Steller Sea Lion Protection Measures
Final Supplemental
Environmental Impact Statement

United States Department of Commerce

National Oceanic and Atmospheric Administration

National Marine Fisheries Service
Alaska Region

November 2001

Volume III Contents

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[1] Form letters are not all being reproduced. We received 1,027 versions of this form letter during the comment period and an additional 84 since the comment period closed October 15, 2001.

⊕ I'm 76 from Seattle + Maui 9/9/2001 in Alaska!
I fished all my life there

SSL EIS

IC-0001

NATIONAL MARINE FISHERIES
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Dear Sirs-Miss or Mrs

The idea that one would
sacrifice food fish for the
sake of Steller Sea Lions
is absurd.

The Sea Lions ruined a
multi million dollar Steelhead
Sport fishing industry that
Hunters + Fishermen by the way
paid for, in Seattle, ruined the
Herring schools in San Francisco
+ crapped on the dock etc they
causing filth + disease and then
left to find fish else where.
They are powerful Animals and
will find fish to feed on by
themselves you don't have to worry
about them. most people feel there
+ still too many Sea Lions, cut
down their numbers and you won't
have to worry about taking food out
of peoples mouths for them. I say No

respectfully William Weslow ⊕

9-18-01

1514-10 SSL RPA EIS Public Comment #2 27p

North Pacific Longline Association

Records Management Office
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, Alaska 99802
Attn: Lori Gravel

September 18, 2001

SSL EIS
G0002

RE: Comments on Draft Seis for Steller Sea Lion Protection Measures, August 2001

The North Pacific Longline Association represents freezer-longliners that fish for cod and other species off Alaska, processing and freezing their product at sea. The August 2001 BiOp (BiOp4) is a great improvement over BiOp3, and makes a more realistic assessment of the possible causes of sea lion decline. We wish that it had abandoned completely the theory of localized depletion, but it did not.

On page 123 of BiOp4 several exceptions to closures of nearshore waters for fixed gear operators are described, based on the view that fixed gear fisheries are least likely to cause localized depletion. Unfortunately there are several contradictory statements regarding the possibility of causing localized depletion with fixed gear on the page, the last concluding that NMFS has no scientific data to support its view, and is forced to "speculate" on the possible impacts. We beg to differ.

Early in the RPA committee process we supplied detailed weekly catch charts of our FY2000 BSAI cod fishery by statistical area, prepared by Fisheries Information Services of Juneau. These charts demonstrate clearly that our longline fishery is thouroughly dispersed in time and space, minimal in critical habitat, and conducted at low rates of CPUE. Lowell Fritz of the AFSC has produced more detailed charts for several years, demonstrating that it is very unlikely that the longline industry is causing localized depletion (Fritz 2001, unpublished).

Longline fishing causes localized aggregation of fish, not localized depletion. Svein Lokkeborg and Asmund Bjordal of the Institute of Marine Research, Bergen, Norway, have conducted studies indicating that fish are attracted to baited hooks from long distances (at least 700 meters), the struggling of hooked fish attracts more fish to the gear, and the hooking probability of fish attracted to baits is low (most fish drawn to a baited longline are not caught) – see Lokkeborg, personal communication, September 11, 2001, longliners do not cause localized depletion, attached. The prey field in the vicinity of longline gear will be dense so long as bait is available and/or hooked fish are struggling. The Council saw a video of this behavior, made by Lokkeborg and Bjordal, at its September meeting in Sitka. Also attached are three studies by the researchers that support the contentions above.

We request that all of this scientific data be taken into consideration in the final version of BiOp4. Thank you for your attention.

Sincerely,

Thorn Smith

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

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STATE OF ALASKA

TONY KNOWLES, GOVERNOR

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OFFICE OF THE COMMISSIONER

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September 20, 2001

SSL EIS
C-0003

Lori Gravel, Records Management Officer
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

Dear Ms. Gravel:

On behalf of the State of Alaska, the Alaska Department of Fish and Game (ADF&G) submits the enclosed comments on the August 20, 2001, biological opinion addressing proposed Steller sea lion protection measures in federal groundfish fisheries. The State appreciates this special opportunity to comment on a draft version of a biological opinion.

Due to the close ties between the State's parallel season groundfish fisheries and the federal groundfish fisheries, the analysis of this biological opinion extends to the parallel season fisheries. Accordingly, the conclusion of "no jeopardy or adverse modification" should extend to the parallel fisheries. Based on interagency discussions, ADF&G understands the Protected Resources Division agrees with that assessment. The final biological opinion and incidental take statement should expressly say that the parallel season fisheries are included within the protection given to the federal fisheries.

The description of other state fisheries, especially salmon and herring, should be revised substantially as set forth in the attached comments. As currently drafted, the biological opinion misrepresents the nature of those fisheries and overstates the realistic potential for those fisheries to have any detrimental effect on sea lions.

We suggest the Protected Resources Division also consider the August 2001 report of the Alaska Steller Sea Lion Restoration Team (ASSLRT) in addition to the attached comments. In that report, the ASSLRT reached conclusions that differ in import ways from the assumptions and analysis in the biological opinion. Most significantly, the ASSLRT recommended that the nutritional stress hypothesis should not be used as a justification for commercial fishing restrictions. ADF&G believes the ASSLRT report provides a sound assessment of sea lion issues. Nonetheless, ADF&G intends to recommend to the Alaska Board of Fisheries that the Board adopt the restrictions necessary to structure the parallel season fisheries in the manner anticipated in this biological opinion.

Thank you for the opportunity to offer the attached comments.

Sincerely,

Frank Rue
Commissioner

Enclosures

cc: John Sisk
Kevin C. Duffy
Earl E. Krygier
Jon Goltz

September 20, 2001

ADF&G Comments on the Draft Section 7 Biological Opinion

The new biological opinion is improved in many ways, especially the manner in which it acknowledges scientific uncertainty and incomplete data. Even so, the State of Alaska, Department of Fish and Game provides the following comments, fulfilling the State's role as a cooperating agency on the SEIS and seeking to improve the description and analysis of state fisheries in the biological opinion. We encourage NMFS to consider the final report of the Alaska Steller Sea Lion Restoration Team (ASSLRT) in addition to the following comments.

1. Page 39, lines 6-7 states that human disturbance of sea lions at terrestrial sites is not considered to be a factor in the continued decline. But figure 4.2 on page 70 indicates that disturbance is a possible factor in the decline from 1990 to 2000. This is an apparent inconsistency that should be avoided or explained.

2. Page 45, the table should not list the eastern edge of the central GOA as "Eastern GOA." That term has a specific meaning, which includes the area east of 140 degrees.

3. Page 76, lines 36-39 are not self-explanatory, and yet no explanation is given for the conclusion that "it is unlikely that the natural environmental change has been the sole underlying cause for the decline of Steller sea lions." The biological opinion does not give any explanation for determining that it is either likely or unlikely that environmental change is the sole cause. If it is truly unlikely, the reasons why it is unlikely should be explained. The ASSLRT team did not believe there was a single source that accounted for the historical or recent declines of sea lions. They noted that sources of unknown mortalities should include the cumulative mortality hypothesis in which a number of mortality sources (e.g., illegal shooting, predation by killer whales and sharks, entanglement, incidental fishing mortality, disease, etc.) may fully account for recent population trends.

4. Page 77, the discussion of killer whales should present not only the minimum killer whale population estimate, but the full range with an associated confidence level. This would provide a range of possible population sizes for the transient population that feeds on marine mammals. The conclusion on page 79 could then more accurately include a range of possible impacts and a consideration of how this range of impacts may play in accounting for the decline.

5. Page 82, lines 12-20, Section 4.4.3.1 reports that the federal groundfish fisheries are estimated to directly kill 9 Steller sea lions per year, and the Prince William Sound salmon drift gillnet fishery is estimated to directly kill 15 Steller sea lions per year. The biological opinion does not, however, report the source of that estimate. It appears to have been taken from the Alaska Marine Mammal Stock Assessments published by NMFS. The draft 2001 stock assessment reports a mean annual sea lion mortality in the federal fisheries of 8.4, and a mean annual take in the Prince William Sound salmon drift gillnet fishery of 14.5. Those

numbers are official estimates made by NMFS in compliance with the Marine Mammal Protection Act. The reference in the biological opinion to "another 30" mortalities "expected to be killed each year in interactions with state fisheries" is not helpful in light of the recognition that the estimate is "not reliable." That statement should be deleted, and marine mammal stock estimates of direct mortality should be used unless more reliable information is available.

6. Page 87, lines 20-40, this section discuses the impacts of trawling. These impacts are portrayed later (Pages 90 & 92) as also occurring from other gear types in state waters. This connection between non-trawl gear and trawl-like effects is not justified in the literature.

7. Pages 87-88, the last paragraph of Section 4.4.3.2.2 suggests that all species of Steller sea lion prey are targeted by commercial fisheries. That is not true. Among the top 14 prey of Steller sea lions are squid, octopus, Pacific sand lance, smelt, Irish lord, Pacific sandfish, snailfishes, and rock greenling, none of which are targeted in commercial fisheries. This information, which is not discussed in the biological opinion, tends to weigh against the food competition theory and should be acknowledged in the biological opinion.

8. Page 89, lines 4-16, this paragraph describes critical habitat. Because of the amount of area proposed to be closed we assume the closures are largely in respect to the hypothesis of nutritional stress linked to fishing activity. The ASSLRT considered that protective measures that address two types of sea lion biological activities may aid their recovery. First is a precautionary zone of non-disturbance, from 100's to 1,000's of feet, around haulouts and larger areas around rookeries. A second biological activity for precautionary consideration would be to provide non-competitive forage for age and sex classes at risk. The ASSLRT team believed that information that described where critical life stages actually foraged was important to define foraging zones and decide if no-fishing should occur there. Never-the-less, at today's date a precautionary approach could warrant more restrictive closures as proposed to the Council. In the future, information should become available to delineate where critical life stages of SSL feed. Then if precautionary measures are deemed prudent to impose, they should reflect where the critical SSL life stages actually forage and where fishing operations actually deplete the forage.

9. Page 89, line 24, the paragraph beginning on this line should be deleted. The fact that NMFS has asked the State to apply for an incidental take permit has nothing to do with the environmental baseline. If the permit request has any proper place in the biological opinion, it is in the section addressing conservation recommendations.

10. Page 89, lines 33-42, this paragraph should be revised. It discusses the effects of state fisheries in terms of "takes," which is a term with particular legal significance. The state disagrees with many of the statements and implications set forth in this section, and the biological opinion is not the proper context for asserting and defending against legal positions. The paragraph should be written in a manner that describes "effects" without suggesting legal conclusions about takes. In the alternative, the paragraph should at least explain that not all takes are prohibited by law, and that the State has said it will be working

to expand and improve the analysis of any effects that fisheries may have on sea lions and to modify fisheries or apply for an incidental take permit as necessary.

11. Page 89, lines 33-42, in addition, this paragraph says that state-managed fisheries are estimated to account for about 30 lethal takes per year, but that statement rests on information that is identified elsewhere in the document as unreliable. It also exceeds NMFS' own official estimate of annual Steller sea lion mortality in state fisheries in the draft 2001 Alaska Marine Mammal stock assessment report. This statement should be deleted from this section.

12. Page 89, lines 33-42, the discussion of illegal shooting should also be separated from the rest of this section because it is logically unrelated to authorized state fisheries. The State does not authorize the shooting of sea lions. Also, the number assigned to illegal shooting mortalities is said to be based on speculation. If the number is not known that should be acknowledged rather than resorting to speculation.

13. Page 90, line 18, the use of adjectives describing an "intense pattern of localized removals of dense schools of fish" tends to portray state managed fisheries incorrectly.

14. Page 90, in general, the state is concerned with this section because, with the exception of Kodiak, neither herring fisheries, nor herring stocks, occur in the major "problem" areas of the Steller sea lion decline. (The Dutch Harbor Food and Bait and a small portion of the Togiak herring fishery occur in critical habitat but exploitation rates and fishery duration are extremely conservative.) The biological opinion does not mention this fact, despite the lengthy discussion of herring fisheries. The department provided many maps and figures and text about this to NMFS via Kruse et al. 2000, but this observation has not been included in the biological opinion. Also, parts of this section, especially the last paragraph of the herring section (lines 29-47) appear to be speculation about the effects of herring fisheries on sea lions rather than a scientific analysis.

15. Page 90, line 27 says, "Interactions between Steller sea lions and the herring fishery occur when vessel activity interferes with sea lions foraging." To our knowledge, interference does not occur, and there is no literature concluding otherwise. At most, a speculative statement that vessel interference "might" occur is all that is warranted.

16. Page 90, line 28 says, "and when mortality results from direct takes of sea lions in the fishery." We are not aware of any documented direct take of sea lions in the herring fishery. Undoubtedly there were rifle shots fired in bygone eras, but this statement implies it is still happening. The statements should be supported by a citation or deleted.

17. Page 90, line 42 says, "Human activities that diminish feeding opportunities for sea lions, such as herring fisheries, may have negative consequences." The negative consequences are identified as a mere possibility, but so should be the connection between herring fisheries and diminished feeding opportunities for sea lions. At a minimum, a second qualifier is needed in this sentence that herring fisheries "might" diminish feeding opportunities, in addition to the statement that it "may have" negative consequences.

18. Page 91, lines 9 and 10 imply there is a negative consequence from the fishing activity. Our many years of field experience on the fishing grounds while managing herring fisheries indicates that it is equally likely that sea lions venture into the fishing grounds because the fishery is beneficial, concentrating herring and confusing them and enhancing feeding opportunities. This cannot reasonably be considered to cause harm to sea lions, and could actually be considered beneficial.

19. Page 91, lines 18-27, Hobart Bay is in Southeast Alaska. Since Steller sea lion abundance in that area is at record high levels, one could conclude that our herring management strategies are not impacting sea lions. In the Steller sea lion problem areas of the central and western gulf, other than Kodiak, there are essentially no herring fisheries. The use of Hobart Bay as an example of the association between sea lions and herring fisheries is misleading.

20. Page 91, lines 29 and 30 says "[t]he fishery moves in and harvests entire schools of herring . . . ." At herring fishery areas, it is often the case that multiple schools, large and small, are present. While purse seiners have sometimes reported wrapping up whole schools, this only occurs if the school is small. When seiners set on a large school, they get only a very small part of the large school. By far, most of the herring biomass is in these large schools. Since the small schools are in close proximity to larger schools, there is not a significant hole in the available prey field. The largest 5% of the herring schools accounted for 50% of the biomass in the one study that we have where we were able to quantify the size of all the schools (Funk, et al. 1995).[1]

21. Page 91, lines 29-47, the biological opinion provides no support for the statement that the short openings for herring fishing in state waters "may be essential to the survival of animals such as Steller sea lions." The statement is not self-evident, especially in light of the fact that sea lions feed on herring schools both when fishing is permitted, and when no fishing is permitted (which is the vast majority of the time). Moreover, it is difficult to imagine how the few hours in which fishing is permitted could be "essential to the survival" of sea lions when, as the biological opinion reports elsewhere, sea lions do not store energy but need a regular supply of forage to maintain their energy needs. The biological opinion also fails to explain that the State of Alaska has closed many herring fisheries in recent years due to low abundance of herring in many areas.

22. Page 92, line 7, why is the state cod harvest characterized as a percentage (22.5%?) of the federal harvest rather than a percentage of the total harvest? What is there about this metric that is descriptive or meaningful? It doesn't appear to be a proper descriptive metric to us. Our estimate of the percent of the federal harvest is: 0.11% for pollock, and 5.29% for Pacific cod. This is for the combined BSAI and GOA federal groundfish harvests in 2000.

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[1] Funk, F.C., G.A. Borstad, and S.A. Akenhead, 1995. Imaging spectrometer detects and measures the surface area of Pacific herring schools in the Bering Sea. Proceedings of the Third Thematic Conference on Remote Sensing for Marine and Coastal Environments: II-833-844, Professional Paper PP-117, Alaska Department of Fish and Game, Juneau.

23. Page 92, line 8, the state GHL for pollock is <u>not</u> limited to 25% of the ABC for pollock. In Prince William Sound the GHL is based on independent surveys. It is set at 19.5% of the available spawning biomass, which is a minimum estimate because our survey estimate is conservative. In the parallel fisheries, the pollock fishery closes when the federal TAC is attained.

24. Page 92, line 12, why is it stated unequivocally, "State managed groundfish fisheries reduce the abundance or alter the distribution of several Steller sea lion prey species"? Clearly, if you remove one fish, you have reduced abundance. But it is not scientifically creditable to assume that such miniscule removals have any effect on the ability of sea lions to forage. Removal rates in State managed groundfish fisheries are low. If one is trying to make a case for competition, it is not very creditable. This is because low removal rates, coupled with the fact that sea lions feed significantly on prey of a smaller size than targeted by commercial fishers and also prey significantly on non- commercial species, do not limit forage opportunities. Quite simply, we do not believe that a responsibly managed fishery with low harvest rates and fished with gear that does not remove industrial amounts in a single swoop can be considered to impact foraging, particularly when no nutritional link to sea lion health or to fishery removals are presented. Furthermore, there is no characterization of federal fisheries in a similar light, yet these fisheries coincide in time and space at the 3-mile limit.

25. Page 92, lines 13-20, the sentence beginning "The groundfish fisheries can cause dense schools of prey to scatter" is inappropriately placed in the discussion of state fisheries. Large industrial trawl fisheries have been shown to cause temporary displacement of fish within a school up to one hour after the trawl passed through a spawning aggregation. In our Prince William Sound pollock trawl fishery the harvest occurs below the usual feeding depths of sea lions, so if any short-term dispersal occurs, it is not affecting sea lion feeding. The remaining state groundfish fisheries are using attractant gear (pots, jigs and longline). Scientific literature from Norway indicates such gear does not cause fish schools to scatter. Rather, a percentage of the fish in an area (those that are hungry) will slowly move to the gear. But only a fraction of those that are attracted, are actually caught. By attracting dispersed fish to an area, the forage density actually increases. Therefore, this discussion should be moved to the direct effects section as opposed to inclusion here.

26. Page 93, lines 6-7, the fishery opens January 20 (concurrent with CGOA) and closes by emergency order no later than March 31, 2001.

27. Page 94, lines 6-12, these lines should be rewritten to say:

"Existing state groundfish management measures limit fishing effort in numerous ways that reasonably reduce potential interactions with sea lions, though the extent of any competitive interaction has not been quantified. Moreover, portions of the state managed groundfish fishery are relatively new, so any effects to the sea lion prey field also would be relatively new. Prior to 1995 …"

28. Page 94, lines 14-49, the discussion of salmon fisheries fails to mention that salmon have greatly increased in abundance over the period of time that sea lions have generally decreased in abundance. It also fails to mention that salmon generally have traveled though sea lion foraging areas by the time they are harvested in the salmon fisheries. Instances in which sea lions forage in the same area in which salmon fisheries occur are rare in comparison to overall sea lion foraging habits. These basic facts should be included in the discussion of potential interactions between salmon fisheries and Steller sea lions.

29. Page 137, line 49, this sentence contains an unwarranted assumption that nutritional stress is occurring. The Endangered Species Act requires NMFS to ensure that its actions are not likely to jeopardize the continued existence of Steller sea lions. A determination of what is likely cannot reasonably be based on an assumption that runs contrary to the evidence. If the evidence (together with a reasonable accommodation of potential error) tends to show that nutritional stress is not occurring, then potential causes of nutritional stress are not likely to pose jeopardy. This unwarranted assumption is moot in this case in light of the conclusion that the federal action poses no jeopardy. But NMFS should reconsider its analysis in future biological opinions.

30. Page 148, lines 19-32, this section does not recognize testimony that has been given a number of times in front of the Council, that local rural residents have voluntarily reduced their subsistence take greatly to aid in the conservation of sea lions. Also, rural subsistence users often inflated their subsistence numbers in the past so as not to be limited if a limit were put in place.

31. Page 148, Section 6.2, analysis of any effects that state fisheries may have on Steller sea lions is a proper subject of the biological opinion, but only to the extent such effects have a logical relationship to an analysis of the federal action. Section 6.2 should avoid legal conclusions about "takes" in state fisheries. If the federal government has concerns about compliance by the State of Alaska with federal laws, those concerns should be expressed elsewhere and discussed with the state fisheries agency and the Board of Fisheries.

32. Page 148, Section 6.2, additionally, analysis of the effects of state fisheries should be treated with the same objectivity and recognition of uncertainty that is afforded the federal fisheries. The merely "rudimentary" understanding of sea lions that is humbly acknowledged in section 5.1.2 should also be acknowledged in section 6.2, and the implications that state fisheries are likely to threaten the existence of sea lions should be eliminated. Evidence that Steller sea lions are not nutritionally limited is no less compelling in the context of state fisheries than in the context of federal fisheries. In addition, the biological opinion should recognize that the State has the best understanding of the abundance and distribution of state resources such as herring, salmon, and cod.

33. Page 148, Section 6.2, because the proposed action analyzed in the biological opinion is described in alternative 4 of the SEIS, the biological opinion apparently relies on the expectation of the Alaska Board of Fisheries taking regulatory action to further restrict fishing during the parallel season for Pacific cod in the Gulf of Alaska. NMFS should provide to ADF&G and the Board, as soon as possible, the precise restrictions it anticipates.

The NMFS Office of Protected Resources and Office of Sustainable Fisheries should also prepare to explain to ADF&G and the Board why those restrictions have been anticipated and the reasons why they believe the Board should impose such restrictions in state fisheries.

34. Page 148, Section 6.2, in regards to the Biological Opinion's discussion on salmon, we find that it does not accurately portray the information this agency has provided NMFS in our comments on the BSAI/GOA Groundfish SEIS and on the Second Half of the 2001 Groundfish Fishing Year EA. That provided information indicated that in the summer, salmon are short term residents and most of the sea lion foraging on salmon occurs upstream of terminal fisheries. Sea lions do not appear to be nutritionally stressed in the summer and salmon stocks are at record high levels. Because no other salmon species are present in coastal waters in the winter, sea lion forage on salmon could only be on late run coho or feeder kings, neither of which has a commercial fishery occurring on them in the winter months. These facts should be acknowledged.

35. Page 148, lines 43-47, see comment 25 above for page 92 lines 13-20, and correct the portrayal of the state fisheries here also.

36. Page 148, lines 49-51, see comment 24 above for page 92 line 12, and fix here also.

37. Page 149, lines 26-27, why should NMFS expect the small boat fleet to grow? We don't.

38. Page 149, lines 32-37, the qualifiers "substantially" and "appreciably" in line 36 should be removed from this section. These qualifiers greatly exceed the available justification because: (1) NMFS has concluded that there is currently no direct evidence of nutritional stress; (2) significant sea lion forage is available both in sizes not targeted by commercial fisheries and as non-TAC species within 0-3 miles; and the state has provided materials showing that the expected impacts of state managed fisheries are likely to be negligible.

39. Page 149, line 37, the sentence beginning on this line should be changed to read: "If the hypothesis that links fishery removals with SSL ability to forage proves true, then State managed fisheries will continue to reduce the abundance of preferred sea lion prey within these marine foraging areas and may alter the distribution of certain prey resources in ways that reduce the foraging effectiveness of sea lions if such fisheries are conducted in a manner that depletes prey fields. " This quantifier more accurately reflects the circumstances under which state fisheries could impact nutritional needs.

40. Page 154, lines 48-49, this language greatly contrasts with the discussion on pages 89 and 90, which indicates that state fisheries are a large concern. In such light, state fisheries are provided less precision, accuracy and justification than federal fisheries. We ask NMFS to moderate the language and discussion on pages 89-90 to reflect the tone of the comment on page 154.

41. Page 154, line 50, a new paragraph should be added: "NMFS intends the scope of this incidental take statement to extend to parallel fisheries authorized by the State of Alaska, if the parallel fisheries are authorized and conducted as set forth in alternative 4 of the SEIS.

The analysis in this biological opinion is based on an assumption that the Alaska Board of Fisheries will adopt restrictions in the parallel fisheries so that those fisheries reflect fishing activity in state waters as set forth in alternative 4 of the SEIS. The state-controlled parallel fisheries are inextricably linked to the federal action that is analyzed here, and they have therefore been analyzed as if they were part of the federal action. The incidental take statement provides the same protection for those fisheries as it provides for the federal fisheries that make up the federal action."

42. Page 156, line 19, the words "the potential for" should be inserted after the word "revealed." New information has not revealed conclusively a greater dependence on areas nearshore for foraging outside of the areas also described as important for socializing, nursing, breeding and resting (non-disturbance areas).

43. Page 156, lines 21-23, these lines should be rewritten to say: "If the hypothesis of fishing caused nutritional stress is correct, then fisheries that occur in waters within the jurisdiction of the state may adversely affect sea lions if they are conducted in a manner that depletes prey fields." Again, these quantifiers more accurately reflect the circumstances under which state fisheries could impact nutritional needs.

44. Page 156, line 24, the words "are likely" should be changed to "may."

45. Page 156, lines 25 – 28, this last sentence should be deleted because it is not necessary to the biological opinion, and implies that the State of Alaska is out of compliance with the Endangered Species Act and the Marine Mammal Protection Act.

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SSL EIS
C-0004

Dear Jim Balsiger,

It has recently come to my attention that the council you sit on will be making a decision next month as to how best deal with increasingly small number of accountable sea lion populations. I am writing this letter to you, and the other council members, with the hope that you will keep a balanced view on this issue. I understand that you are considering shutting down massive areas to all cod fishing, which is concerning.

When debating this issue, I ask you to please do the following:

- Consider the small boat fleet for what it is, and value information from our fleet as a "seperate view" from the billion dollar big boat industry. (By small boats, I mean those under sixty feet without proccessing or refridgeration capabilities.)

- Look into the fact that the fleet of boats in the Aleutians under sixty feet without proccessing or refridgeration is: a) miniscule in size b) the cleanest of all fisheries at risk c) will have minimal impact, if any d) is a valuable part of the lifeline in rural aleutian communities

- Be aware of all bias comment. It is easy to see how the industry is bias in it's thinking. If they get shut down, there will be hurt. But the equally large bias will come from environmentalists, as they are unfamiliar with the environment they seek to protect and are putting large stock into shaky science.

- Remember that small boats don't put our NEAR the pollution large boats do. This means air pollution, fish waste, water pollution, noise, etc.

- Act on Fact. This is hard to do, we don't know most of the facts that need to be known to make a 100% decision, but we know where the studies and experiences point to. We know that in 92 there were 100,000 sea otters west of Dutch, and in 00 there were about 5,000. The number one suspect in that trial is the orcas, number two is disease- not the hunters or fishermen. We know the orcas are getting more aggressive; this is shown in the fact (among others) that they are going shallower than ever before to get halibut off fisher's long line gear. We know that the small boat fleet catches such a small percentage of the aleutian cod, it couldn't possibly be a major contributor to this population decline.

`Small, non proccessing, non freezing, non invasive vessells are becoming more and more a economic reality out here in the aleutians. As this becomes so, we should support moves in this direction as a clean option to the pollution and waste associated with the larger fleet. "Shutting it all down" so to speak, without room for reform or other options will be detrimental. Like prohibition, or war.

I am confident that should the environmental groups on the other end of the courtroom learn of the realities of the small boat fleet's operations, they would not interfere with our continued effort to create a sustainable fishery.

Please act wisely.

Sincerely,

Jeb Morrow

9-21-01 1514-10 SSL RPA EIS 10pp

PROWLER FISHERIES, INC.

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SSL EIS
C-0005

September 21, 2001

Lori Gravel
Records Management Office
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, Alaska 99802

Re: Comments on the Draft Biological Opinion and Incidental Take Statement for the BSAI/GOA Groundfish Fisheries in regards to Steller Sea Lions.

The following comments are on behalf of Prowler Fisheries who own and operate three freezer-longline vessels that participate in BSAI/WGOA p-cod fisheries. Accordingly, these comments primarily pertain to the western stock of Steller sea lions and proposed RPAs for the longline p-cod fleet. There is one attachment to these comments which is a handout of background material that Prowler Fisheries provided to the NPFMC during testimony at the September 2001 meeting in Sitka, Alaska.

General: The draft BiOp is a large improvement over the previous Nov. 30 BiOp in that the new draft includes re-analyzed and new information including: a summation of known sources of SSL mortality; SSL diet trends by region; immature SSL foraging behavior studies; an overview of telemetry studies; and the evaluation of impacts of the proposed RPAs on SSLs.

Due to the stated uncertainty in regards to the nutritional stress hypothesis, it is not clear to Prowler Fisheries that fishing and local depletion are significant factors in the recent (second phase) decline in the population of the SSLs. However, in order to avoid jeopardy and to maintain fishing opportunity (although restricted), Prowler Fisheries accepts the RPAs as developed by the RPA Committee that are contained in the draft BiOp.

The caveat on this acceptance would be that the validity of the nutritional stress hypothesis be tested as well as testing differential gear impacts on local depletion. Each fishery should bear the burden of conservation proportional to its impacts, if any.

Frozen at Sea Longline Caught Fish

Differential Effects of Gear Type on Local Depletion: NMFS has conditionally accepted the nutritional stress hypothesis without supporting quantitative data. A markedly different standard is applied to evaluating the likelihood of local depletion by gear type, in which the BiOp is inexplicably ambivalent. In several instances the BiOp states that fixed gear is less likely to cause localized depletion than trawl gear. The discussion of interactive competition (p.87) is confined to trawl gear. Previous BiOps make the distinction between gear types. On the other hand, the draft BiOp also states that NMFS does not have the scientific data to discern the differential possibilities of producing localized depletion by gear type and is left to speculate (p.123).

Both quantitative data and qualitative information were supplied to NMFS during the RPA Committee meetings by the longline sector (Prowler, NPLA et al). This information included a series of charts showing time/area dispersion; a description of the fishery; a bait study paper; corrected catch information etc. This information should be sufficient for NMFS to make an informed decision (as to the likelihood of localized depletion by fixed gear longline) that it is conditionally significant in spite of incomplete or unavailable information. It should be noted that in dealing with large ocean ecosystems, it can always be argued that information will always be incomplete.

Since the RPAs in the draft BiOp include a de facto zonal approach by gear type (in some areas), NMFS should recognize the available information and clarify the decision that resulted in the RPAs and the inherent zonal approach by gear type.

The majority (82%) of the longline harvest in the BSAI occurs outside of Critical Habitat (20 miles) and 76% occurs outside of CH (20 miles) plus the foraging areas. However the harvest inside of CH is still of importance to the longline fleet. The availability of harvest opportunity in these areas keeps the freezer-longline (approximately 37-40 vessels) well dispersed in the BSAI. Loss of access to CH would result in a de facto closure of the AI area due to the steep underwater topography of the AI chain as well as the high number of rookeries and haulouts in the AI chain. Loss of the AI area to longliners would then force the vessels currently fishing there (6-10 vessels) to relocate to the BS where the fleet would be even further concentrated (due to closure of CH also in the BS). The negative effects of this concentration are somewhat depicted in part in the evaluation of Alternative 2 in the DSEIS on SSL Protection Measures.

The telemetry data suggests that the 0-10 mile zones around haulouts and rookeries are significantly utilized by sea lions. Therefore, most of the emphasis on the hypothesized localized prey depletion is focused on the 0-10 mile zone. The rationale for allowing the BSAI longline fleet to fish inside of CH and in particular in the 3-10 mile zone in some areas includes:

- Effort is broadly dispersed over a broad area (see time/area series charts etc.) from the Aleutian chain to the eastern Bering Sea. .

- Effort is broadly dispersed over time (see time/area series charts etc.) in the first and third trimesters.

- There is no imminent reason for fleet behavior to change. The fishery is not expanding (Amendment 64) and the fleet size is stable (Amendment 67).

- 94% of the p-cod longline catch comes from vessels with observers aboard. 66% of the p-cod catch is directly observed.

- Scat studies indicate that while p-cod is a component of the SSL diet, p-cod is of considerable less frequency than pollock and salmon (Regions 1,2,&3); and Atka mackerel (Region 4) [Figure 3.1-8, p.3-33, DSEIS].

- The average length of p-cod caught in the longline fishery is 67 cm (1997-98 avg.) while the cod EA indicates that from scat analysis, 80% of the p-cod eaten by SSLs were approximately less than 50 cm in length.

- Longline gear has a lower removal rate than trawl gear. As an indication, in 1999, the maximum weekly catch of p-cod by gear type was: trawl = 7,134 mt/week; longline = 4,547 mt/week; and pot = 2,833 mt/week. The trawl cod harvest is heavily concentrated in the first trimester.

- In the Norwegian hook study (*Responses of Cod and Haddock to Baited Hooks in the Natural Environment*, Lokkeborg et al 1989) less than 5% of the cod reacted to the bait and showed a behavior response pattern. Of those that reacted, only 29% of the cod bit at the bait, and of those that bit the bait only 37% were hooked.

- Longline gear is baited to attract cod and may increase aggregations of cod in the local vicinity from the downstream side (scent). However, the bait is competing with any other available forage in that area for the cod's attention. The hook study indicates that only a small portion of the cod in the vicinity of longline gear are actually hooked.

- Cod have daily rhythmic feeding activity that would effect the CPUE of longline gear via bait response. There are times when the cod maybe aggregated but they are not feeding which lowers the effectiveness of longline gear. Mobile trawl gear is effective on cod whether the cod are feeding or not.

- The physical dimensions of longline gear cover considerably less area than mobile trawl gear. The footprint of longline gear is the same regardless of vessel size and horsepower while trawl dimensions are directly linked to vessel size and horsepower.

Longline gear is benthic gear and is thereby effective in a portion of the water column whereas mobile gear covers a larger portion of the water column.

- Longline harvest is not likely to disrupt schools of cod or aggregations and normal dynamics as is hypothesized with trawl gear in interactive competition (page 87)..

There appears to be enough information available for NMFS to make the determination that longline gear is less likely to cause local depletion (if local depletion is the accepted hypothesis).

Uncertainty in the Nutritional Stress Hypothesis: The draft BiOp has numerous references and statements as to the uncertainty of the role of nutritional stress hypothesis in the decline of SSLs since 1990 (see attachment). Seventy-five per cent of the current decline is unexplained and twenty-five per cent of the recent decline is attributable to known takes such as subsistence, killer whale predation etc. Direct evidence for the nutritional stress hypothesis is lacking but "*...since NMFS cannot insure that nutritional stress is not occurring, we* [NMFS] *will then make the assumption that it is likely, adhering to our mandate to insure that fisheries do not jeopardize listed species.*" (page 137).

One large assumption is that the SSL population will stabilize if anthropogenic sources of mortality are removed. This may or may not be the case as all populations in nature are cyclic and all ecosystems are dynamic. It is wishful thinking to have all populations forever stable or increasing. It is also unclear what population level of SSLs is appropriate, that is, the population that is in equilibrium with the environmental conditions and amount of forage biomass. The draft BiOp touches on this uncertainty in the underlying assumptions in the forage ratio method (pp. 143-144). For example, there is an estimate of the peak historic population (200,000) but there is no knowledge of the forage available at that time nor knowledge if this was the appropriate population level for that time and conditions.

Additionally, the BiOp states it is likely that environmental change from the regime shift has resulted in a biomass switch in forage species which has contributed to the decline of SSLs. Given these uncertainties, there is no guarantee that removal of all anthropegenic sources of mortality (such as fishing via prey competition) will indeed stabilize or recover the SSL population. This must be kept in mind in evaluating the RPAs in the future.

Using the precautionary approach, the nutritional stress hypothesis is then conditionally accepted because it can not entirely be ruled out as a factor for the decline. As a result, fisheries are to be managed to avoid reductions in localized prey availability under the RPAs. Since ESA gives the benefit of the doubt to the species, and there is a desire on the part of the fishing industry to have future fishing seasons (without court injunctions), the fishing community largely accepts the RPAs in order to avoid a jeopardy finding.

Miscellaneous Comments:

p.9: Referencc to Appendix 1 which did not appear to be attached.

p. 84-85: Discussion of overlap between prey size and fisheries is confined to pollock explicitly and all species implicitly. The cod EA contained some specific information relative to cod sizes in scat and in fisheries.

p.123: Concluding statement contradicts numerous prcvious statements.

p. 155: Incidental Take Statement: Terms and Conditions #4: The use of the phrase "any vessel" maybe inappropriate as some vessels are allowed inside of conservation arcas (example: IFQ black cod and halibut). "Any" implies monitoring of all vessels which may be an impossibility for management and enforcement.

We want to thank NMFS for the opportunity to comment on the draft BiOp and hope these comments are given consideration.

Thank you,

Gerry Merrigan (on behalf of John Winther)
Prowler Fisheries

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SENT BY FAX – SEPTEMBER 21, 2001 – 4 PAGES

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SSC-EIS
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Attention: Lori Gravel

AGDB COMMENTS ON THE DRAFT BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT ON THE AUTHORIZATION OF THE BERING SEA/ALEUTIAN ISLANDS AND GULF OF ALASKA GROUNDFISH FISHERIES

REQUEST FOR FINE-TUNING OF THE GULF OF ALASKA POLLOCK RPA'S FOR 2002

The tentative preferred Alternative # 4 recommends that the 2002 Pollock fishery structure in the Gulf be divided into four fishing seasons of equal TAC allocations. Each season is followed by a stand down period when no directed fishing is allowed.

Table 1. Alternative 4 Gulf of Alaska Pollock fishery structure

Season	Open Date	Closure Date	# of days season	Stand down
A season	January 20	February 25	36	13
B season	March 10	May 31	82	86
C season	August 25	September 15	21	16
D season	October 1	November 1	31	80
Annual Total	N/A	N/A	170	195

The members of AGDB believe that the stand down period following the A and C seasons should be eliminated.

Table 2. Gulf of Alaska Pollock fishery structure removing stand down periods between fisheries

Season	Open Date	Closure Date	# of days season	Stand down
A season	January 20	March 10	49	0
B season	March 10	May 31	82	86
C season	August 25	October 1	37	0
D season	October 1	November 1	31	80
Annual Total	N/A	N/A	199	166

<u>Justification:</u>

(1) The November 1 BIOp 3 proposed Gulf Pollock fishing seasons structure did not have stand down periods between seasons. The BIOp 3 is considered more restrictive than what was proposed for fishing structure recommendations for 2002 in the BIOp 4.

Table 3. Proposed BIOp 3 Gulf of Alaska Pollock fishing seasons

Season	Open Date	Closure Date	# of days season	Stand down
A season	January 20	March 31	70	0
B season	April 1	June 10	70	0
C season	June 11	August 21	71	0
D season	August 22	Oct 31	70	81
Annual Total	N/A	N/A	281	81

(2) One of the main goals of the proposed RPA Steller Sea Lion mitigation measures is to spread catch over time (temporal dispersion). The longer seasons allow catch to be dispersed over more fishing days.

(3) In the Bering Sea Pollock fishery there are no stand down periods between fishing seasons (A season runs from Jan 20 to June 10 and B season runs from June 10 to Nov 1).

(4) The BIOp 4 page 117 "Two seasons are considered appropriate, with roughly 50% of the harvest occurring in each season to minimize the possibility for localized depletions, four seasons would be more conservative, and further reduce the likelihood of competition between fisheries and Steller sea lions." The Gulf Pollock fishery is a four-season fishery and therefore more conservative.

(5) The Alternative 4 analysis for the jeopardy finding of Steller sea lions did not include additional measures that were retained from the 2001 fishery. These measures include the 300,000-pound trip limit in the GOA, tender restrictions east of 157 degrees W longitude in the GOA, as well as stand-down provisions and exclusive registration provisions between the BSAI and Gulf of Alaska; a net benefit for Steller Sea Lions. These additional measures will helps slow the 2002 Pollock fisheries catch rates in the Gulf as well.

(6) The Gulf of Alaska Pollock fishery quotas are apportioned by biomass allocating quota allotments to areas 610, 620, 630, 640 and Shelikof Straits. Apportioning quota based on biomass spatially disperses catch over the entire Gulf, an added conservative measure.

(7) Approximately 6,050 MT of catch has been lost because of the stand down between seasons during the 2001 fisheries. This represents an ex-vessel loss of approximately 1.1 million dollars. The 2002 fishery structure is more restrictive than in 2001. The A and C seasons in 2002 are shorter, a net loss of fishing time of 10 days.

Table 4. 2001 Pollock fishery -- Loss of Pollock TAC as of NMFS web catch information through Sept. 15

Fishery	Season	Unharvest TAC	Loss TAC*	Closure Date
Shelikof Straits	A season	7808	1601	reg close Mar 1
Shumagins-610	C season	2578	668	close Sept 7
Chirikof - 620	C season	5022	3781	reg close Sep 15
Kodiak - 630	C season	1831	0	close Sept 10
Total Loss	Annual	17239	6050	N/A

*After allowed roll over of maximum of 30% of the annual area TAC provision applied

Table 5. Comparison of A and C season Pollock fishery structures 2001 vs. 2002
Part A. 2001 Fishery Structure

	2001 Fishery Structure		
Season	Open Date	Closure Date	# of day season
A season	20-Jan	1-Mar	40
C season	20-Aug	15-Sep	26

Part B. 2002 Fishery Structure

	2002 Fishery Structure		
Season	Open Date	Closure Date	# of day season
A season	20-Jan	25-Feb	36
C season	25-Aug	15-Sep	21

OTHER COMMENTS

Sec. 3.2.2.2 Critical Habitat Areas with few Observations of Steller Sea Lions: Page 38 lines 15 and 18. "There are also numerous haulouts throughout the range that have had little use over the past 10-15 years...Observations at about 30 sites have resulted in either few or no animals counted there over the last 10 years." In the Gulf of Alaska fishery some of these low use or no use haulouts based on the RPA committee recommendation allow trawling within the 3 to 10 nm range. It would seem appropriate to do a table which compares these 30 haulouts with the proposed fishing restricts for the 2002 fishery management plans to see the interface between reduced fishery restrictions and haulouts with no present time usage.

AGDB comments – Page 3 of 3

Table 5.4 Temporal Dispersion and Allocation; GOA Pollock: 30%, 15%, 30% and 25%.
Should read: GOA Pollock: 25%, 25%, 25%, and 25%.

Thank you for considering these comments.

Sincerely,

Julie A. Bonney

Julie Bonney
Director, AGDB

AGDB comments – Page 4 of 3

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Comments on the Draft Biological Opinion and Incidental Take Statement on the Authorization of the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Fisheries

Submitted by

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Submitted to the

Records Management Office

National Marine Fisheries Service

Alaska Region

PO Box 21668

Juneau, Alaska 99802

Attn: Lori Gravel

September 21, 2001

After review of the new Biological Opinion we offer the following comments.

We do understand the desire to achieve an increased measure of "temporal and spatial dispersion" in fisheries, even if we do not fully endorse the concept. Nevertheless we feel it important to point out two changes prescribed in this new Opinion for the Gulf of Alaska, that will likely lead to concentration rather than dispersion in fisheries.

Gulf of Alaska Pollock Fishery

In the Gulf of Alaska (GOA) pollock fishery, roe-bearing pollock is commonly three times as valuable as non-roe bearing. So, when season apportionment during the roe season change, they merit careful analysis. The proposal to change the "A" and "B" seasons to 25% from 30% and 15% respectively is a very significant action.

In the Gulf, the roe season for pollock normally occurs during the "A" season in area 610, and it usually occurs in the "B" season in Central Gulf areas 630, 620,and Shelikof. Because roe fish is so much more valuable than non-roe, the net effect in area 610 is net loss of potential gross revenue (lose 5% of the roe fish which is worth three times as much as non-roe, but only partially offset the loss with a 10% gain in non-roe fish).

In the Central Gulf where roe season is "B" season, the results are reciprocal. Taken together, the combined effect is a big increase in value in the Central Gulf versus a loss in the Western Gulf. But, the important thing is that a fisherman with a good market **can and will fish both areas** during the respective roe seasons. The result will be concentration of fishing effort, not "spatial and temporal dispersion".

Gulf of Alaska P-cod Fishery

Another change that needs to be highlighted is the so-called 60/40 split for Gulf of Alaska p-cod. P-cod has mainly been harvested during the Winter and Spring. P-cod are generally aggregated during this period and are harvested efficiently. This year, under the 60/40 split a large part of the second season P-cod remains un-harvested. The reasons are many, but we want to make the following point.

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By catch of **Prohibited Species (PSC)** shut down this fishery. And it's such a shame.

The Gulf p-cod fisheries have been very clean fisheries. The fishing usually occurred on aggregated stocks with extremely low bycatch rates. Now, under the new plan, the fleet is forced to fish in non-traditional areas, on un-aggregated stocks, at unusual times of the year. Instead of straight p-cod, they catch lots of halibut. This is a failure of the prime directive, to "disperse temporally and spatially". It is just a plain shame. And, the fleet has been saying repeatedly for the last year or more that this would be the case.

The spin off to this waste of the PSC is that development of new fisheries such as arrowtooth is arrested. The opportunity foregone. The PSC could and should be used so much more wisely.

Finally, we want to comment on the need for rationalization of groundfish fisheries in the Gulf of Alaska. The new document identifies and embraces rationalization, as ultimately necessary for the future health of our fisheries. We concur.
Thank you for this opportunity to comment.

Joe Childers
Executive Director
Western Gulf of Alaska Fishermen Association

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September 21, 2001

Petition SSLEIS C08-10

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Attn: Lori Gravel

Comments on the Draft August 22, 2001 Biological Opinion ("RPA BiOp")

Dear Ms. Gravel:

We offer the following comments on the Draft August 22, 2001 Biological Opinion ("RPA BiOp").

The Draft **RPA BiOp, p. 7**, cites two main reasons for the re-consultation and a new "action-specific" BiOp: (1) new telemetry data on the distribution of Steller sea lions, and (2) a significant deviation from the specific actions required in the Reasonable and Prudent Alternative (RPA) of the November 30, 2000 FMP-level BiOp. However, the action in (2) is premised on the data in (1), and the new telemetry data is a flimsy basis for deviating significantly from the RPA principles and guidelines laid out in the December 3, 1998 BiOp, the October 1999 pollock RFRPA, and the 2000 FMP BiOp.

The RPA BiOp itself and the accompanying telemetry white papers (ADFG 2001; Loughlin et al. 2001) acknowledge the long list of fundamental, substantial caveats associated with the "new" telemetry data and cast considerable doubt on the strength of the interpretation given to the "new" telemetry research in the RPA BiOp, and yet the telemetry data serve as the sole basis for a dubious scheme of partitioning critical habitat into "zones of concern." The remarkable rush to use this new telemetry information (for pups and yearlings only) as a justification for rolling back critical habitat protections has little to do with science and belies NMFS's intention to arrive at a preferred industry conclusion regardless of science or the best interests of the endangered species.

Solely on the basis of new telemetry data for young-of-the-year pups and yearling sea lions, NMFS has made a radical departure in approach from the November 2000 FMP BiOp and from the previous pollock BiOp RPA principles and guidelines (1999-2000) as well as the numerous other Section 7 consultation recommendations and findings since 1990. The telemetry information is only a pretext for withdrawing protection to large portions of critical habitat[1] and justifying the industry/Council preferred RPA. Area by area negotiations with affected groundfish industry interests determined the specific "protections" in the proposed Alternative 4 RPA, not the needs of sea lions based on their biology and ecology.

In the November 30, 2000 FMP BiOp, NMFS concludes that competitive interactions with groundfish fisheries as a whole jeopardize the survival and recovery of sea lions and cause adverse modification of

[1] See percentages at **RPA BiOp, Table 5.3, p. 122**, and total area at **RPA SEIS, Table 4.8-2, p. 4-240**

sea lion critical habitat at three temporal-spatial scales: the global, the regional and the local.[2] The FMP BiOp (p. 259) identifies 4 primary effects categories: effect of global biomass levels, effects of disturbance, and effects of temporal and spatial concentration of fishing. NMFS says the RPA must avoid jeopardy and adverse modification *"at all three scales where the competitive interactions occur"* (FMP BiOp, p. 290). Thus the goal of any acceptable RPA alternative should be to design a fishery based on levels of fishing highly likely to avoid competition with Steller sea lions at the three scales of competitive interaction identified by NMFS in the FMP BiOp.

An adequate RPA package must include the following elements:

- At the global scale, reduce groundfish catch levels. The RPA should employ more conservative exploitation strategies for important forage fishes such as pollock, Atka mackerel, and Pacific cod in order to maintain the forage base for predators at high levels of abundance relative to the unfished condition.

- At the regional scale, disperse groundfish fisheries in time (at least 4 seasons) and space (adequately distributed by management areas, based on biomass distribution if available) both inside and outside critical habitat.

- At the local scale within critical habitat, *eliminate* the possibility of direct food competition and disturbance of the prey field by establishing complete spatial separation of trawl fishing from all critical habitat.

The basis for these RPA elements can be found in the Steller sea lion Biological Opinions prepared by NMFS in 1998 and 2000, as analyzed in the Draft RPA SEIS, Alternative 2 (NMFS 2001). However, we envision that some fishing with lower-impact fixed gears (pot, jig, hook-and-line) can occur within critical habitat with minimal disruption to sea lions or the prey field, as now occurs in Southeast Alaska waters, provided that limits on total catch and measures to spread the fishery in space and time avoid large-scale removals over short periods in concentrated locations (i.e., pulse fishing). Thus we have advocated and endorsed the fixed-gear Pacific cod provisions in the Alternative 2, which would allow fixed-gear vessels (except factory longliners) to operate within 3-20 nm of critical habitat zones around rookeries and haulouts:

- For the fixed-gear cod fishery, employ vessel size and gear limits, daily (or weekly) catch limits, and at least four seasonal allocations of the quota within critical habitat in order the disperse the effort of longline, pot and jig fishermen in a way that is highly likely to avoid harming Steller sea lions.

We believe such a package of RPA measures, analyzed in the RPA SEIS as Alternative 2, will be highly likely to avoid jeopardy and adverse modification of critical habitat, providing major reductions of catch of sea lion prey in critical habitat while allowing a robust and low-impact fixed gear cod fishery within critical habitat. The proposed year-round trawl exclusion in all critical habitat (106,410 nm^2) would provide substantial benefits to Essential Fish Habitats (EFH) and HAPC species of concern, as noted by

[2] FMP BiOp, p. 289: "*This competitive interaction, occurring at the global, regional, and local scales has been shown to jeopardize the continued existence of Steller sea lions by interfering with their foraging opportunities for the three major prey species resulting in reduced reproduction and survival.*"

NMFS in the accompanying **RPA SEIS, Sec. 4.8.2** (Effects of Alternative 2 on Marine Benthic Environment): "*This alternative is the most protective alternative under consideration in terms of reducing competition for prey with Steller sea lions, and is also the most protective for EFH.*" NMFS says that the Alternative 2 "zonal" approach to fixed-gear cod fishing regulations within critical habitat is quite protective of EFH and HAPC species.[3]

We do not believe that either the framework RPA (Table 5.2) or the actual proposed RPA (pp. 23-30) meets NMFS's obligations under the Endangered Species Act. Major shortcomings in the proposed RPA measures are outlined below. Furthermore, there are a variety of places in the RPA BiOp where NMFS notes that more risk-adverse approaches than the proposed RPA are available, but does not explain why such approaches were not assessed or adopted, or how that failure meets the agency's obligations under the Endangered Species Act.

The proposed Alternative 4 RPA fails to address cumulative impacts of the fishing exploitation strategy ($F_{40\%}$ proxy for F_{MSY}) at the global scale of competitive interaction.

- In the November 2000 Steller sea lion Biological Opinion on North Pacific groundfish Fishery Management Plans (FMPs), NMFS concluded that the proxy MSY "harvest policy" ($F_{40\%}$) has reduced important Steller sea lion prey stocks to 40-60% of the expected unfished stock size over time, *by design*. The estimated 40-60% decline in exploited groundfish biomass resulting from the $F_{40\%}$ harvest policy is "reasonably likely to reduce significantly" the prey base for Steller sea lions over time[4] and to reduce the carrying capacity of sea lion critical habitat.[5] Based on these conclusions, NMFS should have examined an overall reduction in the fishing rate in the FMP BiOp, and in this draft BiOp. Instead, the FMP BiOp confined these concerns to situations where the biomass falls below the status quo $B_{40\%}$ stock level.[6] NMFS also equated a stock size below the $B_{40\%}$ level with a "take" of Steller sea lions.[7] Yet the proposed Alternative 4 Global Control Rule does nothing to prevent stocks from falling below the $B_{40\%}$ "target" stock size because it does not stop fishing until after the *estimated* stock biomass has dropped to 50% of that "target" biomass. At **RPA BiOp, p. 119**, for instance, NMFS says: "*For sea lions, the relevant question is whether fishing under the prevailing exploitation strategy (the global control rule) results in such large overall removals of fish that sea lions are unable to forage at levels that prevent starvation.*" But NMFS concludes that this is a "moderate" concern now, and only "*if the biomass level for these species was to fall below 20% of its theoretical unfished biomass amount...*" **RPA BiOp, p. 116**. The Draft RPA BiOp fails to provide any new evidence that

[3] **RPA SEIS, p. 4-242**: "*is quite protective of EFH and particularly of HAPC species and of nearshore HAPC areas. As described in Sec. 3.8.1, nearshore habitat provides spawning habitat for numerous fish species, including Atka mackerel, and the effect of this approach is that these nearshore areas are closed to all but the least invasive gear types.*"
[4] FMP BiOp, p. 225.
[5] FMP BiOp, p. 259.
[6] FMP BiOp, pp. 250-51: "*However, it is our opinion that biomass reductions of important groundfish species below 40% of their unfished level <u>would not insure</u> the protection of listed species or their environment.*"
[7] FMP BiOp, p. 259: "*The harvest strategy used in the BSAI and GOA has resulted in biomass reductions of Steller sea lion prey on the order of 40-60% from that of estimated unfished levels...As far as the level of effect that constitutes a "take" of Steller sea lions, based on concerns of their ability to forage effectively without reducing appreciable [sic] their likelihood of survival and recovery, <u>take could be expected to occur whenever the biomass of pollock, Pacific cod, or Atka mackerel is below $B_{40\%}$</u>.*"

would justify the conclusion or otherwise explain the sudden divergence and downgrading of global-scale concerns that were identified in the November 30, 2000 FMP-level BiOp. Moreover, the model-derived point estimates of stock size are surrounded by large confidence limits that NMFS fails to consider in the Draft RPA BiOp. The RPA BiOp analysis should evaluate error bounds in stock size estimates and the risks associated with ABC levels of fishing based on those estimates, as well as precautionary "control rule" measures to address such risks, including a global control rule that begins to take effect before stock size estimates reach "target" and "limit" reference levels.

The proposed Alternative 4 RPA fails to provide any reasonable assurance that groundfish catch levels and spatial/temporal distribution at the regional and local scales of competitive interaction will avoid continued jeopardy to the species or adverse modification of nearshore and pelagic foraging habitat.

- In the RPA BiOp, NMFS continues to improperly conflate analyses of jeopardy and adverse modification. For example, both the jeopardy and adverse modification discussions rely heavily on NMFS' new zonal approach, without sufficient demonstration of how this approach satisfies NMFS' obligation to ensure against jeopardy and adverse modification. Rather, NMFS' heavy reliance on the zonal approach has resulted in a biological opinion in which description and analysis of the effects of the action, the federal groundfish fisheries, on sea lions and their designated critical habitat is virtually absent. Furthermore, the zonal approach effectively amounts to a redefinition of critical habitat, without procedures or analysis.

- The RPA BiOp fails to demonstrate how the proposed RPA avoids jeopardy and adverse modification. For example, with regard to adverse modification, the RPA BiOp states that the value of the marine portions of critical habitat will be determined by the abundance and distribution of prey species. **RPA BiOp, p. 146.** Nowhere in the RPA BiOp, however, does NMFS describe or analyze the abundance and distribution of prey species in critical habitat in light on the proposed RPA, or demonstrate that the value of critical habitat for sea lion survival and recovery will not be appreciably diminished by the proposed fishing plan.

- The RPA BiOp fails to explain or justify how the proposed RPA, which results in continuing negative growth rates and declines in the endangered population over the next eight years, complies with NMFS obligation to avoid jeopardy and promote recovery of Steller sea lions.

- The proposed Alternative 4 RPA fails to achieve significant reductions in catch from critical habitat or to justify the large increases in catches from critical habitat that would ensue in the Sea Lion Conservation Area (SCA) and west-central Aleutians, while maintaining already high levels of pollock and cod trawling in critical habitat of the GOA. Since there are virtually no limits on catch in critical habitat anywhere (**RPA BiOp, p. 125**), this proposed RPA would recreate the conditions that led to successive jeopardy and adverse modification opinions in the first place.

- The proposed Alternative 4 RPA fails to *eliminate* competition between Steller sea lions and the large trawl fisheries in all designated critical foraging habitat around rookeries and haulouts, and in fact would increase both direct and indirect competitive interactions with foraging sea lions in the eastern Bering Sea and the west-central Aleutians, while maintaining the already high levels of pollock and cod trawling in GOA critical habitat.

- The proposed Alternative 4 RPA fails to address large seasonal differences in sea lion foraging ranges or the need to protect the large aquatic foraging areas beyond 20 nm in Shelikof Strait and the Aleutian Islands, including the Sea Lion Conservation Area (SCA), during the fall, winter, and early spring months when sea lions commonly frequent areas well beyond 20 nm of rookeries and haulouts, based on decades of POP observations, incidental catch records, and available telemetry.

- The proposed Alternative 4 RPA fails to spread the BS/AI pollock, Pacific cod and Atka mackerel fisheries and GOA cod fishery into at least four distinct seasons in order to prevent the majority of the catch from being concentrated into large pulses of fishing during the winter and fall months when NMFS says both adult females and young animals are particularly vulnerable to nutritional stress.

- The proposed Alternative 4 RPA also fails to satisfy outstanding requirements of previous BiOp RPA principles and guidelines, or explain why such measures are no longer necessary, including (1) spatial dispersion by creating area-specific pollock and cod TACs in the Bering Sea east and west of 170 W. Long. outside the SCA, and (2) adequate temporal separation of the "seasonal" TACs to avoid a single pulse of fishing, including provisions to prevent roll-overs of unused TAC from one season to the next.

The Draft RPA BiOp fails to provide adequate information to assess the impacts or merits of the proposed Alternative 4 RPA, fails to provide reasoned explanations for the significant deviations from previous biological opinions, and the analysis on which the RPA is premised is woefully inadequate.

- Table 5.2 seems to be NMFS' framework for the RPA. There are, however, significant differences between the measures described in the Table, and the actual RPA, with no discussion of the differences. Further, NMFS refers to "minimal" levels of fishing in Table 5.2 and in the associated text, but does not define, discuss, or explain the concept or relate it to the agency's obligations under the Endangered Species Act.

- NMFS fails to explain why, given "the long list of caveats associated with the [telemetry] data," the agency has embraced the data and radically changed management direction based on that data. Furthermore, while NMFS explicitly recognizes that the newly analyzed telemetry tracking data for pups and juveniles cannot be said to represent foraging locations, throughout the RPA BiOp, NMFS repeatedly ignores this significant caveat and refers to the telemetry data as foraging data. All such misstatements must be corrected.

- At **RPA BiOp, p. 113**, NMFS describes the procedure for addressing the bias in the number of telemetry locations in the first distribution bin, 0-2 nm. Why did NMFS not also consider the nearshore bias in the telemetry for locations beyond 2nm? We would like to see the results of the 90% filter on a larger number of bins, e.g., 3-4 nm.

- NMFS fails to explain or justify the selection of an RPA alternative that will, by the agency's own estimation, result in continuing negative growth rates and declines in the endangered population. The Draft RPA BiOp concludes that, "*it is reasonably likely that the western population of Steller sea lions will experience reductions in reproduction, numbers, and distribution in response to the proposed action and those effects described in the Baseline (Section 4).*" **RPA BiOp, p. 140**. At **RPA BiOp, p. 134**, NMFS says: "*The average trend in abundance for the proposed action is –0.41%...*" Why was there no further consideration of the RPA measures recommended in Alternative 2, which *does* provide a positive growth rate and a basis for recovery?

- The DeMaster paper describing the exponential model (Evaluating the Impact of Reasonable and Prudent Alternatives for the Management of the BSAI and GOA Groundfish Fisheries on the Western Stock of Steller Sea Lions) and its discussion in the RPA BiOp are inadequate to provide a clear understanding of how various conservation components of the proposed RPA were weighted and scored in terms of their conservation benefits for sea lions and their habitat. For example, while the RPA BiOp purports to describe the assumptions (see **RPA BiOp p. 128**), it is only during a discussion of the robustness of the conclusions (see **RPA BiOp, p. 135**) that the reader is made aware that NMFS weighted different portions of critical habitat differently. All assumptions and methods for calculating conservation benefits to sea lions, and the justification for such assumptions and methods, must be made clear in the final BiOp. Further, NMFS must explain thoroughly the basis for its determination to include a 2% increase to each of the green areas described in the FMP BiOp, **RPA BiOp, p. 130**, and the reason why NMFS did not correspondingly include a decrease to each of the red areas described in the FMP BiOp to reflect the fact that those areas were not truly closed to fishing under the FMP BiOp's RPA. Finally, there is no explanation why the worst case scenario from the FMP BiOp was used for the comparison, or how this measure relates to NMFS obligations under the ESA, which must be clarified in the final BiOp.

- The Draft RPA BiOp, Table 3.1, p. 44, provides non-pup Steller sea lion counts from 1975-2000. However, the available time series of data starts in the late 1950s and can be found in the Steller Sea Lion Recovery Plan (1992), Table 5. Similarly, Merrick et al. (1987) include the earliest trend counts of adult and juvenile sea lions in western Alaska.[8] By using only trend counts from the 1970s, by which time the western sea lion trend count numbers had already declined 50% or more in many regions, NMFS is understating the true abundance of sea lions in western Alaska prior to the decline and artificially lowering any future benchmark for a recovered population. Methodological differences in the earlier survey counts do not invalidate their utility as indicators of a minimum population estimate prior to the decline. If anything, the earliest counts understate true sea lion numbers because not all sites surveyed today were surveyed then, but the earlier counts provide a "baseline" abundance estimate for Steller sea lions in western Alaska prior to the full expansion of the fisheries. Long-term adult and juvenile (nonpup) and pup trend counts should be provided separately, including the regional distribution of nonpup counts as well as pup counts by rookery. For instance:

[8] Richard L. Merrick, Thomas R. Loughlin, and Donald G. Calkins. Decline in Abundance of the Northern Sea Lion in Alaska, 1956-86. Fishery Bulletin: Vol. 85, No. 2, 1987: 351-365.

Counts of adult and juvenile Steller sea lions at western Alaska rookery and haul-out trend sites, 1956-1998.

	SOUTHEAST ALASKA	GULF OF ALASKA			ALEUTIAN ISLANDS		
YEAR		EASTERN	CENTRAL	WESTERN	EASTERN	CENTRAL	WESTERN
1956				24,320 (1)			
1957			35,150 (1)				
1959						28,115 (1)	
1960					52,530 (1)		
1962						31,040(1)	
1975(2)					21,221		
1976		7,053	30,677	9,480	22,142		
1977					23,922		
1979	6,376					41,677	14,011
1982	6,898						
1985			24,389	6,667	10,802	25,759	
1989	8,471	7,241	9,614	3,908	3,145	7,759	
1990(2)	7,629	5,444	7,050	3,915	3,801	7,988	2,327
1991	7,715	4,596	6,273	3,734	4,231	7,499	2,411
1992	7,558	3,738	5,721	3,720	4,839	6,399	2,869
1994(3)	8,826	3,369	4,520	3,982	4,421	5,790	2,037
1996	8,231	2,133	3,915	3,741	4,716	5,528	2,190
1998	8,693	1,952	3,346	3,361	3,847	5,761	1,913
2000(4)		1,894	3,117	2,842	3,842	5,427	1,071

(1) Steller Sea Lion Recovery Plan 1992, Table 5.

(2) NMML/NMFS Trend Counts, 1975-1998. Based on June/July aerial surveys of rookery and haul-out trend sites. Trend counts underestimate total population but reflect long-term population trends. Loughlin et al. (1992) applied a 1.331 correction factor (counted nonpups x 1.331) to derive a total population estimate. The first trend counts (1956-1960) totaled 140,000 nonpups in the Aleutian Islands and Gulf of Alaska with no correction factors applied (Merrick et al. 1987).

(3) Sease and Loughlin. 1999. Aerial and Land-Based Surveys of Steller Sea Lions in Alaska, June and July 1997 and 1998, NOAA Technical Memorandum, NOAA-NMFS-100.

(4) John Sease. Steller Sea Lion Survey Results, June and July 2000. 8 September 2000.

CENTRAL GULF OF ALASKA MAJOR ROOKERIES (>1,000 PUPS SINCE 1979) PUP COUNT TRENDS 1979-1998 (1,2)

	SUGARLOAF ISLAND		MARMOT ISLAND		CHOWIET ISLAND		CHIRIKOF ISLAND	
YEAR	nonpups	pups	Nonpups	pups	nonpups	pups	Nonpups	pups
1979		5,123 (1)		6,741 (1)		5,485 (1)		1,649 (1)
1984		3,184		5,751		3,207		1,913
1985								
1986		3,077		4,381		1,731		1,476
1989		2,109		2,199		820		709
1990		1,638		1,611 (2)		340		607

1991	1,216 (2)		1,459		716 (2)		946 (2)	
1992	1,184		1,581		771		770	
1994	976	958	1,091	804	599	625	433	325
1996	741		1,102	632	592		360	
1997	625		781		538		295	
1998	646	703	694	642	515	234	266	184
(1) Steller sea lion Recovery Plan, 1992. Table 6, Pup Counts 1979-1990.								
(2) NMML/NMFS (Draft) Trend Site Counts, 1990-1998. Unpublished.								

Furthermore, throughout the RPA BiOp, different percentages are used to describe the decline in the 1990s. See e.g., page 9 (5%) versus page 128 (4%). As the 5% figure is consistent both with the Loughlin and York recent mortality analysis and with the Sease and Loughlin summaries of survey results, this figure should be consistently used throughout the RPA BiOp.

- NMFS fails to explain why the agency has measured the impacts of alternative RPAs by reference to the sea lion population as a whole, while ignoring regional trends. NMFS must provide a justification for this approach, and discuss how the proposed RPA addresses the needs of subpopulations of the western stock, upon which the health of the stock it relies.

- The RPA BiOp should provide readily available area-specific catch statistics for the entire time period of the sea lion decline, so that longer-term fishery distribution trends can be seen, compared and assessed relative to critical habitat and to RPA actions intended to address the impacts of the fisheries in critical habitat. For instance:

Bering Sea pollock percent and tons of catch taken from critical habitat (mostly from the SCA), 1977-2000 (1)

Year	%	Tons	Year	%	Tons	Year	%	Tons
1977	21.6	213,527	**1985**	20.2	242,334	**1993**	49.0	679, 586
1978	22.5	221,741	**1986**	22.7	268,967	**1994**	61.2	870,239
1979	10.6	97,684	**1987**	48.5	508,150	**1995**	69.1	849,556
1980	9.5	96,465	**1988**	53.7	418,933	**1996**	54.4	614,354
1981	26.3	270,334	**1989**	45.8	547,690	**1997**	55.9	594,065
1982	28.3	286, 885	**1990**	36.7	462,523	**1998**	58.4	607,760
1983	29.3	304,624	**1991**	52.6	587,160	**1999**	37.0	350,914
1984	25.2	295,064	**1992**	46.8	655,029	**2000**	19.0	217,847

(1)NMFS/AFSC unpublished observer blend data.

GOA Pollock Catches Inside Critical Habitat, 1999 (metric tons)						
Season	Months	610	620	630	640	Total GOA
A	Jan-Feb	6,885	11,556	13,063	92	31,596
B	June	5,315	7,207	6,379	-	18,901
C&D	Sept-Oct	4,975	10,499	9,613	-	25,087
	All year	17,175	29,262	29,055	92	75,584
Total GOA Pollock Catch Inside/Outside Critical habitat:						92,121
Percentages Inside CH by area						
Seasons	Months	610	620	630	640	Total GOA
A	Jan-Feb	85%	93%	97%	5%	88%
B	June	82%	92%	97%		90%
C&D	Sep-Oct	58%	62%	96%		71%
	All year	74%	79%	97%	5%	82%

Similar catch statistics should be provided for all regions of critical habitat by management areas, to facilitate ease of comprehension and use of information in the analysis of fishing impacts on critical habitat. Lacking such information and analysis, the Draft RPA BiOp provides no basis for concluding that the Alternative 4 RPA will significantly alter the scale of fishing in critical habitat that prompted jeopardy and adverse modification opinions in the first place.

- In the Draft RPA BiOp, NMFS has assumed that 52% of the eastern Bering Sea pollock stock is found in the Sea lion Conservation Area (SCA) in the winter, but there is no explanation or justification for the choice of this percentage value. 52% is not consistent with available winter Bogoslof/SCA survey information for pollock during the 1990s, or with the analyses performed by NMFS in 1999. If the 2001 exploitable biomass for the EBS pollock stock as a whole is estimated by the stock assessment model to be 10 million tons, for instance, a 52% value means that 5.2 million tons (give or take) must be in the SCA during some portion of the winter. Yet the results from the 2001 winter acoustic survey in the SCA indicate about 1 million mt during that period, and it seems implausible that the expanded biomass estimate would be five times higher than the survey estimate. The RPA BiOp's choice of 52% fails to consider previous analyses by NMFS in the1999 EA/RIR for pollock RPAs (see p. 111 and pp. 117-123, Tables 3-5A and 3-5B, Figures 3-17, 3-18, 3-19, 3-20 and 3-21) which indicate that the proportion of age 3+ biomass in the SCA ranged from 26-38%, depending on assumptions about selectivity of the trawl gear.

- The proposed Alternative 4 RPA fails to provide adequate catch limits in the BS/AI critical habitat during the winter season, allowing as much as 75% of the Bering Sea pollock A-season catch to occur in the SCA critical habitat. Aside from the fact that the 75% value mirrors the pollock fishery average from 1991-1998, NMFS provides no justification for allowing such a large percentage of the catch to be taken from the SCA in the winter. Furthermore, the proposed

RPA contains no catch limits for Bering Sea pollock during the summer/fall fishery. Previously in the December 1998 BiOp NMFS recommended distributing the Bering Sea pollock catch proportional to biomass distribution during the summer/fall period, based on the most recent available summer trawl survey information. NMFS does not even consider its own analyses from the EA/RIR for Final SSL RPA Regulations (NMFS 1999, EBS Pollock Catch and Stock Biomass Distribution, 1982-1997), indicating that a very small percentage of the pollock biomass is SCA critical habitat during the summer and early fall period:

Percent EBS Pollock Stock Biomass Distribution By Area Based On Summer Surveys, 1997-1998, 1991-1998, 1982-1998			
AREA:	% 1997-1998	% 1991-1998	% 1982-1998
SCA	6.5	14.5	12.4
E170W	35.5	30.2	25.8
W170W	58.0	55.3	61.7

NMFS fails to provide any rationale for the complete lack of caps on catch in SCA critical habitat or spatial dispersion of Bering Sea pollock TAC by management areas in the summer/fall fishery, utterly ignoring previous agency analyses and RPA recommendations.

- As noted elsewhere by NMFS, the percentages of the GOA pollock and cod TACs taken from critical habitat have remained high because there are no catch limits in critical habitat. Since the rookery no-trawl zones have been in place in the Gulf since 1991-1992, the pollock TAC has come primarily from 10-20 nm of rookeries or from 0-20 nm around haulouts, yet this readily available information was not provided and analyzed in the RPA BiOp. Using available (unpublished) Observer Program catch data, NMFS should provide a detailed analysis of percent and tons of pollock, Pacific cod, Atka mackerel and other groundfish taken from the "zones of concern" within critical habitat, to the extent that the data permits analysis at such spatial scales (e.g., 0-10, 10-20, >20 nm). For example, GOA pollock and Pacific cod taken from within 10-20 nm of GOA rookeries and within 0-20 nm of GOA haulouts over the entire time series of data is as follows:

YEAR	POLLOCK	PCOD
1977	2%	3%
1978	3%	3%
1979	6%	9%
1980	19%	53%
1981	24%	6%
1982	50%	17%
1983	57%	45%
1984	41%	47%
1985	77%	58%
1986	80%	48%
1987	5%	22%
1988	68%	52%

1989	97%	3%
1990	63%	53%
1991	44%	51%
1992	61%	53%
1993	75%	46%
1994	69%	55%
1995	61%	63%
1996	62%	61%
1997	58%	64%

From 1990-97, for instance, the Observer Program data show an average of 63% of the observed GOA pollock catch has come from within 20 nm of sea lion rookeries and major haulouts listed as critical habitat, with twice as much taken from 10-20 nm as from 0-10 nm (NMFS/AFSC unpubl. fishery data):

Average percent of observed GOA pollock catches within 10-20-40 nm of sites listed as critical habitat in the west-central Gulf of Alaska, 1990-97:

Within 10 nm	Within 20 nm	Within 40 nm
21%	63%	97.5%

(Source: NMFS/AFSC unpubl. fishery data, 1990-97)

NMFS should have provided this information in detail in the Draft RPA BiOp, in order to assess the distribution of fishing effort and catch relative to the proposed Alternative 4 RPA protection measures for critical habitat. Specifically, the final BiOp should provide the historical catches by fishery, season and gear type within the zones of critical habitat using information from the Observer Program database and the Appendix to the 1999 EA/RIR for Final SSL Pollock RPA Regulations. Lacking such careful analysis of fishing effort and removals relative to "zones of concern" in the proposed RPA, the analysis fails to demonstrate the validity of the RPA "zonal" approach to critical habitat "protection."

- The Draft RPA BiOp, Table 5.3, p.122, provides very crude percentage fractions of critical habitat that would be closed under Alternative 4. This information is inadequate to characterize the actual area (nm^2, km^2) and percent of critical habitat that would be "protected" from 0-3, 3-10, 10-20, and >20 nm under this alternative, including seasonal differences in area/percent protection. The Draft RPA SEIS, Table 4.8-2 (p. 4-240), provides an analysis of areas closed and partially closed to fishing under Alternatives 1-5, although seasonal differences in closure zones are not included in this table. NMFS should combine the format of RPA BiOp Table 5.3 and RPA SEIS Table 4.8-2, providing information on the amount of area (nm^2, km^2) and percent of critical habitat that would be "protected" from 0-3, 3-10, 10-20, and >20 nm, by season, by gear type, and by fishery. We also request that the same information be provided for previous pollock RPAs and pre-1999 protective regulations dating back to 1991, specifying the total area protected and any differences in seasonal versus year-round protection for each separate action.

- There is no explanation or description of the "pattern of dispersal of fishing vessels" in areas outside 20nm. **RPA BiOp at 115**. There is no discussion of the edge effect, or an explanation of why it is not an issue for NMFS's new zonal approach. If the "edge" has been moved inside critical habitat to within 10 nm of rookeries and haulouts, why is there no consideration of the effects on prey availability within 10 nm as a result of concentrated trawling in the 10-20 nm zone? Similarly, if concentrated trawling is occurring on the boundaries of the SCA critical habitat due to lack of adequate spatial dispersal, why is NMFS no longer concerned about the potential intercept effects on prey availability within the SCA critical habitat?

- The Draft **RPA BiOp, Figure 4.1, p. 67**, provides Platform of Opportunity Program (POP) sightings, 1991-1997. First of all, why does NMFS only provide POP distributions from the most recent time period, when sea lion numbers are fewest? Why are POP distributions from earlier in the time period not provided, starting in the 1950s? Furthermore, the single POP map at p. 67 is drawn at a scale that does not provide much useful information. More and better POP maps at finer spatial scales should be provided. NMFS should also provide maps showing historical distributions of sea lion incidental catch from the Observer Program database. The bathymetry lines should be provided in order to facilitate understanding of the distribution of sea lions relative to shelf width, shelf breaks, and other features of their habitat. Finally, NMFS states that the POP database "may best reflect the foraging distribution of adult animals." It is our understanding, however, that the POP database does not differentiate among sightings of adults, juveniles or pups. NMFS should correct this misstatement, which implies that *only* adult distributions are reflected in the POP data.

- NMFS should describe clearly: (1) the basis for the statement, "*Even if fishery related impacts to Steller sea lions were eliminated completely, we would expect that decline to continue as a result of environmental pressures that area also acting upon, and reducing the survivability of this population*," **RPA BiOp, p. 139**; and (2) how this statement relates to and/or is consistent with NMFS's analyses and determinations in the Steller Sea Lion Protection Measures Draft Supplemental EIS that, for instance, Alternative 2 results in a positive sea lion population increase, and that reduced fishing effort will change the sea lion population trajectory. Although some scientists hypothesize that sea lions declined due to an oceanographic "regime shift" and an "explosion" of gadids, NMFS's findings in the November 2000 FMP BiOp indicate that pollock were abundant before the regime shift and did not take over the ecosystem after the regime shifted. **FMP BiOp, p. 134**. In fact, the FMP BiOp and current Draft RPA BiOp conclude that conditions for many wildlife prey species actually improved with the 1976-1977 "regime shift" and the benefits of increased productivity from a large number of potential prey stocks would be as likely to increase the ecosystem carrying capacity for top predators as to decrease it. **FMP BiOp, p. 137; RPA BiOp, p. 76**. In addition, the mid-1970s regime shift coincided with a major expansion of the groundfish fisheries in the BSAI and GOA, confounding the ability to differentiate between natural and human effects. NMFS fails to provide any evidence that supports the contention that sea lions would continue to decline in the absence of fishing due to environmental pressure. The RPA BiOp must explain precisely what "environmental pressures" NMFS has in mind, and the precise mechanism(s) by which these pressures are thought to be capable of causing continued sea lion declines in the absence of fishing. If NMFS is suggesting junk food theory as a mechanism, which seems to be the implication, how is that consistent with the FMP BiOp's finding that the proportion of pollock in the diets of the increasing eastern and declining western stocks are similar? **FMP BiOp, p. 136; Fig. 4.5.**

- There is no explanation of how the research discussed during the Is It Food II? workshop is (1) different from the research discussed during the 1999 Physiology Workshop and considered in the FMP BiOp; or (2) responsive to the Physiology peer review criticisms of existing research data comparing eastern population animals to western population animals.

- At **RPA BiOp, p. 87,** NMFS states that the hypothesis that interactive competition occurs cannot be evaluated with the information currently available. In the section on state-managed fisheries at page 92, however, NMFS states that just these types of effects are occurring, without any explanation of why the evidence supporting the conclusion regarding the state fisheries is unavailable in the context of the federal fisheries.

We look forward to a final biological opinion that incorporates these comments.

Sincerely,

Kara Veryo for 0008
Charlotte de Fontaubert
Oceans Coordinator
Greenpeace

Kara Veryo for 0009
Phil Kline
Fisheries Policy Director
American Oceans Campaign

Kara Veryo for 0010
Jack Hession
Alaska Representative
Sierra Club

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Petition

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SSL EIS

September 21, 2001

Records Management Office
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, AK 99802

Attn: Ms. Lori Gravel

Comments on the Draft Biological Opinion and Incidental Take Statement dated August, 2001

On behalf of World Wildlife Fund and the National Environmental Trust, we submit the following comments on the draft biological opinion (RPA BiOp).

We fully endorse the comments submitted by Greenpeace, American Oceans Campaign, and the Sierra Club. In addition, as members of the RPA Committee and authors of Alternative 2, we add our comments on the shortcomings of the RPA BiOp and its endorsement of Alternative 4. Overall, we continue to believe that Alternative 4 fails to eliminate jeopardy for the Steller sea lion and adverse modification of its critical habitat.

POSITIVE GROWTH RATE FOR STELLERS VS. CONTINUED DECLINE

NMFS needs to provide greater justification for the decision to select Alternative 4 which would result in a -.41% annual growth rate, over Alternative 2 which would result in a +.70% growth rate. This difference in expected growth rates resulted even with the use of the biased scoring system which gave three times as much credit for protections from 0-10 nautical miles as from 10-20 nautical miles.

In addition, NMFS fails to explain or justify why it chose an alternative that will result in continued declines of the endangered western population of Steller sea lions. On page 140 of the RPA BiOp, NMFS concludes that, "*it is reasonably likely that the western population of Steller sea lions will experience reductions in reproduction, numbers and distribution in response to the proposed action and those effects described in the Baseline (Section 4).* Why did NMFS not consider including some of the conservation provisions of Alternative 2 in the proposed RPA?

CRITICAL INFORMATION GAPS

The RPA BiOp has many information gaps. Two of the more important gaps include a failure to include historical catch levels from 0-3 nautical miles from rookeries and haulouts, 3-10 nautical miles, 10-20 nautical miles, and beyond 20 nautical miles. While these figures have appeared in previous documents, they are missing from this document. This information more accurately assesses where pollock, Atka mackerel and Pacific cod aggregate, a fact that is important to both the fishing fleet and Steller sea lions.

The second gap is a lack of adequate survey data to determine biomass availability in sea lion critical habitat at any given time of the year, and lack of consideration of the confidence intervals around survey data or stock assessment estimates of acceptable biological catch, reflecting the risks of error.

PROBLEMS WITH TELEMETRY

This information was presented to the RPA committee in March with many of the shortcomings detailed at that time. Those serious pitfalls remain. At the outset, we stated our concerns about the selective nature of the sample (mothers, nursing pups and a few yearlings), the time of year for the samplings (summer, when the mothers have just given birth and will naturally be closer to rookeries and soon after haulouts), and the relationship between hits and shallow water play near the rookery and transits out for longer trips.

Additional problems with the sampling are not only the small number of animals sampled, but also the lack of data for other vulnerable segments of the population, including subadults, females without pups, and mature males. The time of year in which these samples are taken is also a problem. The majority of economic return and catch from the fishery, for which we are recommending changes, occurs during the winter. The vast majority of the telemetry readings occur in the summer and those findings are extrapolated to make conclusions about Steller behavior in the winter. The justification for the almost exclusive reliance on this data for the changed conclusion is absent.

Finally, NMFS acknowledges that telemetry locations are not equivalent to foraging locations, but NMFS provides no rationale for treating telemetry hits as if they reflect the relative importance of foraging habitat.

MACRO LEVEL MANAGING VERSUS MICRO LEVEL MANAGING

In the November 30th BiOp, there were three scales of competitive interaction between fish and Stellers which must be addressed to eliminate jeopardy: (1) at the global scale, reduce groundfish catch levels; (2) at the regional scale, disperse groundfish fisheries in space and time; and (3) at the local scale, eliminate the possibility of prey competition by closing critical habitat to trawling. Since the November 30th BiOp is the governing document for this opinion, we fail to see any justification why these principles were ignored in the NMFS analysis.

Another inconsistency that must be addressed related to judging the impact of these proposed changes is whether or not NMFS will judge their impact on the micro level, i.e., eastern vs. western Aleutians, or on the macro level, i.e., Bering Sea, Aleutian Islands.

Currently, it seems to be a mixture of both, according to what will allow greater fishing in Steller sea lion critical habitat but result in the appearance of less of an impact on Steller sea lions.

NMFS must explain why the agency has chosen the measure impacts at the scale of the population as a whole, rather than by region. Declines in the western Aleutians, for instance, are ignored because NMFS argues that it is only concerned with the western stock as a whole. No justification is provided for this approach.

Thank you for considering our comments.

Sincerely,

0011 Karen Vergo for
Gerry Leape
National Environmental Trust

0012 Karen Vergo for
David Cline
World Wildlife Fund

1514-10 SSL RPA/EIS 47PP

9-21-01

MARINE CONSERVATION ALLIANCE

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C-13-22
SSL EIS

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National Marine Fisheries Svc.
SEP 21 2001
Juneau, Alaska

September 21, 2001

Records Management Office
National Marine Fisheries Service
Alaska Regional Office
P.O. Box 21668
Juneau, Alaska 99802

Attn: Lori Gravel

Re: Draft Biological Opinion on the Authorization of the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Fisheries

To Whom It May Concern::

We are writing on behalf of the Marine Conservation Alliance ("MCA") to comment on the above-referenced Draft Biological Opinion. The MCA is a broad-based coalition of Alaska coastal communities, fixed and mobile gear fishermen, vessel owners, processors, support industries, Western Alaska native villages and related Community Development Quota (CDQ) organizations, fishing organizations, consumers and others who are directly or indirectly involved in various aspects of the Alaska groundfish fisheries. The coalition members have joined together to support science-based policy that protects the marine environment and the North Pacific fishing community.

Our comments are attached. If you have any questions about them, please feel free to contact any one of the signatories to this letter.

Sincerely,

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Congressman Don Young
Senator Patty Murray

Comments

on the Draft Biological Opinion

and Incidental Take Statement

on

the Authorization of the Bering Sea/Aleutian Islands

and Gulf of Alaska Groundfish Fisheries

by the

Marine Conservation Alliance

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submitted to the

National Marine Fisheries Service

Alaska Regional Office

September 21, 2001

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I. INTRODUCTION

The National Marine Fisheries Service("NMFS") reinitiated consultation on the Bering Sea and Aleutian Islands(BSAI) and Gulf of Alaska(GOA) groundfish fisheries' authorization due to significant new information regarding the biology of Steller sea lions and to proposed changes in the Federal actions in these two fisheries. On July 26, 2001, NMFS reinitiated consultation under Section 7 of the Endangered Species Act, resulting in publication of a Draft Biological Opinion ("Draft BiOp 4"). NMFS concluded in Draft BiOp 4 that the management measures to be implemented in the fisheries do not result in jeopardy of the western stock of Steller sea lions or in adverse modification of sea lion habitat.

These comments on Draft BiOp 4 are submitted by the Marine Conservation Alliance ("MCA"), an organization of fishermen, harvester trade associations, processors, and coastal communities. MCA members and member organizations have worked on sea lion/fishery issues since these matters arose and are committed to reaching conclusions that are based on excellent research and thoughtful policy consideration.

II. DRAFT BIOP 4 FOCUS AND BASIS

Draft BiOp 4's conclusions are based squarely on substantial new information and analysis developed by NMFS and the Alaska Department of Fish and Game ("ADF&G") over the last six to nine months as new energy and additional resources have been focused on Steller sea lion issues. The new information and analysis was presented to the North Pacific Fisheries Management Council ("Council")'s RPA Committee in meetings in February, March, April, and May 2001 by NMFS and ADF&G.

The RPA Committee was established by the Council in January 2001 and is composed of twenty-one members from harvester groups, processor groups, Alaska communities, and environmental groups from both the Bering Sea/Aleutians area and the Gulf of Alaska, and NMFS representatives, ADF&G representatives, and scientists. The Council asked the Committee to review scientific data and make recommendations to the Council on management

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measures. The RPA Committee received extensive briefings from researchers dealing with sea lion diet, foraging habitats, telemetry data on movements, causes of sea lion mortality, and sea lion physiology. The RPA Committee met for fifteen days over those four months, with daily opportunities for public comment and with all meetings fully open to the public. Several Committee members made proposals both for the second half of 2001, and for the year 2002 and beyond.

At the April meeting of the Council, the Committee provided recommendations for management measures for the second half of 2001 (with three members objecting and one abstaining), which were reviewed and approved by the Council and accepted and implemented by NMFS. During the June Council meeting, the Committee made recommendations for 2002 and beyond (with three objections). The Council considered the recommendations and approved the measures for analysis, with a schedule of final action to occur in October 2001.

During the two RPA Committee meetings in May, the two NMFS representatives on the Committee presented new information and analysis relating to the foraging behavior of Steller sea lions, particularly pups and juveniles. The NMFS representatives worked as Committee members, searching for useful outcomes, but also provided the Committee with continuing preliminary views of NMFS on possible management measures. In addition, they provided feedback on proposals so that the Committee had a sense of whether the proposals would meet the jeopardy and adverse modification standards. Most significantly, the NMFS members "scored" the proposals, showing the expected effect of proposals on the eight-year trend of the sea lion population direction. During the discussions of proposed management measures for the year 2002 and beyond, the Committee Chair proposed a "Cotter Strawman" proposal as a focus of discussion on overall management measures that could be debated by the Committee and evaluated by NMFS. The Cotter Strawman became the base case for scoring the various proposals.

During the May and June meetings of the RPA Committee and the Council, NMFS scientists explained the change in NMFS' focus as new data and analysis became available. The scientists stated that their major concern was with the survival of juvenile Steller sea lions and that new data indicated that juveniles remained very close to shore, particularly during the winter months(seven months as defined by NMFS). Consequently, NMFS placed a significantly increased emphasis on protection measures in areas close to shore, particularly from the coastline out to ten nautical miles. Telemetry information from tagged juveniles and pups showed that over 99%(unfiltered) or 95%(filtered) of the telemetry "hit" locations were within ten miles of shore, and most within three miles.

In response to the new information and the revision in NMFS' focus, the RPA Committee and the Council recommended significantly changed management measures for the Bering Sea and Aleutian Islands, and Gulf of Alaska fisheries. With the need to protect inshore areas, the measures included closures for pollock trawling inside ten-mile areas at all rookeries and haulouts in the BSAI area and in most rookeries and haulouts in the GOA area. The closure areas included the nineteen additional haulouts that are not part of critical habitat, but that were closed under RPAs. Also, pollock trawling would be closed in the area landward of a line drawn across the entire Southeastern Bering Sea coast from the southwest to the northeast and hitting tangents at all rookery and haulout closures(an additional 2646 square nautical miles). The Bogoslof Area remains closed to pollock trawling and pollock trawling in the Aleutians is prohibited with twenty miles of shore. Overall, more than 60% of the Bering Sea critical habitat would closed to pollock trawling.

In preparing Draft BiOp 4, NMFS refined its analysis of the new data and information on Steller sea lions and concentrated its concern on the area between the coast and ten miles. The proposed management measures from the Council had been guided in that direction in May and June, and placed the greatest protection measures in those nearshore areas. The result is a finding of no jeopardy in Draft BiOp 4. The new information is set out in an Appendix to Draft BiOp 4 as a series of seven white papers prepared by scientists from NMFS, ADF&G, and universities.

NMFS suggested in a cover letter to Draft BiOp 4 that the RPA Committee and the Council consider some additional restrictions in the Bering Sea cod fishery and in seasonal catch limits. In response, the RPA Committee met in late August and recommended (with three objections) new restrictions on the cod fishery near Bering Sea haulouts and tighter seasonal harvest restrictions in the Bering Sea cod and pollock fisheries.

In September, the Council recommended that these new restraints be added to the proposed management measures for a final decision package in October. In its presentation to the Council, NMFS said that the revised proposal results in an improved sea lion conservation score above the proposed measures alone or even above the previous biological opinion. Since the proposed measures were already found to avoid jeopardy and adverse modification, the revised proposal is well above the required standard.

Overall, the significant new data, information, and analyses have been reviewed, discussed and applied to the proposed management measures over the past six months in RPA Committee and Council meetings. The amount of effort is evident in Draft BiOp 4 and the result makes sense.

III. ERRORS BY CONSERVATION MEMBERS OF RPA COMMITTEE

The conservation community has mischaracterized the measures contained in the proposed management measures analyzed in Draft BiOp 4. Based on a letter submitted to the Council at its meeting in Sitka earlier this month, it is clear that the conservation community's opposition to the RPA Committee's recommendation (the Council's "preferred alternative") as modified by the Council at the Sitka meeting) is based on a misunderstanding about key elements of the Committee's proposed package of management measures.

In a letter submitted to the Council on August 29, 2001, Messrs. David Cline, of the World Wildlife Fund (WWF), and Gerald Leape of the National Environmental Trust, both of whom serve on the Council's RPA Committee, wrote that they and Mr. Alan Parks (Alaska Marine Conservation Council's representative on the Committee) had voted against the Committee's proposal because:

A. The Committee's proposal would allegedly "re-open" critical habitat in the Aleutians for pollock and Atka mackerel trawling; thereby threatening Steller sea lions and their critical habitat;

B. The Committee's proposal would allegedly "introduce trawling" into coral habitats risking high bycatch of rockfish and other marine life;

C. The Committee's proposal would allegedly lead to "continued decline - - rather than recovery - - of Steller sea lions;"

D. The Committee had refused to consider "any provisions of [the environmental representatives'] proposal during the most recent meeting;" and

E. "NMFS had scored [their] proposal as the only alternative that would result in a positive growth rate for Steller sea lions."

Messrs. Cline, Leape and Parks were mistaken on each count. First, with regard to the pollock and Atka mackerel fisheries in the Aleutians, the Committee's proposal does not "reopen" critical habitat to pollock trawling. Under the Committee's proposal, pollock trawling is specifically limited to the areas outside of critical habitat. There is no indication whatsoever that Steller sea lions would be adversely impacted by a pollock fishery in the Aleutian Island area that takes place outside 20 miles. Furthermore, based on recent scat analyses, it does not appear that pollock is an important prey item for Steller sea lions in the Aleutian Islands anyway. (See white paper prepared by Sinclair and Zeppelin, pp. 10).

With regard to Atka mackerel trawling, except for the brief (but economically disastrous) judicially-mandated closure of all critical habitat to all groundfish trawling in the Aleutian Islands, Bering Sea and Gulf of Alaska in the summer/fall of 2000 while NMFS completed its cumulative impacts BiOp (BiOp #3), a significant portion of the Atka mackerel trawl fishery has always operated inside critical habitat in the Aleutians. The RPA Committee's recommendation actually reduces the amount of Atka mackerel trawling that will occur in various parts of the Aleutians by closing critical habitat in area 541 to Atka mackerel trawling and platooning (dividing) the Atka mackerel fleet into two sectors, each of which is limited to fishing its portion of the TAC in areas 542 and 543 so as to avoid high daily catch rates that result when the entire fleet operates together in the same statistical area, as has repeatedly occurred in the past.. The

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RPA Committee's proposal does not "re-open" trawling for Atka mackerel inside critical habitat - - it apportions it - - thereby limiting its potential impact on sea lions by slowing daily harvest in the two statistical areas where critical habitat fishing is still allowed.

Similarly, with regard to the assertion that the Committee's proposal would "introduce" trawling into coral habitats, thereby risking high bycatch of rockfish and other marine life, the RPA Committee's proposal does not "introduce" trawlers into areas they haven't already been operating for years. Furthermore, rockfish bycatch and incidental catch of corals in the Atka mackerel fishery is higher in the areas outside critical habitat than inside. Thus the focus is the proposed platoon system to slow catch rates so that the fishery may continue to occur in critical habitat with reduced potential for localized depletion. This serves both the sea lion protection objective and the objective of reducing bycatch of rockfish and other marine life. Here again with regard to pollock, the Committee's proposal specifically excludes the pollock fishery from the areas about which Messrs. Cline, Leape and Parks were ostensibly concerned.

Their third point, that the RPA Committee's proposal would lead to a continued decline in the Steller sea lion population, also misses the mark. The BiOp makes it clear that, the cod, pollock and Atka mackerel fisheries are but one of many factors that may be contributing to the decline of Steller sea lions. If all groundfish trawling was prohibited inside critical habitat as per the Leape/Cline proposal, the Steller sea lion population would still continue to decline due to other factors such as the regime shift, subsistence hunting, illegal shooting, killer whale and shark predation, etc. To the extent that the target fisheries for cod, pollock and Atka mackerel, are contributing factors to the Steller sea lion decline, the proposal suggested by Messrs. Leape and Cline may have arguably provided marginally greater short term benefits for Steller sea lions than the RPA Committee's proposal, but at a substantially greater cost to fishermen and fishing communities. (The proposal submitted by Mr. Parks on behalf of AMCC, would have provided a lower degree of protection/benefits for Steller sea lions than the Committee's recommendation. See minutes of the RPA Committee's May 2001 meeting in Seattle. In fact, AMCC's approach is internally inconsistent by arguing for protection of inshore areas while also strongly criticizing the telemetry data analysis which points to protection of inshore areas). Over the longer term, all three proposals were projected to generate increased benefits for Steller sea lions insofar as potential impacts from the fisheries are concerned. More significantly, however, all three proposals would have met the requirements of the ESA - - the avoidance of jeopardy and adverse modification of critical habitat.

Finally, with regard to the suggestion that the Committee refused to consider "any provisions" from the environmentalists' proposal, the authors neglect to point out that the Committee adopted Mr. Parks' proposal to exempt smaller fixed gear fishing vessels from the closure of the most sensitive of Steller sea lion areas - - the waters within 0-3 miles from rookeries and haulouts. Even though such vessels are unobserved, do not carry VMS devices, do not weigh their catch or bycatch, do not operate in harvesting co-operatives and are often times outside the jurisdiction of the NMFS, Mr. Parks argued to exempt such vessels from closure of the areas where Steller sea lion pups and juveniles are most likely to be encountered and where groundfish prey is most likely to be an important food source. Despite these concerns, the RPA Committee agreed for reasons of safety at sea to support an exemption for such vessels from the closures that will apply to all of the other fishing vessels in the GOA and BSAI areas.

Whether or not Messrs. Leape, Cline and Parks would have supported the Committee's proposal even if they fully understood the elements of that proposal more clearly remains to be seen. Their letter, however, clearly reflects a misunderstanding as to key elements of the Committee's recommendations and the response to comments on the BiOp should so note.

IV. SEA LION DECLINE CAUSES AND NMFS' PRECAUTIONARY APPROACH

The September 4-5, 2001 minutes of the Council's Scientific and Statistical Committee contain the following:

> "Nevertheless, the true cause(s) of the continued decline and lack of recovery of Steller sea lions remain unknown; as does the impact of the groundfish fishery on Steller sea lion survival. Consequently, the proposed federal action is motivated by precautionary consideration of the potential for adverse fishery effects."

In Draft BiOp 4, the MCA believes that NMFS has applied an extraordinarily conservative approach to the analysis, giving the benefit of the doubt to protection of Steller sea lions at every step. Even with that conservatism, Draft BiOp 4 reaches a no jeopardy conclusion and, in evaluating the revised proposed management measures, determines that those measures are well above the required standard. The following reviews the steps in the overall approach by NMFS:

1. Mortality Causes. Draft BiOp 4 contains the conclusion that no evidence or studies exist that point to nutritional stress as the cause of the continued population decline in the 1990s. Although NMFS believes that nutritional stress may have been a contributing cause in the 1970s and 1980s, NMFS now finds no evidence that it is a continuing cause during the last years. In the "Is It Food II Workshop?" convened by NMFS to address this question, a majority of the twenty-four scientists stated that they do not believe nutritional stress is a primary cause of the continuing sea lion decline. However, although NMFS admits that there is no evidence of current nutritional stress, NMFS still moves forward with the analysis as if there were evidence. This first lynchpin of the analysis rests on no evidence.

2. Fishery Competition. Even if one assumes, as NMFS does, that nutritional stress is a significant cause of the current decline, the analysis must then show that the stress is caused by competition with the fisheries in order to find jeopardy. The Scientific and Statistical Committee, again in its September 4-5, 2001 minutes, states that NMFS needs "to demonstrate that the most vulnerable life-stages of Steller sea lions are taking the same species and size classes of prey and in the same regions and depths as the fishery". However, MCA believes that Draft BiOp 4 concludes (p. 85) that the degree of overlap based on prey size is unknown for most species and only that depth overlap "may occur". The flimsy nature of this evidence is underscored by the results of the "Is it Food II Workshop" in which twenty of the twenty-four scientists stated that they do not believe that fishery competition is a primary cause of the decline. Lynchpin # 2 has little foundation.

3. Type II Error. In spite of the lack of evidence and foundation for nutritional stress, NMFS explains in Draft BiOp 4 that it must avoid a "Type II Error", i.e. it must avoid concluding too easily that nutritional stress and fishery competition are not the primary current cause of the decline. Based on the best scientific evidence available, NMFS would be entirely reasonable in concluding that fisheries are not the problem. However, Draft BiOp 4 states (p. 106) it must give the "benefit of the doubt" to the endangered species, a strongly precautionary approach.

   Although it is true that federal agencies must give the benefit of the doubt to the species in taking the first step in the ESA consultation process by consulting with NMFS or the Fish and Wildlife Service, the analysis and decision after that first step does not require proving a negative, i.e. that NMFS is certain that fisheries are not the problem. In fact, the 1979 amendment to the Endangered Species Act cited on p. 106 of Draft BiOp 4 was specifically intended to soften the requirement, and to eliminate the need to prove negatives. The prior language that NMFS must ensure no jeopardy was amended to ensure that jeopardy is not "likely". NMFS and the Fish and Wildlife Service have published their handbook on procedures and standards under the Endangered Species Act. Part 4 of the Handbook on Sec. 7 consultations never even uses the term "precautionary" or "benefit of the doubt". Extensive case law simply requires NMFS to use the best available scientific evidence and to make reasonable decisions.

4. Conclusion. Draft BiOp 4 takes an extremely conservative, protective approach. The scientific evidence does not lead to the conclusion that nutritional stress is occurring nor to the result that fishery competition is causing the decline. The legal standards do not require the degree of caution in Draft BiOp 4. That the proposed management measures receive a "no jeopardy" finding at the end of such a protective process is extraordinary evidence that the fisheries will not have a negative impact on Steller sea lions.

V. TELEMETRY DATA ANALYSIS

Substantial new data has become available since the publication of earlier Biological Opinions. The new data includes significant new information on the foraging behavior of Steller sea lions which directly impacts the potential competition for prey by Steller sea lions and the commercial fishing fleet, and the development of effective management measures.

This new information in BiOp 4 is scattered throughout the draft document, often interlaced with caveats. While we appreciate the intellectual honesty demonstrated by the agency in BiOp 4 regarding the uncertainty surrounding the causes of Steller sea lion decline and competition with the commercial fishing fleet, some of the caveats used in portrayal of the new data do not seem justified. The best example of this is found in Section 5.2.1.4 "Further Discussion on Satellite Telemetry Information."

This section reaffirms that, while NMFS previously considered nearshore areas most important to Steller sea lions, it had to treat all critical habitat to be of equal importance to Steller sea lions because it was unable to quantify the amount of time spent in nearshore areas. The new telemetry and other foraging data changed that.

As shown in table 5.1a, and as described in the unpublished paper by Loughlin et. al.., 95% of pup and juvenile (the population of most concern) telemetry hits occurred within 10 miles of shore, most of it within three miles. The document discusses potential biases of the data based on different behaviors of Steller sea lions near to shore including resting, sleeping and social interactions. However, it fails to use a scientific basis to filter out potential biases. Despite information in Loughlin's and Andrews' papers, as well as other information that further substantiates the importance of nearshore areas, the BiOp utilizes a table that filters out 90% of all telemetry hits within 2 miles.

The choice of 90% was not based on any direct evidence and it is described in the BiOp (pg. 112) as "highly theoretical" and represents what is described in the document as the "upper bound" to be used in considering the importance of offshore areas. Even with the 90% filter, the number of near-shore contacts is large and validates NMFS' conclusion that the zero-to-ten mile area is the most significant area for younger animals. However, because of the importance of the telemetry data, the agency should make every effort to determine a scientific method to filter out all potential biases in the final BiOp.

VI. MARINE CONSERVATION ALLIANCE RECOMMENDATIONS ON PRESENTATION OF TELEMETRY DATA AND ANALYSIS

A. The Marine Conservation Alliance makes the following recommendations to improve the scientific method to filter out potential bias in the telemetry data:

1. Known behavior. Use information from the Loughlin's and Andrews' papers on the behavior and feeding patterns of juvenile Steller sea lions to determine a filter that best conforms with known foraging and prey consumption patters of Steller sea lions, particularly pup/juveniles and adult females.
2. Logical Approach. Re-examine the scientific value of using a 90% filter by considering the illogical implications the filter imposes on known Steller sea lion foraging behavior. For instance, by filtering out 90% of pup/juvenile hits, table 5.1b then appears to indicate that young Steller sea lions do relatively more foraging in areas greater than 20 miles from shore in the summer. Given the locations in the Gulf of Alaska and Aleutian Islands where sea lions have been fitted with telemetry devices, this distance from shore would mostly place the animals in extremely deep water. If groundfish species are the forage species of interest, then the reliance on foraging in areas greater than 20 miles from shore makes little sense because there is little groundfish prey at the dive depths accessible to juvenile sea lions.

3. Weekly Data Sets. Incorporate weekly telemetry data information about individual animals as described in Mr. Dave Fraser's public testimony rather than a view of several months at a time which does not accurately reflect the number of trips in the nearshore areas that including no offshore traveling.
4. Resting Behavior. The BiOp suggests that "resting" near-shore may create a bias toward increased transmission rates. However, the recovery period after deep dives is

likely longer than after shallow dives. As animals go further offshore, if they are diving deeper (which is likely given bottom contours), they should also spend more time at the surface recovering from foraging dives. The dive profiles for offshore trips versus near-shore trips need to be compared to see if they shed any light on possible bias. We may find that animals spend more time at the surface once they have reached an offshore foraging area than they do when they are near-shore. Times when animals are transiting should be eliminated from the "offshore" profile to the extent possible.

5. <u>Nearshore Activities.</u> As the BiOp states on page 113, "various sea lion behavior types will influence the data transmission rate". The social behavior in Steller sea lions near-shore includes activities such as playing that may involve frequent shallow dives. Near-shore activity may also involve transit parallel to shore, which may include frequent shallow "porpoising" (0-4 meter dives). These activities would turn the transmitters off and thus under-represent near-shore activity.

6. <u>Sleeping Behavior.</u> The BiOp mentions "sleeping" as a near-shore behavior that may create a bias toward increased transmissions. Examination of offshore positions suggests that they tend to be associated with multi-day trips. It seems reasonable to assume that sleeping behavior in the water would be as common offshore as near-shore. The BiOp presents no information on sea lion sleeping posture, leaving open the question of whether the tag is likely to be "wet" or "dry". If the tag is likely to be wet, that could create a bias toward under-representing near-shore transmissions.

B. <u>The MCA recommends that, if a 90% filter is used, it should clearly be identified as an extreme outer bound for interpreting the data and include the following information:</u>

1. Highlight that even in using an extreme outer bound of 90% to filter out potential bias in the telemetry data, the data clearly shows that nearshore areas are significantly more important to Steller sea lion foraging and that any precautionary restrictions are

best focused in those areas. While this was said several times by NMFS staff during their presentations to the Council, it is not included in the draft document.

2. Include comparative discussion of scientific value of telemetry data and old POP data (see below).

C. The MCA recommends that tables 5.1a and 5.1b include better descriptions of the data:

1. Include information on number of trips.
2. Define winter and summer seasons.
3. Add a field for 0-10 nm to help identify the importance of foraging activity inside the ten mile protected areas.
4. Describe the two populations tagged (pup/juveniles and adult females).

D. Further Analysis by MCA Members of the Telemetry Data.

MCA Members are continuing to work on an analysis of the telemetry data that the MCA intends to submit to NMFS. Unfortunately, because of computer problems caused by the nimda worm at both NMFS and SeaState, the analysis is not complete. MCA hopes to complete it within a few days for submission. In addition, MCA intends to submit the analysis to the Council at its October meeting and in the MCA comments on the SEIS.

VII. SEA LION PROTECTIVE EFFECTS OF THE AMERICAN FISHERIES ACT

The "Objectives and Background Information" chapter of BiOp#4 indicates that the BiOp "evaluates two [separate] actions". Those actions are identified as (1) the Steller sea lion conservation measures for the pollock, cod and Atka mackerel fisheries of the BSAI and the GOA (amendments 70/70); and (2) the final regulations to implement the American Fisheries Act of 1998 (amendments 61/61). The following 166 pages of the BiOp proceed to evaluate various aspects of the proposed sea lion protection measures in great detail. But, except for a brief discussion of the statutory provisions of the American Fisheries Act of 1998 (the AFA), at pp. 20-23, there is virtually no analysis or "evaluation" of the effects that the AFA provisions have had on the subject fisheries. Nor is there any discussion of the benefits that AFA-related measures have had insofar as sea lion protection is concerned. In our view, this is a major shortcoming of the BiOp.

The AFA profoundly altered the way in which the groundfish fisheries off Alaska are conducted--at least the way in which the fisheries prosecuted by "AFA" vessels are conducted. These changes have in turn resulted in fishing patterns and other operational characteristics of the fisheries that afford significant levels of protection to Steller sea lions and other components of the BSAI and, to a somewhat lesser extent, the GOA ecosystems. For example, the introduction of harvesting cooperatives in the BSAI pollock fishery represents one of the most innovative developments in fisheries management in the past decade. As explained more fully below, coops have de-capitalized the pollock fishery, ended the race for fish in that fishery, reduced the spatial and temporal concentration of the fishery, reduced bycatch, increased yield and facilitated a more responsible approach to management. Yet none of these developments, many of which inure to the benefit of sea lions, are mentioned, much less "evaluated" in the BiOp.

The BiOp's failure to discuss AFA-related benefits to Steller sea lion protection efforts is curious. This is especially so in view of the fact that the Emergency Rule under which the fishery has been operating this year specifically conditioned authorization of the 2001 BSAI pollock fisheries on continuation of the pollock harvesting coops that have been formed under the auspices of the AFA. (See 66 FR 7262-7327, at 7278, Jan. 22, 2001). Furthermore, 50 CFR Section 402(g)(8), which governs the development of biological opinions, specifically requires consideration of beneficial actions taken prior to the initiation of consultation:

> "(8) In formulating its biological opinion,... the Service will use the best scientific and commercial data available and will give appropriate consideration to any beneficial actions taken by the Federal agency, ...including any actions taken prior to the initiation of consultation".

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In the MCA's view, the overlay of AFA-related management measures is an indispensable part of the regulatory regime that must be evaluated and discussed in BiOp #4. Therefore, we recommend that the final document include a detailed discussion of the AFA and how the management regime implemented following its passage has benefited Steller sea lions--justifying, at least in part, the document's "no jeopardy/no adverse modification" conclusion. For example, we would recommend the following:

1. Pre- and Post-AFA Fisheries Characteristics. Include in the BiOp a comparative analysis of temporal and spatial characteristics of the BSAI pollock and cod fisheries pre- and post-enactment of the AFA and discuss how the AFA has spread out the BSAI pollock fishery both in space and time. It is clear that the nature of fishing under cooperatives created by the AFA has allowed the pollock fisheries to spread their catch spatially and temporally, consistent with Steller Sea Lion protection measures.

   The effects on harvest can clearly be seen in Figures 1 through 3. Figure 1 illustrates Bering Sea pollock harvest by the AFA shoreside catcher vessel fleet. What is apparent in this figure is that the peak harvest is down somewhat in 2000 from all previous years and the length of season extends longer than all previous years. Also apparent is the shift of effort earlier in the second part of the year for 1999 compared to earlier years, and even earlier still in 2000.

   Figure 2 provides analogous data for the BSAI pollock mothership sector. There are a couple of changes of note over these years. First is the drop in the peak from the years 1996-1998 to the year 1999 (the first year of offshore co-ops) in the early part of the year ("roe season"), and then a dramatic drop in this part of the year from 1999 to 2000 (the first year of mothership co-ops). Looking at the summer/fall season, there is an earlier start as well as the sharply lower peak for 2000 compared to previous years.

   Figures 3(a) and 3(b) compare BSAI pollock catcher processor harvest activity during two periods of time. The first period, 1995-1998, reflects fishing patterns during the pre co-op "race for fish"; and the second period, 1999-2001, reflects fishing patterns following formation of the at-sea harvesting co-op as authorized by the AFA. These figures demonstrate two of the benefits that the AFA has generated insofar as sea lion protection is concerned. Under the co-op harvesting regime, for example, the "A" season pollock fishery now lasts almost three times as long as it did during the "race for fish" and the maximum daily catch rate is about 40% of the levels seen in pre co-op days. The fishery has been temporally (and spatially) dispersed, with the "pulse" type fishery that was characteristic of the "race for fish" being replaced by a moderately paced fishery that takes place over an extended period of time.

The AFA not only had positive effects on the BSAI pollock fishery, but on the sideboard fisheries as well. Examination of Figure 4 shows how the AFA and the establishment of co-ops has resulted in the spreading out and reducing the weekly harvest rate of cod from the BSAI catcher vessel trawl sector. Under the AFA, the catcher vessels no longer have to race into the cod fishery once the pollock roe season concludes. They now have the ability to fish both species simultaneously thereby lengthening the cod season and reducing the weekly harvest peaks from pre-AFA highs of 5-6 thousand tons/wk to under 3,000mt/wk post AFA.

These figures clearly illustrate the termination of the race for fish. In Chapter 5.3, Effects of the Action on SSL and their Critical Habitat, the analysis discusses the direct and indirect effects of current fisheries relative to the status and prey needs of the sea lion. In section 5.3.1.3 the authors state, "High levels of harvest during particular seasons may adversely affect sea lions even if the total annual harvest level is not a threat. ...Particular levels of TAC, even when divided into seasons, can result in a race for fish that concentrates fishing effort in a short period of time until the TAC is caught and the fishery closed." Rather than leave this statement open-ended, we suggest including the above noted information on how the AFA has terminated the race for fish in the BSAI pollock fishery as well as the newly established AFA sideboard fisheries. Inclusion of information showing reduction in the average daily

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harvest of cod and pollock in the BSAI trawl fisheries illustrates how the AFA has reduced the daily harvest rate and increased the length of the seasons thereby eliminating the pulse-type nature of open access fisheries. Therefore, we recommend including graphic illustrations showing 1) total season length of the fisheries, 2) average harvest per day, by sector, and 3) harvest per day and total amount within SSL critical habitat, for pre- and post-AFA BSAI pollock and cod trawl fisheries.

2. Catch Accounting and Monitoring. Include in the BiOp information on improvements in catch accounting and monitoring due to enactment of the AFA. In the North Pacific Fishery Management Council's September 10, 2001 Report to Congress on the AFA, information is presented that discusses the improvements to monitoring and enforcement of the pollock fishery by the NMFS. The cooperative management structure has shifted more of the monitoring and enforcement burden to the cooperatives and their members, which has allowed the fishery to be managed more precisely. Monitoring their own catch, vessels are able to individually and in the aggregate come very close to harvesting exactly the amount of pollock they were allocated. This enables the fleet to avoid overharvesting discreet area quotas that, in the past, were difficult for the agency to manage.

   The AFA mandated that two observers be onboard catcher/processors in the BS/AI pollock fishery. Prior to implementation of the AFA, catcher/processors were required to carry one observer. Increased observer coverage provides better information on the actual harvest. The AFA also mandated use of scales to more accurately weigh fish in the catcher/processor sector. Prior to the use of scales on all AFA catcher/processor vessels, NMFS often estimated catch using product recovery rates to back calculate total catch from finished product. Such product recovery rates were based on industry averages and seldom reflected the actual recovery realized on any given vessel. We recommend that these benefits to the management of the fishery be included in the BiOp.

3. AFA Impact on Sea Lion Measures. The analysis should include information about how the AFA provides the fishing industry with the tools and flexibility to comply with additional requirements in a rational manner. While the Steller sea lion management measures require spreading out the fishery in time and space, it was the AFA that allowed members of the fishery to comply with those requirements. The negative impacts of recent SSL protection measures were lessened by the AFA. For example, many small catcher vessels would have had difficulty competing with the larger vessels as the fishery was pushed farther offshore. In addition, managing an inside critical habitat catch limit without the AFA would be very difficult.

   Under AFA regulations, the pace of the fishery can be voluntarily adjusted, e.g., allowing time for each respective sector to be more "selective" in its fishing practices, prospecting for larger fish and, thus, avoiding concentrations of smaller fish, moving out of areas of high bycatch, or PSC concentrations, etc.

4. Harvester Cooperatives. Harvesting co-operatives have proven to be an effective vehicle for the control and reduction of bycatch in the pollock fisheries. A good example is the salmon reduction plan implemented this past year via an inter-coop bycatch avoidance program that utilizes real time data from the fishing grounds to alert fishing vessels of bycatch hotspots and that rewards vessels that successfully keep their bycatch rates below pre-determined levels. A discussion of the bycatch reduction benefits of coops should be included in the BiOp as well.

5. AFA Conservation Benefits. Lastly, 50 CFR 402.14(j) specifically authorizes the "consulting agency" to provide with the biological opinion "a statement containing discretionary conservation recommendations" which, although such recommendations do not have the force of law, can be an effective way of influencing future management decisions. Therefore, we suggest that the BiOp be revised to include a section that describes the conservation benefits attributable to the enactment of the AFA and subsequent fishing practices by the AFA fleets. To the extent the no

jeopardy finding is premised on a rationalized pollock fishery and the corresponding absence of a race for fish, the BiOp should so indicate.

VIII. BIOP TREATMENT OF POTENTIAL COMPETITION WITH FISHERIES

The MCA makes the following recommendations regarding certain aspects of potential interactions of the fisheries with Steller sea lions. While the current BiOp provides a much more scientific treatment of the potential causes for the current and past decline in the Western population of Steller sea lions, the discussion of some aspects of the fisheries and the potential interactions with Steller sea lions suffers by the incorporation of several statements based on little more than pure speculation. Such speculative statements draw attention away from the scientific issues and data discussed in the balance of the document. Federal case law bars NMFS from speculation in analyzing jeopardy and adverse modification issues under Sec. 7 of the Endangered Species Act.

1. Overstatement of "evidence" of localized depletion (Page 87. lines 13-16). The analysis cites an unpublished paper (Fritz unpublished) to substantiate the statement that analyses have shown that repeated trawling can lead to severe localized depletions. While the statement is later qualified to say that the number of schools affected and the effects on schooling dynamics are not known, these caveats do little to reduce the strength of the statement suggesting that NMFS has reasonable evidence of localized depletions from trawling. The unpublished paper cited as a basis for this evidence was written in 1997 and it continues to reemerge in biological opinions as statistical evidence of localized depletion. A number of scientific reviewers (including one hired by NMFS) have raised significant issues regarding the appropriateness of the analytical techniques used in the paper and the treatment of the data. As far as we know, none of these issues have been resolved.

   Recommendation: Given the serious issues raised by reviewers, the controversy surrounding the results, and the fact that the paper has still not been approved for publication by any scientific journal, we feel it is inappropriate to cite this paper

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as evidence of localized depletion (especially "severe" localized depletion as the BiOp states). Unless NMFS currently has any sound scientific evidence of localized depletion, we suggest that lines 13-18 be omitted. Alternatively, the characterization of the quality of the evidence should include the major issues raised by reviewers including the North Pacific Council's SSC as reflected in their June 1998 minutes.

2. Atka mackerel stock dynamics (BiOp page 18, lines 35-42). This section speculates on the migration patterns of Atka mackerel and suggests that Atka mackerel migrate from the Aleutian Islands to the Gulf of Alaska. The section further suggests that fishing for mackerel in the Aleutian Islands could have downstream effects on the Atka mackerel found in the Bering Sea and Gulf of Alaska. While the analysis cites a source (a chapter in the 1997 SAFE report), careful review of the source information shows that there is no definitive scientific information to support the hypothesis. The claim of a linkage is based on a single, unsupported mention therein of the possibility that mackerel found in the GOA come from migration of adults or subadults originating in the Aleutian Islands. Two papers cited in the stock assessment (Levada 1979 and Lee 1985) conclude that there are morphological and meristic differences in Atka mackerel from the different areas in the Aleutian Islands and Gulf of Alaska (Levada 1979). This would suggest separate populations, not migration. The stock assessment, however, also notes that a genetic study found no evidence of discrete stocks between GOA and the Aleutian Islands (Lowe et al. 1998), but this does not necessarily mean that a demonstrable migration pattern exists between the Aleutians and GOA. In the end, this may be a classic case where something mentioned in an unpublished paper gets cited over and over without critical review. Data to support a possible linkage between mackerel found in the Gulf and in the Aleutians would be such things as results from a tag return experiment, for example, but no information of this type is presented. In fact, the Alaska Fisheries Science Center (REFM) is currently conducting a tag and recovery study that was started in 2000. Thus far, the study suggests that a very high

percentage of tags have been recovered in the Seguam area within a very small distance from where fish were tagged (See February 2001 Atka mackerel tagging project cruise report summary). While the possibility that mackerel move east as they mature cannot be eliminated, it is not backed by scientific evidence and it does not appear to comport with preliminary findings from NMFS' ongoing tag return study

Recommendation: In our view, the speculation simply serves to suggest that the consequences of fishing or other effects/changes in Aleutians mackerel may be greater than anticipated and may affect an area wider than the Aleutian Islands. The opposite seems to be an equally possible assertion at this point. In the end, we feel it is probably best not to speculate about possible migrations and interrelations of mackerel found in different parts of North Pacific waters until scientific evidence becomes available.

3. Section on interactive versus exploitative competition (pages 86-88). This section speculates about how trawls may break up fish schools and possibly disadvantage Steller sea lion foraging (or perhaps advantage it). The theoretical concept of interactive competition is treated as a second type of potential competition for forage over and above the simple issue of removal of fish. The premise of the interactive competition theory is that fish schools are somehow disaggregated by trawling, making sea lion foraging more difficult. There is not a single citation of supporting scientific information in this section and, to our knowledge, NMFS is relying on nothing more than a theory lacking empirical evidence. A theoretical discussion of interactive competition was included in the November 30, 2000 BiOp. What is new here is the focus on the question of which fisheries might create more profound degrees of this undocumented theoretical phenomenon: is it fisheries which are unable to employ fish finders to find fish aggregations such as Atka mackerel, or is it fisheries where fish finders can be used effectively to find fish schools, such as for pollock? Once again, however, this section adds no concrete information to the analysis because NMFS has no data or even consensus of scientific opinion to inform the reader. The levels upon levels of speculation about interactive competition

discussed in this section makes it sound like the agency has considerable empirical proof to back this theory when it has none.

Recommendation: This whole section should be removed.

4. Discussion of potential for cumulative effects from additional competition created by fisheries other than pollock, cod, and Atka mackerel (pages 87-88). Starting on page 87, line 40, a discussion of potential cumulative effects suggests that the negative effects of exploitive (and presumed interactive) competition from pollock, Atka mackerel, and cod fishing are increased by additional effects from fisheries such as yellowfin sole, other flatfish, salmon, herring, rockfish, etc. This BiOp sets out some management measures for "parallel" state waters fisheries for cod and appears to suggest that additional steps for other state waters fisheries such as salmon and herring might be in order. The inclusion of rockfish, other flatfish, and yellowfin sole in this discussion, however, contradicts the "no jeopardy" findings for those fisheries made in the November 30th BiOp and is inconsistent with the scientific information presented in the November 30th BiOp as well. Here, NMFS cannot present a rationale. While flatfish species such as yellowfin sole and rocksole have been found in the diet of Steller sea lions, Steller sea lion scat data suggests that the importance of such species is minor compared to the three groundfish species that are the subject of the current BiOp. Likewise, rockfish species for which there are commercial fisheries within the waters inhabited by the western Steller sea lion population (west of Cape Suckling) occur predominantly in very deep water. Due to the relatively deep occurrence of these rockfish species, NMFS has up until now argued against the possibility of competition with fisheries because these rockfish species are not really available to Steller sea lion foraging. Additionally, data presented in the November 30th BiOp demonstrated that flatfish fisheries occur mostly outside of critical habitat for Western Steller sea lions. Given the absence of any new data to contradict the earlier findings, the suggestion that fisheries for rockfish and flatfish could be creating additional competition for Steller sea lions lacks scientific foundation.

Recommendation: This section should be revised to remove the flatfish and rockfish fisheries from the discussion of potential cumulative additional competition.

5. Section 4.4.3.2.2. Indirect effects on critical habitat for Steller sea lions (page 88). This section asserts that all commercial fisheries create significant competition for sea lions throughout critical habitat, a gross overstatement of the Agency conclusions in Draft BiOp 4. As such, the discussion appears to throw out the opinion of this BiOp itself and even overstep the conclusions of the November 30th BiOp which limited the finding of jeopardy to pollock, cod, and Atka mackerel of the groundfish fisheries considered in that BiOp. Please consider the statement below taken from page 88 line 22:

> "After considering all of the commercial fisheries that occur in the action area, especially in areas designated as critical habitat for sea lions, and comparing those fisheries against the various fish species consumed by Steller sea lions, we would conclude that commercial fisheries would reduce the availability of Steller sea lion prey in designated critical habitat. Given the magnitude of these harvests and their spatial and temporal extent, these removals could reduce the availability of prey in critical habitat for Steller sea lions sufficient to reduce the habitat's value to the sea lion population."

This statement and the entire section contradicts the findings of this BiOp and the November 30th BiOp wherein groundfish fishing operations for species other than pollock, cod, and Atka mackerel were found not to be a source of jeopardy or adverse habitat modification. But it also contradicts Draft BiOp 4 as well, in which fishing operations for pollock, cod, and Atka mackerel that occur beyond ten miles and that are otherwise subject to the seasonal apportionments and other measures included in the proposed management measures, are found not to be a source of jeopardy or adverse modification of critical habitat.

Recommendation: This section should be revised to be less sweeping in the scope of its conclusions. If the intent is to point out that beyond the three species of interest for this BiOp, additional competition by some fisheries may occur, then the fisheries of concern should be listed specifically and the relative degree of concern by area or zone (e.g., inside ten miles and outside ten miles) should be elucidated. Like the section discussed in item 4 above, on face value, one could conclude from the section as currently drafted that flatfish, rockfish, sablefish, halibut, and other fisheries are implicated and that critical habitat areas beyond ten miles are just as important, from a sea lion management perspective, as the areas inside ten miles. This is not consistent with the analyses that have been prepared based on the most recent telemetry data or with the ultimate conclusions drawn from such data. This is not what the agency has been stating in all the public meetings it has conducted throughout the development of this and earlier BiOps.

IX. OTHER AREAS OF CONCERN FOR THIS BIOP

1. Section 5.3.2.8 Comparison of the proposed action to the management measures (FMP Biological Opinion) (Pages 127-136). In general, this section is well written and provides a very useful discussion of the qualitative model and the rankings assigned to different Steller sea lion recovery measures in the FMP Biological Opinion and Steller sea lions measures proposed in this BiOp. It also describes the simulation done to predict Steller sea lions population trajectories under the two proposals. The section is followed by a rather informative sensitivity analysis to evaluate the effects of the assumptions used for the modeling. While everyone would be interested in an improved degree of precision, what is presented employs the best available methods of analysis for the type of available data. On page 128, starting on line 41, the text discusses the need to revamp the population model to compare the November 30 BiOp to the current one. The heart of the matter is that the new proposed measures are based on levels of distance from Steller sea lions rookeries and haulouts with respect to the new sea lion location and foraging information from the new telemetry data. What is troubling about this portion of the section is that it implies that the simulation and the population model are inherently highly subjective and more so than the November 30th BiOp. Line 45 on page 128 states that "NMFS

notes that this method over the 8 year period for which the population was simulated added a good degree of subjectivity to the analysis that wasn't present in the analysis in the FMP biological opinion". The informed reader may understand that the complex distance from shore data stratifications (0-3 nm, 3-10 nm, 1020 nm, and beyond 20 nm) and other features of the proposed measures in this BiOp make the extrapolation more complex. But this should not be construed to mean that the analysis of the protection measures is inherently subjective or by any means arbitrary. In fact, this section of the document does a thorough and concise job explaining how the rankings were arrived at. Further, the methodology behind the assignment of points to different sets of measures is consistently applied.

Recommendation: While it is true that the analysis of the population trajectories comparing the FMP BiOp to the current BiOp is detailed and complex, the statement cited above should be modified so as to avoid implying that the population model or point assignments are highly subjective and hence possibly arbitrary.

2. Implications that the new proposed measures open up new fishing areas to the Atka mackerel fishery (page 125). Lines 27 through 34 on page 125 discuss the objective of slowing down the harvest rate within the two Aleutian Islands statistical areas where mackerel fishing will be allowed to continue inside Steller sea lions critical habitat. The discussion revolves around the institution of a "platoon" management system which is designed to randomly divide the fleet into two teams of approximately the same number of vessels and divide fishing effort between the two statistical areas to reduce catch rates on a daily basis within each statistical area. First of all, the text states that platoon management will apply to statistical areas 541 and 542, which is incorrect. The RPA committee recommendation does not allow fishing inside Steller sea lions critical habitat in area 541. In areas 542 and 543 where platoon management will be implemented, companies wishing to fish for the portion of the sub-area total allowable catch of Atka mackerel in critical habitat will have to participate in the platoon management system.

Another mischaracterization in this section is that the result of the platoon management system is that "a number of preferred fishing grounds were opened under this action that were previously closed" (page 125 lines 30-31). In fact, the platoon management system does not re-open preferred fishing areas compared to areas currently open or those that have been open since before the litigation on sea lions began. Platoon management serves to slow down the daily harvest rate. The RPA committee proposal also adjusts the amount of the allowable catch inside critical habitat to the proportion of the Atka mackerel biomass estimated to occur inside Steller sea lions critical habitat. This adjustment attempts to make harvesting proportional to the biomass distribution in order to better protect the mackerel stock from localized overfishing.

3. Discussion of degree to which different approaches to regulating fishing in critical habitat are risk adverse (Page 125). In discussing aspects of spatial dispersion of fisheries within critical habitat, the BiOp contrasts the degree of risk aversion of the current proposed management measures to an approach with groundfish harvests limited to the target exploitation rate theoretically applied to the seasonal proportion of the biomass in Steller sea lions critical habitat. While the statement (starting on page 125, lines 46) appears to simply state that the theoretical approach of "perfect proportionality" is preferred to the one used for this BiOp, the claim that the theoretically preferred approach is more risk averse than an applied approach is not really a legitimate comparison. Any theoretical approach will be superior to an applied approach when data governing the fundamental scientific relationships is less than perfect. But the agency and RPA committee had to develop an applied approach for Steller sea lions protections based on available groundfish and Steller sea lions location data. Every possible management approach would fall short of perfection under these conditions.

Recommendation: The analysis should avoid making comparisons of degrees of risk aversion between theoretical approaches and actual solutions that must be limited to real world data and logistical boundaries. For example, the approach used in the November 30th BiOp attempted to limit the amount of seasonal fishery removals in proportion to the available biomass in portions of critical habitat. Data on the seasonal distribution of groundfish stocks was not available outside of the summer period when surveys have been conducted in the past. In addition, groundfish species migrate (particularly cod and pollock) and the amount of fish in a restricted catch area fluctuate significantly

The discussion of the relative degree of risk aversion of the current proposed management measures implies that they depart from a risk averse approach relative to the November 30 BiOp, when this in not necessarily the case. In fact, the zoning approach relied upon for the current proposed management measures keeps virtually all fishing with high catch rate gears and fleets away from areas where telemetry data suggests a high reliance by juvenile and pup Steller sea lions for foraging. That in itself may be more risk averse than the earlier proposed measures. The agency should take a critical look at what is written in this section and reconsider the comparisons that are discussed.

4. BiOp Should Contain a Summary Conclusion Section. The BiOp should include a summary conclusion which clearly pulls together old and new scientific data to justify its conclusion of no jeopardy. This information should include identification of the age and gender populations of most concern, new information on the foraging behavior of Steller sea lions, the changes discovered in nutritional stress, immature Steller sea lions foraging behavior, the successful foraging ability of adults in competition with fishing fleets in areas outside 10 miles, the accounting of sources of Steller sea lions mortality, Steller sea lions diet trends including scat data as well as prey ingestion data, as well as the data that led the majority of scientists in the "Is It Food? II Workshop" to reject of competition with fisheries as a current leading hypothesis for Steller sea lions decline. The BiOp should explain why NMFS now concludes that 1) It no longer ranks competition with fisheries as the leading hypothesis for the decline, 2) It is unable to link the decline or potential recovery to the commercial fishing fleet, 3) The management measures are a precautionary measure and 4) Even without a commercial fishery, and despite implementation of

any of the proposed alternatives, Steller sea lions would continue to decline because of environmental considerations and population trend dynamics.

5. Comparison Of Telemetry and Platform of Opportunity (POP) Data. In the series of BiOps (1-3) prior to the current draft, NMFS relied on a combination of POP data and telemetry data gathered prior to 1994 to assess the foraging ecology and habitat use of Steller sea lions.

Since 1994, the telemetry technology has improved significantly, as documented in the "white paper." The usable telemetry data set is several times larger than the earlier data. Additionally, the deployment of tags has focused on pups and juveniles, which are thought to be the demographic segment of the population of most concern. That data has now been analyzed and used in the development of the management measures analyzed in Draft BiOp 4 .

Telemetry tagging can be done in a systematic fashion, but the POP data was randomly generated on an opportunistic basis. As a result, POP data is heavily biased to the location of fishing boats with observers. Because large trawlers account for most of the observer coverage days, the best use of the POP dataset may be to define the range of where those vessels operated. It also reflects the regulatory structure under which the vessels operated. For a large portion of the last decade, trawlers were restricted from fishing near rookeries. Trawlers with the higher observer coverage levels also faced an array of other nearshore fishing restrictions for other management reasons including bycatch reduction and fish allocation(e.g. CVOA summer closure to catcher-processors, Bristol Bay pot sanctuary, chum salmon closure area, etc.). The larger vessels were also designed to fish offshore, and they do so as fishing conditions dictate. The combination of these factors effects the distribution of observations that make up the POP data set.

As a result of the distributional pattern of observations the data is downwardly biased against the nearshore areas of high importance to sea lions. Opportunistic sampling in the POP data means they are heavily "pre-filtered." Older POP data, gathered prior to the decade of the 1990's, reflect a far different level of abundance of Steller sea lions at that time. Prior to the regime shift, when the population of Steller sea lions was at higher levels, one would expect an expanded range of area use. When the population contracts, with both fish and marine mammals, the range of a wild animal usually contracts to its core area of dependence.

In addition, the POP data does not distinguish whether the animals sighted were adults or juveniles, does not identify the sex of the animal, and cannot determine whether the same animal has been sighted several times by different vessels. To the extent that the recovery of the population is limited by juvenile survival and female reproductive success, and to the extent their distribution differs from that of adult males (a well documented phenomena for other marine mammals such as walrus), it is important to make such distinctions in the use of habitat.

NMFS and ADF&G representatives have stated to the RPA Committee and to the Council that the telemetry data represents the best available scientific data for understanding Steller sea lion foraging ecology. The analysis should clearly state the limitations of the POP data and the improvement in scientific information that has resulted from the collection of telemetry data.

6. <u>Adaptive management measures incorporated in the proposed management measures.</u>
As the agency is well aware, in the past industry participants have repeatedly requested that any further modifications to the groundfish fisheries to address potential interaction of fisheries and sea lion foraging should incorporate an adaptive management experiment. The purpose of such an experiment is to learn something about the effectiveness of the proposed modifications to the fishery and hopefully gain some scientific data and information on the general hypothesis of potential competition of groundfish fisheries and Steller sea lions. A valid experimental design should be incorporated into sea lion measures so that the effectiveness of the measures can be tested and information on validity of the competition hypothesis can

be obtained. We support the adaptive management measures incorporated into the proposed management measures, as well as the experimental programs that NMFS currently has under way in the sea lion arena. These efforts, and the $40 million in new funds Congress provided this year to support Steller sea lion research, will hopefully lead to a better understanding of the degree (if any) to which there is a competitive interaction between sea lions and the fisheries that is negatively affecting sea lion populations in Alaska.

The RPA Committee process and marine mammal and fishery scientists on the committee have increased the depth of knowledge regarding the difficulty from a scientific perspective of a large-scale experiment to determine the effects of the groundfish fisheries. A subcommittee of the RPA Committee has been charged with the development of an adaptive management experiment to be incorporated into new measures once measures are in place. The subcommittee has found that the establishment of an adequate control area and the degree of restrictions that would have to be imposed to scientifically detect a difference in the open versus closed area is not a trivial matter. Furthermore, the intricacies of an experimental design that would attempt to control for environmental variables that affect sea lions and fisheries can not be underestimated.

For this reason, the MCA believes that NMFS' current approach makes the most sense. NMFS is in the process of conducting several small scale experiments to answer discrete scientific questions surrounding the overall sea lion/fisheries competition hypothesis. These projects include the Chiniak and Barnabas Gullies pollock depletion experiment conducted this year, the on-going Atka mackerel tagging experiment in the Aleutians, and the pilot winter survey and cod tagging work that were started this year. In addition, the proposed management measures incorporate a number of discreet area closures available to serve as control areas for future experiments. These areas are useful for the measurement of changes in sea lion populations that may or may not occur in adjacent areas that remain open to fishing. The closed areas include the Seguam foraging area in the eastern Aleutians that would be closed to all fishing; the Bogoslof area (Area 9) that would be closed to all trawling; and areas 4, 10 and 11 in the Gulf of Alaska that would be subject to a variety of major fishery-related closures.

These smaller scale projects are more likely to increase scientific knowledge in the near term. Such smaller experiments are also necessary as pilot projects for a more global experiment in the future because they are critical to resolving basic scientific issues on how to measure effects and eliminate the confounding effects of changes in environmental variables. For this reason, the MCA agrees that the agency could not have incorporated any large scale adaptive management project into the Draft BiOp. Once some of these small scale projects are completed, the MCA will reconsider its request that NMFS design a large scale experiment to test the merits of the fisheries competition hypothesis.

X. MSFCMA REQUIREMENTS IN ANALYZING MANAGEMENT MEASURES

Fishery Management Plans (FMPs) and amendments to those plans must be consistent with a series of national standards specified in §301 of the Magnuson-Stevens Act (16 U.S.C. §1851). They must also comply with "other applicable law," which includes the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), the Marine Mammal Protection Act (MMPA), the Administrative Procedure Act (APA), the Regulatory Flexibility Act (RFA) and various Executive Orders.

1. Endangered Species Act Requirements. Section 7(a)(2) of the ESA specifically prohibits federal agencies, including the National Marine Fisheries Service (NMFS), from authorizing actions which are "likely to jeopardize the continued existence of endangered species… or result in the destruction or adverse modification of their critical habitat" (the so called "jeopardy/adverse modification" test). If an agency contemplating the authorization of a proposed action (the "action agency") determines that the action being contemplated may affect a listed species or its critical habitat, the action agency is required by the ESA and 50 C.F.R. §402.14 to initiate consultation with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries (NMFS), depending on which of the two Services has jurisdiction over the

species in question.[1] The purpose of the consultation process is to determine whether or not the proposed action is "likely to jeopardize" the endangered species or "adversely modify" its critical habitat. Once the formal consultation required by 50 CFR §402.12 is completed, the consulting Service is required to issue a Biological Opinion that determines whether or not the proposed action is likely to result in jeopardy or adverse modification. 50 C.F.R. §402.14(g)(8) provides that "in formulating its biological opinion,…the Service will use the best scientific and commercial data available and will give appropriate consideration to any beneficial actions taken by the Federal Agency…including any action taken prior to the initiation of consultation."

If, following the formal consultation process specified in 50 C.F.R. §402.14, the consulting Service concludes that the proposed action is likely to result in "jeopardy" or "adverse modification," the resulting Biological Opinion is supposed to include reasonable and prudent alternatives (RPAs) if there are any, that would alter or modify the proposed action so that it could pass the jeopardy/adverse modification test. On the other hand, if the Biological Opinion concludes that the proposed action is not likely to result in jeopardy or adverse modification, no RPAs are necessary and the action agency may proceed with the proposed action as originally contemplated.[2]

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1 In the case of Steller sea lions (Steller sea lions), NMFS is both the action agency insofar as it is proposing to authorize groundfish fishing operations in the North Pacific; and the "consulting Service" insofar as it has ESA jurisdiction over Steller sea lions and certain other marine mammals.

2 In such cases, where a no jeopardy/adverse modification determination is made, 50 C.F.R. §402.14(j) specifically authorizes the consulting service to suggest discretionary conservation measures for the action agency to consider, but such conservation recommendations are advisory in nature and are not "intended to carry any binding legal force" (see 50 C.F.R. §402.14(j)). Other than the requirement to avoid jeopardy and adverse modification of critical habitat, the ESA does not require the action agency to select an action alternative that has the least impact on the species in question - - only that the action selected does not "jeopardize the continued existence of the species or adversely modify its critical habitat". Once that bar has been crossed, the agency is free to adopt a proposed measure even though there might be other alternative measures

This is the ESA process that has resulted in the issuance of BiOp 4. BiOp 4 has made a preliminary "no jeopardy/no adverse modification" finding with regard to the Council's "preferred alternative," and no RPAs have been proposed.

2. National Standards Test. In the case of a fishery management measure, the proposed action must not only pass the "no jeopardy/no adverse modification" test, it must also pass the "consistency with the national standards" test prescribed by the M-S Act. In a case such as this, where the agency is considering a number of competing management alternatives, all of which arguably meet the "no jeopardy/no adverse modification" test, each of the various alternatives must be evaluated in the context of the national standards. Thus, the Council and NMFS are required to evaluate the competing alternatives (Alternative Nos. 2-5 as identified in the draft SEIS that accompanies the BiOp) in terms of the following national standard issues:

    (1) Optimum Yield. Which alternative best prevents overfishing while achieving optimum yield from the fishery for the U.S. fishing industry?

    (2) Best Scientific Evidence Available. Which alternative is based on the best scientific information available?

    (3) Management of Individual and Interrelated Stocks of Fish. Which alternative best accomplishes the management of North Pacific stocks throughout their respective ranges?

    (4) Allocations of Fishing Privileges must Promote Conservation and Must be Fair and Equitable. Which of the sea lion-related alternatives succeed in promoting conservation (of fish, marine mammals and birds) while being fair and equitable to fishermen?

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that are arguably better for the endangered species in question (e.g. no fishing whatsoever).

(5) Efficient Use of Fish Resources. Which of the competing alternatives result(s) in the most efficient use of fishery resources?

(6) Variations Among and Contingencies in the Fisheries. Which of the alternatives best accounts for the differences in the various groundfish fisheries of the North Pacific, its fishery resources and catches?

(7) Minimization of Costs and Unnecessary Depletion. Which alternative minimizes the cost of prosecuting the pollock, cod and Atka mackerel fisheries and best avoids unnecessary duplication?

(8) Protection of Fishing Communities. Which of the alternatives best accommodates the dependence of fishing communities on the fishery resources of the North Pacific, ensures their continued participation in the fisheries for such resources and minimizes adverse economic impacts on such communities?

(9) Minimization of Bycatch. Which of the alternatives facilitates the prosecution of the fisheries with the lowest amount of bycatch?

(10 Safety of Life at Sea. Which alternative provides the greatest margin of safety for the fishermen, vessels and crews engaged in the North Pacific groundfish fisheries?

These are the considerations mandated by the M-S Act's national standards. Thus, each of the alternatives presently under consideration must not only meet the ESA's "no jeopardy/no adverse modification" test but each must be evaluated in terms of its consistency with the goals and objectives specified in the ten national standards as well. A full discussion of the degree to which the various alternatives comply with the national standards can be found in the MCA's forthcoming comments on the Supplemental Environmental Impact Statement (SEIS) that NMFS has prepared in connection with the proposed action.

XI. OTHER ISSUES OF CONCERN

Introduction

Draft BiOp 4 provides a much more scientific treatment of the current level of scientific data as well as the reasoning used in determining whether the pollock, Atka mackerel and cod fisheries of the BSAI and GOA cause jeopardy to Steller sea lions or their critical habitat. While the Marine Conservation Alliance joins the SSC in welcoming this new approach there are still elements of speculation that detract from the scientific value of the document. We have tried to identify on a line-by-line basis where we think unsubstantiated statements or errors might have occurred. We have also included line-by-line identification of where tables, figures or statements occur in the draft BiOp that should be changed based on the new management measures imposed since the draft document was published.

1. Table 2.4; page 28. Include new management measures.
2. Sec. 4. Competition during the Winter Season; page 86, lines 20-26. Clearly define Winter and Summer season consistently throughout the document. The agency has said that the telemetry data winter season is defined as October through April. Delete or substantiate caloric value of winter prey made in this passage.
3. Sec. 4.4.3.2.3; Indirect Effects on critical habitat for Steller sea lions; page 88, lines 22-28. This section concludes that fisheries reduce the value of critical habitat because of a reduction in prey. These lines should be deleted or strong caveats included that clearly state that potential adverse impact may occur if no restrictions are imposed on nearshore areas.
4. Section 5.2.1.3; Telemetry Information; page 110, lines 36-38. These lines state that Steller sea lions spend a larger proportion of time on the surface in nearshore waters and so have a higher probability of being observed than offshore hits. Either delete or

substantiate with evidence that Steller sea lions spend more time on the surface in nearshore areas.

5. Same section; page 110, line 46. Explain why the telemetry data for sub adults and females without pups is less important than lactating females and weaned and non-
6. Table 5.1. Fields should be more clearly identified. A new field, including data for 0-10 miles should be added since its importance cannot be overstated in this document in assessing the value of proposed management measures.
7. Same section; page 115, lines 32 & 33. These lines point out relatively high percentage of pups beyond 20 nm in summer and relatively high number of adults during summer in table 5.1b. Because this is based on use of a formula that filters out 90% of nearshore telemetry hits, it should be noted here that this is the extreme outer bound of a highly risk averse analysis rather than reasonable or probable foraging occurrences. This caveat should be used wherever figures generated from Table 5.1b are generated in the document.
8. Same section, page 116, lines 3-6 and lines 18 & 23. These lines discuss agency concerns about additional gear closures inside critical habitat and seasonal splits that have been included in the new management measures since the draft BiOp was published and should be deleted. (This issue is discussed in more detail in "Issues of Concern" section of MCA comments.)
9. Same section, page 116, line 11. This line states that outside 0-10 miles, competition is less likely, "although impossible to quantify." This seems an inaccurate overstatement since we have excellent catch accounting and survey information in this area as well as increased telemetry data. It would be more accurate to say "although impossible to precisely quantify."
10. Table 5.2. Page 117. In field characterizing Temporal Dispersion, it discusses the different impacts of two and four seasons. For pollock and cod, there are three or four seasons in the BS and GOA. Discussion of two seasons is misleading. These numerous seasonal splits come at considerable cost to the fishing communities. Bullet three commenting on two and four seasons and its impact on localized depletion (largely unsubstantiated) should be deleted or appropriately corrected.

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11. Section 5.3.1.3. Page 119, lines 19-22. These two sentences inaccurately characterize the winter period as a potential period of nutritional stress supposedly caused by a race for fish and the length of the pollock fishery has nearly doubled since AFA management measures went into place. The AFA has similarly impacted the conduct of the cod fishery. AFA sideboards and other regulatory actions have produced similar effects in the GOA. The Atka mackerel fleet has crafted a platoon system to slow down that fishery. The language should describe the importance reductions in daily catch effort
12. Table 5.3. Page 122. Update this table so that it reflects the additional management measures adopted after publication of the draft BiOp.
13. Section 5.3.2.1. Zone: 0-3. Page 123, lines 11 & 12. There is no substantiation for the stated conclusion that "NMFS considers fixed gear to be less likely to cause localized depletion." NMFS should not speculate.
14. Section 5.3.2.2. Zone 3-10. Page 123, lines 25-28. Same issue as immediately above.
15. Section 5.3.2.4. Zone: Spatial Dispersion (beyond 10 miles). Page 125. This section should be updated to reflect the additional management measures proposed.
16. Same section: Line 2 should be corrected to read capped at *28%* of the annual TAC and seasonal limit is *70%.* Line 3 should read that catcher-processors are *prohibited* rather than *restricted* from harvesting their sector share inside CVOA during B season.
17. Same section: Line 4 should read no pollock fishing in the *0-10* zone rather than 10-20 zone.
18. Same section: The two sentences in lines 4-8 should be eliminated. Specifically, the restriction that forces the fleet to fish 30% of the BS TAC outside the SCA during the period when highly valued and aggregated pollock are inside that area is neither "arbitrary" or "marginal" in impact. If that were true, we could continue to take close to 90% of A season fish in that area as we had done before imposition of RPAs.
19. Same section: The same misstatement applies to line 19.

20. Same section: The paragraph in lines 19- 25 should be written to reflect increased protection to critical nearshore areas rather than focus on fractions taken inside large, and often distant, areas of critical habitat.
21. Section 5.3.2.6 Zone: Temporal Dispersion beyond 10 nm. Page 126, lines 21-24. These sentences address the management measure cod seasonal splits before they were modified and should be corrected.
22. Same section, same page, line 25. Correct enumeration of BS pollock seasons from two to three.
23. Same section. Same page, lines 35-39. Eliminate this paragraph, which discusses concerns which have been adequately addresses since management measures have been modified. And again, the agency determination language on the ability of the described measures to avoid adverse impact should be consistent with earlier sections.
24. Section 5.3.2.7. Global Control of Fishing effort. The Draft BiOp should include the agency determination of effectiveness of this measure in avoiding adverse impacts to Steller sea lions.
25. Table 5.4. Update with additional management measures.
26. Same section. Page 129, lines 18-25. The trajectory numbers in this paragraph need to be changed after incorporating additional management measures imposed since publication of draft BiOp.
27. Table 5.6 and the description that follows on pages 130-134 need to be changed to incorporate additional management measures.
28. Figure 5.3 describing the Steller sea lion population model relative to compared management measures needs to be changed to reflect impact of additional management measures in BiOp 4 package. Again the wording "highly subjective" should be eliminated from the cutline for the reasons cited earlier on page 135, line 7.
29. Same section, page 135-136. This section should be rewritten to accurately reflect comparisons of old and new BiOp using additional management measures imposed since publication of draft BiOp.

30. Section 5.4.1.1. Step 2 of Jeopardy Analysis. Page 137. Lines 49 & 50 should be redrafted to better reflect new information regarding nutritional stress as described in appendix paper on "Is It Food?" Action by the agency is no longer to be based on assumption that nutritional stress is "likely," but rather, that it is not, and actions now are taken as "precautionary" measures to meet ESA criteria.
31. Same section. Page 139. Lines 28-30 read as follows: "Even if fishery related impacts to Steller sea lions were eliminated completely, we would expect the decline to continue as a result of environmental pressures that are also acting upon, and reducing, the survivability of this population." This conclusion is of such importance that it should be highlighted in the BiOp conclusion, especially since some have argued that the proposed action fails to cause immediate recovery while other proposed actions in the EIS would.
32. Same section. Page 140. Lines 8-10. Incorporate here the conclusion that even elimination of all fishing would cause continued, near term decline. And based on population trajectory model in Figure 5.3 decline is expected to end and recovery begin in approximately four years.
33. Same section. Page 140, lines 34 & 35. Correct this information on comparison of old and new management measures based on changes in BiOp 4 management measures.
34. Section 5.4.2.2 Discussion of the Effects on Steller sea lion critical habitat. Page 146, lines 26-28. Add clarification on varying degrees of importance to different zones of critical habitat, noting higher importance of nearshore critical habitat as described elsewhere in the document.

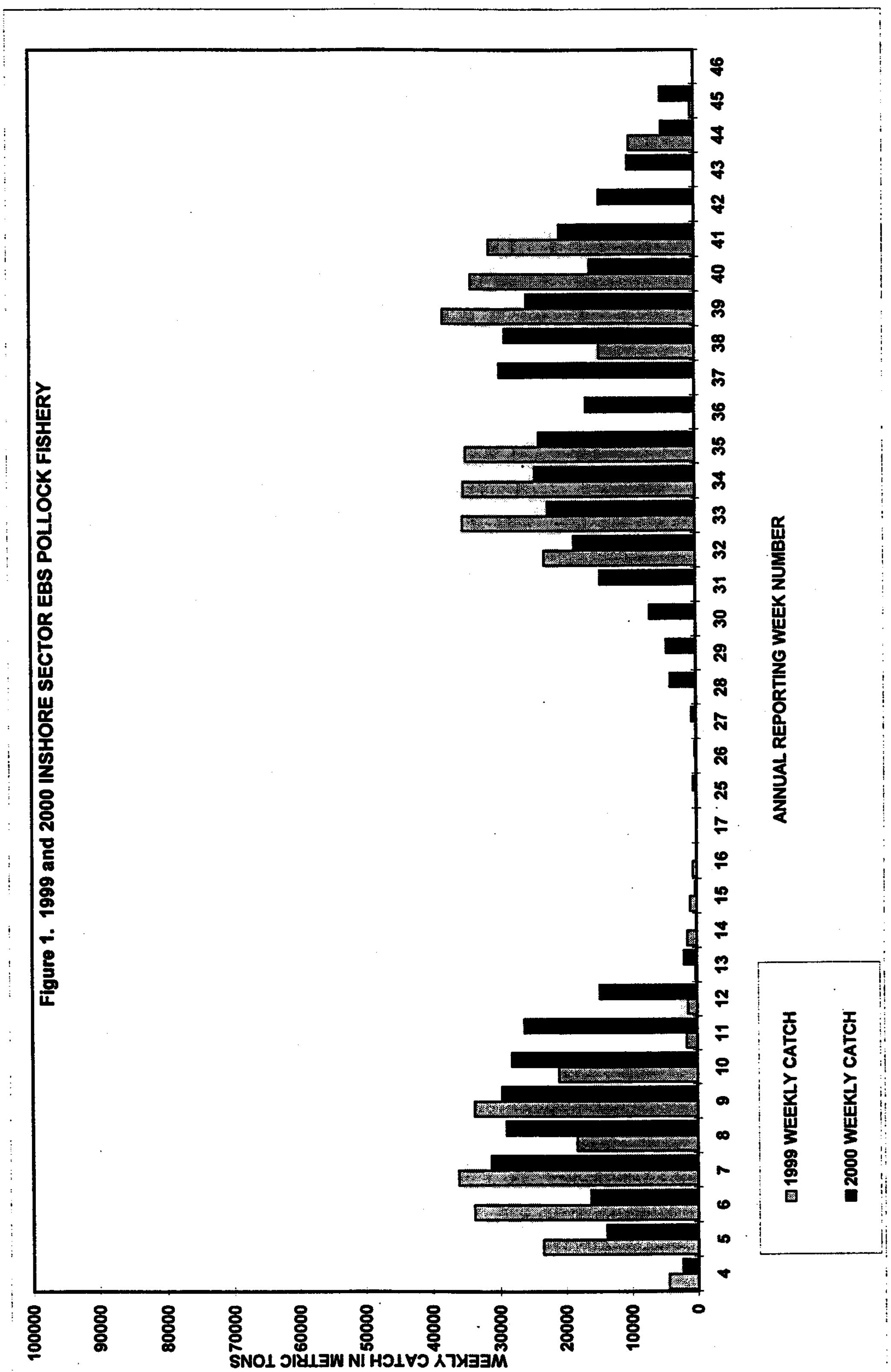
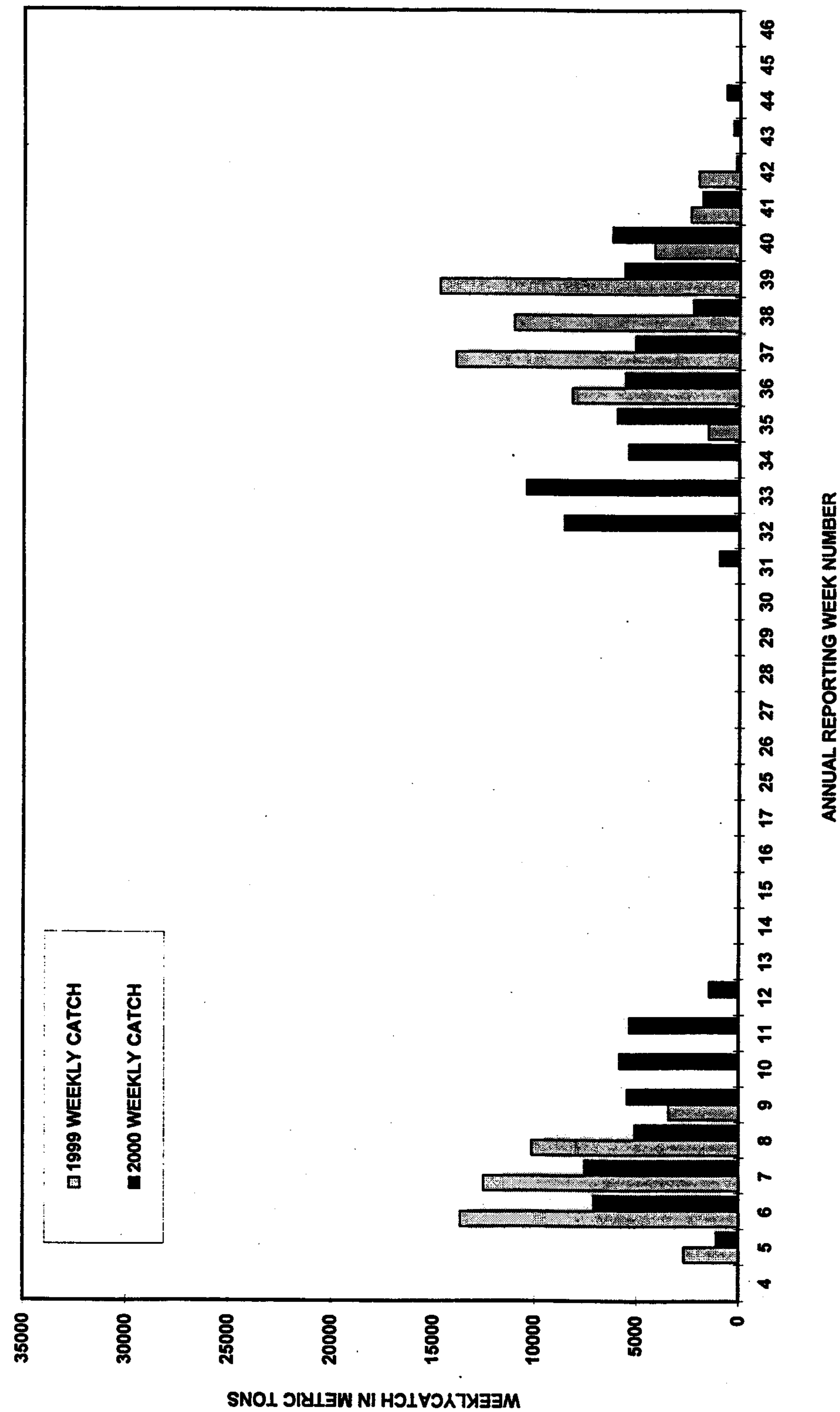


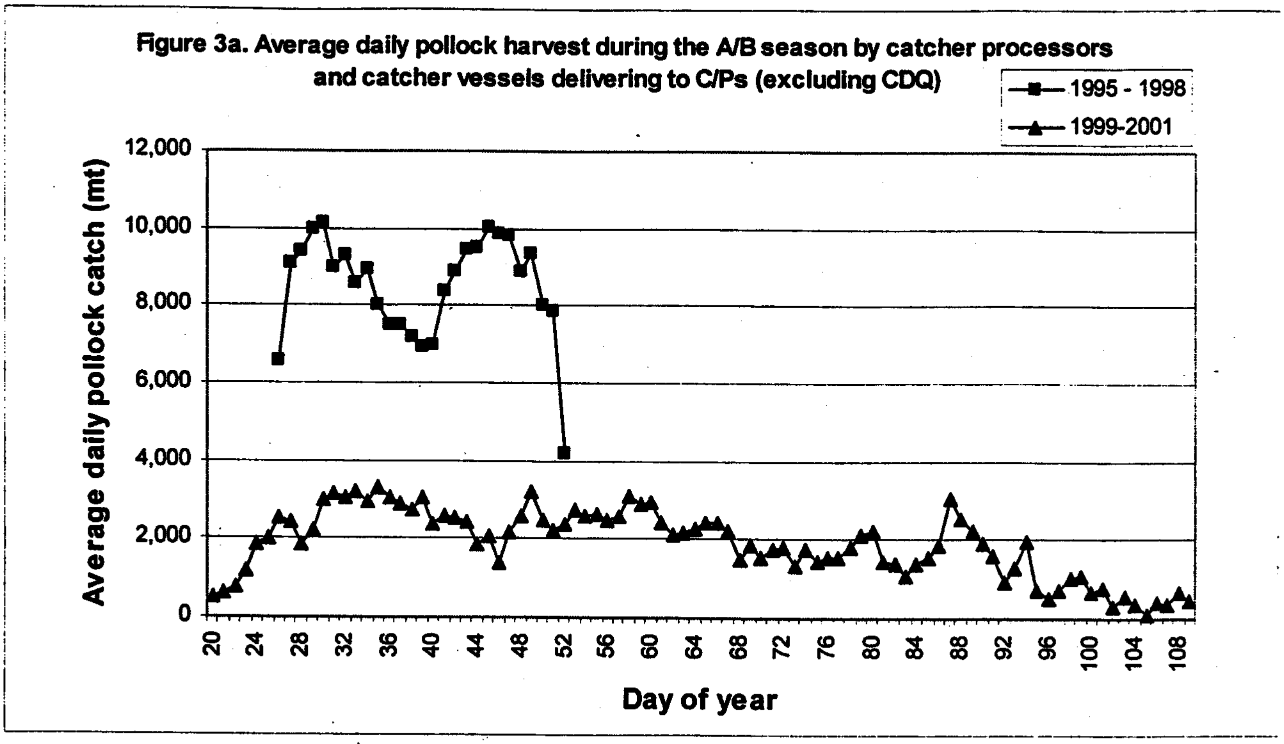
Figure 1. 1999 and 2000 INSHORE SECTOR EBS POLLOCK FISHERY

Source: 2000 AFA Catcher Vessel Intercooperative Report

Figure 2. 1999 and 2000 MOTHERSHP EBS POLLOCK FISHERY



Source: 2000 AFA Catcher Vessel Intercooperative Report



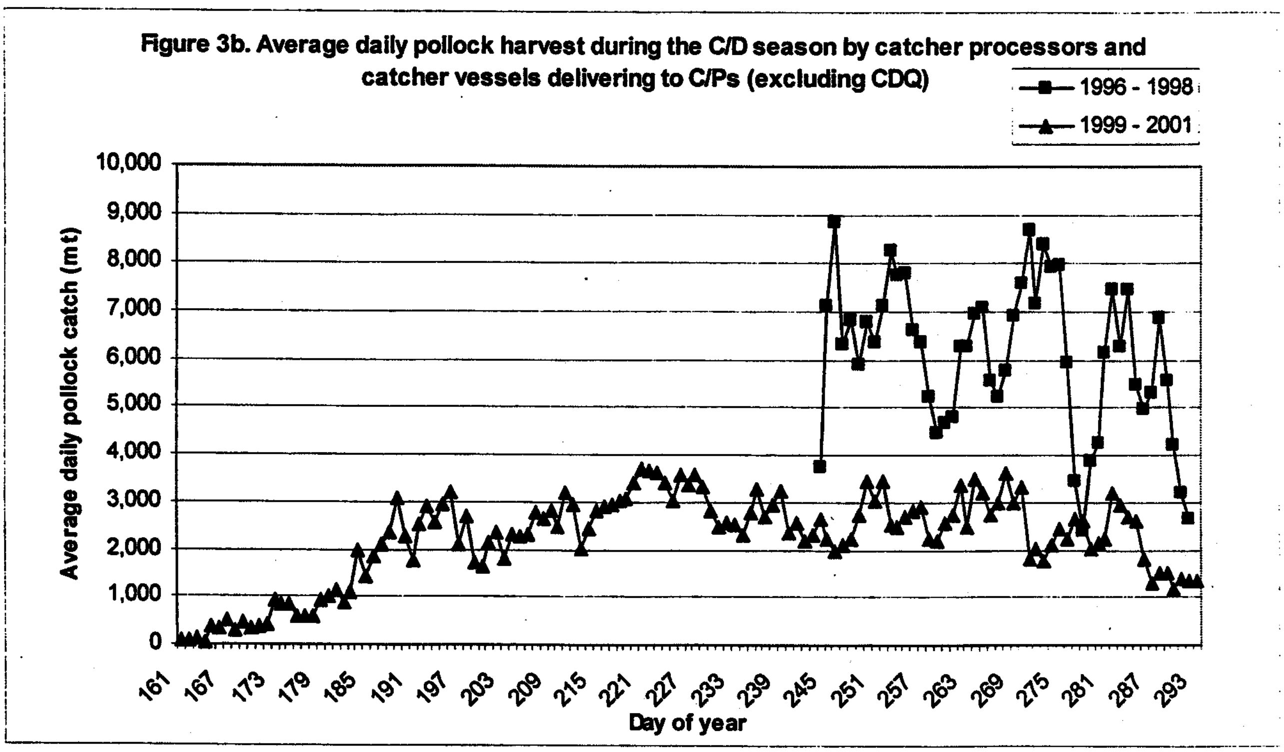


Figure 3. MCA comments on Biop 4

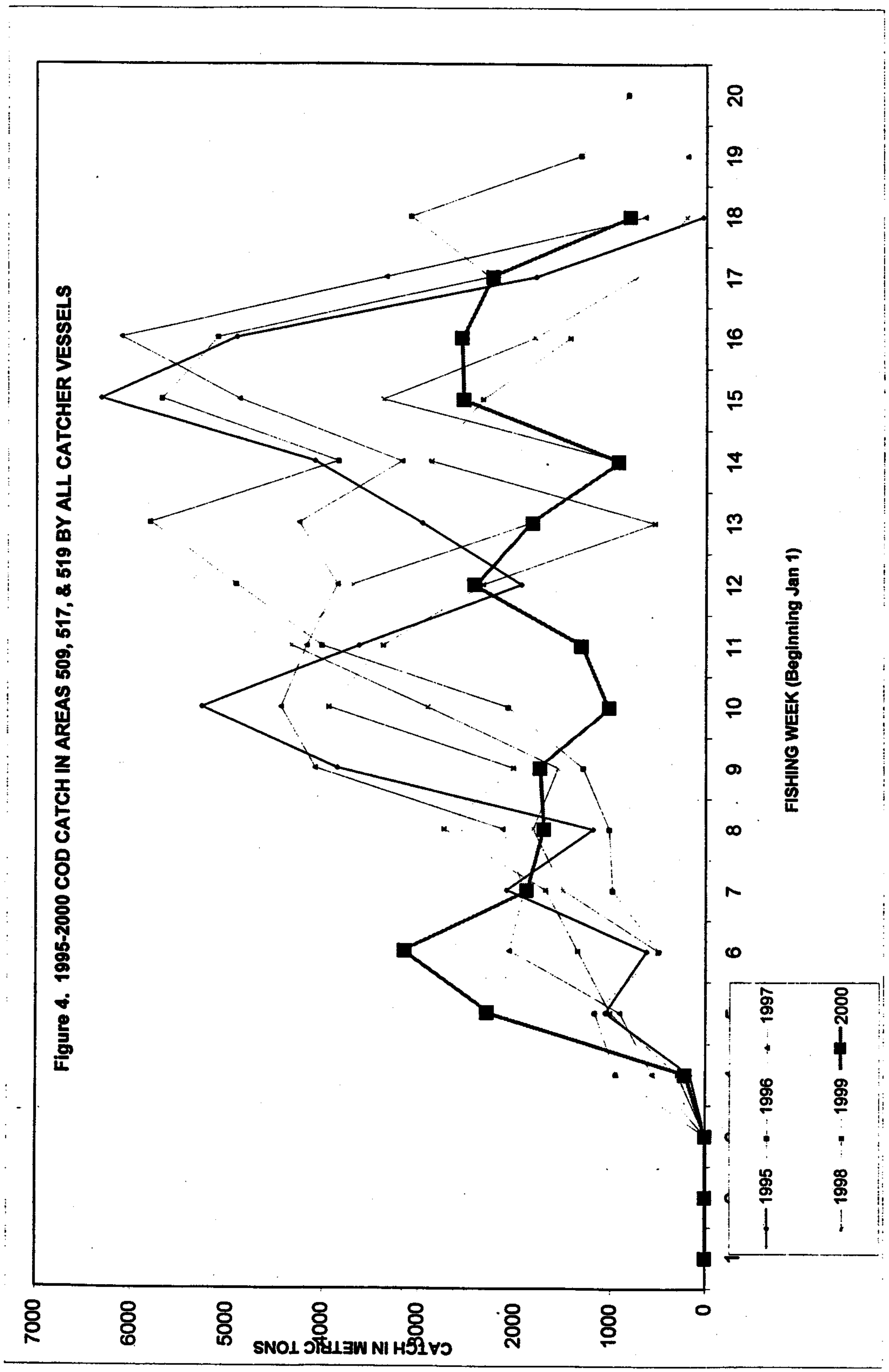


Figure 4. 1995-2000 COD CATCH IN AREAS 509, 517, & 519 BY ALL CATCHER VESSELS

Source: 2000 AFA Catcher Vessel Intercooperative Report

9-21-01 1514-10 SSL Pro. EIS

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Records Management Office
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, Alaska 99802
Attn: Lori Gravel

September 21, 2001

The Ocean Conservancy

Re: Draft Biological Opinion/Steller Sea Lion Protection Measures

The Ocean Conservancy appreciates the opportunity to provide these comments on the Draft Biological Opinion provided as Appendix A to the Draft SEIS for Stellar Sea Lion Protection Measures (August 2001) (hereinafter "BiOp4").

The Ocean Conservancy's mission is to protect ocean ecosystems and conserve the global abundance and diversity of marine wildlife through science-based advocacy, research, and public education. Headquartered in Washington, D.C., the Ocean Conservancy has regional offices in Alaska, California, Florida and Maine, field offices in Santa Barbara and Santa Cruz, California, and the Florida Keys, and the Office of Pollution Prevention and Monitoring in Virginia Beach, Virginia.

The Ocean Conservancy is very concerned about the health and biodiversity of the North Pacific ecosystem, the recovery of the Steller sea lion, and the health of the Pacific cod, Atka mackerel, and pollock stocks at issue in this Biological Opinion. The Ocean Conservancy is particularly troubled by the continued decline of the Steller sea lion, whose western population (i.e., west of 144 degrees long.) has seen a decline of over 80% in the past twenty years, and was upgraded from 'threatened' in 1993 to 'endangered' in 1997.

The Ocean Conservancy appreciates NMFS' commitment to fulfilling their responsibilities under the Endangered Species Act by taking an approach that provides the "benefit of the doubt" to the imperiled species. (BiOp4, pg. 106) Within this context, the Ocean Conservancy offers the following comments on the adequacy of the agency's analysis of the Pacific cod, Atka mackerel, and pollock fisheries in Steller sea lion critical habitat.

- BiOp4 appears to subvert the basic interest of the recovery and survival of Steller sea lions by abandoning management techniques previously recommended as necessary for conservation and adopting instead an approach more focused on maximizing extraction.

The Ocean Conservancy strives to be the world's foremost advocate for the oceans. Through science-based advocacy, research, and public education, we inform, inspire and empower people to speak and act for the oceans.

- BiOp4 bases the above discussed management reorientation upon unfinished and inconclusive telemetry studies, the assumptions and conclusions of which are admittedly biased, unreviewed, and controversial.

- BiOp4 undertakes a de facto re-designation of critical habitat by "reinterpreting critical features" of critical habitat without adequate data or public input.

- BiOp4 improperly determines that the Pacific cod, Atka mackerel, and pollock fisheries do not cause jeopardy to the continued survival and recovery of Steller sea lions.

- BiOp4 improperly determines that the Pacific cod, Atka mackerel, and pollock fisheries do not adversely modify Steller sea lion critical habitat.

Reorientation of Management Techniques

At the heart of BiOp4 appears to be a driving desire for the agency to maximize resource extraction at the expense of Steller sea lion populations and habitat. This is in direct contravention to NMFS' assurance that it will undertake management with the "best interests" of the species in mind. NMFS admits that consultation was reinitiated because the newly proposed management of Atka mackerel, Pacific cod, and pollock fisheries "significantly deviates from the specific actions" required to avoid jeopardy and adverse modifications in the previous biological opinion. (BiOp4, p. 7) While NMFS attempts to justify this change based upon newly obtained telemetry data, the validity of which is discussed below, the actual driving force behind this change appears to be the desire to open significant portions of critical habitat to large scale fishing operations, a result which will have extremely deleterious effects on the possibility for future recovery and survival of Steller sea lions. Indeed, while previous RPA techniques would have resulted in a **positive**, albeit limited, rebound effect on Steller sea lion population in the near future, the less risk-averse management regime detailed in BiOp4 will have an admittedly **negative** effect. (BiOp4, pp. 134, 140)

New Scientific Data

NMFS rationalizes the loosening of management restrictions by basing BiOp4's analysis upon several new scientific studies, the most important of which is the incomplete manuscript referred to as Loughlin *et al.* unpublished. This unfinished manuscript is a description of dive depth and duration data obtained by using satellite dive recorders on pre-breeding and breeding-aged Steller sea lions. Loughlin *et al.* conclude that since 93.8% of all locations recorded were within the 0-10 nautical mile ("nm") zone, this 0-10 nm zone is the most important habitat for Steller sea lion foraging.

Although assuming that the new information "reflects" where sea lions forage, NMFS also "recognizes the many limitations in interpreting this data . . ." (BiOp4, p. 39) These limitations are listed as follows:

- At-sea satellite hits will be skewed toward near-shore activities because Steller sea lions spend more time at the surface when near the shore as opposed to when diving deep in off-shore waters (and thus the recording device will more often be dry and available to record a hit when the satellite passes overhead during near-shore activities).

- At-sea locations do not directly indicate where sea lions are actually foraging.

- The large majority of pups, and perhaps most juveniles, were likely still nursing and thus not foraging independently for prey.

- Telemetry data for subadults and females are lacking.

Thus, while recognizing that this data does not accurately reflect either (1) when Steller sea lions were further off-shore, or (2) when Steller sea lions were actually foraging, NMFS has concluded, based on this data, that the new information 'reflects' that Steller sea lions do not often forage offshore. The absurdity of NMFS' proposed conclusion was highlighted at the May RPA meeting when sea lion biologists noted that it cannot be concluded that the area beyond 0-10 nm is less important to Steller sea lion foraging needs. NMFS reiterates this point when admitting that the author has pointed out the "danger" of using this data to infer spatial distribution of foraging bouts.

The questionable nature of NMFS' interpretation of this data is further compounded by the fact that NMFS does not focus on the fact that juvenile survival is the most important aspect for Steller sea lion recovery. (BiOp4, p. 66) This is important because Loughlin *et al.* only studied a sample size of 25 animals. 18 of these occur in Alaska, and only 5 of the 18 are weaned or weaning yearlings. Of these 5 yearlings, 2 specific dive patterns are illustrated in the Draft SEIS at 4-88 and 4-89. Even without the caveat that near-shore time is more heavily weighted, these illustrations show dive trips well beyond the 10 nm boundary that NMFS is essentially setting for foraging importance.

Furthermore, NMFS states that foraging requirements, which are "far from being completely understood," are variable as a function of sex, age, site, season, and reproductive status, and as a function of prey availability and environmental conditions. (BiOp4 at 47) Relating this to the vulnerable yearlings, who should be the focus of Steller sea lion recovery, NMFS admits that yearlings have both increased foraging styles and areas. (BiOp4 at 48) Thus, as yearling data is limited and their foraging area the most essential, and because yearlings range over a wide area, NMFS should not conclude that the area beyond 10-20 nm are not important to the species as a whole.

Moreover, in response to the long list of caveats associated with this data, NMFS attempted to filter the data to give less weight to near-shore activities. When this was done, NMFS concluded that pups spent 63% of their time beyond 10 nm in the summer and that adults spent 59% of their time in the winter beyond 10 nm. This directly undercuts NMFS assumption that the area beyond 10 nm, while officially designated as critical habitat out to 20 nm, is unimportant to Steller sea lion foraging.

In sum, although the new telemetry data may prove useful in the future, it should not be used as a means to presently scale back the protection to critical habitat and essential forging areas, especially as they relate to juveniles. As the Scientific Statistical Committee concluded at its September 5-6, 2001 meeting: "[n]evertheless, actual foraging distribution remains uncertain."

Re-designation of Critical Habitat

Despite ultimately finding that "[a]t this point we can still say very little about the foraging success of these animals while at sea, and therefore do not know if there are areas of ocean, a time of day or distance from land that is more or less important or effective for a foraging Steller sea lion," NMFS has determined to undertake a de facto re-designation of critical habitat. (BiOp4 p.112) NMFS, while stating that it in no way is actually re-designating critical habitat (and thus avoiding the public process that this would require), states that the "interpretation of the essential features of critical habitat" has changed. (BiOp4, p.34) This reinterpretation is largely based upon the telemetry data discussed above and its unproven conclusion that 0-10 nm are the essential foraging areas for Steller sea lions.

NMFS approaches the reinterpretation of critical habitat through a zonal approach. This zonal approach concludes that 10-20 nm are of low to moderate importance. The moderate rating is based upon the assumption that important prey species migrate through this zone. This low to moderate rating, however, ignores the significant caveats and flaws with NMFS' conclusions regarding the telemetry data and also ignores NMFS original designation of critical habitat. Even if NMFS were to conclusively determine that 10-20 nm was not important for foraging activities, NMFS is still required to determine the importance of this segment of critical habitat in providing adequate stocks of Pacific cod, Atka mackerel, and pollock. (See 50 C.F.R. 424.12(b)) NMFS does not, however, have adequate information for determining the importance of 10-20 nm on these fish populations. NMFS states that they are "not able to reliably describe the abundance, biomass, age structure, or temporal and geographic distribution within critical habitat" to understand how these fish populations interact with Steller sea lions or fisheries. (BiOp4, p.39). NMFS further states that they do not know the movements, distribution inside and outside of critical habitat, vicinity of rookeries and haulouts, relationships between stocks, or change of either Atka mackerel or pollock. (BiOp4, p.39)

Thus, it is unclear at this time how NMFS proposes to justify a reinterpretation of critical habitat between 10-20 nm. NMFS clearly has no data indicating that this area is not vital to either juveniles whose survival rate is the major cause of decline of populations or to prey species found in this area. The latter is especially egregious in light of the fact that NMFS has made a finding that the proposed action will have a "conditionally significant adverse effect" on the prey species.

Determination of No Jeopardy to Continued Survival and Recovery

Based in part upon the above-discussed deficiencies in data and analysis, NMFS improperly determines that the Pacific cod, Atka mackerel, and pollock fisheries do not jeopardize the continued survival and recovery of Steller sea lions. With respect to survival, NMFS' capriciousness is most readily apparent in its acceptance that the proposed action would create a negative trend in Steller sea lion populations. While NMFS states that there is a possibility that this negative trend might not be fisheries related, NMFS also concludes that a more conservative alternative would actually create a slight recovery in Steller sea lion populations. With respect to recovery, which is defined as improving the status of the species to the point at which listing is no longer appropriate, NMFS is unable to offer meaningful analysis because it has never adopted a definition of recovery as recommended in the abandoned Steller Sea Lion Recovery Plan.

Determination of No Significant Adverse Modification of Critical Habitat

NMFS has also improperly concluded that the proposed action will not adversely modify critical habitat. As discussed above, NMFS has used incomplete data and unsupported conclusions to reinterpret the significant features of critical habitat. By taking this approach, NMFS now offers virtually no significant reductions in catch from critical habitat and actually opens previously closed areas to disturbance. This, in NMFS' own words, will lead to reductions in "the local abundance of the target species over spatial and temporal scales." (BiOp4, p. 71) Atka mackerel trawling, for instance, will cause a "substantial local depletion in the exploitable biomass." (BiOp4, p. 71)

Since the most essential feature of critical habitat is the prey resources contained therein, it is imperative that NMFS not allow for exploitation of 10-20 nm without a proper understanding of the importance of this area to Steller sea lions, particularly juveniles. NMFS admits that both exploitative and interactive competition take place in critical habitat, but does not adequately explain how opening these areas to further trawling and other disturbances are not the reason why NMFS anticipates a further decline in the Steller sea lion populations after implementing the action. Considering that alternatives exist which would allow for an increase in population, and considering that these alternatives employ further restrictions and closures within critical habitat, it is illogical for NMFS to somehow argue that increased competition with fisheries, and the related direct and indirect effects, are not adversely modifying critical components of sea lion habitat such as foraging areas and abundant populations of prey species.

Conclusion

While the Ocean Conservancy appreciates NMFS' ongoing efforts to further understand the foraging habitat of Steller sea lions, it is inappropriate at this time to conclude that recent telemetry data allows NMFS to scale back the protection of both Steller sea lion populations and habitat critical to the ongoing survival and recovery of the species. BiOp4, while a reasonable starting point for discussion of the need for site specific restrictions tailored to local habitats and foraging patterns, impermissibly concludes that the continuation of destructive fishing practices within critical habitat neither jeopardizes the continued existence of Steller sea lions nor adversely affects their critical habitat.

Sincerely,

Whit Sheard
Fish Conservation Program Manager

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AT-SEA PROCESSORS ASSOCIATION

Partners for Healthy Fisheries

www.atsea.org

SSL EIS
C- 0024

September 21, 2001

Records Management Office -- Attn. Lori Gravel
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, Alaska 99802

Dear Ms. Gravel,

My name is Edward Richardson and I am an economist working for the At-sea Processors Association. The nine member companies of our association operate the catcher-processor fleet listed as eligible to catch and process Bering Sea and Aleutian Islands (BSAI) pollock under Section 208 of the American Fisheries Act (AFA). In addition, our member companies harvest eighty-six percent of the Community Development Quota fishery for BSAI pollock established under Section 206 of the act. The purpose of this letter is to comment on the August 20, 2001 NMFS draft Biological Opinion and Incidental Take Statement on the Authorization of the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Fisheries (BiOp2002). These comments address mainly three areas: 1) uncertainty in the measurement of Steller sea lion forage activities; 2) ecosystem effects of killer whale predation on Steller sea lions; and 3) the effects of the AFA on the BSAI pollock and trawl-cod fisheries.

An important finding of the draft BiOp2002 is that the commercial fisheries for pollock, cod, and Atka mackerel off Alaska, as modified by the North Pacific Fishery Management Council RPA (Council RPA), will not jeopardize the continued survival and-or adversely modify the critical habitat of the endangered western stock of SSL. Our association believes that this conclusion is appropriate given current understanding of the Bering Sea ecosystem, Steller sea lion natural history, and the possibility for interactions between the commercial fisheries off Alaska and the endangered western stock of SSLs.

Before listing our comments on the draft BiOp2002, we would like to indicate in the strongest possible terms our continued support for recent statements made by the Science and Statistical Committee of the North Pacific Fishery Management Council. Specifically, in their minutes of September 5-6, 2001, they state:

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JUNEAU
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SEATTLE
4039 21st Avenue W., Suite 400
Seattle, WA 98199
Tel: (206) 285-5139
Fax: (206) 285-1841

The DSEIS and BiOp4 are prepared to evaluate revised proposed federal actions to regulate the Alaska groundfish fisheries. The revisions are designed to mitigate presumptive impacts of the groundfish fishery on the survival and recovery of SSLs. ***Nevertheless, the true cause(s) of the continued decline and lack of recovery of the Steller sea lions remain unknown; as does the impact of the groundfish fishery on Steller sea lion survival.*** Consequently, the proposed federal action is motivated by precautionary consideration of the potential for adverse fishery effects.

Measuring Steller Sea Lion Forage Activities

Our association supports the NMFS determination that the 0-3 nautical mile (nm) aquatic zones around SSL rookeries and haulouts should be considered the areas of highest concern for foraging SSLs, and we agree with their assessment that: "The proposed action [Council RPA] would be very effective at avoiding any adverse impacts in this zone." Our association also supports the NMFS determination that the 3-10 nm zone around SSL rookeries and haulouts is the next highest area of concern with regard to use by foraging SSLs, and we agree with the BiOp2002 conclusion: "Given the relatively small overlap between fisheries and Steller sea lions, it is unlikely that the proposed action would result in competitive interactions with sea lions."

In addition, our association agrees with the BiOp2002 judgment that when it comes to SSL forage activities, the 0-10 nm aquatic zones around rookeries and haulouts are three times as important as the waters from 10-20 nm. Our association also believes that this determination provides a sufficient basis for accepting that the BiOp2001 RPA and the Council RPA should be considered roughly equal in terms of their anticipated effects on projected SSL numbers. That is to say, our association supports the NMFS jeopardy-analysis White Paper as a reasonable and consistent way to judge the <u>relative</u> differences among alternative harvest restrictions in the pollock, cod, and Atka mackerel fisheries in terms of their <u>hypothetical</u> impacts on SSL stock abundance. The jeopardy-analysis White Paper also provides sufficient rationale for the BiOp2002 finding that the Council RPA will not jeopardize the continued survival and-or adversely modify the critical habitat of the endangered western stock of SSL.

Our association understands that this analysis was in-part based on telemetry data obtained from a relatively small sample of satellite-tagged SSLs. However, our association supports the NMFS analysis because we agree with their determination that the SSL location data described in the telemetry White Paper is the best data now available to assess SSL forage dependence by aquatic zone. In addition, we can think of no reason to believe that additional information on SSL forage activities will change the findings made in BiOp2002. Further, we agree with the NMFS assessment that pending additional data and analysis, it is reasonable to interpret the available SSL location data as an index of relative SSL forage dependence among the 0-3 nm, 3-10 nm, and 10-20 nm zones.

In contrast, our association takes issue with the several statements in the draft BiOp2002 that attribute some sort of unspecified bias to observations in the location data set, apparently due in part to the natural history of SSLs in the wild. For example, on page 124 it is stated:

> For pups and juveniles instrumented in the winter, only about 0.6% of the at-sea locations were in this zone (Table 5.1a). However, this number could be biased downward because some of the animals are likely to be nursing and therefore, may not be traveling far from shore.

From this statement, it would appear that the location observations are biased due to the likely event of pups nursing and so not traveling far from shore. However, it is our opinion that many SSL pups and juveniles will continue to nurse through the winter because it is a feature of their natural history, and so forage opportunities in near-shore areas will continue to be important. In general, we recommend that BiOp2002 include a more detailed description of any and all sources of bias claimed in the telemetry data, as well as any assumptions required to support the claims. In addition, pending further analysis, all unsubstantiated claims of telemetry-data bias should be struck from the opinion.

Our association believes that BiOp2002 should include a better description of the reasons why it chose to evaluate sea lion locations by zone after deleting 90 percent of the locations between 0-2 nm. In particular, indicating that there are biases in the location data when the intent is rather to communicate that all of the location data may not represent SSL foraging activity creates uncertainty in the mind of the BiOp2002 reader about the veracity of the location data. One way to accomplish this might be to consolidate and amplify the rationales given on pages 112-113 of BiOp2002 and pages 12-13 of the telemetry-data White Paper concerning methods to address the uncertainty associated with using all of the location data as a relative index of SSL dependence on the alternative zones when foraging. For example, by eliminating 90 percent of near-shore SSL locations, it is no longer necessary to assume that the observed at-sea distributions are indicative of sea lion foraging. In our opinion, deleting 90 percent of the locations within 0-2 nm creates perhaps the most conservative relative index of forage dependence possible where the intent is to minimize the possibility of over-estimating the relative importance of the very near-shore areas to SSL foraging success.

Comparison of the corrected Tables 5.1a+b from BiOp2002 yields a Table 5.1c (all shown below), which reports the percentage of SSL locations by aquatic zone and data filter. Table 5.1c indicates that, for pups-juveniles in winter and adults in summer, eliminating near-shore locations which may not represent SSL foraging activities does not affect this index of SSL foraging activity inside the 20 nm circles. Perhaps winter conditions in the BSAI and Gulf of Alaska (GOA) offshore areas are so harsh that itÆs

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easier, from an energy-balance perspective, for pups-juveniles to forage very close to shore. Alternatively, it could be that prey of the appropriate size for pups-juveniles are very abundant close to shore in the BSAI and GOA during the winter. For adults in summer, it may be that because females must nurse and wean their young during this period, these adults must also forage close to shore. In these cases, interpretation of the SSL locations by zone as a relative index of dependence on the zone for foraging activities would lead one to conclude that SSL dependence on the 0-10 nm zone is 80-100-fold greater than the 10-20 nm zone regardless of the degree of filtering applied to the data.

Table 5.1c also shows that eliminating a very large fraction (90 percent) of the SSL locations recorded with 0-2 nm of shore does affect the location-data-index of SSL foraging dependence for pups-juveniles in summer and adults in winter. However, even when 90 percent of near-shore locations are eliminated for these groups, the relative dependence of the 0-10 nm zone as compared to the 10-20 nm zone is three-fold greater. That is to say, even when the telemetry data set is modified in a way that makes it extremely unlikely that the NMFS could possibly overestimate the importance of the near-shore locations as representing foraging activities, the resulting data set supports the judgment of the NMFS that the inner 0-10 nm zone is three times more important than the outer 10-20 nm zone.

Table 5.1a - Raw database of NMFS SSL locations by at-sea zone.

	Summer		Winter	
Zone (nm)	Pups-Juveniles (%)	Adults (%)	Pups-Juveniles (%)	Adults (%)
0-3	68.4	89.6	92.8	74.0
3-10	6.0	6.0	6.3	5.2
10-20	5.1	0.0	0.6	4.2
> 20	20.4	4.5	0.4	16.7

Table 5.1b - SSL locations with 90% of the observations in the 0-2 nm zone deleted.

Summer	Winter

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Zone (nm)	Pups-Juveniles (%)	Adults (%)	Pups-Juveniles (%)	Adults (%)
0-3	22.1	54.5	62.7	26.3
3-10	14.9	26.0	32.4	14.7
0-20	12.6	0.0	2.9	11.8
> 20	50.4	19.5	1.9	47.2

Table 5.1c - Percentage of SSL locations by aquatic zone and data filter.

Data Filter	Zone (nm)	Summer Pups-Juveniles (%)	Summer Adults (%)	Winter Pups-Juveniles (%)	Winter Adults (%)
90%	0-10	37	81	95	41
90%	10-20	13	0	3	12
RAW	0-10	74	96	99	79
RAW	10-20	5	0	1	4

Ecosystem Effects of Killer Whale Predation on Steller Sea Lions

Compared with the NMFS BiOp2001 (dated November 30, 2000), Section 4.4.2.1 of BiOp2002 does a much better job of discussing the likely effects of killer whale predation on SSLs. However, in our opinion more information is known about the likely effects of killer whale predation on marine mammals than is presented in Section 4.4.2.1, and this additional information bears directly on the likely magnitude of the effect of killer whale predation on SSLs. Specifically, there is additional published information about killer whale predation on sea otters that we believe has implications as regards the continued survival and recovery of the western stock of SSLs, and this information should be included in the final BiOp2002.

On page 78 of BiOp2002, it is noted that the most comprehensive assessment of the impact of killer whale predation on SSL populations is by Barrett-Lennard et al. (1995), and our association concurs with this assessment. However, while BiOp2002 does summarize some of the conclusions of the report, it does not summarize them all, nor does it do a complete job of relating the timing of the report and some of its conclusions to observations made subsequently by independent marine mammal researchers focused on the near-shore Bering Sea ecosystem.

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For example, Barrett-Lennard et al. contains a simulation analysis of killer whale predation on SSL over time that explores the effects of alternative assumptions regarding the prey-switching dynamics of killer whales. In classical predator-prey theory, when the abundance of a prey species declines below a certain level, it becomes unprofitable for a predator to continue to search for that prey. When this occurs, specialist predators may emigrate or die off (numerical response) and generalist predators may switch to alternate prey (functional response). Because transient killer whales (Hoelzel et al. 1998) take a variety of marine mammal prey, the authors state that it seems reasonable that some form of prey switching would occur as sea lion numbers decline (i.e., we should expect to observe a functional response by the killer whale to the SSL decline). With reasonable model assumptions as concerns the fraction of SSL in the diet of killer whales (their assumptions are similar to values reported in BiOp2002, page 77) and a functional response on the part of killer whales to declining prey levels, the simulation model produces a SSL population trajectory over a thirty-year period (Figure 5.5, Model 3 type II and III functional responses) that appears very similar to that observed for the western stock of SSLs during the 1970-2000 period (and shown in BiOp2002, Figure 4.2, and by the NMFS at http://nmml.afsc.noaa.gov/AlaskaEcosystems/sslhome/decline.htm). However, these simulation results, and in particular their consistency with the available data on the observed abundance trajectory of the western stock of SSL, are not reported in BiOp2002.

Another very interesting aspect of the Barrett-Lennard et al. study is where the authors surmise that if the western stock of SSLs were to have been a significant component of the diet of killer whales, then the sharp decline in their numbers and the generalist nature of the killer whale as a top-level carnivore should lead the killer whale to switch prey species. In this regard, on pages 40-41, where the authors argue persuasively for a functional response by killer whales to declining SSL numbers, they note that in the absence of a large population of harbor seals (a prey preferred by killer whales), one would expect that:

> .... transient killer whales are likely to shift their concentration from sea lions to species that live further offshore, such as dolphins, porpoises, mysticete whales, fur seals, and elephant seals. In this case, a TYPE III functional response curve might be expected, where killer whales cease actively searching for sea lions as seal lion abundance declines, but continue to prey on sea lions opportunistically when they are encountered by chance.

Further, the Barrett-Lennard et al. employ the simulation model to explore issues concerning the number of transient killer whales capable of maintaining a state of zero population growth in different-sized populations of SSLs. As a result of this work, the authors conclude (page 42):

> In the part of Alaska west of 142 W Longitude, we estimated that there were on the order of 125 transients and 42,500 Steller sea lions at the

end of the pupping season in 1994. Based on the type III functional response plotted in Figure 5.3 and an intrinsic growth rate of 4% /yr, it can be seen from Figure 5.5 that this number of transients is, theoretically, more than required to cause the sea lion population to decline. Taking slopes from Figure 5.5, we can determine that 250 transients would cause this population to decline at 7.7%/yr, thus the predicted instantaneous rate of decline for 125 transients is 3.8%/yr. This compares with an actual rate of decline of approximately 5%/yr.

East of 142 W Longitude and north of Washington State, there are approximately 23,700 sea lions and 125 transient killer whales. With the same assumptions as those above the model predicts that predation should be capable of holding these sea lion populations at a growth rate close to zero (Figure 5.6). In fact, these populations are increasing slightly (on the order of 2% per year, Olesiuk, unpubl. data, Trites and Larkin 1995).

The authors conclude further (page 42) that "Under model assumptions, killer whale predation is unlikely to drive sea lion populations to extinction, and in southeastern Alaska and British Columbia it may hold sea lions numbers at or near present levels." Note also BiOp2002 indicates that the number of transient killer whales in western Alaska would be between 102-194 (page 77). Using the middle of this range and the simulation model results of Barrett-Lennard et al., 148 transient killer whales would cause the western stock of SSL to decline at roughly a 4.6% annual rate. The ten-year, observed SSL annual decline from 1991-2000 (Table 9.7 of BiOp2001), which when measured as a percentage of the stock has remained essentially constant (unchanged) throughout the period, is 4.1%.

Finally, the Steller sea lion is not the only marine mammal in the near-shore waters of the Bering Sea and Gulf of Alaska that killer whales have been taking as prey. Recently, it was reported that killer whale predation has been responsible for precipitous and unexpected declines in sea otter populations over large areas of western Alaska during the 1990s (Estes et al. 1998, Recer 1998, Schneider 1999, Bellisle 2000, Henderson 2000). According to Estes et al., the first attack by a killer whale on a sea otter was seen in 1991, and during the 1990s, sea otter declines in the central Aleutians averaged about 25% annually. Interestingly, the range of the sea otter is essentially identical to that of the SSL, and rapid stock declines in traditional strongholds of otter abundance in the western-central Aleutians and Prince William Sound correspond with the areas of steepest decline in SSL numbers (BiOp2001 RPA Areas 1 and 12-13).

Estes et al., in their study of the otter stock declines, noted that "The concurrent and widespread nature of these declines strongly suggests a causal link with the oceanic environment." The authors also dismissed disease, toxins, and starvation as causes of the population declines because any one of these should have produced substantial numbers of beach-cast carcasses, whereas very few were found. Also, there were marked increases in urchin biomass during the decline at Adak, and no signs of disease were found. According to the authors, "The collective evidence thus leads us to conclude that increased killer whale predation has caused the otter declines." BiOp2002 should include this information, and note too that these same circumstances characterize the decline of the western stock of SSL in an essentially similar fashion. In addition, BiOp2002 should report that videotape accounts of killer whale predation on SSLs were presented at several North Pacific Fishery Management Council meetings during 1998-2001.

Estes et al. note that killer whales and sea otters have co-inhabited the west-central Aleutian archipelago for much of the past half century, and they attribute the recent change in killer whale behavior to the sharp declines in SSL and harbor seal populations during the 1980s. According to the authors:

> .... Our proposed explanation involves a chain of ecological interactions, beginning with reduced or altered forage fish stocks in the oceanic environment, which in turn sent pinniped populations into decline. Pinniped numbers eventually became so reduced that some of the killer whales who once fed on them expanded their diet to include sea otters. (page 475)

Now it is possible to interpret many of the conclusions of Barrett-Lennard et al. about the effects of killer whale predation on SSL numbers as hypotheses about possible features and characteristics of the population trajectory of SSLs. In addition, the authors make conditional predictions about changes in killer whale behavior in the context of prey-switching dynamics, alternative prey locations and abundance, and the nature of transient killer whale prey. As noted above, with regard to SSL population trajectories, the shape and duration of the decline predicted by the authorsÆ model with a TYPE III function response is similar, if not essentially the same as, that observed in the western stock of SSL during 1970-2000. This fact should be reported in BiOp2002, as it forms part of the weight of evidence as regards the role of killer whale predation in the decline of the western stock of SSL during the 1990s. In addition, as noted above, during the period from 1991-2000, the observed annual rate of SSL decline has been very close, although slightly above, that reported by the authors as likely given predation by 125 transient killer whales; and current NMFS stock assessments of western area transient killer whales indicate that there are likely to be found a few more than 125 individuals in the area. Again, we believe that this information also has a role in any determination on the part of the NMFS as regards where the weight of evidence lies in advancing likely explanations for the decline of the western stock of SSL, and subsequently, for the degree of precaution that would be required under the Endangered Species Act in the context of limiting any hypothesized interaction between the Alaska commercial groundfish fisheries and the SSL.

Finally, given what is known about the natural history of transient killer whales, that killer whales were observed to change their behavior as regards predation of sea otters during the early 1990s just after a precipitous decline in the western stock of SSL must not be overlooked by the NMFS or the general public. Given the results of Barrett-Lennard, the observed switch in killer whale predation reported by Estes et al. must be considered prima facie evidence that killer whales were likely very dependent on the SSL as prey during the 1980s. Apparently, the reason that Barrett-Lennard et al. did not predict the observed switch to sea otters is simply that only a very small group of researchers has ever observed killer whales attacking sea otters, and these observations were not made public until the study of Estes et al. was published in 1998. In addition, the ability of the transient killer whales to change behavior and prey on another marine mammal whose range coincides almost exactly with that of the SSL has almost certainly allowed ("subsidized") additional killer whale predation on SSL, even given the lowered SSL abundance. In fact, this aspect of predator-prey theory is consistent with observations that during the 1990s relatively high rates of SSL mortality have persisted in areas of traditionally high sea-otter abundance (Table 9.7 of BiOp2001).

It is our recommendation that the BiOp2002 authors include all of the material above, and perhaps other information about the harvest of baleen whales during periods prior to 1970 (e.g., in NRC 1996) in a new section in the environmental baseline analogous in intent to Section 6.5.3.1 of BiOp2001-Predator/prey relationships and cascade effects. As the draft BiOp2002 now stands, the only mention of cascade effects appears on page 82, but in the context of surmised indirect effects of the commercial groundfish fisheries on the relative levels of groundfish biomasses and their concomitant implications for ecosystem functioning. Yet a more frequent reference to cascade effects, especially in connection with the Bering Sea ecosystem, would describe the effects of the prior commercial fisheries for whales and their implications for subsequent ecosystem functioning, including in the present case the possibility that commercial harvests of whales may too have altered killer whale behavior by forcing them to switch from preying on whales to preying on pinnipeds. As Estes et al. note, the decline in pinnipeds then would have led to a further change in killer whale predation behavior ù most recently moving to sea otters.

Lastly, BiOp2002 reports that a year 2000 survey by used by Waite et al. (in review) observed no killer whales west of 174 W (page 77). However, other authors (Dahlheim 1997; Braham and Dahlheim 1982) show many killer whale observations west of 174 W.

The American Fisheries Act and Fishery Rationalization

As is widely known, the passage of the AFA in the fall of 1998, and the subsequent development of harvesting cooperatives in the Bering Sea and Aleutian Islands pollock and trawl-cod fisheries during 1999 and 2000, have profoundly changed the structure and functioning of these fisheries. In simplest terms, the rights-based harvesting program embodied within the basic structure of cooperative fishing activities served to slow the pace of these fisheries, reducing daily catches from levels observed prior to the development of cooperative fishing (i.e., during the race-for-fish Olympic-style fisheries). More or less concurrently during the fall of 1998, the NMFS also developed BiOp1 (signed December 3, 1998), and it was the first ESA Section-7 consultation to find that the BSAI and GOA fisheries, as prosecuted historically, would jeopardize the continued survival and-or adversely modify the critical habitat of the endangered western stock of SSL. Because of the concurrence of these two developments, it is difficult to consider the AFA as being part of the fisheries environmental baseline. Said another way, it becomes difficult to determine whether many of the current features of the pollock and cod fisheries result from the various reasonable and prudent alternative harvest measures adopted to govern the BSAI pollock fishery during 1999-2001, or are the result of the alternative harvest behaviors adopted by the many commercial fishing companies that participate, either via catching or processing, in the pollock and trawl-cod fishery cooperatives.

For the reasons noted above, it is recommended that the final BiOp2002 include within it, under Section 5.3.1.5 Fisheries Effects on the Environment, a very expanded and thorough discussion of the effects of the AFA on the spatial and temporal distribution of the BSAI pollock and trawl-cod fisheries, and then examine how the spatial and temporal distribution of the BSAI pollock and trawl-Pacific cod fisheries differs from those that occurred prior to 1998 (i.e., that would more logically be part of the environmental baseline). Finally, these changes in the spatial and temporal aspects of harvesting could be related back to important features of the BSAI environment, such as, e.g.: the removal of target and non-target species; the trophic levels of the catch; the potential for localized depletions of SSL prey, or for harvests that are concentrated in space or time; the effects of fishing on marine habitat; the effects of discards from catching and processing activities; etc. It is also the opinion of our association that the final BiOp2002 should include the above-described analysis directly, i.e., not via reference to alternative documents such as the draft SEIS for BSAI FMP Amendments 61/61 and 70/70.

After reviewing the discussion of the AFA contained in the NMFS BiOp2001, it becomes apparent that insufficient attention was devoted to describing the effects of the AFA, and especially cooperative fishing, as regards its likely effects on the marine environment in general and the attributes of SSL critical habitat in particular. For example, in BiOp2001 there is a Figure 5.3 that shows the daily catch rates of the EBS pollock fishery during the winter fisheries in 1998, 1999, and 2000, yet the figure appears never to have been referenced in the text of the opinion. In addition, Figures 5.1, 5.2, and 5.4 are explained very poorly, if at all, and statements such as:

> The AFA should indirectly benefit Steller sea lions by reducing the catching power of the catcher/processor sector of the BSAI pollock fleet, reducing the rate at which pollock can be taken, increasing the temporal

> dispersion of the fishery, and thereby reducing the probability of localized depletion of pollock. (BiOp2001, pages 165-166)

should now be revised to indicate that all of these developments and more have indeed taken place during the 1999, 2000, and 2001 BSAI pollock and trawl-cod fisheries. Unfortunately, close comparison of the draft BiOp2002 with BiOp2001 indicates that the same insufficient level of attention to the fishery and environment effects of the AFA persists in the draft BiOp2002. As such, the following comments and suggestions are provided with the intent that the NMFS revise the BiOp2002 to describe in a thorough manner the role that the AFA has already played (and will continue to play) in the ability of the industry to meet the goals of any new RPAs that may result from the final BiOp2002.

ò The BiOp2002 analysis of the AFA should focus on the decapitalization and rationalization aspects of the AFA separately such that the reader gains an appreciation for the difference between the decapitalization effects (i.e., the removal of fishing capacity from the fisheries) and the rationalization effects (i.e., the institution of a rights-based harvest program and its subsequent effects on the temporal aspects of harvesting).

ò The BiOp2002 should make better use of graphical analysis in the tracking and assessing of the changes in the spatial and temporal aspects of the BSAI pollock and trawl-cod fisheries prior to 1998, and then subsequently to the development of the pollock and trawl-cod cooperative fishing during 1999 and 2000 (see, e.g., the attached figure that shows catcher-processor pollock daily catches during 1995-1999).

ò Use charts along the lines of Figures 6.15a and 6.15b from BiOp2001 to illustrate changes in the temporal aspects of the fisheries pre- and post-cooperative fishing, but modifiy them in a way that keeps separate from the remaining fisheries those fisheries that have rationalized due to the provisions of the AFA.

ò Use side-by-side charts of daily catch rates by area to illustrate how cooperative fishing in concert with RPA measures that disperse the fishery in space work to lower further daily catch rates in those areas most important to SSLs (see, e.g., the attached figure that shows catcher-processor pollock daily catches inside and outside of SSL critical habitat during 2000).

Miscellaneous Comments

On page 70, Figure 4.2 indicates that disturbance is a likely cause of both the rapid decline and the current decline in SSL numbers. Yet in many places BiOp2002 states that disturbance has not been, or is not considered to be, an important factor in the SSL decline. For example, on page 151 it is stated: "Disturbance may have

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contributed to or exacerbated the decline of the Steller sea lion, although it likely has not been a major factor in the decline." It is recommended that disturbance be eliminated from the likely causes listed in both of the declines described in Figure 4.2.

On page 86 BiOp2002 it is stated: "For example, pollock in reproductive condition (i.e., bearing roe - toward the end of winter) are presumably of greater nutritional value to sea lions (for the same reason that the fisheries would rather take roe-bearing pollock spent after the spawning season." As far as we know, there has never been any research to indicate that roe bearing pollock have greater nutritional value to sea lions and so this statement would appear to be pure speculation and as such it should be eliminated from the final BiOp2002. In addition, our member companies (and indeed most all vessels that capture roe bearing pollock at any time of the year) harvest pollock roe for further processing, and finally for the highest quality roes, inclusion in holiday gift packages that have nothing to do with nutrition. Many in Japan pay high prices for pollock roe because of what the product connotes ù fertility and long life. When Japanese consumers are concerned about nutrition, they look to heart-healthy foods low in fat and PowerBars, just like US consumers do. Also, there is attached a sheet of preliminary results from research conducted by a graduate student under the supervision of Dr. Andrew Trites, who directs the North Pacific Marine Mammal Research Consortium. As may be seen, these preliminary results indicate that pollock are highest in energy (caloric content) during the fall months, presumably after they have been eating well.

Clarify or explain in the BiOp2002 text that the 19 haulouts that were added to critical habitat by the NMFS team during 1998 were in fact added without the benefit of any input from the SSL recovery team or the public and also were not included based on any recommendations contained in the current SSL recovery plan. Please note also that in BiOp2002 Figure 3.2 there appear to be 17 locations labeled while the text indicates that 19 haulouts are illustrated.

Citations for Benson and Trites (2000), page 74, Cohen (1987), page 106, Crouse (1999), page 107, are missing from the list of references.

References

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Ed Richardson
At-sea Processors Association
(by Ed McCarty)

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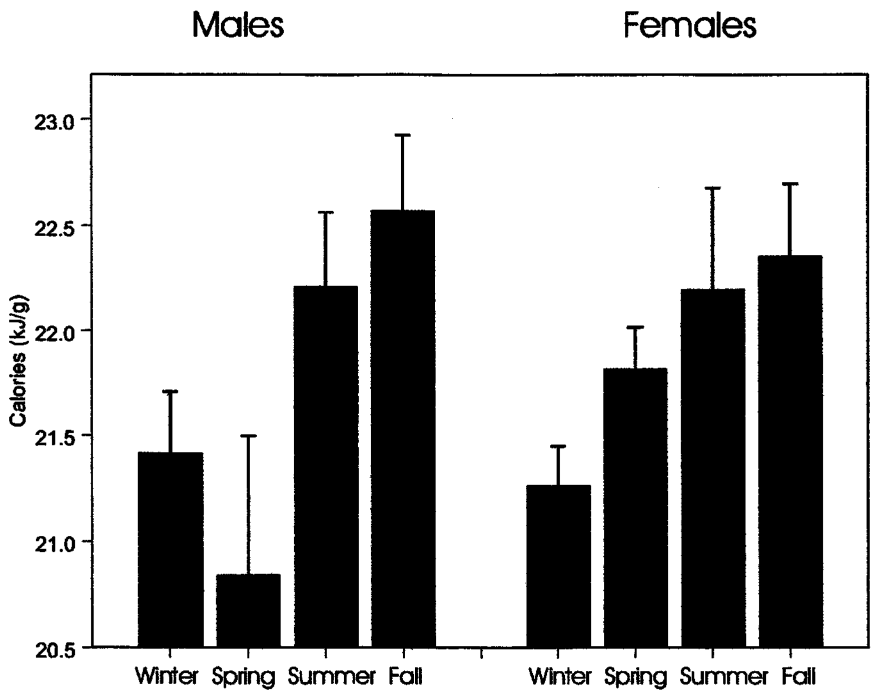
3 pages attached

Seasonal Changes in Caloric Content of Male and Female Walleye Pollock

(Azana, Trites & Kitts – unpublished data)

May 24, 2001



Note that the lines are measures of standard error and that the seasons are:

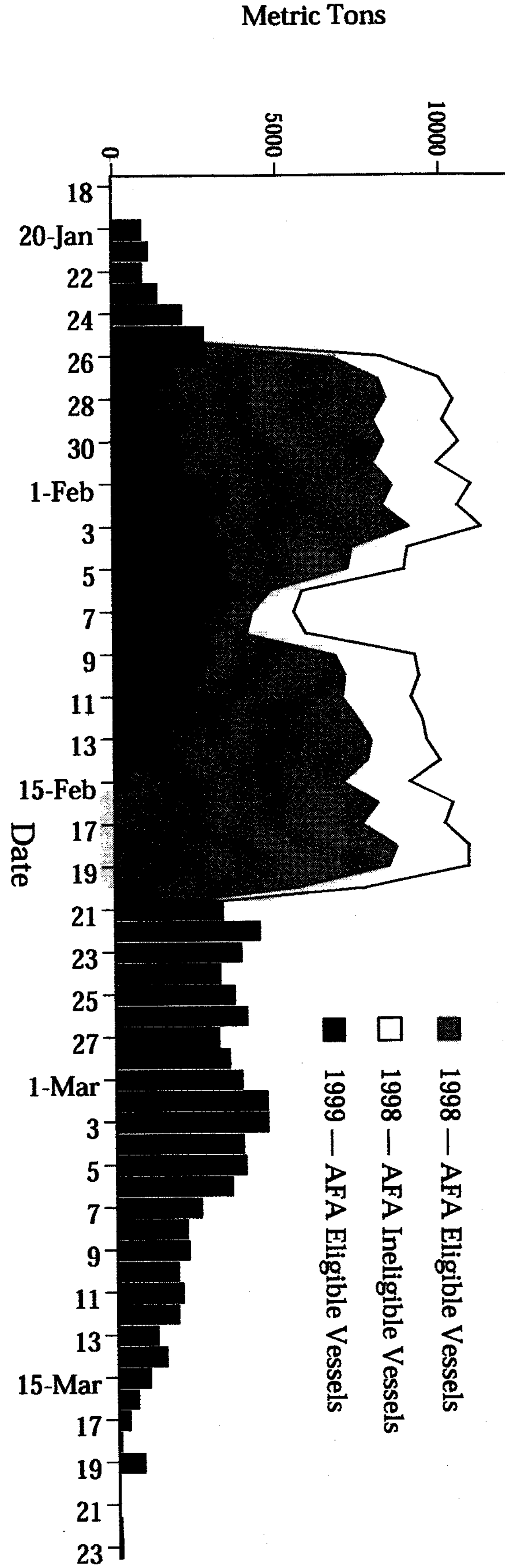
Winter:	Dec-Feb
Spring:	Mar-May
Summer:	Jun-Aug
Fall:	Sep-Nov

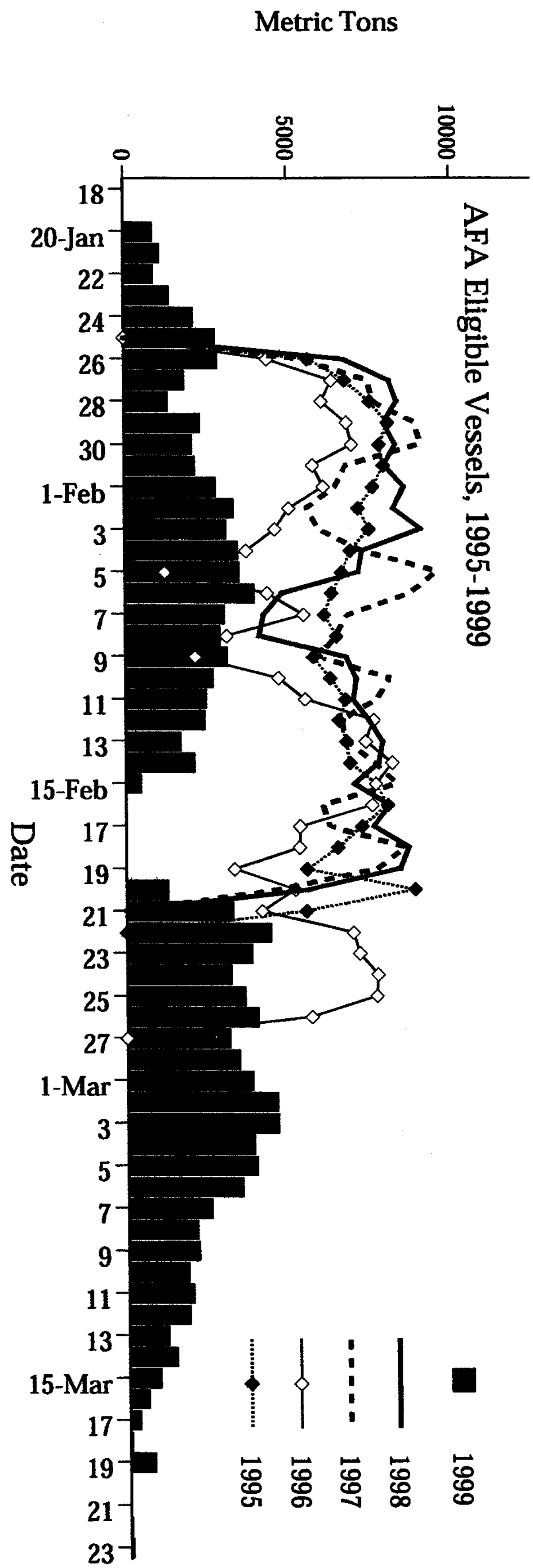
Also note that fish were caught over 2 years and were not collected in all months. For each month that we sampled, we analyzed approximately 30 males and 30 females, for a total of about 540 pollock.

These results are preliminary. We are checking the statistics and analyses, and are working to complete a draft manuscript by the end of August that will contain the final results on caloric density of pollock, as well as differences in the composition and digestibility of pollock by season.

attachment

Bering Sea Pollock Fishery
Catcher-Processor A-Season Daily Catches; No CDQ

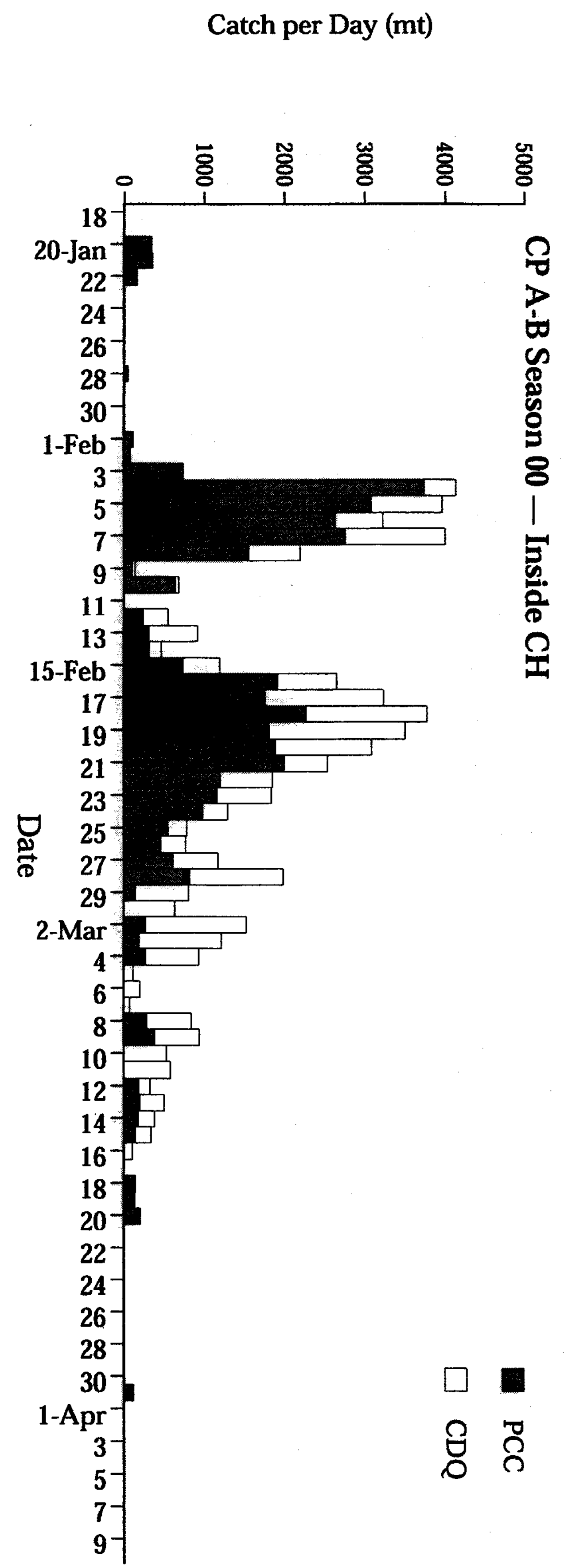




At-sea Processors Association, April 1, 1999.

Source: NMFS AKFSC - SeaState, Inc.

attachment


CP A-B Season 00 — Inside CH
Catch per Day (mt)
Date
PCC
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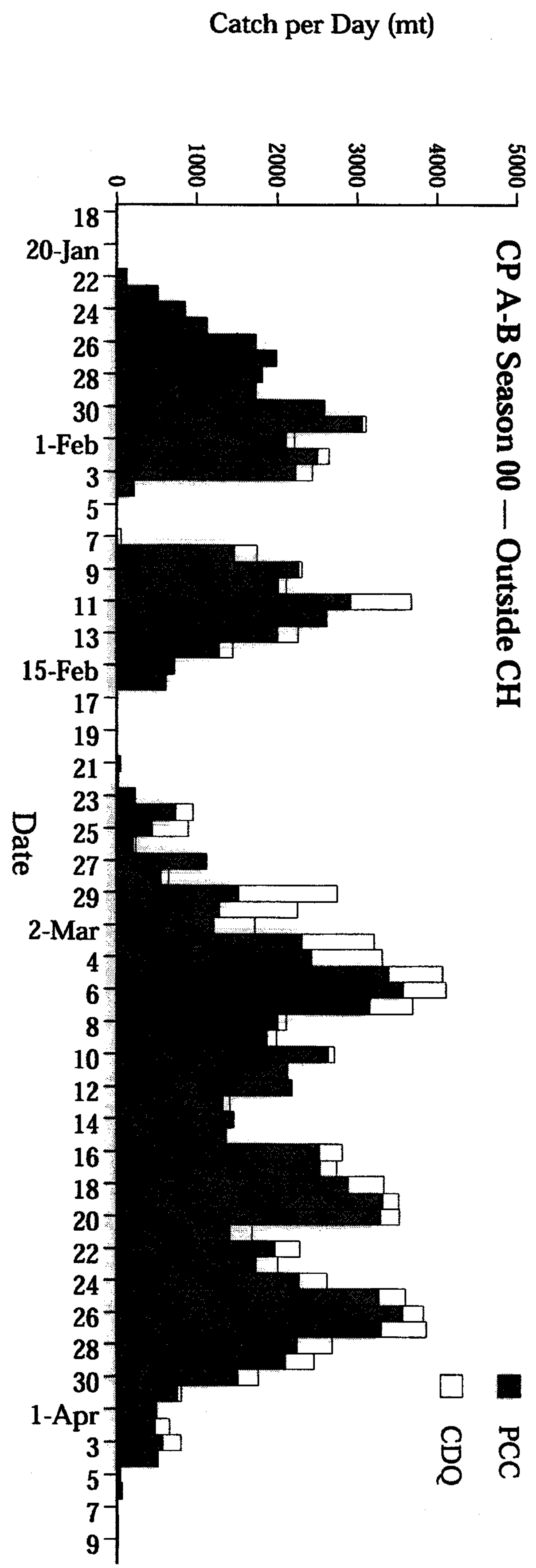
CP A-B Season 00 — Outside CH
Catch per Day (mt)
Date
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attachment

ALEUTIANS EAST BOROUGH

RECEIVED
NATIONAL MARINE FISHERIES
2001 SEP 21 AM 8:32

SERVING THE COMMUNITIES OF
■ KING COVE ■ SAND POINT ■ AKUTAN ■ COLD BAY ■ FALSE PASS ■ NELSON LAGOON

September 19, 2001

SSL EIS
C-0025

Jams W. Balsiger
Alaska Regional Administrator
NMFS
PO Box 21688
Juneau, AK 99802

Ref: Comments on Steller Sea Lion Protection Measures
Draft Supplemental Environmental Impact Statement

Dear Mr. Balsiger,

This letter constitutes the initial comments of the Aleutians East Borough and is restricted only to Appendix F, SSL Social Impact Assessment. Additional comments will be tended latter. In short, the Aleutians East Borough finds the treatment of Akutan, King Cove and Sand Point inadequate. Also, there is no discussion of the Aleutians East Borough as a legal entity representing several other communities, Cold Bay, False Pass and Nelson Lagoon that are impacted by SSL protective measures. Financial impacts in one community have regional consequences if there is regional government. For example, a decline of tax revenue in King Cove paid to the Aleutians East Borough impacts Nelson Lagoon if it becomes necessary to reduce school expenditures. A thorough discussion of the Aleutians East Borough in Appendix F along with more substantive discussions of the economies of Akutan, King Cove and Sand Point is required to accurately gauge the impacts of the proposed protective measures for SSL.

To assist your staff in making the necessary corrections to Appendix F, I am enclosing a copy of a recent report by the McDowell Group, *An Assessment of the Socioeconomic Impacts on the Aleutians East Borough of Reduction s in the Alaska Groundfish Fisheries Due to Steller Sea Lion Protection Measures, August 2001.* This report demonstrates that the Aleutians East Borough is:

1. One of the largest fishing regions in the United States based upon volume and value.
2. Extremely dependent upon fisheries for local employment and taxes that underwrite local services.
3. Becoming more dependent on groundfish fisheries given the economic decline of salmon and crab.

If you have any questions, please contact me at the address listed below.

Sincerely,

Robert S Juettner

Robert S Juettner
Administrator

Cc: Beth Stewart, Dir. of AEB Natural Resources Department
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AN ASSESSMENT OF THE SOCIOECONOMIC IMPACTS ON THE ALEUTIANS EAST BOROUGH OF REDUCTIONS IN THE ALASKA GROUNDFISH FISHERIES DUE TO STELLAR SEA LION PROTECTION MEASURES

PREPARED FOR:

ALEUTIANS EAST BOROUGH
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McDowell
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JUNEAU • ANCHORAGE

AUGUST 2001

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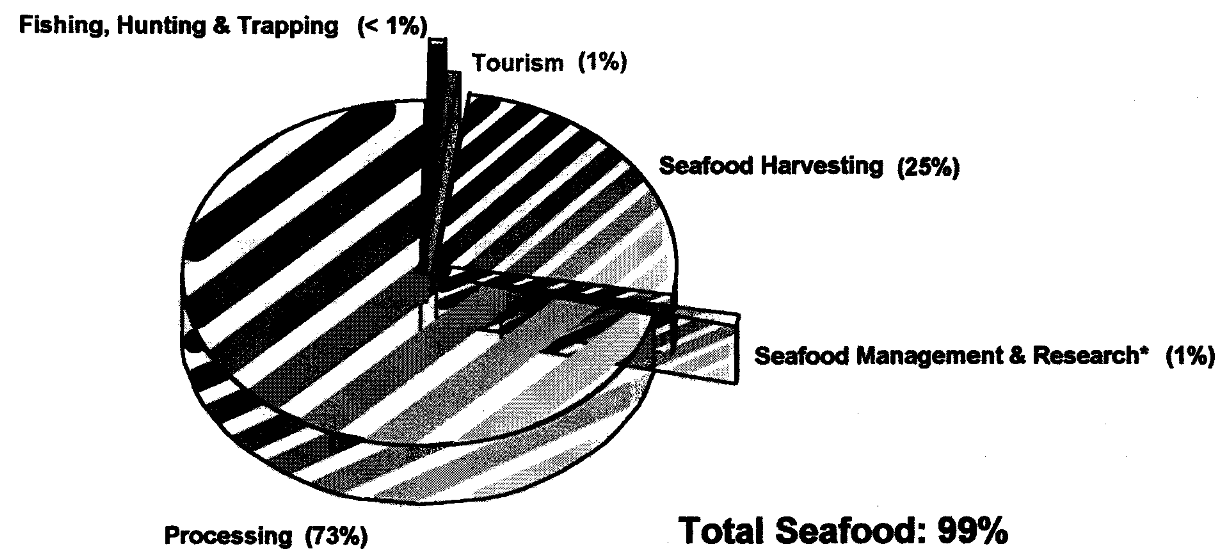
Introduction

The Aleutians East Borough (AEB), consisting of the towns of Sand Point, Akutan, Nelson Lagoon, Cold Bay, False Pass and King Cove, is a major center for commercial fishing and processing of groundfish. Currently, the federal government is distributing $30 million in economic disaster relief funds to groundfish industry participants due to measures enacted by the National Marine Fisheries Service to reduce fishery impacts on Stellar sea lions. The McDowell Group, Inc. was commissioned by the AEB to conduct an assessment of the impact of groundfish on the Borough's economy to provide information for equitable distribution of the disaster relief funds among industry participants. Key findings of the assessment are presented below.

The Aleutians East Borough Economy

- The seafood industry is the largest industry in the AEB. It accounts for 1,645 12-month annual average jobs, contributing approximately 99 percent of the AEB's basic economic employment, and 76% of all employment.

Aleutian East Borough's Basic Industry Composition, 1999
(Percent of annual average *basic* industry employment)



*Alaska Department of Fish and Game and Lzembek National Wildlife Refuge.

Commercial Fishing

- The annual average employment in 1999 for AEB fishermen was an estimated 424 jobs.
- Salmon fisheries provide the largest annual average employment in the AEB commercial fishing industry at 207 annual average jobs, followed by groundfish fisheries at 167 annual average jobs.
- The top fisheries, as defined by resident permit holders' earnings, are salmon ($18 million), groundfish (including sablefish; $9 million), crab ($4 million), halibut ($2 million), and herring ($1 million).

Aleutians East Borough Seafood Harvesting By Fishery Employment and Earnings Estimates, 1999

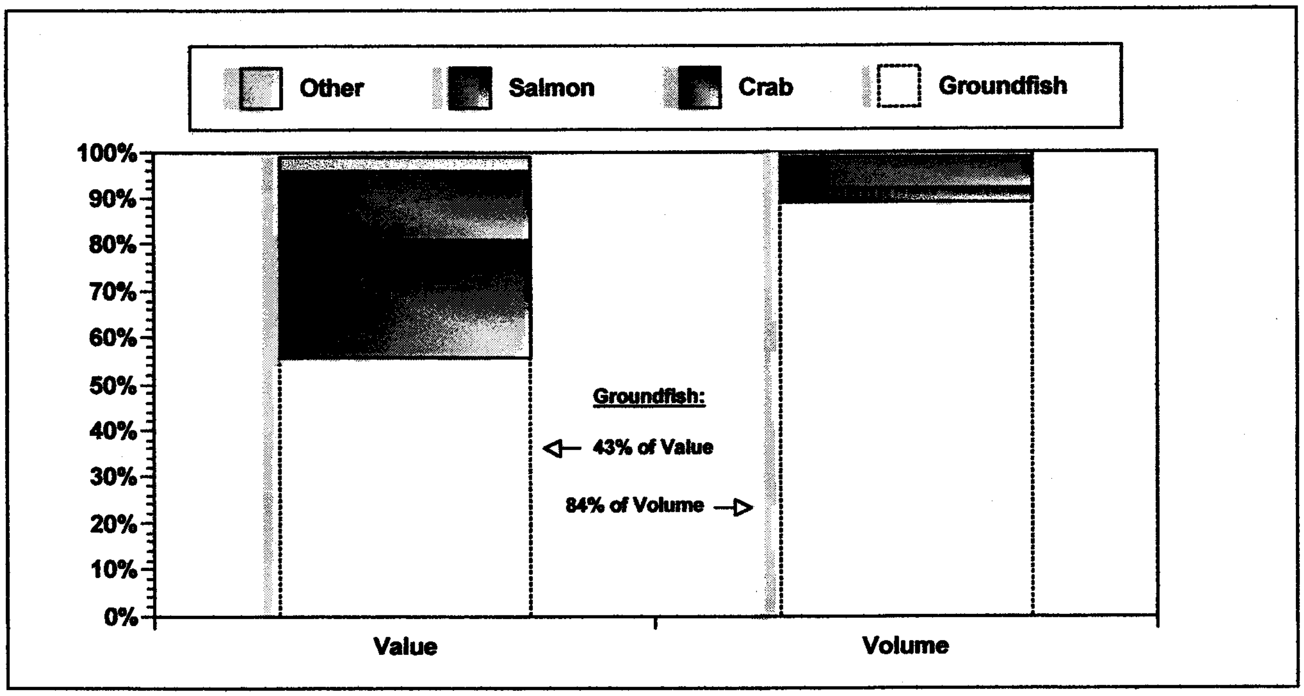
Fishery	Permits Fished	Annual Average Employment	Gross Earnings (millions of dollars)	Estimated Payroll (millions of dollars)
Salmon	172	207	$17.5	$8.7
Groundfish	104	167	9.4	4.5
Halibut	60	39	2.0	1.3
Herring	13	7	0.5	0.3
Crab	12	4	4.0	2.4
Total	**361**	**424**	**$33.4**	**$17.2**

Source: Permits fished and gross earnings, Commercial Fisheries Entry Commission. Annual employment and estimated payroll are estimates by McDowell Group, Inc., based on standard crew sizes, months of participation in each fishery, and study team estimates of net "take-home pay" by skippers and crew.

Seafood Processing

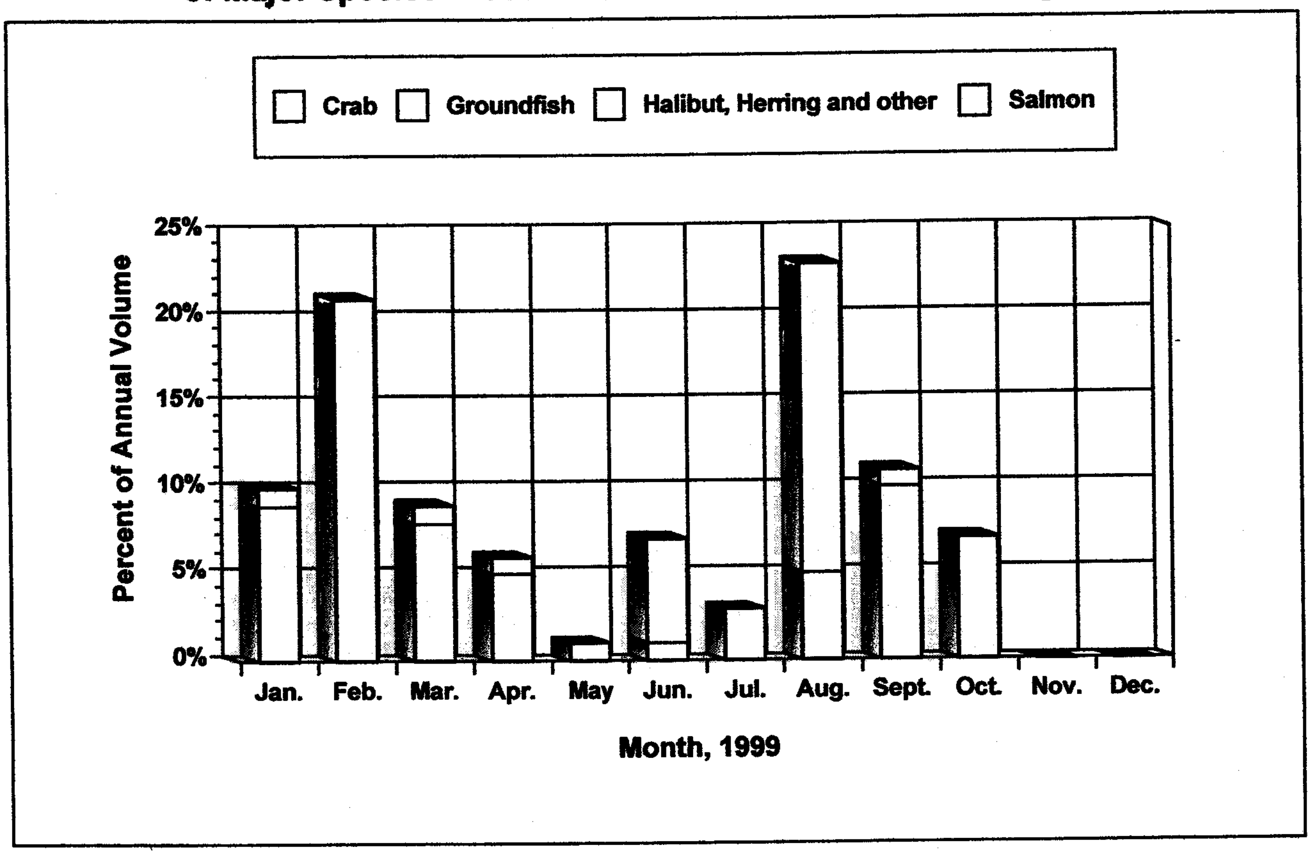
- The seafood processing industry is the AEB's largest employer at over 1,200 annual average jobs.
- AEB processors processed an average of 474 million pounds of seafood with an ex-vessel value of $106 million a year between 1995 and 1999.
- Groundfish is the mainstay of the AEB's processing industry, accounting for 84 percent of volume and 43 percent of value.

Seafood Landings in the Aleutians East Borough
Percent of Ex-Vessel Value by Species
1995-1999 Average



- Groundfish are harvested and processed in every month except November and December. Crab are delivered primarily from January through April, with salmon and herring delivered May through September. Halibut are delivered from March through November.

Percent of Annual Volume by Month of Major Species Processed in the Aleutians East Borough, 1999



Source: City of King Cove, City of Sand Point, City of Akutan

Aleutians East Borough Fish Tax Revenue

- In 1999, tax revenues from local sales tax on fisheries landings and the state-shared fisheries business tax accounted for 40 percent of the operating budgets for the towns of Akutan, King Cove and Sand Point.
- Fisheries taxes accounted for 40 percent of the operating budget of the AEB government as well.
- Groundfish account for over 40 percent of the ex-vessel value of fish processed in the Borough. This translates into 16 percent of the operating budgets of the towns and the borough.

The groundfish fishery for the Gulf of Alaska and the Bering Sea/Aleutian Islands area of the North Pacific is one of the largest volume and revenue-producing fisheries in the world. The Aleutians East Borough (AEB), consisting of the towns of Sand Point, Akutan, Nelson Lagoon, Cold Bay, False Pass and King Cove, is a major center for commercial fishing and processing of groundfish. The seafood industry is the largest industry in the Borough, providing over 1,645 annual average jobs. These jobs constitute 99 percent of basic industry employment and 80 percent of total employment in the economy. Virtually all of the Borough's support industries (retail, service, trade) result from the seafood industry.

Currently, the federal government is distributing $30 million in economic disaster relief funds to groundfish industry participants due to measures enacted by the National Marine Fisheries Service to reduce fishery impacts on Stellar sea lions. The McDowell Group, Inc. was commissioned by the AEB to conduct an assessment of groundfish on the Borough's economy to provide information for equitable distribution of the disaster relief funds among industry participants. A McDowell Group economic model was developed for the AEB economy based on Department of Labor data. Included in the model are McDowell Group estimates of the annual average employment and take-home pay of AEB-based skippers and crew. These estimates are essential because standard government reports do not include employment or personal income from seafood harvesting, the driving force in the AEB economy.

Fishery data pertaining to the AEB groundfish fishery from local, state and federal government data sources is then presented in the context of the AEB economy, providing the basis for the assessment of the potential socioeconomic impacts on the AEB of reduced groundfish harvests.

About 2,700 people live in the AEB. Sand Point is the largest community with about 1,000 residents, followed by King Cove (about 800 residents), and Akutan (about 700 residents). King Cove is home to Peter Pan Seafoods, the largest salmon cannery in North America. Trident Seafoods, another major processing company, operate plants in Sand Point and Akutan.

The dominant industry in the AEB is commercial fishing. No other industry has measurable or significant impact on the economy. Service and supply sector development is very limited.

The area was home to some of the first commercial fisheries in the state, with commercial cod and salmon fishing beginning in the late 1800's. The fishing industry has adapted over the years to changing market and political conditions. The Alaska Peninsula fishermen experienced low salmon harvests in the early 1970's, along with fishermen in the rest of the state. At that time, the region's crab fishery took off in gold rush fashion, and fishermen quickly adapted their fishing operations to also harvest crab. This fishery peaked in 1980 and then crashed to record lows. Following the crab stock crash, fishermen again adapted to the harvest of the increasing stocks of groundfish - Pacific cod and pollock - in their area. Groundfish, as well as halibut, helped to buffer the effects of low crab stocks and reduced salmon harvests and prices.

Today, the region's lifeblood is threatened. The Alaska Peninsula salmon fishery has been under fire for the past 20 years, as fishermen from Bristol Bay, the Yukon and Kuskokwim River region, and Chignik all vie to restrict the region's fishery harvest in hopes of increasing salmon returns to their own areas. The region's fisheries were reduced further in 2001 by the Board of Fisheries. Currently, the AEB salmon fishery is in distress due to a combination of low quotas and record low salmon prices.

In the midst of these salmon fishery restrictions, the groundfish fishery has also seen increasing restrictions due to concerns for the Stellar sea lion. At this time, there is no "savior" species on the horizon in the ways that crab helped to buffer the low salmon runs of the 1980's, or that groundfish buffered both the crab stock crash of the 1980's and the salmon fishery reductions in the 1990's. Unlike other coastal communities, where a diversity of tourism, mining, forestry, and charter fishing have aided economies in weathering low prices or harvests in the commercial fishing industry, the AEB relies solely on commercial fishing for its economic survival.

The Aleutian East Borough's "Economic Engines" – The Basic Economy

Economic base industries are those industries that bring new money into the local economy by exporting goods or services outside the local area. Also included in the basic industries are government agencies that manage and research basic industries, such as the Alaska Department of Fish and Game.

The remainder of the local economy consists of support industries that cater to the local population and business community. Support businesses do not create new wealth for the community. However, money brought to the economy by the basic industries and other outside sources, such as fishing income, impacts the local economy in many ways as it cycles through the support businesses.

Industries that provide the economic base for a region determine the overall prosperity of a community. In the AEB, the sole basic industry is the seafood industry. Local residents harvest groundfish, crab, salmon, herring, and halibut. The harvest is primarily processed locally, and then exported to consumers in the U.S., Japan, and the rest of the world. In exchange, AEB fishermen and processors are paid with money that originates outside the local economy. The fishermen and processor employees in turn spend a portion of their paycheck in the AEB's support sector on such things as groceries, electricity, maintenance, day care, health care, and rent. These expenditures create additional support jobs in the AEB economy.

To form a complete picture of the AEB economy, the study team made estimates (explained in the "1999 Seafood Harvesting Employment and Earnings Estimates" section) of annual average employment and take-home pay of AEB-based skippers and crew. These estimates are essential because standard government reports do not include employment or personal income from seafood harvesting, the AEB's primary industry.

Seafood Industry

The seafood industry constitutes over 99 percent of the region's basic industry. Annual average employment in 12-month equivalents in 1999 in the commercial fishing industry is an estimated 424 jobs, and in the processing industry over 1,200 jobs. The Alaska Department of Fish and Game (ADFG) and the Izembek National Wildlife Refuge (INWR) staffs also contribute to the AEB economic base in the management and research of the area-wide fisheries for all Alaska and non-Alaska residents, and provide about 12 jobs. Altogether, the seafood industry accounts for 1,645 jobs, contributing approximately 99 percent of the AEB's economic base employment, 77 percent of total employment and 80 percent of total payroll. A proportional share of the AEB's support industries (trade, services, etc.) is also the result of the dominant seafood industry.

Other Basic Industries

Agricultural services, forest products, hunting, trapping and tourism make up a small fraction (less than 1 percent) of the basic industry in the AEB. The remoteness and difficult access to the region do not support a large tourism industry at this time.

Aleutians East Borough Support Industries

AEB support industries provide goods and services to the local population and business community. Support industries account for 490 annual average jobs and $12 million in payroll. Support industries provide 23 percent of total employment and 20 percent of total earnings.

Support industries linked directly to fisheries include a wide array of businesses, including accounting, boat yards, fuel sales, engine mechanics, electricians, freight forwarding, hydraulic service, air taxi, and shipwrights.

In terms of employment, the most important support industries in the AEB are government, services, trade, finance/insurance/real estate, transportation/communications/utilities, and construction.

Government

Government is a major cornerstone of the AEB economy. When all of its functions (health care, education, resource management, and local, state, and federal government) are included, government is the largest support industry, accounting for over 260 average annual jobs and almost $7 million in payroll. Government support totals exclude the government entities in the base economy (ADFG and INWR).

Services

The service industry is the AEB's second largest support industry. Some examples of service jobs include hotels, vessel and engine repair, welding, and computer services. Total service employment is about 105 jobs with a payroll of nearly $3 million. Another six service jobs are included in the tourism total of the base economy.

Trade

Trade refers to all businesses selling physical goods. Trade contributes about 55 jobs and over $1 million in payroll. Grocery, hardware stores, and restaurants are some examples. Another three retail trade jobs associated with the tourism industry are included in the base economy.

Transportation, Communications, and Utilities

This infrastructure sector provides about 26 jobs and about $1 million in payroll. Another 2 jobs are included in the base economy due to their tourism relationship.

Finance, Insurance, and Real Estate

These support businesses add about 40 jobs and $700,000 in payroll to the support sector.

The Aleutians East Borough Economic Model Output

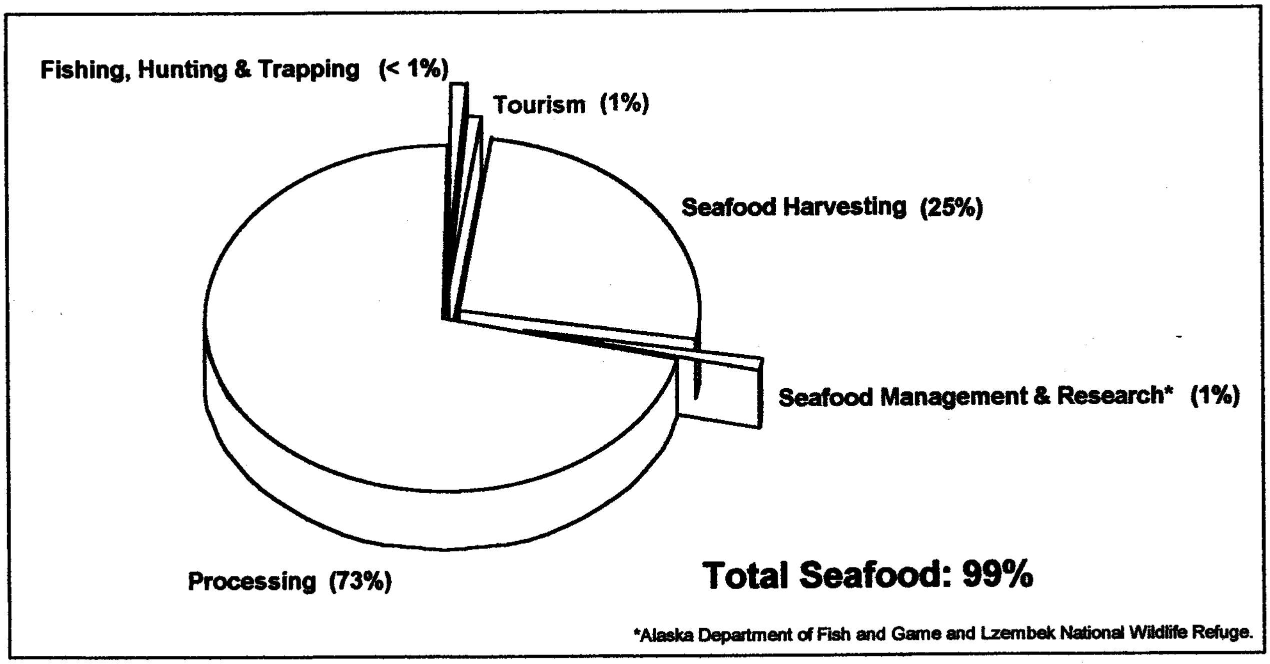
The McDowell Group's modeling of the AEB economy is called the Export Base Model. The model is intended to show the dynamic relationship between the basic and support sectors of the economy, and provide a baseline against which to gauge impacts of groundfish fishery restrictions on the AEB economy. As explained above, basic industry exports goods and services to markets outside the local area and brings in new money in exchange. The support industry serves the local population and business community, as residents trade existing dollars with their neighbors.

Aleutians East Borough Base and Support Industries Employment and Payroll, 1999[1]

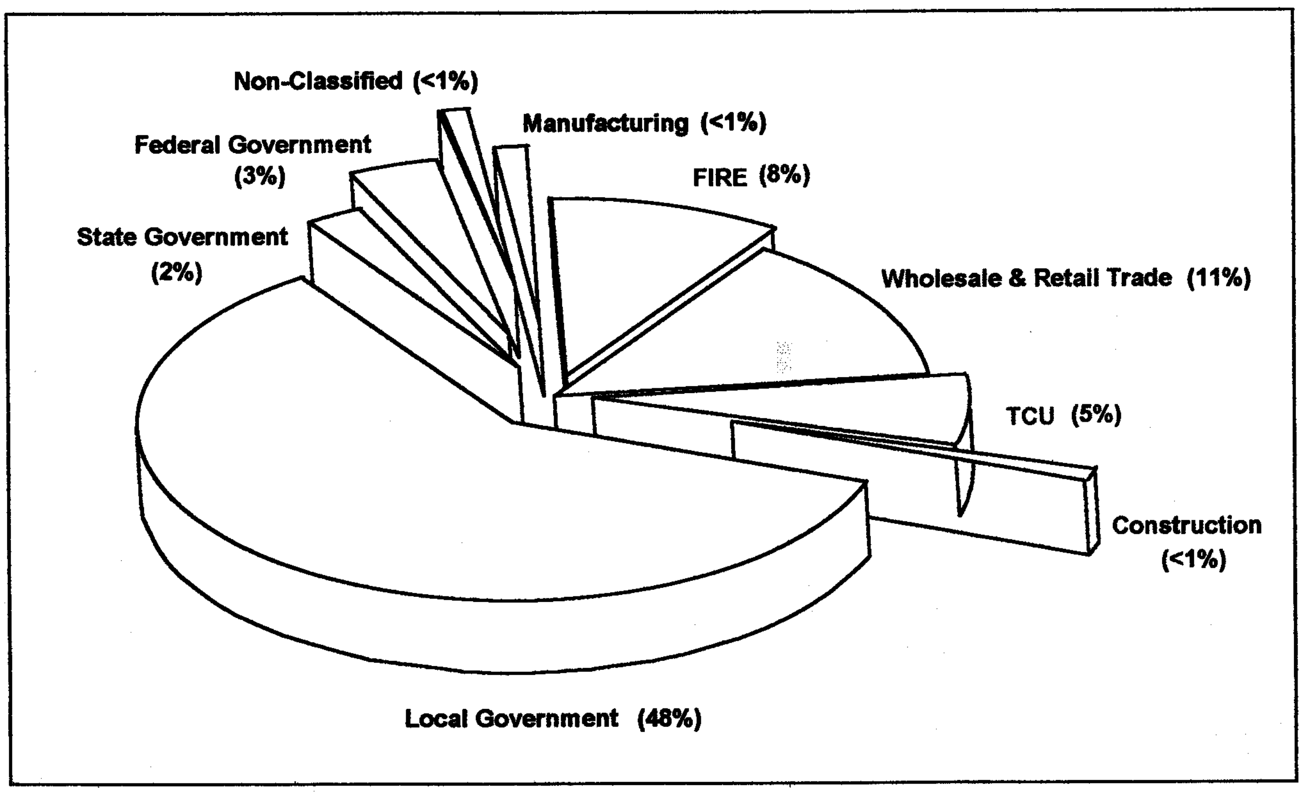
	Annual Average Employment	Percent of Total Employment	Total Payroll (Millions of $)	Percent of Total Payroll
BASIC INDUSTRY				
Seafood Harvesting[2]	424	20%	$17.2	28%
Processing	1,209	56%	30.7	52%
Alaska Dept. of Fish and Game	6	<1%	0.2	<1%
Izembeck National Wildlife Refuge	6	<1%	0.2	<1%
Total Seafood:	**1,645**	**76%**	**$48.3**	**79%**
Tourism[3]	**11**	**<1%**	**0.3**	**<1%**
Fishing, Hunting and Trapping	**3**	**<1%**	**0.2**	**<1%**
Total Basic Industry	**1,659**	**77%**	**$48.8**	**79%**
SUPPORT INDUSTRY				
Construction	1	<1%	$0.5	<1%
Transportation, Communication, Utilities	26	1%	0.9	2%
Wholesale and Retail Trade	55	3%	1.1	2%
Finance, Insurance and Real Estate	40	2%	0.7	1%
Services	105	5%	2.8	5%
Non-Classified	1	<1%	0.04	<1%
Federal Government[4]	16	<1%	0.6	1%
State Government [5]	10	<1%	0.4	<1%
Local Government	236	11%	5.7	10%
Total Support Industry	**490**	**23%**	**$12.7**	**21%**
TOTAL ALL INDUSTRIES	**2,149**	**100%**	**$61.5**	**100%**

Source: Compiled by McDowell Group, Inc., based on Alaska Department of Labor & Workforce Development data except where noted.
[1]Number of employees for the Alaska Department of Fish and Game and Izembek National Wildlife Refuge are for 2000.
[2] Seafood harvesting employment and income and McDowell Group, Inc. estimates, based on CFEC permit data.
[3] McDowell Group, Inc. estimates.
[4] Federal government employment, less Izembek National Wildlife Refuge positions.
[5] State government employment, less Alaska Department of Fish and Game positions.

Aleutian East Borough's Basic Industry Composition, 1999
(Percent of annual average *basic* industry employment)



Aleutian East Borough's Support Industry Composition, 1999
(Percent of annual average *support* industry employment)



Seafood Harvesting

- In 1999, 192 AEB residents participated in commercial fishing as permit holders, fishing a total of 361 permits.
- Additionally, 430 crew members claim the AEB as their place of residence. Permit holders who work as crew are not included in this crew total.
- More than one in four adult AEB residents participated in commercial fish harvesting as a permit holder or crew member during 1999, a total of 791 individuals.
- During 1999, AEB permit holders landed almost 100 million pounds of seafood in Alaska, earning $33 million.

Aleutians East Borough Resident Harvest and Earnings, 1995-1999
Permit Holders Fishing, Permits Fished and Gross Earnings

Year	Permit Holders Fishing	Permits Fished	Landings (Millions of Pounds)	Gross Earnings (Millions of $)	Gross Earnings per Permit Holder
1995	223	423	96	$30	$135,000
1996	223	421	71	19	85,000
1997	220	412	80	23	105,000
1998	206	397	89	23	112,000
1999	192	361	97	33	172,000
5-Year Average	**213**	**403**	**87**	**$26**	**$122,000**

Source: Alaska Commercial Fisheries Entry Commission

- The top fisheries, as defined by resident permit holders' earnings, are salmon ($17.5 million), groundfish (including sablefish; $9.4 million), crab ($4 million), halibut ($2 million), and herring ($500,000, Table 3).

Seafood Harvesting Employment and Earnings Estimates

To form a complete picture of the AEB's economy, the McDowell Group made the following estimates of the annual average employment and take-home pay of AEB-based skippers and crew, based on 1999 data. These estimates are essential because standard government reports do not include employment or personal income from seafood harvesting, the AEB's most important industry. The source for all other employment data, the Alaska Department of Labor, expresses employment in annual average 12-month equivalents. Harvesting employment estimates use this method to be comparable.

Following the methods used in McDowell Group's 1989 *Alaska Seafood Industry Study*, the study team considered the preparation and fishing time and assigned months of participation to each fishery. Typical crew sizes were assumed for various size vessels. Net earnings as a percent of gross fishery earnings were estimated. The effects of the same vessels and crews being used for different fisheries were considered. Finally, the assumption was made that AEB vessels were crewed primarily by AEB residents. The analysis indicates employment of about 424 seafood harvesting jobs and $17 million in skipper and crew personal income, comparable to 12-month land-based salaries and wages.

Aleutians East Borough Seafood Harvesting By Fishery Employment and Earnings Estimates, 1999

Fishery	Permits Fished	Annual Average Employment	Gross Earnings (millions of dollars)	Estimated Payroll (millions of dollars)
Salmon	172	207	$17.5	$8.7
Groundfish	104	167	9.4	4.5
Halibut	60	39	2.0	1.3
Herring	13	7	0.5	0.3
Crab	12	4	4.0	2.4
Total	**361**	**424**	**$33.4**	**$17.2**

Source: Permits fished and gross earnings, Commercial Fisheries Entry Commission. Annual employment and estimated payroll are estimates by McDowell Group, Inc., based on standard crew sizes, months of participation in each fishery, and study team estimates of net "take-home pay" by skippers and crew.

Aleutians East Borough Resident Permits, Harvest and Gross Earnings

Salmon and groundfish provide the largest annual average employment, with salmon providing 207 annual average jobs and groundfish 167 jobs. IFQ holders fishing for halibut provide another 39 jobs, with crab and herring combining for about 11 jobs.

Salmon is the income leader for AEB permit holders at nearly $18 million. Ground fish is second, producing $9 million in gross earnings. Crab fisheries contributed $4 million in income, followed by halibut at $2 million and herring at $1 million.

Aleutians East Borough Resident Commercial Fishing Permits Landings and Earnings, 1999

Permit Code	Fishery	Permits Fished	Pounds	Total Gross Earnings	Avg. Gross Earnings	Data Source
K 09T	King crab, pot gear, < 60', Bristol Bay	1	*403,000*	*$410,000*	*$410,000*	McDowell Estimate
K 91T	Bristol Bay King Crab, > 60'	6	253,000	1,587,000	265,000	Actual
T 91Q	Tanner Crab > 60', Bering Sea	*5*	*2,015,000*	*2,050,000*	*410,000*	McDowell Estimate
	Total Crab	**12**	**2,600,000**	**$4,000,000**	**$364,000**	Actual
M 05B	Misc. Finfish Hand Troll	6	23,400	7,700	1,300	Actual
M 06B	Misc. Finfish Longline, < 60'	*1*	*45,000*	*14,600*	*14,600*	Fishery Avg.
M 07B	Misc. Finfish Otter Trawl	35	40,700,000	6,300,000	180,000	Actual
M 09B	Misc. Finfish Pot Gear, < 60'	46	9,400,000	2,400,000	52,000	Actual
M 26B	Misc. Finfish Mechanical Jig	9	176,000	51,000	6,000	Actual
M 91B	Misc. Finfish Pot Gear, >60'	7	2,500,000	635,000	91,000	Actual
	Total Groundfish	**104**	**53,000,000**	**$9,400,000**	**$90,000**	Actual
B 05B	Halibut Hand Troll	*1*	*800*	*1,000*	*1,000*	Fishery Avg.
B 06B	Halibut Longline Vessel < 60'	30	470,000	853,000	28,000	Actual
B 61B	Halibut Longline > 60'	29	635,000	1,118,000	38,000	Actual
	Total Halibut	**60**	**1,105,000**	**$1,971,000**	**$33,000**	Actual
G 01A	Roe Herring Purse Seine, Southeast	*1*	*354,000*	*96,000*	*96,000*	Fishery Avg.
G 01T	Roe Herring, Purse Seine, Bristol Bay	4	905,400	156,000	39,000	Actual
H 01M	Herring Food/Bait Purse Seine, Peninsula/Aleutians	8	1,153,000	281,000	35,000	Actual
	Total Herring	**13**	**2,412,000**	**$533,000**	**$41,000**	
S 01M	Salmon Purse Seine, Peninsula/Aleutians	*62*	*30,000,000*	*9,500,000*	*153,000*	Fishery Avg.
S 03E	Salmon Drift Gillnet, PWS	*1*	*40,000*	*55,000*	*55,000*	Fishery Avg.
S 03M	Salmon Drift Gillnet, Peninsula/Aleutians	34	2,069,000	2,013,000	59,000	Actual
S 03T	Salmon Drift Gillnet, Bristol Bay	2	*123,000*	*102,000*	*51,000*	Fishery Avg.
S 04M	Salmon Set Gillnet, Bristol Bay Peninsula/Aleutians	*70*	*6,475,000*	*5,746,000*	*82,000*	Fishery Avg.
S 04T	Salmon Set Gillnet, Bristol Bay	*3*	*86,000*	*71,000*	*24,000*	Fishery Avg.
	Total Salmon	**172**	**38,000,000**	**$17,500,000**	**$102,000**	Actual
Total Aleutians East Borough		**361**	**97,000,000**	**$33,000,000**	**$91,000***	

*Average earnings per permit fished
Source: Alaska Commercial Fisheries Entry Commission
Some data was confidential. For these gear groups, average harvest and earnings or McDowell Group estimates were used. These estimates appear in underlined italics.

Seafood Processing

Processors in the AEB processed an average of about 490 million pounds of seafood worth an ex-vessel value of $106 million a year between 1995 and 1999. Groundfish is the mainstay of the AEB's processing industry, accounting for 84 percent of volume and 43 percent of value from 1995 to 1999. Crab accounts for 6 percent of volume and 35 percent of value. Salmon accounts for 9 percent of volume and 18 percent of value, and halibut, herring and other species account for 2 percent of volume and 4 percent of value to AEB processors.

Ex-Vessel Landings of Seafood in the Aleutians East Borough 1995-1999 (Millions of Pounds)

	1995	1996	1997	1998	1999	Average
Salmon	82.8	35.0	28.1	46.4	54.7	42.0
Crab	15.1	14.8	24.3	45.4	32.6	26.4
Groundfish	364.2	413.2	404.0	404.1	404.8	398.1
Other species (halibut, herring, etc.)	7.2	7.0	9.6	8.8	4.7	7.5
Total all species	531.6	464.1	458.2	499.0	489.4	481.3

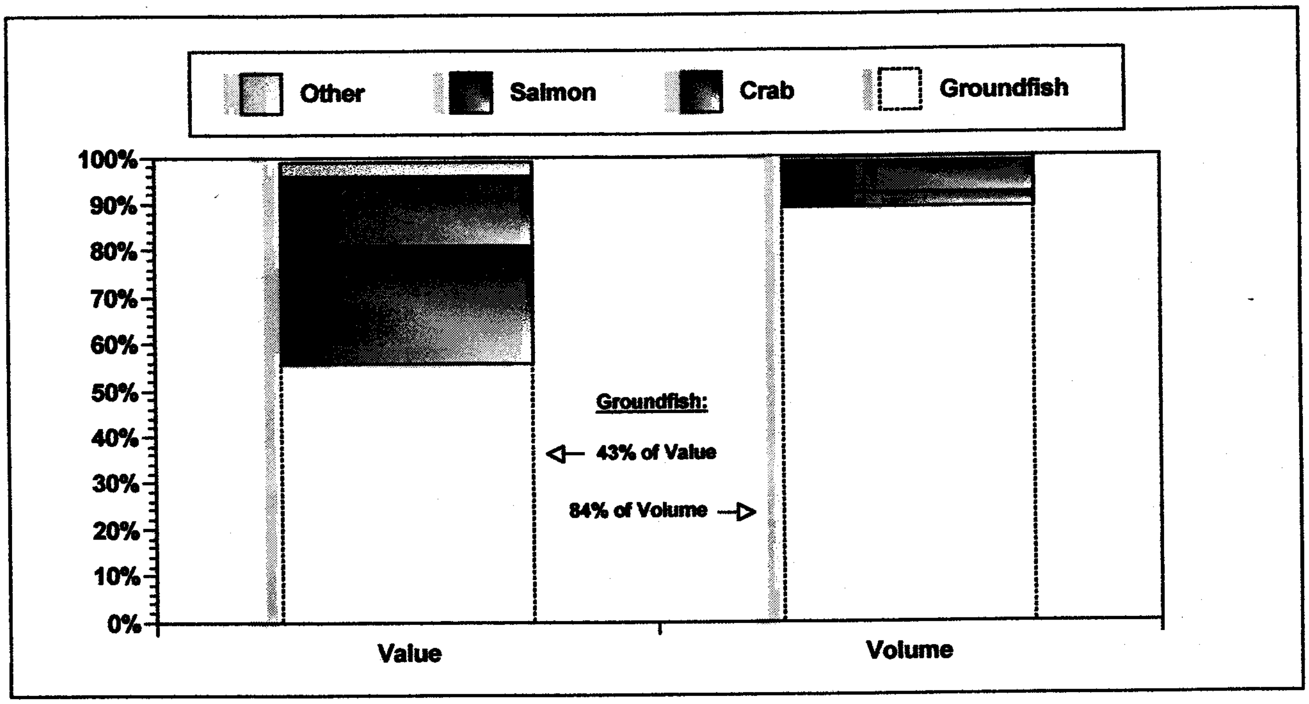
Source: ADFG

Ex-Vessel Value of Seafood Landings in the Aleutians East Borough 1995-1999 (Million of Dollars)

	1995	1996	1997	1998	1999	Average
Salmon	$37.8	$17.0	$18.2	$23.2	$34.0	$26.1
Crab	38.5	30.1	28.2	36.4	54.0	37.4
Groundfish	44.1	44.7	51.8	37.8	52.8	46.2
Other species (halibut, herring, etc.)	4.2	4.2	5.2	2.4	3.8	4.0
Total all species	$113.7	$91.5	$95.9	$93.8	$137.1	$113.6

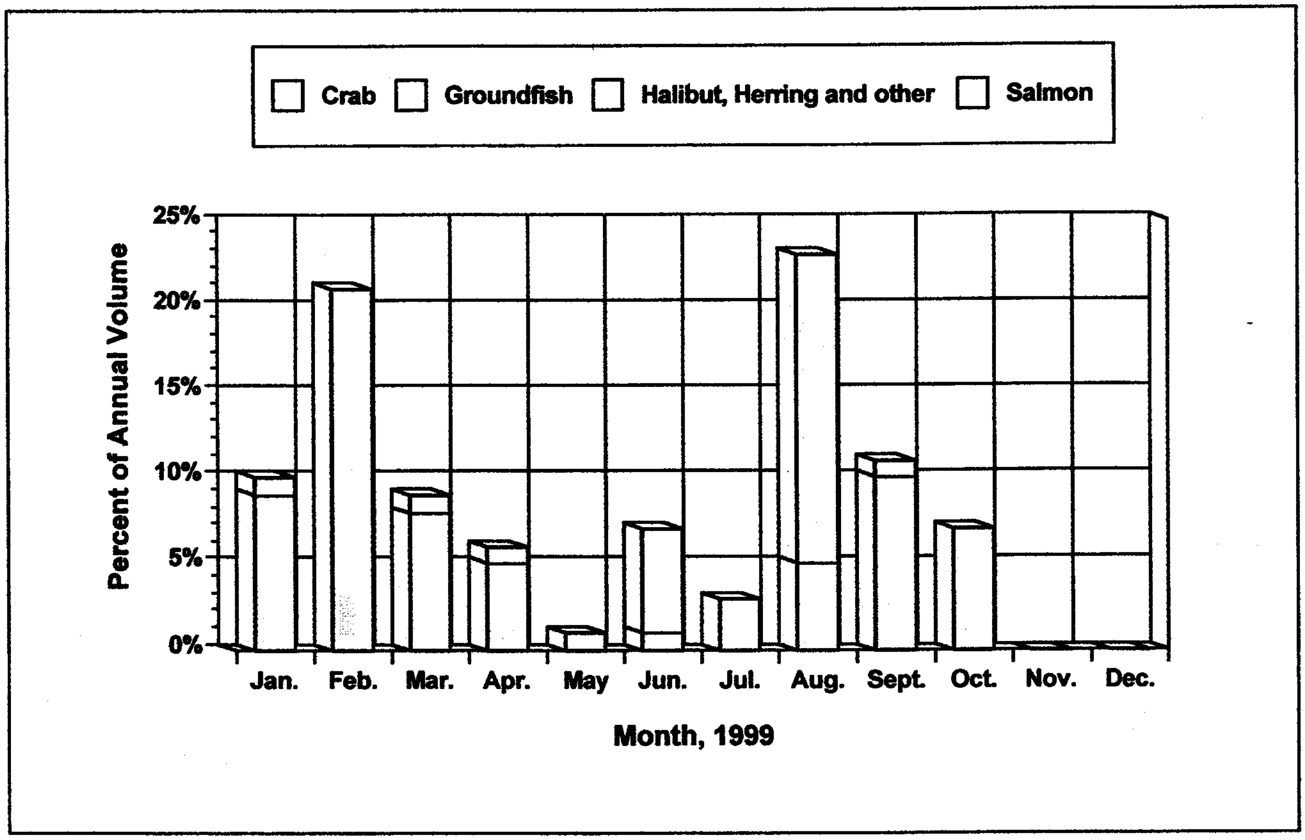
Source: ADFG

Seafood Landings in the Aleutians East Borough Percent of Ex-Vessel Value by Species 1995-1999 Average



Groundfish are harvested and processed in every month except November and December. Crab is delivered primarily from January through April, with salmon and herring delivered during May through September. Halibut is delivered from March through October.

Percent of Annual Volume by Month of Major Species Processed in the Aleutians East Borough, 1999



Source: City of King Cove, City of Sand Point, City of Akutan

Processing volume and value in the preceding tables and figures are separate and distinct from the harvest volume of permit holders who live in the AEB. Processing volume quantifies the amount and value of fish that is purchased and processed in the AEB, without regard to residence of the harvester.

Aleutians East Borough Raw Fish Tax Revenue

The cities within the AEB receive both local sales taxes and state-shared raw fish taxes from fish landed within their towns. In 1999, tax revenues from local sales tax on fisheries landings and the shared fisheries business tax from the state accounted for 40 percent of the operating budgets for the towns of Akutan, King Cove and Sand Point. Fisheries taxes accounted for 40 percent of the operating budget of the AEB government in 1999 as well. Since groundfish account for over 40 percent of the ex-vessel value of fish processed in the borough, this translates to 16 percent of the operating budgets of the towns and the borough.

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

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Dr. James Balsiger
Administrator, Alaska Region
National Marine Fisheries Service
P. O. Box 21109
Juneau, AK 99802-1109

Dear Dr. Balsiger:

Thank you for the opportunity to comment on the August 2001 draft Supplemental Environmental Impact Statement (SEIS) and Biological Opinion (BioOp) concerning Steller sea lion protective measures.

As you are aware, our staffs have been working closely in the development of the SEIS and BioOP. With respect to the Incidental Take Statement portion of the BioOp, I understand that you have a working draft paper, dated 12 September 2001, which recasts the wording of the terms and conditions section, including condition 4. That condition discusses requirements to monitor locations of fishing activity. I concur that the increased use of VMS by all fishing vessels participating in directed fisheries for pollock, pacific cod, and atka mackerel will enhance our ability to effectively monitor the rookery, haulout, and foraging areas that will be closed to fishing.

With the inclusion of the change noted above, I find that the issues of safety and enforcement in the SEIS and BioOp are accurately analyzed and presented.

If you have any questions or if there is any more assistance that my staff can provide, please contact me at (907) 463-2226.

Sincerely,

R. J. PRESTON
Captain, U.S. Coast Guard
Chief, Planning and Policy Division
Seventeenth Coast Guard District
By direction of the District Commander

Copy: Commandant (G-OPL-4)

0033

Responsible Official, James W. Balsiger
Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

FACSIMILE NUMBER: (907) 586-7557

Re: Comments on the August 2001 DSEIS for Steller Sea Lion Protection Measures

Dear Mr. Balsiger:

As a citizen who cares about protecting endangered species and the overall health and biodiversity of the North Pacific, I am offering comments on the August 2001 DSEIS for Steller Sea Lion Protection Measures in support of the approach taken in Alternative 2, the Sea Lion Recovery Alternative.

Over the past several decades, Steller sea lions have declined by approximately 90 percent. The National Marine Fisheries Service has an obligation under the Endangered Species Act to promote recovery of the Steller sea lion. Currently, the agency is supporting a plan that would, by the agency's own calculation, result in continued Steller sea lion declines.

Rather than supporting an alternative that will continue the road to extinction for Steller sea lions, we urge NMFS to support the approach taken in Alternative 2, the Sea Lion Recovery Alternative, for the following reasons:

- It promotes recovery of Steller sea lions. By the agency's own calculations it will result in a population increase of .7% per year.
- It eliminates competition for prey from industrial fishing by setting catch limits and restricting fishing in critical habitat areas.
- It allows for continued fishing opportunities for small scale, family based boats in critical habitat.

It is time that the National Marine Fisheries Service supports a plan that curbs industrial fishing in critical habitat and promotes the recovery of the Steller sea lion.

Sincerely,

Jim Lunsford

Name and Address:

Jim Lunsford
1788 La Force Rd.
Alpine CA 91901

Date: 101001

North Pacific Fishery Management Council

David Benton, Chairman
Clarence Pautzke, Executive Director

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September 12, 2001

MEETING SUMMARY

0213

North Pacific Fishery Management Council
September 7-8, 2001
Sitka, Alaska

At its meeting last week, the Council welcomed two new Council appointees, Stosh Anderson and Stephanie Madsen. Mr. Anderson is from Kodiak, Alaska, and fishes salmon, halibut, herring and black cod, and is a founding member of the Alaska Marine Conservation Council. Ms. Madsen, a resident of Juneau, Alaska, is a Vice President for Pacific Seafood Processors Association in Juneau, Alaska. She was appointed to the Council's Advisory Panel in 1993, and served as their Vice Chair from 1996 until her appointment to the Council. The Council also welcomed Captain Richard Preston as the new Council designee for Rear Admiral Thomas Barrett of the Coast Guard.

The Council also re-elected David Benton as Chairman for the upcoming year, and Dennis Austin, Washington Department of Fisheries, as Vice Chair. This will be Mr. Benton's second term as Chairman and Mr. Austin's first term as Vice Chair.

During the meeting, the Council reviewed the draft Supplemental Environmental Impact Statement (DSEIS) on Steller sea lion protection measures, together with a draft biological opinion. The DSEIS evaluated five alternatives to modify fisheries in such a way that the fisheries neither jeopardized the continued existence of Steller sea lions, nor modified their critical habitat. The National Marine Fisheries Service had tentatively identified Alternative 4, the area and fishery specific approach, as the preferred alternative. This was the alternative originally proposed by the Council's RPA Committee. The draft biological opinion, pursuant to the Endangered Species Act Section 7, concluded that the proposed action implemented by this alternative would not be likely to cause jeopardy or adverse modification. The DSEIS and biological opinion are available on the NMFS Alaska region website (www.fakr.noaa.gov).

The Council adopted Alternative 4 (with additional clarifications and details) as its preliminary preferred alternative. The additional details for Alternative 4, along with revisions and additional information to be included in the next draft SEIS, are included in the Council's action (attached). The Scientific and Statistical Committee also suggested numerous revisions and clarifications for the SEIS and biological opinion. At the upcoming meeting in October, the Council will review additional information prior to adopting a final preferred alternative.

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Council Action on Steller Sea Lion DSEIS and Draft BiOp
September 2001

DSEIS

The Council reaffirmed its selection of Alternative 4 as the preferred alternative with the following modifications:

A Incorporate all of the additional recommendations of the RPA committee included in the minutes of the Aug. meeting:

1 W/C-GOA pollock C season start date of Aug. 25
2 Revised platooning for the Atka Mackerel fleet
3 Additional restrictions for the Bering Sea cod and pollock fishery
 a) Closure of Area 8 haulouts (at Reef, Lava, Bishop Pt) to 10 miles for longliners >60'
 b) Implement a 3 season split of trawl cod at 60/20/20 (50/30/20 for CP and 70/10/20 for CV) with rollover provisions.
 c) Limit A season SCA pollock harvest to 28% of annual TAC prior to April 1st

B Incorporate the following recommendations on issues identified by staff, and presented by RPA Committee Chairman Cotter:

1 The 19 additional "RPA" haulouts should be treated consistently with CH haulouts.
2 The 5 northern BS 20 mile haulout closures should apply to the Atka Mackerel, pollock, and P.cod fisheries only.
3 Assignment to mackerel platoons should be random (so switching of assignments between vessels is not allowed) and apply to a specific vessel (not a permit).
4 Seasonal splits of P. cod do not apply to longliners <60 (catch fixed gear vessels <60 between the open access seasons accrues to the <60 reserve quota).
5 Maintain the <99' safety exemption in the SCA. NMFS should set aside such A season pollock quota in the SCA as needed for vessels <99' to harvest their full A season pollock quota in the SCA during the period from Jan. 20th – Mar. 31st.
6 The SCA pollock limit in the A season should be allocated amongst the sectors proportionally (each sector would be limited to 28% of its annual pollock allocation.)
7 300,000lb trip limits in the GOA and tender restrictions east of 157 degrees W lon in the GOA, as well as stand-down provisions and exclusive registration provisions would be retained.
8 Cod rollovers within the trawl sector should occur within a season prior to allocating to other gear types. Rollovers will continue into subsequent seasons but may be reapportioned if one sector is unable to reach its TAC.
9 Jig gear is exempt from haulout closures except in Area 9 and in the Seguam Foraging Area.

The Council also requested that the Alaska Board of Fisheries seriously consider adopting parallel restrictions in the parallel cod, pollock and mackerel fisheries in state waters in a timely manner.

Additionally, the added an option to Alternative 4, or some other remedy, which would create an exemption for longline cod catcher vessels >60 in Area 8 to operate between 3-10 miles.

DRAFT BiOp

A Review the use of the CS+/- methodology for consistency (are effects evaluated primary, secondary, or tertiary effects – do secondary or tertiary effects rely on assumptions or documented causal relationships). Clarify that there is no weighting assigned to these findings (one CS+ for species "A" doesn't necessarily cancel one CS- for species "B"), and that these ratings are only relative comparisons of the alternatives (option 1 may be negative relative to option 2, but the underlying condition may be negative, positive, or trivial in both options.)

B Include a table (as presented by Chairman Cotter) of the rookery/haulout closures by gear type listing each site (as per table 21 for 2001 RPAs) and clarify that table 3.6 does not reflect the Alt. 4 closure specifications.

C Review using 1998 TAC as the reference point for "question 2" (prey availability) is the SSL CS+/- analysis

D A more extensive discussion of the importance of AFA in the gathering of data, monitoring of the fishery, enforcement and management.

E Amplify the discussion on VMS issues, including:
1) implementation schedule
2) reliability
3) consequences of failures
4) fisheries and sectors where VMS monitoring may not be needed to achieve quota monitoring goals.

F Clarify that application of Alt. 4 Global Control Rule reduces TAC to the amount necessary for bycatch and puts that species on MRB only status.

G Analysis of the economic impacts to industry of management and enforcement measures as proposed in each alternative, including compliance costs for vessels to carry observers, observer costs, increased transit costs, impact of lost crew space on production.

Staff were tasked with completing these modifications to the best of their ability within the time available before The October Council meeting when final action is scheduled. The Council also requested that comments provided by the Scientific and Statistical Committee be incorporated in the analyses to the extent practicable.

Finally, for ongoing SSL issues, the Council approved the following recommendations of the Advisory Panel:

1 An ongoing analysis of the telemetry data that integrates both location and dive behavior from individual at sea trips, to directly estimate spatial and temporal foraging patterns.
2 An ongoing study to outline the statistically significant and biologically important differences in SSL demographics and population trends in the 1970's and 1980's compared to the 1990's.
3 Reassessment of the listing status of the western and eastern SSL stocks.

North
Pacific
Longline
Association

October 12, 2001

0214

Dr. Jim Balsiger
Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

Attn: Lori Gravel

RE: Draft SEIS on Steller Sea Lion Protective Measures

Dear Dr. Balsiger:

The NPLA represents freezer-longliners that fish for groundfish off Alaska, processing and freezing their product at sea. We wish to comment on Chapter 3, Section 3.8.4, Effects of Other Gear Types, Longline Gear. Specifically, we request elimination of references to grey literature on "observations" of longline gear and to "substantial" bycatch of benthic epiphauna.

Section 3.8.4, Longline Gear, states, "Very little information exists regarding effects of longlining on benthic habitat." To our knowledge no studies of the impact of longlines on benthic epiphauna have been conducted in Alaska. Studies from other regions may not be relevant to Alaska in terms of types of substrates fished and intensity of fishing. The section contains a synopsis of the PSEIS section, referring to possible effects of longlining "observed" by a diver (High 1998). The difficulty with these "observations" is that they are uncorroborated and untested – grey literature at best. The cover of the document itself states, "This report does not constitute a publication and is for information only. All data herein are to be considered provisional." The degree to which longline gear may impact the benthos is unknown, just as the degree to which pot gear may impact the benthos is unknown. Scientific studies should be conducted to assess the impact of these gears before regulation is undertaken. References to "High 1998" should be deleted from both the Steller Sea Lion DEIS and the Draft Programmatic SEIS.

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The section also states that bycatch of benthic epiphauna by longline gear can sometimes be "substantial" in the BSAI. Coral and anemones are singled out. Table 4.8-1 indicates an average annual rate of coral bycatch at 1,482 kg, or 1.5 mt (1997-1999). The BSAI longline fisheries are conducted in an area of some 200,000 square miles, and occurrences of coral bycatch are rare (John Bruce, personal communication). Relative concentrations occur in the Aleutians and near the Pribilofs, but the average weight of corals taken was only 0.29 pounds in 2,000, suggesting that small branches rather than whole forests of coral are removed (Fisheries Information Service observer data, John Bruce, personal communication). Removal of an entire coral is extremely rare (John Bruce, personal communication). Also, observer data for 2000 did not distinguish between soft and hard corals (FIS). The removal of small pieces of coral is unlikely to modify the benthic habitat in any "substantial" way.

Table 4.8-1 states that the average annual bycatch of anemones in the BSAI longline fisheries was 86,063. The Alaska Fisheries Science Center estimates that the anemone population of the Bering Sea is at a minimum 300,107,901 animals, assuming the trawl survey harvests 100% of the anemones in its track – which it probably doesn't (Dr. Bob Connaughey, personal communication). Reliable data for the Aleutians is not available. If the entire longline bycatch of anemones were taken in the Bering Sea, it would be 0.029%, or 29 thousandths of a percent of the population. Most of the anemones taken in longline fisheries are attached to rocks or snail shells, and are returned to the sea with some prospect of survival (John Bruce, personal communication). To characterize this minute bycatch as "substantial" strains credulity. "I doubt if it means anything" (Gary Stauffer, personal communication).

We request that references to "High 1998" be dropped from Chapter 3, Section 3.8.4 of the Steller Sea Lion Protective Measures DSEIS and from the Draft Programmatic EIS, and that references to "substantial" bycatch of benthic epifauna by longliners be deleted from Chapter 3, for the reasons stated above.

Sincerely,
Thorn Smith
Thorn Smith

TOTAL P.03

**North
Pacific
Longline
Association**

Dr. Jim Balsiger
Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

October 18, 2001

Attn: Lori Gravel

RE: Correction, Comments of October 12 on SSL SEIS

Dear Dr. Balsiger:

Fisheries Information Services has advised me of two mistakes in my letter of October 12 on the SSL SEIS. In the first full paragraph of the second page of my letter I stated that "relative concentrations" of coral occur. I am advised that the occurrences are highly localized, hard corals being taken in certain areas of the Western Aleutians, soft corals in a small area southeast of the Pribilof Islands.

In the second paragraph on the same page I mistakenly referred to a take of 86,063 anemones harvested in the BSAI, when the correct number is 86,063 kilograms or 86 metric tons of anemones. The result, however, is the same. In the BSAI alone there are 26,570 mt of anemones (2001 AFSC trawl survey data). At a maximum, the longline harvest is 0.3% of the biomass. Since the BSAI trawl survey probably does not harvest 100% of the anemones in its track, and since there are no reliable anemone biomass numbers for the Aleutian Islands, the percentage actually harvested is a great deal lower than 0.3% (Dr. Bob McConnaughy, personal communication). In other words, it is insignificant.

Thank you for your attention – I regret the mistakes.

Sincerely,

Thom

Thorn Smith

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

OCTOBER 14, 2001

Ms. Tamra Faris
Regional Planner and NEPA Coordinator
National Marine Fisheries Service, Alaska Region
PO Box 21668
Juneau, Alaska 99802

Subject: Comments on Draft SSL Protection Measures SEIS (October 13, 2001)

Dear Tamra:

This letter contains the combined comments of Dr. Sam Atkinson and myself regarding a consistency review of selected sections of Chapter 4 in the subject Draft SSL Protection Measures SEIS. This letter is divided into four parts: (1) background; (2) process; (3) summary of findings; and (4) detailed comments related to 27 resources (or issues) addressed in Chapter 4.

BACKGROUND

This consistency review comprises Task 3 of OBLIG-2001-11941-0-0 (order number 40-AB-NF-111941) between the Alaska Region of the National Marine Fisheries Service and Canter Associates, Inc. Task 3 was described as the review of the Draft Steller Sea Lion Protection Measures SEIS (Supplemental Environmental Impact Statement).

The specific "scope of work" for this consistency review is as follows:

> Scope of work includes a review of the Steller Sea Lion DEIS substantive sections in Chapter 4 for consistency between significance criteria, information provided and significance ratings for each section (e.g., marine mammals, benthic habitat, seabirds, etc.). In essence, we are to ask if the effects significance ratings shown in each section of Chapter 4 are appropriate given the significance criteria and "data" or "information" provided. Socioeconomics and State Fisheries can be ignored. Cumulative effects should be examined. Consistency between substantive sections and the Executive Summary need not be mentioned.
>
> We do not need to make a determination of whether or not the significance criteria are appropriate, but rather if data or information provided are filtered through stated criteria properly (i.e., a consistency review). We do not need to review any other aspect of the DEIS. Results are to be transmitted in letter form. The letter should specify the above scope, and our findings.

PROCESS

In accordance with the above scope of work, the following 27 sections of Chapter 4 were reviewed:

4.1.1 -- effects on SSLs

4.1.2 -- effects on other ESA listed cetaceans (listed great whales)

4.1.3 -- effects on other cetaceans besides ESA listed species

4.1.4 -- effects on northern fur seals

4.1.5 -- effects on harbor seals

4.1.6 -- effects on other pinnipeds

4.1.7 -- effects on sea otters

4.2.2 -- effects on Walleye pollock

4.2.3 -- effects on Pacific cod

4.2.4 -- effects on Atka mackerel

4.2.5.1 -- effects on flatfish species

4.2.5.2 -- effects on BSAI rockfish

4.2.5.3 -- effects on GOA rockfish

4.2.5.4 -- effects on GOA thornyheads

4.2.5.5 -- effects on sablefish

4.2.5.6.1 -- effects on BSAI squid and other species

4.2.5.6.2 -- effects on GOA other species

4.3.1 -- effects on non-specified species in the BSAI

4.3.2 -- effects on non-specified species in the GOA

4.4 -- effects on forage fish species

4.5.1 -- effects on prohibited species bycatch in BSAI

4.5.2 -- effects on prohibited species bycatch in GOA

4.6 -- effects on ESA listed Pacific salmon

4.7 -- effects on seabirds

4.8 -- effects on marine benthic habitat

4.9 -- effects on the ecosystem

4.11 -- effects on management and enforcement

The following four sections of Chapter 4 were not reviewed:

4.10 -- effects on State of Alaska managed fisheries (omitted in the above scope)

4.12 – social and economic consequences (omitted in the above scope)

4.13 – cumulative effects assessment (was in above scope, however, it was later determined that this section was being revised by a contractor, thus its consistency review was premature relative to Task 3).

4.14 – special considerations regarding impacts of options 1-3 under alternative 4 (not mentioned in the above scope)

As each of the above-listed 27 sections of Chapter 4 were reviewed, the following three questions were considered:

(1) Were significance criteria for effects (impacts) identified, and was the rationale for the criteria explained?

(2) Were the effects of the alternatives clearly explained and supported with quantitative data, research findings, modeling projections, and/or professional judgment?

(3) Were the assigned effects ratings consistent with the significance criteria, and was the rationale for the assigned ratings clearly explained?

SUMMARY OF FINDINGS

The following comments summarize the consistency review of the 27 resources (issues):

(1) Significance criteria for effects were identified for the 27 resources (issues), and the rationale was typically explained. However, several specific action items listed below indicate where the rationale should be strengthened.

(2) The effects of the alternatives were based upon a variety of data and information, including, but not limited to, modeling projections, field observations and studies, research findings, and professional judgment. Further, it was recognized that the data and information basic to determining effects varied from being limited for some resources to extensive for others.

(3) For many of the 27 resources, documented connections were made between the significance criteria, the anticipated effects, and the assigned effects ratings. However, descriptions of rationale for the effects ratings are needed or need to be strengthened for several resources. A large number of the following specific action items indicate where the rationale should be written or strengthened.

(4) Specific action items related to improving the consistency of the analysis for the 27 resources (issues) can be found at the below-listed numbered locations in the following Detailed Comments section: 1 (3) – 3 is the third subpoint under number 1, 2 (note) – note at end of number 2, 3 (note), 8(1), 8(2), 8(3), 8(4), 9(1), 9(4), 10(1), 10(2), 10(4), 10(5), 10(7), 11(1), 11(2), 11(3), 11(5), 12(1), 12(4), 13(3), 14(4), 15(1), 15(4), 16(1), 16(3), 17(3), 18(3), 19(3), 20(1), 20(3), 21(1), 21(2), 21(3), 21(4), 22(1), 22(2), 22(3), 22(4), 22(note), 23(note), 24(1), 25(1), 25(2), 26(2), 26(3), 26(4), 27(1), 27(2), and 27(3).

DETAILED COMMENTS

Detailed comments related to the consistency review are included in this part. They are numbered in accordance with the 27 resources (issues).

1. Effects of alternatives on SSLs

   (1) direct effects – incidental take/entanglement in marine debris (Question 1) --- criteria stated in Table 4.1.1, effects based on observed data estimated take rates (Table 4.1-2), and projected TAC levels (Table 4.1-3) – criteria were consistently applied in evaluating effects, with the results in Table 4.1-5.

   (2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-1, effects based on TAC levels in Table 4.1-3 – criteria were consistently applied in evaluating effects, with the results in Table 4.1-5.

   (3) indirect effects – spatial and temporal concentration of fishing (Question 3) – criteria stated in Table 4.1-1, effects based on spatial and seasonal apportionments of TACs and dietary analyses of SSLs, and an analysis of changes in the trends of SSL populations (Table 4.1-4) – criteria were consistently applied, however, percentage changes in annual SSL populations are not consistently projected to show a new annual population trend in Table 4.1-4.

   (4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-1, effects are discussed from a qualitative perspective – criteria were consistently applied in evaluating effects, with the results in Table 4.1-5.

2. Effects of alternatives on ESA listed cetaceans (listed great whales)

   (1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-6, effects based on some data and information and estimated take rates in Table 4.1-2 -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-7.

   (2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-6, effects based on projected TAC levels (Table 4.1-3) and qualitative discussion of inferences -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-7.

   (3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-6, effects based on prey competition considerations and projected TAC levels (Table 4.1-3) and a qualitative discussion of inferences -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-7.

(4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-6, effects based on qualitative consideration of disturbance from vessels and sonar -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-7.

<u>Note:</u> The paragraph below Table 4.1-7 on page 4-35 needs to be edited to match the results in Table 4.1-7.

3. Effects of alternatives on other cetaceans

(1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-6, effects based on some data and information and estimated take rates in Table 4.1-2 -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-8.

(2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-6, effects based on projected TAC levels (Table 4.1-3) and qualitative discussion of inferences of various prey species -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-8.

(3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-6, effects based on prey competition considerations, projected TAC levels (Table 4.1-3), and a qualitative discussion of inferences -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-8.

(4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-6, effects based on qualitative consideration of disturbance from vessels and sonar -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-8.

<u>Note:</u> The paragraph below Table 4.1-8 on page 4-44 needs to be edited to match the results in Table 4.1-8.

4. Effects of alternatives on northern fur seals

(1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-1, effects based on observed data and qualitative discussion of inferences -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-9.

(2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-1, effects based on qualitative discussion of known information on prey species and their relationship to the diet of northern fur seals, the implications of removal of northern fur seal forage, and the implications of spatial and temporal measures related to target commercial fisheries -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-9.

(3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-1, effects based on spatial and seasonal apportionments of TACs and qualitative discussion of competitive overlap between the fisheries and northern fur seals based on telemetry data -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-9.

(4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-1, effects are discussed from a qualitative perspective based upon some information, however, many unknowns related to disturbance effects from vessel traffic, fishing gear, or noise were noted -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-9.

5. Effects of alternatives on harbor seals

(1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-1, effects based on very low to negligible rates in observed take data, and projected TAC levels (Table 4.1-3) -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-10.

(2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-1, effects based on TAC levels in Table 4.1-3 -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-10.

(3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-1, effects based on the qualitative consideration of spatial and seasonal apportionments of TACs, the preference of harbor seals for nearshore habitat, and the use of no transit zones and no fishing zones -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-10.

(4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-1, effects are discussed from a qualitative perspective

based on limited data and information -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-10.

6. Effects of alternatives on other pinnipeds (ice seals, Pacific walrus, and northern elephant seals)

    (1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-1, effects based on very low rates from observed data, estimated take rates (Table 4.1-2), closure of SSL conservation areas, and redistribution of certain fishing areas -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-11.

    (2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-1, effects based on food habits and diets of other pinnipeds, their foraging behavior and fisheries, and TAC levels in Table 4.1-3 -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-11.

    (3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-1, effects based on spatial and seasonal apportionments of TACs and the qualitative discussion of the minimal spatial, temporal, or dietary overlap of other pinnipeds with groundfish fisheries -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-11.

    (4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-1, effects are discussed from a qualitative perspective considering vessel traffic, noise, or fishing gear-related disturbances, lack of overlaps as noted in (3) above, along with SSL closure areas -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-11.

7. Effects of alternatives on sea otters

    (1) direct effects – incidental take/entanglement in marine debris (Question 1) – criteria stated in Table 4.1-1, effects based on observed low take rates, and projected TAC levels (Table 4.1-3) -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-12.

    (2) direct effects – fisheries harvest of prey species (Question 2) – criteria stated in Table 4.1-1, effects based on discussion of minor importance of groundfish in sea otter diets, lack of overlap between fisheries and the foraging behavior of sea otters, prohibitions of trawling in critical habitat, and TAC levels in Table 4.1-3 -- criteria

were consistently applied in evaluating effects, with the results in Table 4.1-12.

(3) indirect effects – spatial and temporal concentration of fishery (Question 3) – criteria stated in Table 4.1-1, effects based on discussion of lack of competition for forage between sea otters and commercial fisheries, the shallow habitat preference of sea otters, seasonal prohibitions of trawling, and seasonal TAC allocations -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-12.

(4) indirect effects – disturbance effects (Question 4) – criteria stated in Table 4.1-1, effects are discussed from a qualitative perspective in relation to some data indicating low causes of disturbance, allocations of TAC levels, and restrictions on transit and prohibitions against fishing in certain areas -- criteria were consistently applied in evaluating effects, with the results in Table 4.1-12.

8. Effects of the alternatives on Walleye pollock

(1) section 4.2.2 is difficult to read because Tables 4.2-1 and 4.2-2 did not show averages (from 2001 to 2006) for catch for the five alternatives, nor averages for fishing mortality for the five alternatives, nor averages for the total biomass (from 2001 to 2006) for the five alternatives.

(2) sections 4.2.2.1 through 4.2.2.5 describe the effects of alternatives 1 through 5 on Walleye pollock; the descriptions are primarily based on data in Tables 4.2-1 and 4.2-2, along with qualitative discussions (units for the data should be shown in Tables 4.2-1 and 4.2-2).

(3) section 4.2.2.6 (listed as 4.2.1.6) should refer to Table 4.2-3 which describes significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should be explained (in fact, Table 4.2-3 should have been included in section 4.2.2).

(4) section 4.2.1.6 also includes two summary tables showing the effects ratings of the five alternatives for EBS and GOA (Tables 4.2-4 and 4.2-5); however, no rationale is included for any of the ratings; they should have been included, as appropriate, in sections 4.2.2.1 through 4.2.2.5; it is critical that the rationale be described.

9. Effects of alternatives on Pacific cod

    (1) Tables 4.2-7 and 4.2-8 are better in format than Tables 4.2-1 and 4.2-2, thus Tables 4.2-7 and 4.2-8 could be used as the basis for re-formatting Tables 4.2-1 and 4.2-2.

    (2) sections 4.2.3.1 through 4.2.3.5 describe the effects of alternatives 1 through 5 on Pacific cod; the descriptions are primarily based on data in Tables 4.2-7 and 4.2-8, along with qualitative discussions.

    (3) section 4.2.3.6 refers to Table 4.2-3 which describes significance criteria (see comment (3) under 8 above for statement about the need to describe the rationale for each category of effects).

    (4) section 4.2.3.6 also includes two summary tables showing the effects ratings of the five alternatives for EBS and GOA (Tables 4.2-9 and 4.2-10); however, no rationale is included for any of the ratings; they should have been included, as appropriate, in sections 4.2.3.1 through 4.2.3.5; it is critical that the rationale be described.

10. Effects of alternatives on Atka mackerel

    (1) Tables 4.2-7 and 4.2-8 are better in format than Tables 4.2-11 and 4.2-12, thus Tables 4.2-7 and 4.2-8 could be used as the basis for re-formatting Tables 4.2-11 and 4.2-12.

    (2) section 4.2.4 does not include any discussion of the information in Table 4.2-12 for GOA.

    (3) sections 4.2.4.1 through 4.2.4.5 describe the effects of alternatives 1 through 5 on Atka mackerel; the descriptions are primarily based on data in Tables 4.2-11 and 4.2-12, along with qualitative discussions based on research data and professional judgment.

    (4) fishing mortality rates should be added to Tables 4.2-11 and 4.2-12, such rates are referred to in sections 4.2.4.1 through 4.2.4.5; in addition, the reference source for the mean age in the equilibrium unfished BSAI Atka mackerel stock (3.8 years) should be mentioned in each of the above sections.

    (5) in section 4.2.4.3, the mean age of BSAI Atka mackerel is 3.13, not 2.96.

(6) section 4.2.4.6 refers to Table 4.2-3 which describes significance criteria (see comment (3) under 8 above for statement about the need to describe the rationale for each category of effects).

(7) section 4.2.4.6 also includes two summary tables showing the effects ratings of the five alternatives for EBS and GOA (Tables 4.2-13 and 4.2-14); however, no detailed rationale is included for any of the ratings; they should have been included, as appropriate, in sections 4.2.3.1 through 4.2.3.5; it is critical that the rationale be described. (note: very brief summary descriptions are included in two short paragraphs under Table 4.2-14 on page 4-149)

11. Effects of alternatives on flatfish species

(1) in section 4.2.5.1, the projected average combined flatfish yield (2001-2006) for the EBS range from 74,000 mt to 201,000 mt (not from 120,000 to 229,000 mt)

(2) Tables 4.2-7 and 4.2-8 are better in format than Tables 4.2-15 and 4.2-16, thus Tables 4.2-7 and 4.2-8 could be used as the basis for re-formatting Tables 4.2-15 and 4.2-16.

(3) sections 4.2.5.1.1 through 4.2.5.1.5 describe the effects of alternatives 1 through 5 on flatfish species; the descriptions are primarily based on data in Tables 4.2-15 and 4.2-16, along with qualitative discussions based on professional judgment; however, several numbers in these sections cannot be verified from the two tables, thus the sections need to be carefully edited and appropriate documentation provided via cited references.

(4) section 4.2.5.1.6 refers to Table 4.2-3 which describes significance criteria (see comment (3) under 8 above for statement about the need to describe the rationale for each category of effects).

(5) section 4.2.5.1.6 also includes one summary table (Table 4.2-17) showing the effects ratings of the five alternatives when considered relative to two broad groups of flatfish; however, no rationale is included for any of the ratings and they should have been included, as appropriate, in sections 4.2.5.1.1 through 4.2.5.1.5; it is critical that the rationale be described.

12. Effects of alternatives on BSAI rockfish

    (1) Tables 4.2-7 and 4.2-8 are better in format than Tables 4.2-18 (for Pacific ocean perch), 4.2-20 (for other red rockfish), and 4.2-21 (for other rockfish), thus Tables 4.2-7 and 4.2-8 could be used as the basis for re-formatting Tables 4.2-18, 4.2-20 and 4.2-21,

    (2) section 4.2.5.2 should refer to Table 4.2-3 which describes effects significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should have been explained the first time it was introduced in Chapter 4.

    (3) sections 4.2.5.2.1 through 4.2.5.2.5 describe the effects of alternatives 1 through 5 on BSAI rockfish; the descriptions are primarily based on data in Tables 4.2-18 through 4.2-21, along with qualitative discussions based on professional judgment.

    (4) section 4.2.5.2.6 refers to Tables 4.2-22 and 4.2-23 which contain the effects ratings for the five alternatives relative to two direct and two indirect effects; the bases for the ratings are partially described in sections 4.2.5.2.1 through 4.2.5.2.5, however, the rationale for each rating should be more specifically explained.

13. Effects of alternatives on GOA rockfish

    (1) section 4.2.5.3 should refer to Table 4.2-3 which describes effects significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should have been explained the first time it was introduced in Chapter 4.

    (2) section 4.2.5.3.1 includes a composite qualitative discussion of the effects of alternatives 1 through 5 on GOA rockfish; the discussion is based on research findings and professional judgment.

    (3) section 4.2.5.3.2 refers to Table 4.2-24 which contains the effects ratings for the five alternatives relative to two direct and two indirect effects; the bases for the ratings are partially described in sections 4.2.5.3.1, however, the rationale for each rating should be more specifically explained.

14. Effects of alternatives on GOA thornyheads

    (1) the format of Table 4.2-25 is good and similar to the formats of Tables 4.2-27 and 4.2-8.

    (2) section 4.2.5.4 should refer to Table 4.2-3 which describes effects significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should have been explained the first time it was introduced in Chapter 4.

    (3) sections 4.2.5.4.1 through 4.2.5.4.5 describe the effects of alternatives 1 through 5 on GOA thornyheads; the descriptions are primarily based on data in Table 4.2-25, along with qualitative discussions based on research findings, fishing practices, field observations, and professional judgment.

    (4) section 4.2.5.4.6 refers to Table 4.2-26 which contains the effects ratings for the five alternatives relative to two direct and two indirect effects; the bases for the ratings are partially described in sections 4.2.5.4.1 through 4.2.5.4.5, however, the rationale for each rating should be more specifically explained in relation to the effects significance criteria in Table 4.2-3.

15. Effects of alternatives on sablefish

    (1) the format of Table 4.2-27 should be changed to match that of Table 4.2-7.

    (2) section 4.2.5.5 should refer to Table 4.2-3 which describes effects significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should have been explained the first time it was introduced in Chapter 4.

    (3) sections 4.2.5.5.1 collectively describes the effects of alternatives 1 through 5 on sablefish; the descriptions are primarily based on data in Tables 4.2-27 and 4.2-28, along with qualitative discussions based on research findings, fishing practices, and professional judgment.

(4) section 4.2.5.5.2 refers to Table 4.2-29 which contains the effects ratings for the five alternatives relative to two direct and two indirect effects; the bases for the ratings are partially described in section 4.2.5.5.1, however, the rationale for each rating should be more specifically explained in relation to the effects significance criteria in Table 4.2-3.

16. Effects of alternatives on BSAI squid and other species

(1) section 4.2.5.6 should refer to the use of Table 4.2-3 for both BSAI squid and other species, and for GOA other species; Table 4.2-3 describes effects significance criteria in terms of two direct and two indirect effects (direct effects include fishing mortality and spatial/temporal distribution of catch, and indirect effects include change in prey availability and change in habitat suitability); the rationale for each category of effects should have been explained the first time it was introduced in Chapter 4.

(2) section 4.2.5.6.1.1 collectively describes the effects of alternatives 1 through 5 on BSAI squid and other species; the descriptions are primarily based on bycatch TAC levels and stock assessments for squid and other species, anticipated changes in pollock fisheries, field data for squid and other species (skates, sculpins, sharks, and octopi), and professional judgment.

(3) section 4.2.5.6.1.2 (listed as the second 4.2.5.6.1.1) refers to Table 4.2-30 which contains the effects ratings for the five alternatives relative to five species groups (squid, skates, sculpins, sharks, and octopi); the bases for the ratings are described in section 4.2.5.6.1.1, however, the rationale for each rating should be more specifically explained in relation to the effects significance criteria in Table 4.2-3.

17. Effects of alternatives on GOA other species

(1) see comment (1) under 16 above.

(2) section 4.2.5.6.2.1 collectively describes the effects of alternatives 1 through 5 on GOA other species; the descriptions are based on bycatch TAC levels for other species (squid, skates, sculpins, sharks, and octopi), anticipated changes in pollock fisheries, field data on bycatch, and professional judgment.

(3) section 4.2.5.6.2.2 (listed as the second 4.2.5.6.2.1) refers to Table 4.2-31 which contains the effects ratings for the five alternatives relative to five species groups (squid, skates,

sculpins, sharks, and octopi); the bases for the ratings are described in section 4.2.5.6.2.1, however, the rationale for each rating should be more specifically explained in relation to the effects significance criteria in Table 4.2-3.

18. Effects of alternatives on the incidental catch of non-specified species in BSAI

    (1) criteria for the significance of impacts (effects) on the incidental catch of non-specified species are in Table 4.3-1; for non-specified species, only one issue (indicator) is used (incidental catch), however, it is applied to six species groups (grenadiers, other non-specified species, jellyfish, sessile invertebrates, mobile invertebrates, and total non-specified) in BSAI.

    (2) direct effects-incidental catch of non-specified species – the criteria are stated in Table 4.3-1, effects were based on the discussion of data on BSAI incidental catches from 1997 to 1999, the percentage of such catches in relation to the BSAI groundfish fisheries, and the influence of spatial and temporal allocations of TAC levels for pollock, Pacific cod and Atka mackerel in BSAI.

    (3) the direct effects ratings for non-specified species in BSAI are summarized in Table 4.3-2 for the six species groups; the ratings are expressed in terms of effects on populations and likelihood of change in the incidental catch; the discussions in sections 4.3.1.1 through 4.3.1.5 generally support the assigned ratings, although they could be more clearly stated (it was noted that quantitative information on effects on non-specified species is extremely limited, however, even so, the assigned ratings could be more clearly described).

19. Effects of alternatives on the incidental catch of non-specified species in GOA

    (1) criteria for the significance of impacts (effects) on the incidental catch of non-specified species are in Table 4.3-1; for non-specified species, only one issue (indicator) is used (incidental catch), however, it is applied to six species groups (grenadiers, other non-specified species, jellyfish, sessile invertebrates, mobile invertebrates, and total non-specified) in GOA.

    (2) direct effects-incidental catch of non-specified species – the criteria are stated in Table 4.3-1; effects were based on the discussion of data on GOA incidental catches from 1997 to 1999, the percentage of such catches in relation to the GOA groundfish

fisheries, and the influence of spatial and temporal allocations of TAC levels for pollock, Pacific cod and Atka mackerel in GOA.

(3) the direct effects ratings for non-specified species in GOA are summarized in Table 4.3-3 for the six species groups; the ratings are expressed in terms of effects on populations and likelihood of change in the incidental catch; the discussions in sections 4.3.2.1 through 4.3.2.5 generally support the assigned ratings, although they could be more clearly stated (it was noted that quantitative information on effects on non-specified species is extremely limited, however, even so, the assigned ratings could be more clearly described).

20. Effects of alternatives on forage fish species

(1) criteria for the significance of impacts (effects) on the incidental catch of forage fish species are in Table 4.4-1; for forage fish species, only one issue (indicator) is used (incidental catch), however, it is applied to smelt and other forage fish in BSAI and GOA; Table 4.4-1 should be referred to in section 4.4.

(2) direct effects-incidental catch of forage fish species – the criteria are stated in Table 4.4-1; effects were based on the qualitative discussion of the influence of spatial and temporal allocations of TAC levels for pollock, Pacific cod and Atka mackerel in BSAI and GOA.

(3) the direct effects ratings are summarized in Table 4.4-2 in terms of effects on populations and likelihood of change in the incidental catch; the discussions in sections 4.4.1 through 4.4.5 generally support the assigned ratings, although they could be more clearly stated (it was noted that quantitative information on effects on forage fish species is extremely limited, however, even so, the assigned ratings could be more clearly described).

21. Effects of alternatives on prohibited species bycatch in BSAI

(1) criteria for rating the significance of impacts (effects) on eight prohibited species/species groups are in Table 4.5-2; this table should be moved to section 4.5.1 and re-numbered as appropriate.

(2) direct effects based on salmon, halibut, herring, and crab bycatch – criteria stated in Table 4.5-2; effects were based on estimated bycatch percentage changes (Table 4.5-1), critical habitat limitations on Atka mackerel fishing and bycatch limits; discuss-

ions of the percentage changes and habitat limitations are in sections 4.5.1.1 through 4.5.1.5, as appropriate; however, no rationale is provided to connect the effects ratings in Table 4.5-3 (two tables on page 4-197) with the specific significance criteria listed in Table 4.5-2, the inclusion of the rationale is critical.

(3) direct effects-spatial and temporal concentration of bycatch – criteria stated in Table 4.5-2; effects based on limited qualitative discussion of critical habitat limitations for the three target commercial fisheries (if applicable) – criteria do not appear to have been applied due to the limited discussion in sections 4.5.1.1 through 4.5.1.5, and the lack of descriptive rationale related to the effects ratings in Table 4.5-3 (two tables on page 4-197), the inclusion of the rationale is critical.

(4) indirect effects-prey competition – criteria stated in Table 4.5-2; no discussion of the indicator (biomass removal) was found in sections 4.5.1.1 through 4.5.1.5, and thus there is no descriptive rationale related to the effects ratings in Table 4.5-3 (two tables on page 4-197); the inclusion of such rationale is critical in demonstrating the application of the significance criteria in Table 4.5-2.

22. Effects of alternatives on prohibited species bycatch in GOA

(1) criteria for rating the significance of impacts (effects) on eight prohibited species/species groups are in Table 4.5-6 (same criteria as in Table 4.5-2); this table should be moved to section 4.5.2 and re-numbered as appropriate

(2) direct effects based on salmon, halibut, herring, and crab bycatch – criteria stated in Table 4.5-6; effects were based on estimated bycatch percentage changes (Table 4.5-5), and on areas closed to pollock trawling; discussions of the percentage changes and closed areas are in sections 4.5.2.1 through 4.5.2.5, as appropriate; however, no rationale is provided to connect the effects ratings in Table 4.5-7 with the specific significance criteria listed in Table 4.5-6, the inclusion of the rationale is critical.

(3) direct effects-spatial and temporal concentration of bycatch – criteria stated in Table 4.5-6; effects based on limited qualitative discussion of areas closed to pollock trawling -- criteria do not appear to have been applied due to the limited discussion in sections 4.5.2.1 through 4.5.2.5, and the lack of descriptive rationale related to the effects ratings in Table 4.5-7; the inclusion of the rationale is critical.

(4) indirect effects-prey competition – criteria stated in Table 4.5-6; no discussion of the indicator (biomass removal) was found in sections 4.5.2.1 through 4.5.2.5, and thus there is no descriptive rationale related to the effects ratings in Table 4.5-7; the inclusion of such rationale is critical in demonstrating the application of the significance criteria in Table 4.5-6.

Note: The entirety of section 4.5 needs to be carefully edited regarding table numbers.

23. Effects of alternatives on ESA-listed Pacific salmon

(1) direct effects-bycatch – criteria stated in Table 4.6-1; effects related to percentage changes in chinook bycatch by pollock trawl fishery based on average baseline catch for chinook in 1998-1999 in BSAI and GOA (Tables 4.6-3 and 4.6-4) – criteria were consistently applied, with the results in Table 4.6-2.

(2) direct effects-spatial/temporal concentration of bycatch – criteria stated in Table 4.6-1; effects based on seasonal and spatial allocations for pollock TACs, on the percentage change in chinook bycatch shown in Tables 4.6-3 and 4.6-4, and CWT (coded wire tag) recoveries (Figure 4.6-1) – criteria were consistently applied, with the results in Table 4.6-2.

(3) indirect effects-prey competition – criteria stated in Table 4.6-1, effects related to percentage change in squid and herring bycatch by pollock trawl fishery based on 1997-1999 average baseline catch for squid and herring in BSAI and GOA (Tables 4.6-3 and 4.6-4) – criteria were consistently applied, with the results in Table 4.6-2.

Note: Table 4.6-4 needs minus signs added for percent differences in chinook bycatch for Alternatives 4 and 5.

24. Effects of alternatives on seabirds

(1) Table 4.7-2 summarizes the criteria for determining the significance of the effects, the criteria are qualitative and straightforward; Table 4.7-2 needs to be moved to section 4.7 and re-numbered accordingly.

(2) direct effects-incidental take – criteria are stated in Table 4.7-2; effects based on observed data on incidental catch for longline

fisheries (Table 4.7-1), spatial and seasonal apportionment of TACs, related findings of research studies, overlaps of fishing closure areas and areas where seabirds occur, and the qualitative discussion of these issues – criteria were consistently applied in evaluating effects, with the results in Table 4.7-3.

(3) indirect effects-prey (forage fish) abundance and availability – criteria are stated in Table 4.7-2; effects based on related findings of research studies, spatial and seasonal apportionment of TACs, overlaps of fishing closure or restricted areas and areas where seabirds occur, and the qualitative discussion of these issues – criteria were consistently applied in evaluating effects, with the results in Table 4.7-3.

(4) indirect effects-benthic habitat – criteria are stated in Table 4.7-2; effects based on considering the impacts of bottom trawl gear on the foraging habitat of diving sea ducks such as spectacled eiders, the critical habitat of such ducks, related findings of research studies, areas where trawling is prohibited, and the qualitative discussion of these issues – criteria were consistently applied in evaluating effects, with the results in Table 4.7-3.

(5) indirect effects-availability of processing wastes and offal – criteria are stated in Table 4.7-2; effects based on the qualitative discussion of related findings of research studies, spatial and seasonal apportionments of TACs, area fishing restrictions, and locations of major seabird breeding colonies – criteria were consistently applied in evaluating effects, with the results in Table 4.7-3.

25. Effects of alternatives on marine benthic habitat

(1) Tables 4.8-4 and 4.8-5 should be moved to section 4,.8 and renumbered as appropriate; criteria for determining the significance of effects are in Table 4.8-4, while the effects ratings assignments for the five alternatives are in Table 4.8-5.

(2) sections 4.8.1 through 4.8.5 describe the effects of the five alternatives on marine benthic habitat; however, specific connections between the effects significance criteria in Table 4.8-4 and the assigned effects ratings in Table 4.8-5 are not always made, accordingly, it is critical that the rationale for the effects ratings for the five issues listed in Table 4.8-5 be systematically described.

26. Effects of the alternatives on the ecosystem

(1) section 4.9 provides a good summary discussion of background literature related to the effects of fisheries on predator-prey relationships, energy flow and balance, and biological diversity.

(2) Table 4.9-2 in section 4.9.6 summarizes the criteria used for rating the effects of the alternatives on nine indicators grouped into predator-prey relationships, energy flow and balance, and biological diversity; the term non-significant (NS) is used rather than insignificant, it should be changed to insignificant in order to be consistent with the effects terminology used throughout Chapter 4; the NS terminology in sections 4.9.1 through 4.9.5 should be changed, as appropriate, to insignificant.

(3) Table 4.9-2 should be moved to section 4.9 and introduced under Assessment of Alternatives; this would provide the context for reading sections 4.9.1 through 4.9.5; further, Table 4.9-3 should also be moved to section 4.9 under Assessment of Alternatives because the rationale for the specific ratings are explained in sections 4.9.1 through 4.9.5 which follows.

(4) the criteria in Table 4.9-2 were consistently applied for the ratings shown in Table 4.9-3; the only exception was that the rationale for the I for removal of top predators for Alternative 1 was not explained in section 4.9.1.

27. Effects of alternatives on management and enforcement

(1) criteria for rating the significance of effects are in Table 4.11-6 and introduced in section 4.11.5; these criteria and the associated table should be moved to section 4.11 in order to provide a better context for reading sections 4.11.1 through 4.11.4.

(2) the relationship of sections 4.11.1 through 4.11.4 to the two key issues in Table 4.11-6 should be explained in section 4.11.

(3) additional descriptions of the rationale for the effects ratings shown in Table 4.11-7 should be added to section 4.11.5 (the current descriptions are too brief and can be strengthened with data and key points from sections 4.11.1 through 4.11.4); finally, the ratings in Table 4.11-7 appear to have been based on the criteria in Table 4.11-6, they simply need to be supported by more complete descriptions of the rationale.

If you have any questions about the above four parts in this letter report on our consistency review, please let me know. Thank you for the opportunity of reviewing the subject SEIS.

Sincerely,

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0216

October 15, 2001

Dr. Jim Balsiger
Regional Administrator
NMFS, Alaska Region
P.O. Box 21668
Juneau, Alaska 99802

Re: Comments on DSEIS for Steller Sea Lion Protection Measures

Prowler Fisheries, Inc. supports Alternative 4 of the DSEIS, consistent with the RPA Committee recommendation, the draft Biological Opinion, and the actions of the NPFMC at the September and October 2001 meetings. Prowler Fisheries, Inc. has previously provided comments to NMFS on the draft Biological Opinion. Since the draft BiOp is Alternative 4, we will not repeat those comments but reference them as also applicable to the DSEIS. The summary of those comments would be that due to uncertainty in the nutritional stress hypothesis, it is not evident to Prowler Fisheries, Inc. that fishing and associated local depletion are significant factors in the recent decline (second phase) in the population of SSLs. However, in order to avoid jeopardy and to maintain fishing opportunity (albeit restricted by the RPAs), Prowler Fisheries accepts Alternative 4 as the preferred alternative since it provides protection to SSLs under the precautionary approach while minimizing the cost to the harvest sector to the extent practicable. However, the cost to the fishing industry is still considerable in Alterantive 4.

The caveat on this acceptance would be that the validity of nutritional stress hypothesis be tested and quantified as well as the testing of differential gear impacts on localized depletion (longline, trawl, pot). Each fishery should bear the burden of conservation proportional to its impacts, if any.

Given those considerations, Prowler Fisheries, Inc. believes Alternative 2 should not be chosen as a preferred alternative. The costs of this alternative to the fishing industry are extreme while providing unknown benefit to SSLs. The following is a discussion of problems with Alternative 2.

Frozen at Sea Longline Caught Fish

Problems with Alternative 2: "Low and Slow Approach"

General: Alternative 2 is flawed in that it is a broad brush solution that will result in creating new additional management problems (i.e. "squeezing the balloon"). Displaced effort will be redistributed elsewhere, creating an other round of management issues. The effects of Alternative 2 on sea lions may be unknown due to the lack of experimental design in this alternative. It is clear that Alternative 2 will have severe negative effects on fisheries, safety, socio-economics, management and enforcement. In particular, the negative effects are greatest in the p-cod fishery and particularly in the longline fishery. Alternative 2 includes: restrictions on fisheries inside and outside of Critical Habitat; reduction of overall TACs; zonal reallocations; daily fleetwide catch limits by species; seasonal apportionments; and seasonal exclusive area registration.

1.) Global Reduction of TAC: Alternative 2 modifies the current Council TAC setting process (i.e. Plan Team/SSC/AP/NPFMC) by setting the maximum TAC as a percentage of ABC. The p-cod TAC would be 71.8% of the ABC in the BSAI and 55% of the ABC in the GOA, a reduction of 28.2% and 45% respectively. This TAC reduction is for all gear types (trawl, longline; pot, and jig) over broad geographic areas irregardless of use by SSLs.

- The current TAC setting process already employs the precautionary principle in multiple applications and has a proven track record to prevent overfishing (BiOp3: Figure 6.16 & Draft BiOp p. 120). The current TAC setting process is a public process with opportunity for public comment at the Plan Team, SSC, AP, and NPFMC levels.

- Reduction of global catch levels in broad geographic areas is inappropriate when the most recent satellite telemetry indicates 93.8% of juvenile at-sea locations and 75% of all at-sea locations are within 10 nm of land (p. 112 Draft BiOp).

- The SSC has previously commented on BiOp3 stating *"...the document should have concluded that global catch levels do not seem likely to affect SSLs, and consequently, that there is no justification for altering the current control rule for pollock, cod, and Atka mackerel at present."*

2.) Seasonal Apportionment Increases Bycatch and Incidental Take: Alternative 2 establishes four seasons with equal apportionment of TAC for pollock, p-cod, and Atka mackerel for all gear types. Two week stand-downs would be established between seasons with no provision for rollovers. Presently the BSAI longline p-cod fishery is primarily conducted in the first and third trimesters. Alternative 2 mandates that 25% of the TAC will be taken in the summer quarter (June 15 to August 15). The seasonal reapportionment to summer months due to Alternative 2 will result in the following negative consequences for the p-cod longline fishery:

- Alternative 2 will increase the likelihood of interactions with short-tailed albatrosses (an ESA listed species). The draft SEIS (p. 4-222) states, *"An abundance index for short-tailed albatross in waters off Alaska indicates that August (highest index), July, and June experience the highest abundance (USFWS, 1999b). If under Alternative 2 the BSAI cod fishery was prosecuted during the June 15 to August 15 quarter, it is possible that vessels would potentially interact more frequently with short-tailed albatross... Alternative 2 was determined to have conditionally significant adverse effects on the short-tailed albatross with respect to incidental take."*

- Alternative 2 will increase halibut bycatch (PSC) rates. The draft SEIS (p. 4-222) states, *"Historically this fishery* [BSAI cod longline fishery] *has not been fished during summer months when halibut bycatch levels tend to constrain harvest."* During the summer, cod are less aggregated and move into shallower water where there is a higher incidence of halibut. Therefore, in order to fish the summer quarter, more gear would have to be run (due to the less aggregated cod biomass) in waters with a higher incidence of halibut. This would result in higher halibut by-catch rates. Prosecuting an open fishery in this quarter would trigger a seasonal closure (due to halibut PSC) with foregone harvest for the longline fleet (no seasonal rollovers under Alternative 2).

- The quality of cod as a seafood product decreases in the summer months. This would result in loss of ex-vessel value and potential loss of market.

3.) Zonal Approach: Under Alternative 2, the zonal approach for p-cod in the BSAI/GOA has very little to do with sea lions but considerably more to do with allocation and social engineering. The zonal approach is a reallocation scheme in regards to gear type, vessel length and product form by specific displacement from fishing grounds. Displaced effort doesn't vanish but is redistributed elsewhere, generating an other round of management considerations. As proposed in Alternative 2:

0-3 nm	No fishing around rookeries and haulouts (all vessels/gear).
3-10 nm	Pots (<60 pots/vessel), jigs, longliners < 60'
10-20 nm	Pots, jigs, longliners < 60', CV longliners > 60'
20+ nm	All vessels, all gear.

Note: All freezer-longliners (CPs) > 60' and all trawlers are only allowed in the zone outside of 20 nm outside rookeries and haulouts.

- The zonal approach to cod in Alternative 2 makes no distinction between the BSAI and GOA in terms of rationalization and participation. In the BSAI, there is presently an allocation between gear types. This has not taken place in the GOA cod fishery. Additionally, the NPFMC has passed Amendment 67 which will limit the number of participants in the BSAI fixed gear cod fishery. With these actions, the NPFMC has rationalized the BSAI fixed gear cod fishery. In contrast, the GOA cod fishery (though under LLP) is essentially an open access fishery for all gear types with little to no allocations (onshore/offshore, CP vessel length).

- The zonal approach to cod in Alternative 2 makes no distinction between the BSAI and GOA in terms of geography. The distances in the BSAI from the cod longline grounds to shoreside processors can be up to multiple days, plus weather. This essentially precludes participation by non-freezer boats due to quality considerations and the perishable nature of the product. The longer distances of the BSAI also bring increased running time with associated costs particularly if delivering fresh product on a frequent basis.

- The zonal approach to cod in Alternative 2 makes no distinction between the BSAI and GOA in terms of weather. The zonal approach seeks to make the Bering Sea a small boat longline fishery (CV only inside of 20 nm) which is contrary to the weather patterns of the Bering Sea.

- The zonal approach to cod in Alternative 2 differentiates between CP and CV longliners. No rationale is provided as to what benefit this distinction provides to sea lions. The effect of longline gear and harvest is the same regardless if the harvested fish are slushed, iced, or frozen-at-sea. It is unclear how regulating product form is of significance or benefit to sea lions. There are no studies indicating a pinniped preference for product form in a fish hold. Due to quality considerations, the higher product value, and the remoteness of fishing grounds, over 99% of the longline p-cod harvest in the BSAI is by freezer-longliners (CPs). The zonal approach in the BSAI would then reallocate to a CV longline fishery that does not exist. A CV longline fishery may only be practical in fishing grounds that are close to processing facilities (limited in the BSAI). This would seem to concentrate effort to some near-shore areas rather than disperse effort.

- The zonal approach for longline gear also makes a distinction between longline vessel length without providing substantiation for that distinction in terms of sea lions. The rate of removal ("hole in the prey field") by longline gear is the same regardless of the size of the vessel that is hauling the gear, i.e. the gear is the same "hook-and-line". In contrast, trawl gear and vessel size are related by factors of horsepower and net dimensions.

- Given these considerations, the zonal approach is a reallocation of fishing grounds inside of 20 nm from longline and trawl to pot and jig. The zonal approach nearly eliminates freezer longliners (> 60') from the Aleutian Islands as most of the fishing grounds are within 20 nm. The vessels that now fish the AI would then relocate to the EBS resulting in a further concentration of effort in the Bering Sea. The vessels already fishing in the Bering Sea would be further concentrated as these vessels would also be forced moved to outside of 20 nm in the Bering Sea under this alternative.

4.) Management and Enforcement: Alternative 2 is the most complex alternative for management and enforcement (Draft SEIS, p. ES-13) particularly for directed cod fishing and particularly for fixed gear vessels (p. 4-267). This alternative creates the largest number of new quota categories to be managed (+78 quota categories) . The draft SEIS (p. 4-270) states, " *Alternative 2 contains some fairly complex proposals with respect to* *groundfish quota management including a significant increase in the number of quota categories that would have to be managed, decreases in the amount of quota in each category, seasonal exclusive area registration, daily catch limits, and a foraging area catch limit for cod."*

5.) Daily Catch Limits: Alternative 2 establishes maximum daily aggregate (all gear) catch limits for cod in the BS, AI, and GOA. The draft SEIS (p. 4-273) states, *"However, in analysis of the management and enforcement implications of daily catch limits, NMFS determined that our current fisheries management system cannot support daily catch limits."*

6.) Safety: The draft SEIS (p. ES-15) states, *"Alternative 2 is predicted to have the largest operational changes (e.g. transit greater distances between port and open fishing grounds, fish farther offshore, and aggravate the race for fish). Therefore, Alternative 2 is expected to have a high potential to increase the risks of accidents and injury per unit of catch".*

7.) Economic Costs: In the draft SEIS, Table ES-3 depicts overall losses resulting from Alternative 2 in four socio-economic comparisons ranging from 28 to 61% (from status quo). In contrast, the same comparisons for Alternative 4 range from less than 1% to 6%.

8.) Other Negative Effects: Northern Fur Seals, Crab Bycatch:

- Alternative 2 will result in displaced fishing effort that will redistribute in northern fur seal foraging areas in the EBS. The draft SEIS (p. 4-49) states, *"...under Alternative 2, the probable increase of in the fisheries harvest of prey species consumed by northern fur seals in the eastern Bering Sea is rated as conditionally significant negative (Table 4.1-9)"* and *"...Alternative 2 differs from Alternative 1* [status quo] *and represents probable increases in the spatial and temporal interactions of the groundfish fisheries with northern fur seals, it is rated as conditionally significant negative."*

- Under Alternative 2 and effects on PSC bycatch in the BSAI, the draft SEIS (p. 4-192) states *"In general there would be an increase in crab bycatch, especially in red king crab and C. opilio because the bycatch of these species are spatially removed from the critical habitat areas closed*

under Alternative 2 and increased fishing effort due to displaced effort would lead to increases in bycatch."

Thank you for taking these comments into consideration.

John Winther

John Winther

Prowler Fisheries, Inc.

Expanded Analysis of Telemetry Data

Submitted by dave fraser

The "Dear Reviewer" letter issued with the draft BiOp4 requested "substantive comments and other pertinent information that might reveal ...rationale which may not have been considered." In response to that request a further analysis of the telemetry data was undertaken to evaluate the hypothesis that a bias exists in favour of near-shore hits. This was done using the Location, Time Line, and Status message data provided by NMML for the tagged animals in the Western stock of Steller sea lions.

The location data was examined based on two approaches:

- percent of hits by area
- direct examination of time spent by area

Location "Hits"

Any evaluation of the potential for competition between SSL and fisheries outside the areas protected by the Alt. 4 buffers must examine whether use of that area is also partitioned in some way between SSL and fisheries. A review of observer data makes it clear that there is no fishing for cod or mackerel outside the continental shelf break, and very limited Pollock fishing. A review of the telemetry data suggests that a significant fraction of SSL locations outside 10 miles are also outside the 1000 fathom contour.

Using the telemetry data set provided by NMFS, the filtering process outlined on page 4 of the July 2001 ADF&G/NMFS "white paper" was followed. This process eliminates invalid locations based on Argos classification, illogical locations based on speed, and location which fail the Keating error index . The data was divided on a seasonal basis into "winter" and "summer" using the definition of October-April for winter and May-September for summer. Locations "hits" were assigned to area bins based on distance from shore, inside or outside ten miles, and outside 20 miles. All hits outside 10 miles were also evaluated to determine if they were also outside the continental shelf edge as represented by the 1000 fathom contour.

In the analysis of pups and juveniles, 1st only points that passed Keating and swimming speed tests were retained, then only animals for which either timeline or transmitter status (on land or at sea) was available were used in this run. Only confirmed at-sea values were used. Null values (land/sea status unknown) were excluded from the analysis. There were 25 animals in this run.

In the second analysis (of all hits, including and excluding those from waters deeper than 1000 fm), the land/sea status was ignored since it was assumed that animals must be at sea if they are out over 1000 fm. The entire data set of "acceptable" values (i.e. those that survived Keating and swimming speed tests) included 4897 points. There were 52 animals in this run.
The results of this process are reflected in the following table.

Table 1 – Percentage of Locations Outside 10 Miles And Outside 1000 Fathoms

Summer			
	n > 10 miles	n >1000 fm	% > 1000 fm
Pup/Juveniles	99	62	63%
All Ages	173	118	68%

Winter			
	n > 10 miles	n >1000 fm	% > 1000 fm
Pup/Juveniles	60	2	3%
All Ages	194	95	49%

These data suggest that in summer roughly 2/3rds of the locations outside 10 miles are also beyond the shelf edge. In winter roughly half of the outside hits are also beyond the shelf edge for adults. Only a small percentage of pups and juveniles locations were beyond the shelf edge in winter, however, as reported in table 5.1 of BiOp4 only a very small proportion of these animals are outside 10 miles in winter.

While this may not precisely mirror the filtering used by NMFS, i suggest that NMFS undertake a similar analysis using the approach of partitioning hits outside the shelf break.

Analysis of Time Spent by Area

The analysis presented in the BiOp and the accompanying "white papers" examines tabulated telemetry data on the basis of location "hits" by area. This approach is appropriate and useful, but has some limitations. One of the limitations is a result of changing telemetry technology and programming of tags over the last decade (this is described in detail in Loughlin, et al, draft paper "Immature Steller Sea Lion Foraging Behaviour" pages 5-7). Another limitation arises from the changing focus of tagging studies as NMFS has directed its efforts toward the population segment thought to be of greatest concern.

These factors result in a need to sub-divide the data not only by age class, and season, but also by transmitter type and programming specifications, as well as by deployment area. The next logical step is to look at each animal individually, within the context of the bathymetry of its home range and fisheries that might occur in those areas.

Using GIS mapping, each animal's telemetry data was examined individually, to track its activity over time. All Pollock and P. Cod groundfish fishery observer data for the last decade was plotted with the sea lion telemetry data to determine the potential spatial and temporal overlap with the fishery. After using the same data filtering process as described in the "white paper," transmissions by each individual sea lion were sequenced and date/time stamped, they were then plotted using GIS, and finally trip segments were identified.

A summary of the results is as follows:

1. <u>Pre-1999 Buffers:</u> Overlap with the groundfish fisheries was limited even prior to the 1998 RPAs, when the sea lion protection measures were limited to the rookery buffers. This was particularly true for pups less than one year old.

2. <u>Proposed Alt. 4 Buffers</u>: The trawl closures around rookeries, haulouts and RPA sites under Alt. 4 significantly diminished any overlap between fishery observed locations and sea lion telemetry locations.

3. <u>Natural Offshore Area Partitioning</u>: Temporal analysis of the location data indicates further partitioning of the use of area outside the Alt. 4 buffers between sea lions and trawl fisheries. Of the animals from the western stock of sea lions tagged by NMFS, very few animals had substantial activity outside ten miles. Of those animals, three of these went well offshore, past the thousand-fathom continental shelf break. Sea lions traveling or foraging in the area beyond the continental shelf break will not meet competition since no trawl fisheries occur in that area.

4. <u>No Overlap Past 1000 Fathom Contour:</u> To the extent that the data shows a second mode that is well outside the shelf break, SSL activity in that bin does not represent overlap with the fishery. There is no fishing for mackerel or cod outside the continental shelf edge, and very limited pollock fishing. Thus, the SSL activity beyond the shelf edge should be filtered out of an evaluation of the relative importance of the area inside and outside 10 miles for purposes of examining the question of overlap between SSL and fisheries.

5. <u>Area Between 10 Miles and Shelf Edge of Minimal Importance</u>: The analysis shows a bi-modal distribution of sea lion locations. The first, and primary, mode consists of inshore hits (inside ten miles). The second mode consists of offshore hits beyond the shelf edge, past the area where any trawl fishing occurs. Even when the 90% filter is applied to the inshore hits, if the hits beyond the shelf edge are also removed (because there is no potential overlap) the analysis substantiates NMFS conclusion that the area inside ten miles is at least three times as important as the area between ten miles and the shelf edge.

6. <u>Temporal Partioning</u>: Given the time constraints in preparing these comments, figures were not produced to show temporal overlap (or the lack thereof) between fisheries use of areas by season and sea lion use of those areas by season. Each plot of fishery observer data includes all tows over the last decade. A plot of the use of an area by a sealion in the a particular season is portrayed against the use of the area by fisheries over the whole year and thus overstates the degree of temporal overlap. Based on records of fishery

openings and closures it is clear that activity by juvenile sea lions outside 10 miles (e.g., in the case of SSLID 74 or 78 in the month of May) that no pollock, mackerel, or cod fisheries were open in those areas during that month.

The foregoing inferences are supported by an attached set of figures. The following table provides information on the individual animal represented in each figure. These animals were selected either because they had the most locations hits for their age class, or the longest data series over time for their age class. Additional animals were examined after an initial scoping identified those with a significant number of location hits outside 10 miles.

Table 2 – Information by Individual SSL Presented in Attached Maps.

Fig. #	SSLID* #	PTT #	Tag Site	Tag Deployed	Sex	Age Class	Months	Duration Days	At-Sea Location Hit #'s
						Pups			
8	54	14070	Long Is.	2/5/1993	M	P	8	41	92
7	63	14080	Long Is.	1/16/1996	M	P	7	79	72
18 & 19	74	14163	Seguam	2/29/2000	M	P	9	104	206
1 - 3	75	14164	Aiktak	3/8/2000	M	P	9	98	203
6	78	21094	Long Is.	3/12/2000	M	P	9	66	130
						Yearlings			
10	58	14078	Long Is.	12/7/1994	F	Y	18	58	53
11	59	14077	Marmot	12/9/1994	M	Y	18	40	59
4 & 5	60	14072	Aiktak	4/13/1995	F	Y	22	56	47
9	77	14170	Long Is.	3/12/2000	M	Y	21	94	210
						Adult Females			
13	19	14072	Chirikof	12/7/1990	F	AF		174	33
14	25	9956	Chirikof	3/7/1991	F	AF		121	171
15-17	49	14073	Akun	3/8/1992	F	AF		67	217

* Note: Because PPT tag numbers were used for more than one animal, a unique identifier (SSLID) was created for purposes of this analysis.

Notes on interpreting the attached Figures

Map layers:

These figures are made up of several layers of data, described as follows:

Observer data:

Using NMFS observer data for the period from 1990 through 2001, all Pollock and cod haul locations. Hauls were grouped by .01 degree blocks (less than 1 square mile) and the number of hauls by block calculated. The display covers all months of the year.

Legends for the observer data.

Cod, # of hauls, # of locations		Pollock, # of hauls, # of locations	
allhauls_c by CountOfHaul		allhauls_p by CountOfHaul	
26 to 89	(204)	15 to 85	(681)
9 to 26	(737)	6 to 15	(2890)
4 to 9	(1724)	3 to 6	(9497)
2 to 4	(3798)	2 to 3	(11845)
1 to 2	(9920)	1 to 2	(31551)

Over the last decade there have been 9920 locations at which only one or two cod tows have been made, these are represented at the light end of the scale. At the top of the scale there are 204 locations where more than 26 cod tows have been made, there are 681 locations where more than 15 pollock tows have been made.

Buffers:
Each rookery and haulout is plotted with its appropriate trawl closure buffer under Alt. 4. In the case of the Aleutian Islands cod buffers differ from Pollock buffers in size and both are plotted.

Bathymetry Contours:
The 100, 200, and 1000 fathom curves are represented in red, green and blue respectively.

Fishery & Buffers:
When plotting multiple layers of data, the last layer plotted covers up the preceding layer. In most of the figures Alt. 4 Buffers were plotted first, then fishery data, then SSL locations. This allows the view to see displaced fishing effort resulting from incremental closures over the last decade, and to see effort that will be displace by the new measures. In some instances, the buffers were plotted over the fishery data to show areas where there will be no potential overlap between targeted groundfish fisheries and SSL under the new regulations.

SSL Locations:
Sea lion locations were always plotted last so they would not be obscured by other layers. The are represented by a "+" symbol and are generally labeled, either with a date or a counter number to indicate when in the sequence of transmissions a hit occurred.

Transmission Quality:
In several of the figures there is a note referencing either "B" or "-8" quality indexes for SSL locations. These are locations that passed the filtering process outlined in the "white paper," but are of the lowest quality for the remaining data. When these positions occur in isolation from other hits in the sequence, there is a high probability that they do not reflect the position of the SSL at that time. The Argos rating system (3, 2, 1, 0, A, B, Z [*in earlier units negative numbers were assigned to lower quality transmissions]*) assigns accuracy estimates to transmissions rating above 0, but makes no estimate for A and B

quality locations (Z are discarded as invalid by Argos.) A paper by Robson (2001) describes baseline testing performed on telemetry units in a Pribolof fur seal study. That study found a mean error for B class locations of 10.1 km. Loughlin, et al, in their draft paper on "Immature Steller Sea Lion Foraging Behaviour" choose to discard A and B class locations. Howerver, they appear to be included in the calculations for table 5.1 of the BiOp and so were retained for purposes of this examination

Scale: The scale varies between figures, and was set to encompass the full range of at-sea locations in the initial figure for each animal, that met the filter criteria described on page 4 of the ADF&G/NMFS "white paper." Generally, the scale can be inferred from the 10 and 20 miles buffers; in some cases a scale was added to the figure. For some animals, especially those that made a migration, there are multiple figures per animal which capture its range for a subset of time.

List of Figures:

Aleut Community of St. Paul Island
Tribal Government
Ecosystem Conservation Office

0761

October 15, 2001

James W. Balsinger
Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Aang (Greetings):

The Tribal Government of St. Paul (TGSNP) is the local tribal organization representing the Aleut Community of St. Paul Island. The Tribal Government of St. Paul has created the Ecosystem Conservation Office (ECO) to maintain cultural interaction with the Bering Sea environment, protect and conserve all life systems that coexist and are interdependent within the island's ecosystem, manage human activities so as not to negatively impact the natural and/or subsistence resources and other customary traditional practices, and be respectful of, and utilize both indigenous and western approaches to environmental knowledge, wisdom, and science. It is the goal of ECO to exercise stewardship over the island's resources and to promote Tribal self-determination in environmental management, enhancement and protection. Northern fur seals, Steller sea lions, and harbor seals are important customary traditional foods for all Pribilovians. In order to conserve and protect marine mammals and fish for future generations it is necessary to observe and record changes that are occurring within their populations and the ecosystem as a whole as well as change our use of the resources as their levels fluctuate.

The Tribal Government of St. Paul is committed to working cooperatively with all agencies, striving for an ecosystem approach on all environmental matters relating to marine mammals which affect the people of St. Paul. The TGSNP began reviewing the Steller Sea Lion Protection Measures Draft SEIS After our initial review of the effects of the alternatives on northern fur seals we are particularly concerned that:

1) the information used for evaluating the direct effects-Incidental Take/Entanglement in Marine Debris is not complete, and

2)all of the alternatives proposed to avoid significant negative impacts for **Steller sea lions** will cause significant negative impacts to **Northern fur seals.**

We believe there is evidence to suggest the difference in the geographic extent of the no-trawl areas extending around St. Paul and St. George slowed the decline of the northern fur seals on St. Paul and provided no quantifiable benefit to northern fur seals breeding on St. George.

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Information regarding studies of entanglement of northern fur seals in marine fishing debris is not included in the evaluation of any of the alternatives. Recent studies of entanglement indicate that approximately 0.2% of the juvenile male population is entangled each year on both St. Paul and St. George Island (Sinclair and Robson 1999). The entanglement rate for adult female northern fur seals on St. Paul was estimated to be approximately 0.05% in 2001 (Fowler 2001). While estimating the actual proportion of seals entangled in other age and sex classes is difficult we believe the data from 1995-1997 and 2001 should be included and used in the evaluation of the direct effects (Incidental Take/Entanglement in Marine Debris) of the alternatives to estimate the total number of seals entangled each year.

What we are most concerned about is that each of the alternatives to protect Steller sea lions has significant negative impacts on northern fur seals. These alternatives are all unacceptable if they trade negative fishing impacts on a Federally Endangered species (Steller sea lions) for a Federally Depleted species (northern fur seals). Northern fur seals have shown no signs of recovery since they were listed as depleted in 1988. Recent counts of harem and idle bulls (a measure of population size) suggest that there is cause for concern regarding the population trend in the Pribilof Islands (Fowler 2001). When comparing the population trends and the foraging locations of lactating females of northern fur seals at St. Paul and St. George there is an indication that the no trawl protections afforded around St. Paul Island designated by the Pribilof Island Conservation Area may have contributed to the population stabilization of northern fur seals during the late 1980's and 1990's. If the no-trawl protections for St. Paul contributed to the stabilization of the northern fur seal population, then it is likely that the lack of protection around St. George Island may have contributed to the continuous decline of this population since the late 1970's. In addition, there was a significant difference in debris types between the islands, with trawl debris accounting for the larger proportion of debris on St. George than St. Paul (Sinclair and Robson 1999). This evidence also suggests that the protections afforded St. Paul by the larger and more geographically extensive no-trawl zone have resulted in more of this debris type being around St. George than St. Paul.

We believe the preceding evidence indicates that further evidence needs to be evaluated for each of the alternatives as well as additional alternatives that do not "trade" significant negative effects on Steller sea lions for significant negative effects on northern fur seals. In our preliminary evaluation of this document we have only been able to quickly review the northern fur seal section of the SEIS and have ignored, for sake of time, funding and priority, other sections of the SEIS regarding seabirds, other fish species and other marine mammals. We are therefore requesting an additional 60 days to review the remainder of the draft SEIS and provide a more complete review of the northern fur seal data that may have been overlooked. We believe that a more balanced fishery management approach should include an exclusive fishing area around both of the Pribilof Islands for those fishermen who are willing to reduce bycatch of non-target species and age classes, comply with MARPOL Annex V, and be willing to have a portion of the catch directly fund environmental monitoring and research programs in the area

Thank you for this opportunity to review the Steller Sea Lion Protection Measures draft SEIS. If you have any questions you can contact Aquilina D. Lestenkof or Phillip Zavadil by phone at (907) 546-2641 at the ECO of the Tribal Government of St. Paul.

Qaĝaalakux...Thanks,

Aquilina D. Lestenkof
Co-Director

Phillip A. Zavadil
Co-Director

Literature Cited:

Fowler, C. 2001. Report of Field Work – Pribilof islands, July, 2001. Memorandum for Doug Demaster, National Marine Mammal laboratory, July 23, 2001.

Sinclair, E.H., and B.W. Robson. 1999. Fur Seal Investigations, 1997. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-106, 111 p.

Groundfish Data Bank P.O. BOX 788 - KODIAK, AK. 99615

Alaska

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Julie Bonney, Director jbonney@eagle.ptialaska.net

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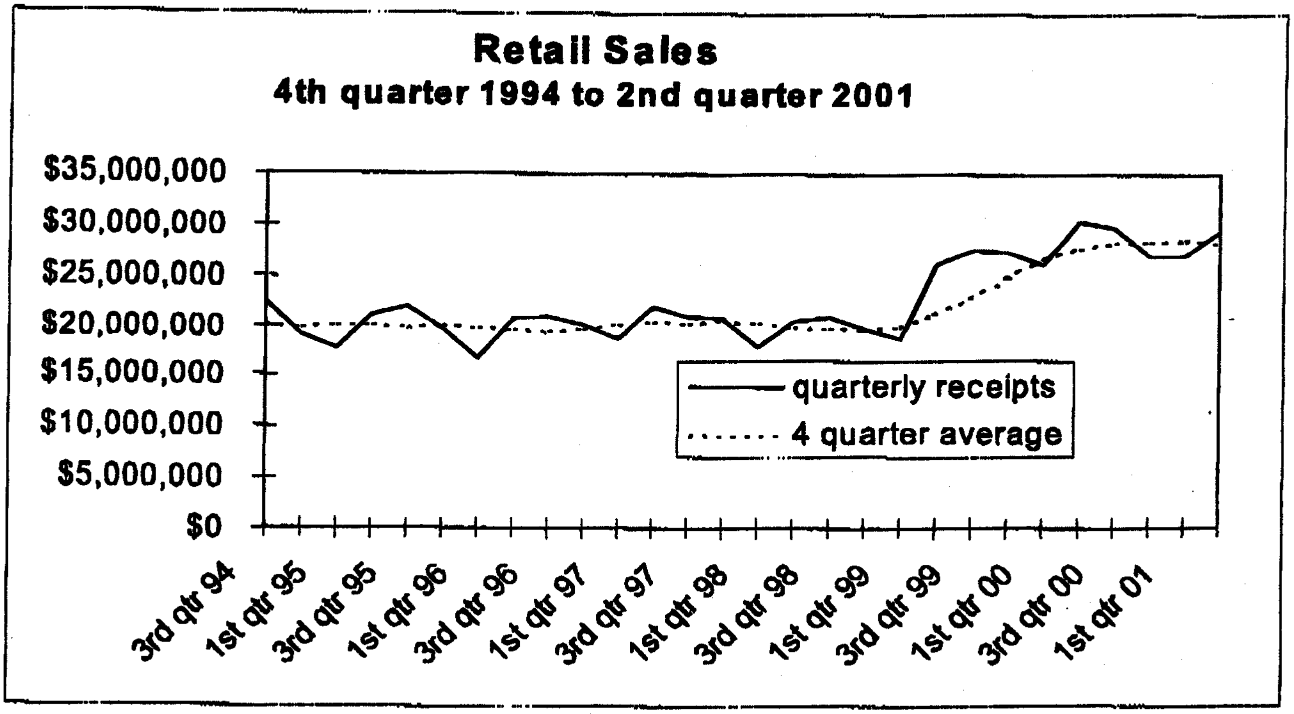
SENT BY FAX – October 15, 2001 – 8 PAGES

James W. Balsiger
Alaska Regional Administrator
National Marine Fisheries
P.O. Box 21668
Juneau, Alaska 99802

AGDB COMMENTS ON THE SEIS STELLER SEA LION PROTECTION MEASURES

Many of the tables and figures for the SSL Social Impact Assessment – Appendix F1 represented outdated information for the Kodiak region communities. The Kodiak Chamber of Commerce has provided revised information reflecting information current through either 2000 or 2001 as show in the following pages.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4th quarter 1994 to 2nd quarter 2001
$35,000,000
$30,000,000
$25,000,000
$20,000,000
$15,000,000
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$5,000,000
$0
quarterly receipts
4 quarter average
3rd qtr 94
1st qtr 95
3rd qtr 95
1st qtr 96
3rd qtr 96
1st qtr 97
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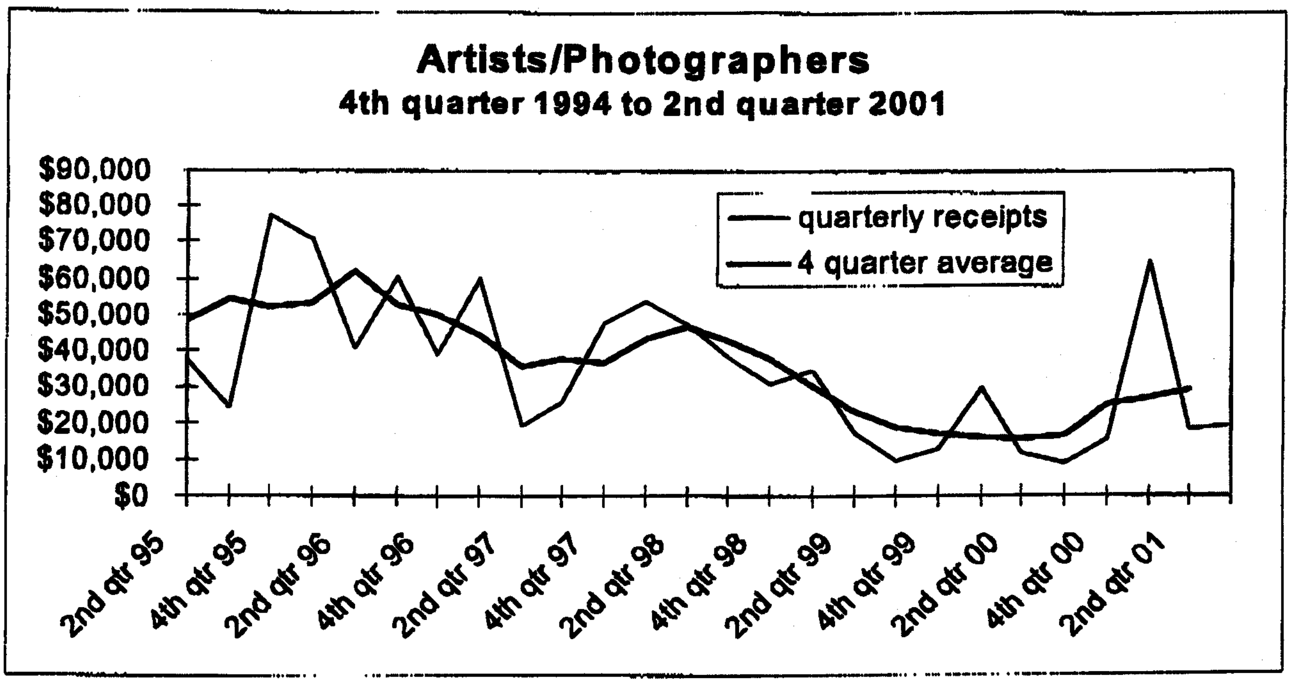
Artists/Photographers
4th quarter 1994 to 2nd quarter 2001
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
quarterly receipts
4 quarter average
2nd qtr 95
4th qtr 95
2nd qtr 96
4th qtr 96
2nd qtr 97
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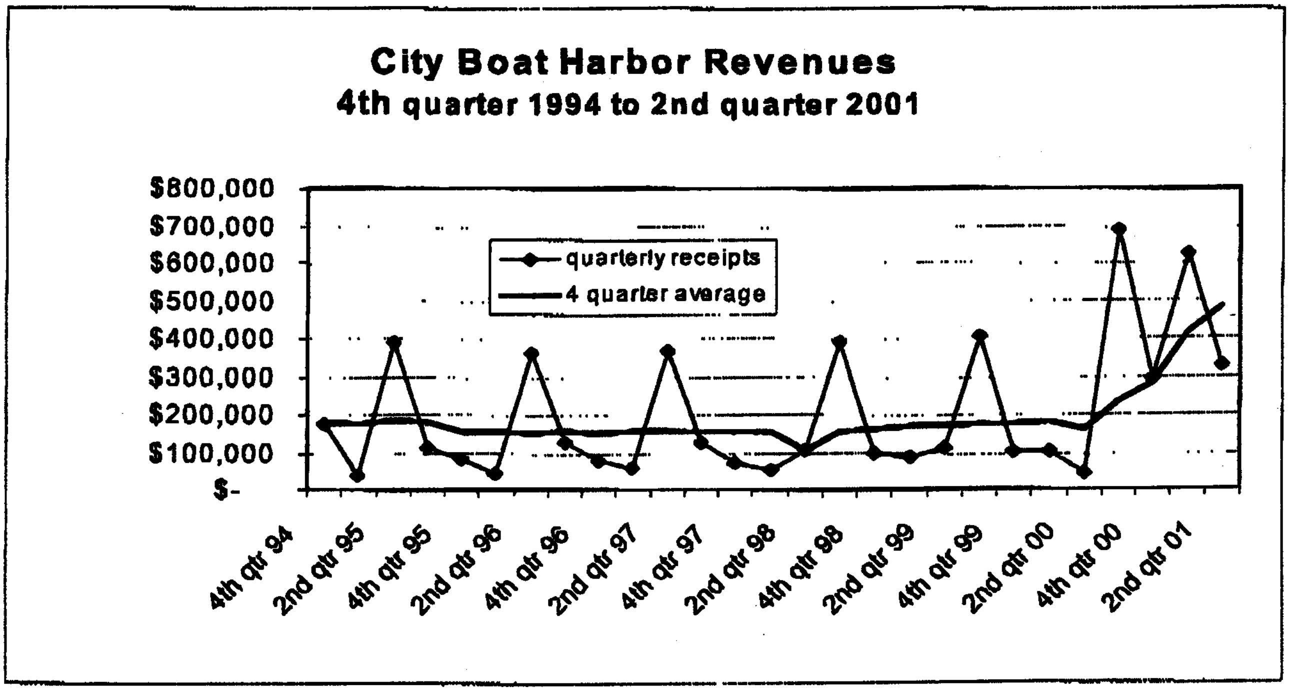
4th qtr 00
2nd qtr 01


City Boat Harbor Revenues
4th quarter 1994 to 2nd quarter 2001
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$-
quarterly receipts
4 quarter average
4th qtr 94
2nd qtr 95
4th qtr 95
2nd qtr 96
4th qtr 96
2nd qtr 97
4th qtr 97
2nd qtr 98
4th qtr 98
2nd qtr 99
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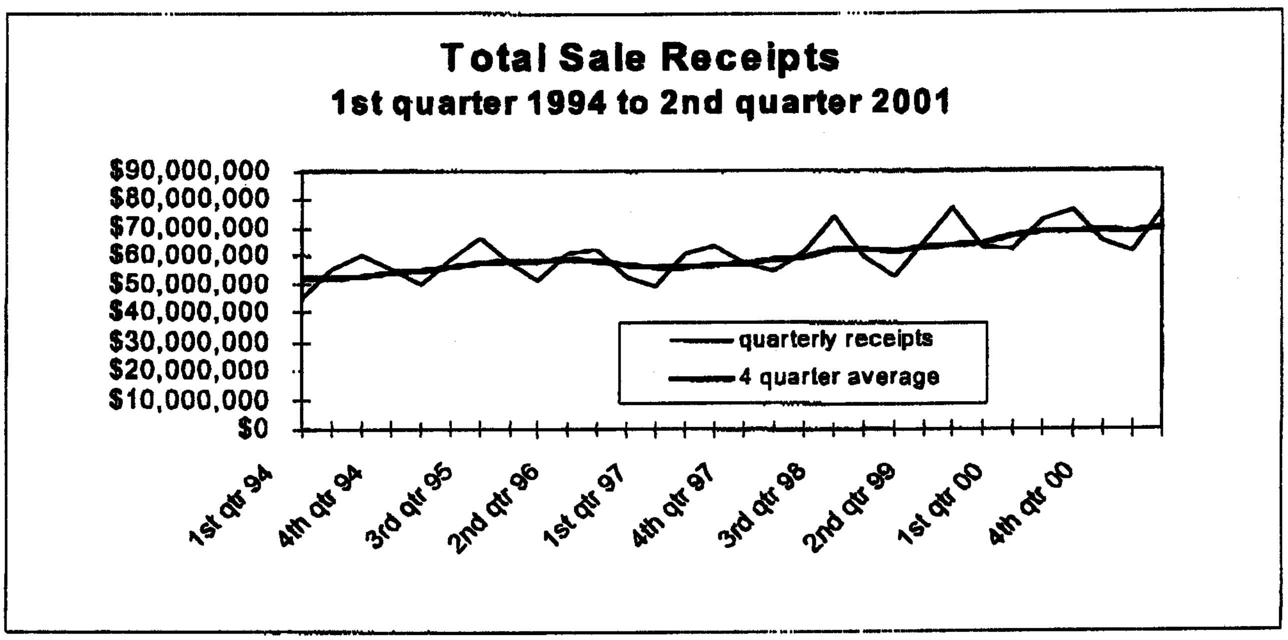
2nd qtr 01


Total Sale Receipts
1st quarter 1994 to 2nd quarter 2001
$90,000,000
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
quarterly receipts
4 quarter average
1st qtr 94
4th qtr 94
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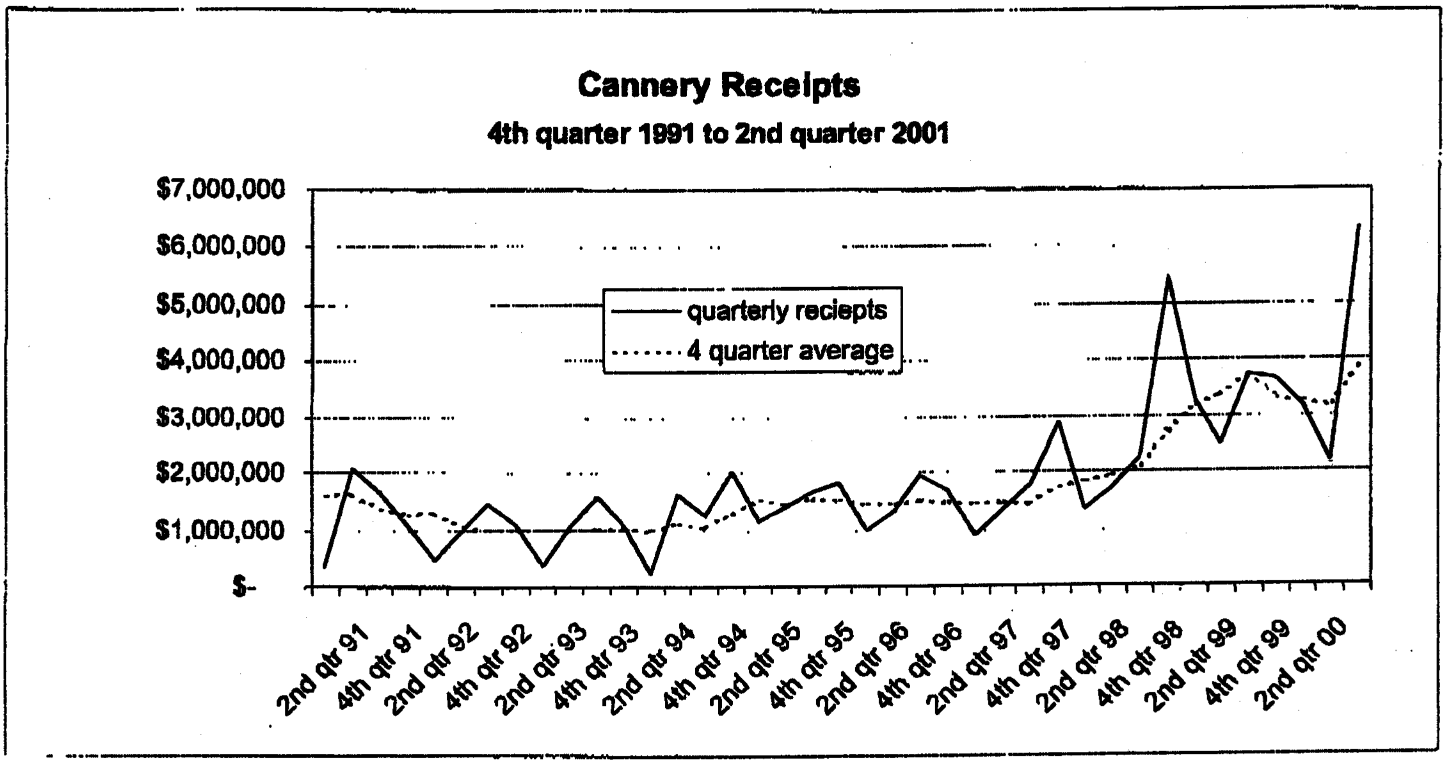
1st qtr 00
4th qtr 00



Cannery Receipts
4th quarter 1991 to 2nd quarter 2001
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
quarterly reciepts
4 quarter average
2nd qtr 91
4th qtr 91
2nd qtr 92
4th qtr 92
2nd qtr 93
4th qtr 93
2nd qtr 94
4th qtr 94
2nd qtr 95
4th qtr 95
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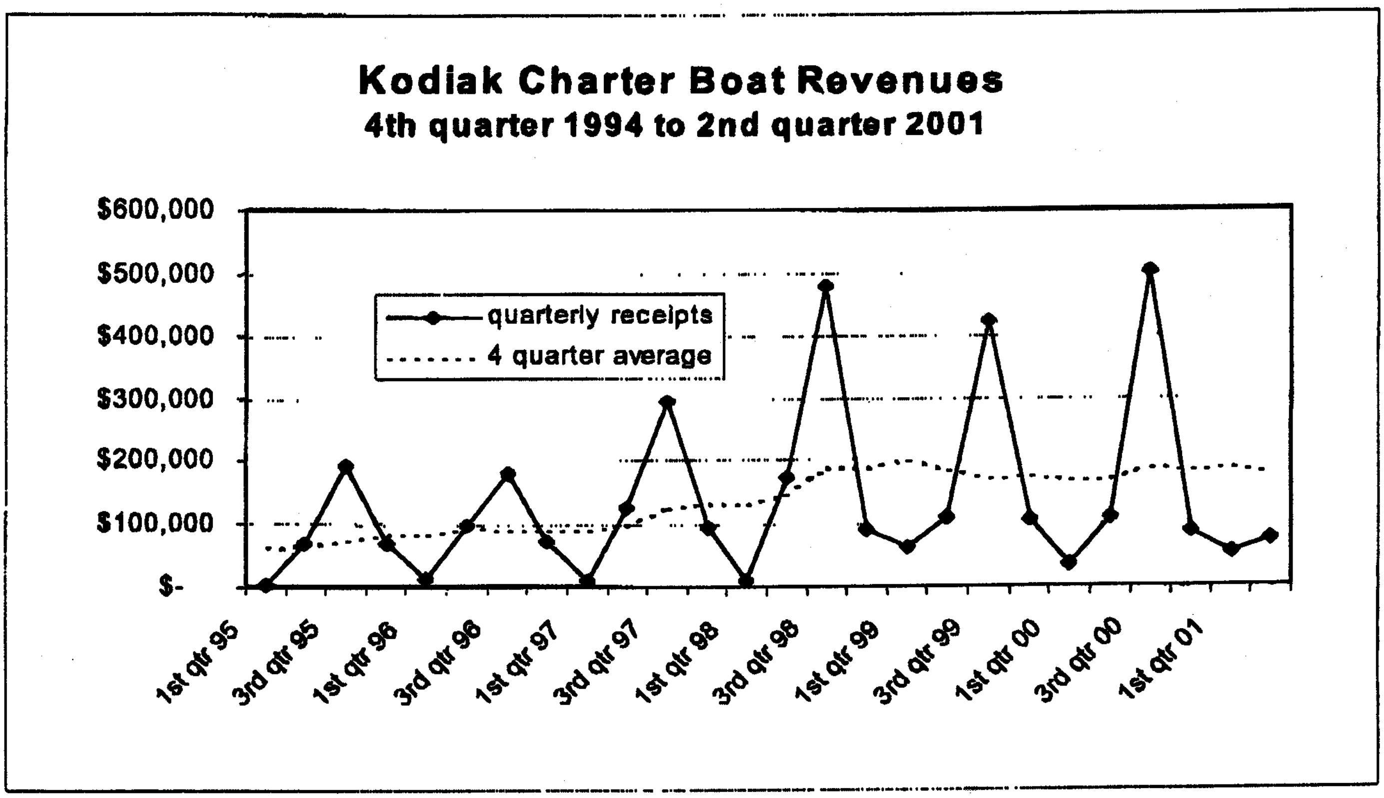
4th qtr 99
2nd qtr 00



Kodiak Charter Boat Revenues
4th quarter 1994 to 2nd quarter 2001
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$-
quarterly receipts
4 quarter average
1st qtr 95
3rd qtr 95
1st qtr 96
3rd qtr 96
1st qtr 97
3rd qtr 97
1st qtr 98
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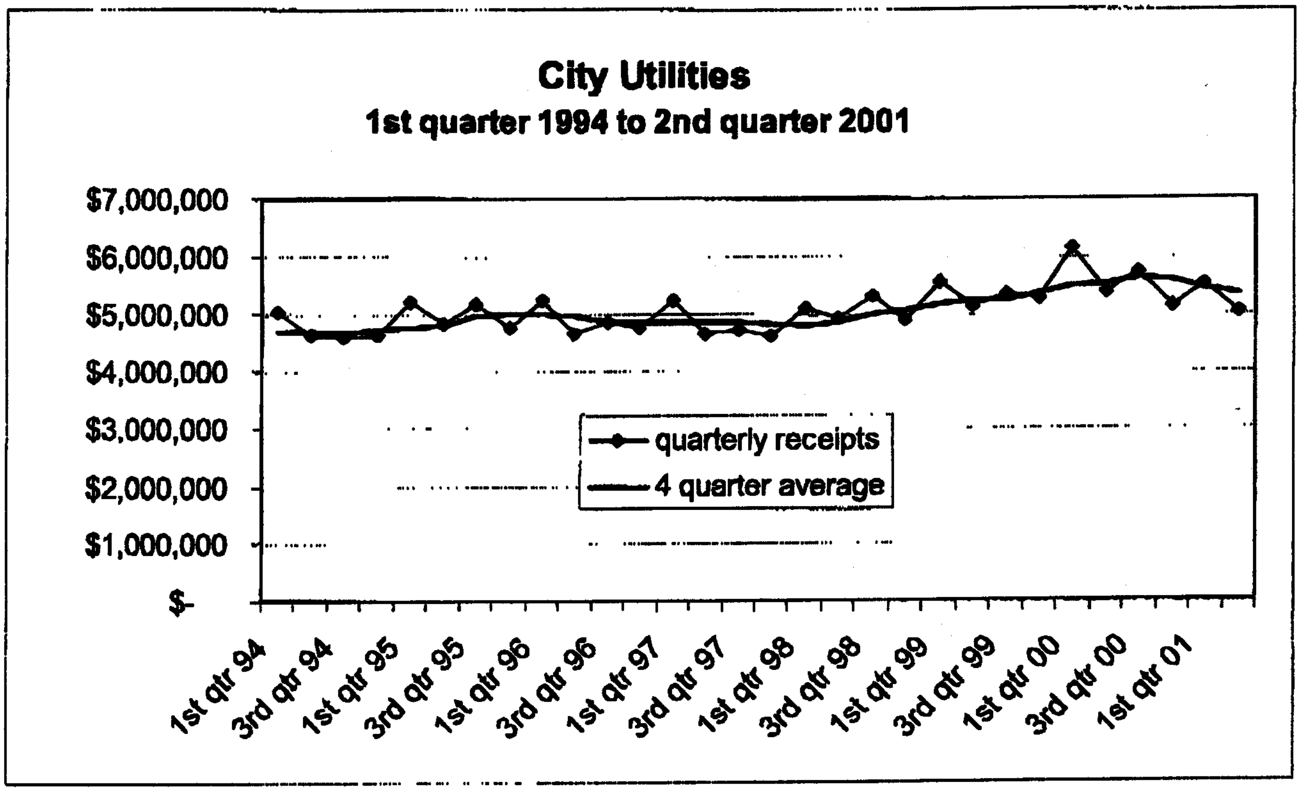
3rd qtr 00
1st qtr 01



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Population by Sex, Kodiak Island Borough; 2000

	Number	Percent
Male	7362	53%
Female	6551	47%
Total	13,913	100%

Population by Sex, Kodiak City; 1970, 1980, 1990, 2000

	1970		1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	2,055	54%	2,498	53%	3,496	55%	3,379	53%
Female	1,743	46%	2,188	47%	2,869	45%	2,955	47%
Total	3,798	100%	4,686	100%	6,363	100%	6,334	100%

Other Comments on the SSL Social Imapct Assessment – Appendix F1 Section 2.1 Kodiak

Seasonality of the Kodiak Economy
Page F1-47
(First paragraph, 4th line)
"city sales tax receipt information for the fourth quarter of 1994 through the second quarter of 2001."

Page F1-48
(Last paragraph, first sentence)
Delete the first sentence in its entirety.

Page F1-50

The first line of the first paragraph should read:
"Still, excluding the U.S. Coast Guard, 4 of the top 5 employers in Kodiak in 2000 were fish processors, and three more were listed in the top 20 employers."
Delete/or rewrite the remainder of the paragraph. Wal-mart came to Kodiak not K-mart.

Kodiak's Top Employers - 2000

	Name	2000 Employment
1	Kodiak Island Borough School District	402
2	Ocean Beauty Seafoods	338
3	Trident Seafood Group	248
4	Polar Equipment (Cook Inlet Processing)	227
5	North Pacific Processors Inc. (APS)	198
6	Providence Kodiak Island Medical Center	177
7	City of Kodiak	173
8	Wal-Mart Associates	147
9	International Seafoods of Alaska	146
10	Safeway Inc.	142
11	Global Seafoods	136
12	Western Alaska Fisheries	109
12	Kodiak Area Native Association	109
14	Space Mark International	108
15	U.S. Department of Transportation	99
16	AK Department of Fish and Game	77
17	KI Enterprises (McDonald's)	66
18	University of Alaska	54
19	Kodiak Island Housing Authority	51
10	Kodiak Electric Association	51

Links to the Groundfish Fishery

Page F1-51
Sentence two should read:
"Table 2.1-8 below displays the total volume of fish landed at Kodiak for 1984 through 2000.

Page F1-51
Table 2.1-8 Volume and Value of Fish Landed at Kodiak 1984 - 2000
Add another row

2000	289.6	6	100.8	3

Page F1-52
Table 2.1-9. Fish Landed at the Port of Kodiak, 2000

Species	Pounds ª	% of Total Pounds	Exvessel Value	% of Total Value
Bearing Sea Snow Crab	1,451,842	0.5	1,277,621	1.3
Dungeness Crab	236,921	0.1	390,920	0.4
Bristol Bay Red King Crab	900,536	0.3	1,707,901	1.8
Weathervane Scallops	280,568	0.1	1,662,575	1.8
Sea Cucumbers	116,152	0.0	174,228	0.2
Misc. (shrimp, sea urchins)	N/A	0.0	N/A	0.0
Octopus	181,993	0.0	90,997	0.0
Halibut	9,258,799	3.2	23,146,998	24.4
Pacific Cod	64,936,708	22.4	24,030,302	25.4
Sabelfish	3,377,355	1.2	6,957,351	7.3
Pollock	102,229,713	35.3	8,720,096	9.2
Flatfish f	1,847,248	0.7	252,530	0.3
Flathead Sole	1,676,648	0.6	234,642	0.2
Pacific Ocean Perch	9,008,682	3.1	729,051	0.8
Rockfish g	9,229,389	3.1	611,210	0.6
Rex and Dover Sole	1,167,310	0.4	132,387	0.1
Rock Sole	10,191,805	3.5	2,061,818	2.1
Black Rockfish	251,520	0.1	108,373	0.1
Salmon	61,800,000	21.3	21,500,000	22.7
Herring	2,740,000	0.9	685,400	0.7
TOTAL	289,600,000	100.0	$94,700,000	100.0

Page F1-53
Kodiak has two grouping of Pollock processors. It is true that the larger plants have 8 to 10 trawlers however most of the smaller plants have 4 or less trawlers in their Pollock fleet.

Processing
Page F1-54
The new Kodiak processor processed fish in Kodiak from the beginning of 2000 until mid-2001. They stopped buying after the A/B Pollock fishery and have offered to sell some of their assets to other local processors.

Support Services
Page F1-56
Under the heading "Support Services," second paragraph, second sentence:
"It has more than 650 boat slips and 3 commercial piers that can handle vessels up to 1000 feet long.

0763

*NATIONAL ENVIRONMENTAL TRUST
1200 18TH STREET, N.W.
WASHINGTON, DC 20036

October 15, 2001

James W. Balsiger
Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Re: Steller Sea Lion Protection Measures Draft Supplemental EIS ("RPA SEIS") Comments

Dear Mr. Balsiger:

On behalf of the National Environmental Trust, I would like to endorse, in their entirety, the comments submitted by Greenpeace, American Oceans Campaign and the Sierra Club.

However, I would like to highlight specifically a few points that are conspicuous by their absence in the RPA SEIS. First, there is no alternative that envisions a significant cut in the Total Allowable Catch of any of the big three species, pollock, atka mackerel and Pacific cod. The closest to it is the approach taken in Alternative 2 which only results in a 10% reduction.

The pre-eminence of pollock as a primary prey for Steller sea lions throughout its range, as reinforced by multiple studies over the last ten years demands exploration of an alternative that would result in a tack reduction of at least 1/3 or as much as one half. While there is some benefit to be realized by the spreading out of the fishery in space and time that would be achieved through the approach taken in Alternative 2, it fall short of the potential benefit that could be realized by sea lions if fewer fish were being caught.

This SEIS dismisses not only the pre-eminence of the food hypothesis, but also the scales of competition for prey on the global, regional and local scales with no rationale for their exclusion. These had been cornerstones of the previous two biological opinions on December 1998 and November 30, 2000. Their dismissal demands an explanation.

In the Biological opinion on the RPAs, it falls short in several areas,.

First, it relies heavily on the telemetry data even with all the expressed shortcomings which include but are not limited to the following: small sample size, only samples mothers and nursing pups, samples in the summer and it assumes similar foraging behavior by these mothers before they give birth as to what they show after they do give birth, they neglect to track the behavior of young adults or males.

Second, it contains no confidence intervals around the population estimates of the fish populations in critical habitat. If a serious assessment is to be made of the impact of fishing on Stellers in critical habitat, it is critical to know whether the estimates of biomass in critical habitat is 1 million tons or 10 million tons.

Third, there is no figures showing the distribution of the catch of the big three species in critical habitat. This information has appeared in previous documents and should be included in this critical document. We know that the majority of the catch is between 10-20 miles off of rookeries and haulouts and this information should be part of the analysis.

I strongly urge you to revisit this draft and your conclusions of no jeopardy and adverse modification because this reversal of conclusions is not justified by any new information presented in the document. The United Nations Highly Migratory and Straddling Fish Stocks agreement directs signatory nations to incorporate the precautionery approach in the way they manage their own fish stocks. The U.S. is a signatory and should begin living up to this commitment by giving the benefit of the doubt in these cases, to the Steller instead of the fishing fleets.

Sincerely,

Gerald B. Leape
Marine Conservation Program Director
National Environmental Trust

North Pacific Longline Association

October 15, 2001

0784

Dr. Jim Balsiger
Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Attn: Lori Gravel

RE: Draft SEIS on Sea Lion Protectve Measures; DPSEIS

Dear Dr. Balsiger:

In its comments on EFH scoping the NPLA voiced its concerns that the process could lead to sniping between gear groups, where we're at our worst. Unfortunately, it has already started. In its July 2001comments on EFH scoping the AMCC stated, at page 5, "AMCC recommends that an alternative in the EFH EIS, similar to Alternative 5 in the DPSEIS, should weigh the potential benefits of increasing gear conversion to pots. This may alleviate some unintended increases of the bycatch of HAPC biota as predicted with longline gear." (Coral and anemones)

In our comments of October 12 on this SEIS we made it clear that for the most part longliners remove only branches of coral, not whole forests (this point corroborated by the grey literature "High 1998" – "...sturdy flexible corals usually appeared to be relatively unharmed by contact with longline components while more fragile hard corals often had portions broken off."). In 2000 those portions weighed on only 0.29 pounds on average – whole corals are rarely taken. Likewise, the removal of anemones in the BSAI is infinitesimal when compared to the overall population. Little comfort can be found here for the proposition that longlines should be replaced by pots.

The SEIS acknowledges that the setting and hauling of pot gear has some effects on the benhtos, which have not been studied – just as the effects of longlining have not been studied. At a minimum, Section 3.8.4

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should be expanded to explain what is know about pot gear – that it is heavy, weighing 500 – 700 pounds; that pots are hauled by vessels under way at 3-5 knots, and that the pots may drag along the bottom for an undetermied distance, scraping and crushing benthic epifauna; that pots are moved by weather and ice with the same likely result; and that the number of pot drops and hauls during a season can be substantial – as many as a million at the height of the red king crab fishery (Dr.Gary Stauffer, personal communication). The cumulative impacts of this activity, while unknown, could be substantial. At a minimum the sea lion SEIS, the DPSEIS, and the EFH documentation should be expanded to include this information.

It is our sincere hope that NMFS will take a fair and balanced approach when describing gear impacts – all gear has some impact - and that all parties shall refrain from attempting to reallocate through any of these actions.

Sincerely,

Thorn Smith

Thorn Smith

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 25526
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2001 OCT 15

October 15, 2001

0785

Lori Gravel, Records Management Officer
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Dear Ms. Gravel:

On behalf of the State of Alaska, the Alaska Department of Fish and Game (ADF&G) submits the enclosed comments on the Draft Supplemental EIS for Steller Sea Lion Protection Measures (SEIS). While some of our comments are critical in nature, please be assured that ADF&G appreciates the opportunity to comment on this comprehensive SEIS. There is a tremendous amount of good work and commitment to Steller sea lion recovery represented in this document.

The State of Alaska concurs with NMFS's selection of the preferred alternative. Considering our collective inability to scientifically describe the cause of the continuing decline in the Western stock of Steller sea lions, Alternative 4 is clearly the best near-term option for meeting the different mandates of NEPA, ESA, and the Magnuson-Stevens Act (MSA). It is the only alternative that realistically deals with not just sea lion recovery but also safety, bycatch, and impacts to fishing communities, harvesters, and processors. This alternative also has the least impact on the CDQ program and the residents of the Western Alaska region. In regards to the impacts on harvesters and communities, we also support including some sort of small vessel exemptions for Chignik and Unalaska, similar to Options 1 and 2. We believe these options can be implemented without tipping the jeopardy scale.

Although our support for Alternative 4 and the NEPA review remains unequivocal, we do take strong exception to some of the statements on state-managed fisheries (see comments 16 and 17). As previously noted in our comments on BiOp4, we do not agree with either the conclusion that state pollock and cod fisheries have the ability to reduce the abundance of prey and disrupt prey fields for foraging Steller sea lions or the concern over potential localized depletions of herring and salmon. These are strictly matters of opinion that have no supporting evidence or data presented in this document (or BiOp4) and should be reworded or removed. Our preference is that these statements be removed. Misstatements, if said often enough, have a way of taking on a life of their own.

It is this same vein of wanting to limit the spread of flawed conclusions that we must comment on the common use of the term "conditionally significant." It is our assessment that use of the term "conditionally significant" fosters faulty conclusions. The impairment occurs in part because the term is used inconsistently. For example, the term sometimes denotes the degree of certainty that an effect will occur (see page ES-6, 4-2); and at other times, it denotes the expected magnitude of an effect (see page 4-264). Even if the term were used consistently, however, it would impair the analysis by masking the agency's determination of which effects are significant. NMFS should limit its categories of effects to "significant," "insignificant," and "unknown." Conditions, caveats and qualifications may be set forth in the discussion. Thus, an effect that is likely to be insignificant should be categorized as insignificant. Specific conditions that might change that conclusion should be explained in the text. If it is too late to eliminate use of the term "conditionally significant" in this EIS, we strongly recommend that this be the last EIS in which NMFS makes such prolific use of it.

On a more technical note, the SEIS should not use the term "state managed fishery" to describe the non-parallel cod fishery that occurs in state waters. Without considering subsistence, all fisheries (other than halibut) that occur in state waters are managed by the state. The fact that the state elects to mirror federal rules in the parallel season in order to facilitate enforcement does not deprive the state of its management authority. State regulations use the term "state waters season" to describe the non-parallel Pacific cod fishery in state waters. See 5 AAC 28.081(c)(4). The SEIS should use "state waters season" in place of "state managed" when describing the non-parallel cod fishery in state waters.

Lastly, NMFS has assured both the state and the council that Section 4 on state water fisheries will be entirely rewritten with the assistance of ADF&G. We look forward to that revision. The department has asked Kristen Mabry to aid your agency in this process.

Thank you for the opportunity to offer the attached comments.

Sincerely,

Frank Rue
Commissioner

Enclosures

cc: John Sisk
Kevin C. Duffy
Earl E. Krygier
Kate Troll
Kristen Mabry
Jon Goltz

October 15, 2001

ADF&G Specific Comments on the Draft EIS for Steller Sea Lion Protection Measures

These comments should be reviewed in the context of the previous comments ADF&G submitted September 20, 2001 on the Draft Section 7 Biological Opinion (BiOp4). For ease of tracking, the comments are tied to page numbers, beginning with the Executive Summary.

1. Page ES-4: While Pacific cod is not a dominant prey (BiOp4: Page 9 Line 43-44) it is certainly an important winter diet component. Nevertheless, we question why, if the real importance is in winter, the alternatives propose restrictions on cod management year round in all areas.

2. Page ES-5, 2nd Paragraph: The SEIS states, "Because much about Steller sea lions is unknown, perhaps even unknowable, much of the 2001 Draft Biological Opinion is based on professional judgment of knowledgeable scientists." As such, the SEIS ask the reviewer to take a leap of faith to accept the nutritional stress hypothesis and foraging reliance. As a consulting agency we strongly encourage a more thorough consideration of the issues raised in the Bowen et al September 2001 report and the State of Alaska's ASSLRT August 2001 report.

3. Page ES-19, Alternative 4: The SEIS determines that alternative 4 would have "conditionally significant negative effects on the harvest of prey species for the Steller Sea Lion." Later on page 4-21 it is explained that this negative determination is based on the fact that alternative 4 does not reduce the TAC more than 5% over the 1998 level. Given the uncertainty noted above, this determination begs the question: "Is the professional judgment of the scientists developed enough to know that a 5% difference in TAC makes all the difference?" This question is even more relevant when one considers that the BiOp4 (p 147, lines 18-21) determines that the global availability of the prey species is determined to be adequate to meet the foraging needs of Steller Sea Lions. Because of the effect of the global availability of pollock, Pacific cod, and Atka mackerel, the SSC recommends that TAC not be used for determining significance classifications of the alternatives as it is inappropriate. We concur and ask that this inconsistency be resolved by not using TAC as a significance determination. Because the Executive Summary is the most widely reviewed section of the SEIS, it is important to correct this misrepresentation of alternative 4 when it first appears.

4. Page 3-156 through 3-163: The section on the effects on habitat is one of the best synopsis describing gear impacts in an EA to date. Unfortunately, the conclusion that links these impacts to SSL foraging is not made for this section. The linkage does appear later, however, see page 3-171, 3rd paragraph: "the trawl (and add other gear types for this section) area closures protect bottom habitats within SSL critical habitat, and they afford protection to non-target species that are part of the Steller sea lion diet in various amounts, including octopus, etc." This could be integrated into the habitat section to

connect the fishing activity to SSL, though a caution should note that this is only important in respect to the credibility of the nutritional stress hypothesis.

5. Page 3-161, 1st paragraph: This statement about little research in the North Pacific is incorrect. Jon Heifetz, Ken Krieger and others at the Auke Bay Lab have researched the link between habitat complexity disturbance and managed fish populations in the North Pacific[1].

6. Page 3-161, 2nd paragraph: This paragraph should note that the State of Alaska has specifically implemented precautionary closures to protect habitat (see page 3-171).

7. Page 3-165, 3rd paragraph: The SEIS states, "Introduction of nonnative species may occur through the emptying of ballast water in ships from other regions." This statement is a hold over from an earlier draft document that cited oil tankers emptying ballast water in Prince William Sound. This is not a fishing effect and does not belong here. Furthermore, this paragraph contains a sentence: "Species level diversity, or the number of species, can be altered if fishing essentially removes a species from the system." This insinuates that the fisheries managed off Alaska have been managed in a manner that result in such occurrences. NMFS should provide the example where this occurred in the Alaska region under the Council management process, or remove it from the text.

8. Page 3-166, 1st paragraph: In a national context the NMFS Ecosystem Principles Advisory Panel suggested in 1999 that: "Absent the political will to stop overfishing, protect habitat, and support research and monitoring programs, and ecosystem-based approach cannot be effective." A statement that the NPFMC has been the leader in such areas and currently follows the recommended measures outlined in Table 3.9-1 should be included. Examples, such as industry funded observer programs, IR/IU, bottom trawl closures to protect crab habitat, the Sitka Pinnacles closure, etc., could easily be included. To not include the context of the NPFMC leaves the reviewer with the suggestion that ecosystem-based management is being overlooked.

9. Page 3-166, last sentence on page: ("an evaluation of how well the status quo groundfish … is contained in the draft programmatic groundfish SEIS (NMFS 2002a)." Rather than citing a 3,400 page document (with no page reference), it would be more

[1] Cimburg, R.L., T. Gerrodette and K. Muzik (1981). Habitat requirements and expected distribution of Alaska coral, Final Report Research Unit #601 to Office of Pollution Assessment, Alaska Office. VTN Oregon, Inc., 54 p.

Heifetz, J. (In Press). Coral in Alaska: distribution, abundance, and species associations. Hydrobiologia.

Krieger, K. J. (In Press). Coral (Primnoa) impacted by fishing gear in the Gulf of Alaska. Proceedings of the First International Symposium on Deep Sea Corals.

Krieger K. J., and B. L. Wing. (In Press). Megafaunal associations with deepwater corals (Primnoa spp.) in the Gulf of Alaska. Hydrobiologia.

Stone, R. P., and B. L. Wing. (In Press). In situ growth and recruitment of an Alaskan shallow-water gorgonian. Proceedings of the First International Symposium on Deep Sea Corals.

helpful to the reader to explain the findings here in a few sentences.

10. Page 3-169, last paragraph and Page 3-170: "The controlling factors for these changes appears to be environmental, with changes in the species composition in nearshore areas linked to an increase in advection in the Alaska Coastal Current." We concur with these findings. Not only were the inshore communities reorganized following the 1977 regime shift, the large foreign fisheries for POP and other long lived Sebastes species in the 1960's and early 1970's greatly changed the GOA ecosystem. Not only was shrimp a dominating species when the Aleutian low was weak, but a very large and biologically stable rockfish resource dominated the offshore complex. And in the 1950's, the best information we have was that pollock stocks were weak when SSLs were at highest recorded levels. These factors are in particular why the state's ASSLRT team and the state's fish management biologists have had difficulty understanding the hypothesis linking SSL declines in the 1990's with fishery activities.

11. Page 3-171, 1st paragraph: We wish to thank your agency for incorporating our earlier comments into this draft. We note that the second to last sentence is slightly incorrect. ("Except for the herring fisheries, no fisheries are permitted for forage fishes.") The Board of Fisheries and the Council both grandfathered in a capelin fishery that occasionally occurs in northern Bristol Bay and the Board has grandfathered in many Alaska native subsistence harvests of Hooligan and other surf or river smelt. Neither the Board nor the Council allows new commercial forage fish fisheries.

12. Page 3-172, 1st paragraph, 3rd sentence: This should read "Exceptions include fisheries for lingcod, and black and blue rockfishes. *Nearshore species* for which the state management authority extends *to cover their distribution within* the EEZ." (Take out the words "throughout," and "to 200 nm offshore.")

13. Page 3-172, 2nd last sentence: Should be worded differently to describe actual state management. Suggest: "Groundfish season openings and closures in state waters are managed to coincide with concurrent federal season openings and closures."

14. Page 3-173, Table 3.10-1: What is this table intended to show? The last column (federal harvest percentage) misrepresents the relative amount of the Pacific cod harvest that comes from state waters by simply showing the percentage of state waters harvest relative to the federal waters harvest. The appropriate and standard manner to present the information provided in column 4 is: "State harvest as a percent of total harvest."

15. Page 3-173, Table 3.10-1, See table footnote stating: "Pollock is accounted for in the SAFE and recommended ABC." This statement is in direct conflict with the statement on page 4-265 section 4.10.2 where it states, "Since the state's GHL for PWS is independent of federal ABC levels." The PWS pollock biomass is added to the CGOA ABC and then subtracted.

16. Page 3-173, 2nd Paragraph, starting: "The NMFS 200 Biological Opinion (NMFS 2000a) addresses:" This paragraph is a statement of opinion, not supported by any analytical evidence. The basis of information used to support this statement should be provided. ADF&G scientists contest this "matter of opinion" that localized depletions of herring and salmon are a concern for competitive interactions with Steller Sea Lion. As previously stated in our comments on BiOp4:

"The discussion of salmon fisheries fails to mention that salmon have greatly increased in abundance over the period of time that sea lions have generally decreased in abundance. It also fails to mention that salmon generally have traveled though sea lion foraging areas by the time they are harvested in the salmon fisheries. Instances in which sea lions forage in the same area in which salmon fisheries occurs are rare in comparison to overall sea lion foraging habits. These basic facts should be included in the discussion of potential interactions between salmon fisheries and Steller sea lions."

"The biological opinion provides no support for the statement that the short openings for herring fishing in state waters "may be essential to the survival of animals such as Steller sea lions." The statement is not self-evident, especially in light of the fact that sea lions feed on herring schools both when fishing is permitted, and when no fishing is permitted (which is the vast majority of the time). Moreover, it is difficult to imagine how the few hours in which fishing is permitted could be "essential to the survival" of sea lions when, as the biological opinion reports elsewhere, sea lions do not store energy but need a regular supply of forage to maintain their energy needs. The biological opinion also fails to explain that the State of Alaska has closed many herring fisheries in recent years due to low abundance of herring in many areas."

"Our many years of field experience on the fishing grounds while managing herring fisheries indicates that it is equally likely that sea lions venture into the fishing grounds because the fishery is beneficial, concentrating herring and confusing them and enhancing feeding opportunities. This cannot reasonably be considered to cause harm to sea lions, and could actually be considered beneficial."

17. Page 3-173, 2nd Paragraph, 3rd Sentence: It should be noted that ADF&G scientists contest the statement that state pollock and cod fisheries have the ability to reduce the abundance of prey and disrupt prey fields for foraging Steller Sea Lions. " This is an opinion statement that has no supporting evidence or data presented in this document, and should be reworded or removed. As previously stated in our comments on BiOp4:

"Removal rates in State managed groundfish fisheries are low. If one is trying to make a case for competition, it is not very creditable. This is because low removal rates, coupled with the fact that sea lions feed significantly on prey of a smaller size than targeted by commercial fishers and also prey significantly on non- commercial species, do not limit forage opportunities. Quite simply, we do not believe that a responsibly managed fishery with low harvest rates and fished with gear that does not remove industrial amounts in a single swoop can be considered to impact foraging, particularly when no nutritional link to sea lion health or to fishery removals are presented. Furthermore, there is no characterization of federal fisheries in a similar light, yet these fisheries coincide in time and space at the 3-mile limit."

"Large industrial trawl fisheries have been shown to cause temporary displacement of fish within a school up to one hour after the trawl passed through a spawning aggregation. In our Prince William Sound pollock trawl fishery the harvest occurs below the usual feeding depths of sea lions, so if any short-term dispersal occurs, it is not affecting sea lion feeding. The remaining state groundfish fisheries are using attractant gear (pots, jigs and longline). Scientific literature from Norway indicates such gear does not cause fish schools to scatter. Rather, a percentage of the fish in an area (those that are hungry) will slowly move to the gear. Yet only a fraction of those that are attracted, are actually caught. By attracting dispersed fish to an area, the forage density actually increases."

18. Page 3-173, 1st paragraph in section "3.10.1 State Pacific Cod Fishery": Two points should be noted here. (1) Though the state does not conduct an independent assessment of P. cod, they do conduct annual trawl surveys for crab assessment that capture groundfish. This information is provided to the Council's Groundfish Plan Team to aid in the GOA groundfish assessment. (2) While the PWS, Cook Inlet and Chignik state water P. cod fisheries do have a GHL as described in this paragraph, this description of the state's Pacific cod fishery needs to be modified to more accurately reflect how these fisheries are conducted. The state GHL for cod is <u>not</u> limited to 25% of the apportionment, rather it is <u>up to</u> 25% with actual harvests being less. In fact, they have only taken a small percentage of their available GHL harvest. Thus the unharvested portion has been available as SSL forage buffer (as would be required if the nutritional stress hypothesis were valid) rather than as commercial harvest either in state or federal fisheries.

19. Page 3-174, 1st Paragraph, 1st Sentence: Insert "and in agreement with the Alaska BOF Guiding Principles for Groundfish" after "seafood industry."

20. Page 3-174, 1st Paragraph, 3rd Sentence: The SEIS states, "Finally, the state does not open the state-managed cod fishery until 7 days after the federal fishery has been closed." This is not quite correct. In the Cook Inlet Area, the state managed Pacific cod fishery opens 24 hours following the federal closure of the CGOA.

21. Page3-174, 1st Paragraph, next to last sentence: Replace the word "state" with "B" so it reads, "there would not be a parallel B season."

22. Page 3-174, 2nd Paragraph, 2nd sentence: What are the three areas? The following sentence lists only two. In addition, it is important to note that while the state does not have a mandatory observer program, the BOF has adopted regulations meant to support and maintain the federal observer requirement in state waters (See 5 AAC 28.053).

23. Page 3-174, 2nd Paragraph, 5th sentence: "State waters Pacific cod fisheries are open access": This sentence should be reworded to reference the exclusive registration areas in the state-managed Pacific fisheries. A vessel that is registered in an exclusive area, may not fish in any other state-managed Pacific cod fishery. Also, several vessel size restrictions (<58' or 60') exist in the state-managed Pacific cod fisheries, and gear

limitations enforce further restriction of effort. So the term "open access" may not concisely describe the constraints on these fisheries.

24. Page 3-175, Table 3.10.2: This table should include a column of TAC allocated to these fisheries, and the % taken in March – June should be the % taken of the entire allocation, not of the very low catch in these areas. Also, data presented over several years would increase the reliability of the percentage of harvest in March – June estimation. A sample size of 1 year could be an anomaly.

25. Page 3-175, 1st Paragraph: After the first sentence, add: "However, the state established no fishing zones around SSL rookeries in 1992." We had not included haulouts sites for various reasons. First, the list of haulouts was a moving target. Second, seasonal use does not equate to annual closures. And finally, the actual value of such closures beyond a few hundred or few thousand feet to provide SSL protection is questionable.

26. Page 4-19, 1st Paragraph: The second sentence bears an inconsistency in regards to alternative 4. Alternative 4 is either conditionally significant or insignificant when it comes to effects on prey species. For the reasons listed under Comment 4, we believe alternative 4 has insignificant impacts.

27. Page 4-22, Table 4.1-2: The question that comes immediately to mind when viewing this table is "What is the basis for these "take" estimates"? While the answer is found on page 4-26 - TAC was used to project incidental take within each fishery - it still leaves one wondering as to the credibility of this table. Given the weakness of the nutritional stress theory, the acknowledged uncertainty about Steller Sea Lions (see comment 3 above) and the concerns about using TAC to make determinations of significance (see comment 4 above), the authors again appear to take a leap of faith just for the sake of analysis. This particular leap of faith is problematic because of the particular legal significance surrounding the term "take." First we ask that you reconsider the value of including these estimates based on TAC and secondly we suggest that this section be written in a manner that describes "effects" without suggesting legal conclusions about takes.

28. Page 4-263, 2nd paragraph: This seems like a circular argument. First you make a presumptive statement for which there is no supportive evidence. Then state that the ADF&G intends to pursue action to appropriately modify the (state) fisheries. The Governor's SSL restoration team, ASSLRT, was not able to find supportive evidence to the proposed nutritional stress hypothesis. While the team supported some near-term precautionary measures, the presumptions implied within this paragraph are not likely outcomes that should be presented as if they were fact. We recognize that assumptions are often necessary to move forward with critical analysis, and we suggest a few qualifiers be added into this paragraph. One such qualifier would be to note that the Alaska Board of Fisheries has not acted and is schedule to consider modifications to state fisheries on November 11, 2001. Another suggestion would be to highlight the "if" part of the letter from Commissioner Rue.

29. Page 4-264, Section 4.10.1.4: This section uses the acronym GLC. Is this meant to be GHL? If not, please explain what GLC means. The second to last sentence refers to a restriction on cod fishing within three miles of haulouts. This appears to be an error. Should it refer to a restriction on cod fishing within three miles of shore in specific areas around specific haulouts during the parallel fishery? It is important to accurately and consistently describe the restrictions envisioned in alternative four. In addition, the closure radius is not just three miles. Some closure rings meet other rings and close 60 to 80 nmi of state waters.

30. Page4-265, Table 4.10.-1: While we recognize the traditional limitations of qualitative assessments such as the significance rating scale in this table, we believe the summation would appear more reliable if studies or other data in the literature were cited as to the development of the criteria used. For example, why is 20% of catch considered insignificant? And is percentage the same over all temporal and spatial scales? We challenge the finding of "NS" in alternative 4 for the South Peninsula management area. Non-significance is difficult to assume, considering that 90% of the catch in this management area is taken from groundfish statistical areas that encompass the 3 nm fixed-gear closure areas in alternative 4. It is difficult to determine the exact extent of harvest restrictions due to these closures, but it could likely meet the 20-50% threshold that represents CS- in this rating scheme.

31. Page 4-369, Discussion on Cumulative Effects: This discussion is confusing in part, because it looks to "past external influences" or historical effects. This allows assessment of lingering influence of past events in the cumulative effects section, but the analysis would be clearer if all historical effects were included in the description of the baseline. Analysis of cumulative effects should be limited to effects that will result from repeated future actions, or from the combination of the federal action with some other present external influence.

32. Page 4-376, last Paragraph: The SEIS reports that effects "have been identified for state-managed fisheries such as herring and salmon, through removal of important prey species of the Steller sea lion." That same statement is adopted by reference into the analysis of alternative four on page 4-380. As noted in comment 16 above, ADF&G disputes the validity of these purported effects of salmon and herring fisheries on sea lions. The specific nature of our dispute has been expressed most recently in our comments on the biological opinion. NMFS has not yet responded to ADF&G's concerns about the characterization of these fisheries. The statement should be eliminated or at least substantiated in response to the points made by ADF&G. Information contained in the report of the Alaska Steller Sea Lion Restoration Team may be helpful in reconsidering this statement.

33. Page 4-380, 1st Paragraph: The last sentence regarding alternative 4 could use some clarification. It should say, "it is assumed that alternative 4 will not by itself result in a stable population, nor will it jeopardize the recovery of a stable population.

34. Page 4-550 & 4-551: This section needs to be beefed up to address measures taken at the October, 2001 Council meeting to address the Dutch Harbor exclusion adopted by the Council, and a consideration of the Chignik exemption if the Board considers adjusting the state water portion of Option 1 during the state water Pacific cod fishery. Both of these exclusions were listed in the BiOp4 as not greatly changing the jeopardy bar.

35. Page 4-512, 3rd Paragraph: We appreciate the recognition that the state waters cod fisheries may present an opportunity to mitigate economic effects on small, community based vessels.

36. Page 4-465, 1st Paragraph: The description of the state herring fishery would be more accurate if it explained that the 20 percent exploitation rate is not 20 percent of the herring stock, but 20 percent of the spawning biomass.

37. Page 4-489, last Paragraph: There is an incorrect reference to a conditionally significant adverse effect for removal and damage to HAPC by mobile gear. This is a surprising conclusion in light of the state's non-pelagic trawl ban in effect for most state waters. If this conclusion is correct with respect to mobile gear, it should be explained in light of the non-pelagic trawl ban.

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Petition
786-788

James W. Balsiger, Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

RE: Steller Sea Lion Protection Measures Draft Supplemental EIS ("RPA SEIS") Comments

Mr. Balsiger:

On behalf of Greenpeace, American Oceans Campaign, and Sierra Club, we offer the following comments on the Steller Sea Lion Protection Measures Draft Supplemental EIS ("RPA SEIS") for 2002 Reasonable and Prudent Alternative (RPA) fishing regulations, actions required under the Endangered Species Act (ESA) to avoid jeopardizing the survival and recovery of sea lions and adversely modifying critical habitat, the most important feature of which is the prey base. We previously submitted comments on the August 2001 Draft Biological Opinion prepared on Alternative 4 of this SEIS, and we hereby incorporate those comments by reference here.

In the Draft RPA SEIS, NMFS summarizes the basis for fishery competition, linking competition to sea lion foraging success:

> "*The question of whether competition exists between the Steller sea lion and BSAI or GOA groundfish fisheries is a question of sea lion foraging success. For a foraging sea lion, the net gain in energy and nutrients is determined, in part, by the availability of prey or prey patches it encounters within its foraging distribution. Competition occurs if the fisheries reduce the availability of prey to the extent that sea lion condition, growth, reproduction, or survival are diminished and population recovery is impeded.*" **RPA SEIS, p. 3-15.**

NMFS has determined that fishery competition *does* pose a threat to Steller sea lions at three major temporal-spatial scales of interaction. In the November 30, 2000 FMP BiOp, NMFS concluded that competitive interactions with groundfish fisheries as a whole jeopardize the survival and recovery of sea lions and cause adverse modification of sea lion critical habitat at the global, the regional and the local temporal-spatial scales.[1] NMFS says the RPA must avoid jeopardy and adverse modification "*at all three scales where the competitive interactions occur.*" **FMP BiOp, p. 290**. Thus the goal of any acceptable RPA alternative should be to design a fishery based on levels of fishing highly likely to avoid competition with Steller sea lions at the three scales of competitive interaction identified by NMFS in the FMP BiOp. At **FMP BiOp, p. 259**, identifies 4 primary effects categories that must be addressed by any RPA: effect of global biomass levels, effects of disturbance, and effects of temporal and spatial concentration of fishing. The RPA SEIS largely ignores these levels of effects analysis, as well as much

[1] FMP BiOp, p. 289: "*This competitive interaction, occurring at the global, regional, and local scales has been shown to jeopardize the continued existence of Steller sea lions by interfering with their foraging opportunities for the three major prey species resulting in reduced reproduction and survival.*"

of the information contained in the RPA BiOp. It bears noting that the FMP BiOp is the operative document for the FMPs as a whole, and the analysis in the RPA SEIS must be consistent with the BiOp.

This overarching problem, as well as numerous other omissions of information and shortcomings of analysis render the Draft RPA SEIS completely inadequate as a NEPA disclosure document or as a basis for choosing among alternative RPAs to avoid jeopardy and adverse modification under the ESA. Major shortcomings include:

- The Draft RPA SEIS fails to consider a reasonable range of alternatives.
- The effects analysis in the Draft RPA SEIS is flawed and confusing.
- The Draft RPA SEIS fails to explicitly consider recovery in framing alternatives and in analyzing the effect of those alternatives.
- The RPA NEPA process is a sham justifying a decision already made.
- The Draft RPA SEIS overemphasizes socio-economic issues at the expense of analysis of effects on Steller sea lions.
- The Draft RPA SEIS is too complicated and confusing to be understood by the general public.
- The Draft RPA SEIS does not comply with the CEQ NEPA regulation regarding incomplete or unavailable information.
- The Draft RPA SEIS fails to assess, and the proposed Alternative 4 RPA fails to address, cumulative reductions of prey biomass resulting from the FMP fishing exploitation strategy ($F_{40\%}$ proxy for F_{MSY}) at the global scale of competitive interaction, as required in the November 2000 FMP BiOp.
- The Draft RPA SEIS criteria for determining the significance of alternatives on pinnipeds and sea otters fail to include consideration of the benthic habitat effects of fishing.
- The Draft RPA SEIS fails to analyze the telemetry tracking data or evaluate the interpretation of that data in the Draft RPA BiOp, which would constitute a radical departure from the treatment of critical habitat in previous Section 7 consultations, as defined in the final rule listing critical habitat (NMFS 1993).
- The Draft RPA SEIS fails to provide any analysis or supporting evidence showing that the proposed Alternative 4 RPA trawl exclusion zones will eliminate competition between foraging Steller sea lions and the large trawl fisheries around rookeries and haulouts, as required in the December 1998 BiOp, the October 1999 Pollock RFRPA and November 2000 FMP BiOp.

- The Draft RPA SEIS fails to provide a complete and adequate analysis of fishery catch distributions in and out of critical habitat during the period of U.S. management under the FMPs, or to compare levels of fishing that would occur in critical habitat under the proposed Alternative 4 RPA to previous RPA and pre-RPA levels of fishing in critical habitat.

- The Draft RPA SEIS fails to evaluate, explain or justify the basis for the arbitrary Draft RPA BiOp conclusion that food limitation and nutritional stress are less important factors in the current decline, based on limited comparative studies of rookery populations in the endangered western and threatened eastern stock.

- The Draft RPA SEIS fails to evaluate large confidence limits around the model-derived point estimates of stock size or the risks associated with ABC levels based on such estimates, as well precautionary control rule measures to address these uncertainties.

- The Draft RPA SEIS fails to provide an integrated, adequate analysis of the direct, indirect, and cumulative effects of the fisheries on Bering Sea, Aleutian Islands and Gulf of Alaska ecosystems.

We discuss each of these issues below.

1. The Draft RPA SEIS fails to consider a reasonable range of alternatives.

The section of an EIS dealing with alternatives is the heart of the environmental impact statement. 40 C.F.R. 1502.14. Based on information and analysis provided in the Affected Environment and Environmental Consequences sections, the alternatives should *sharply define* the issues and *provide a clear basis for choice* among options by the decisionmaker and the public. 40 C.F.R. 1502.14. The action agency (in this case, NMFS) must "rigorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. 1502.14(a). The alternatives, analyses and information contained in the August 2001 Draft RPA SEIS, however, fail to provide the decision-maker and the public a clear basis for choosing among RPAs that will satisfy the Endangered Species Act requirements to (1) avoid jeopardizing the survival and recovery of the species and (2) avoid adversely modifying the species' critical habitat, which is essential to survival and recovery of the species.

Specifically, the Draft RPA SEIS offers no real choice among the RPA alternatives because NMFS failed to include an alternative that would result in positive population growth for the endangered Steller sea lion in western Alaska. According to the analysis, Alternatives 1 through 5 offer only decline and more decline:

Projected population trend by RPA Alternative:

Alt. 1	-3.3% to -7.1%	(RPA SEIS, p. 4-7)
Alt. 2	-1.4% to -2.3%	(RPA SEIS, p. 4-11)
Alt. 3	-1.4% to -5.2%	(RPA SEIS, p. 4-14)

Alt. 4	-3.3% to -7.1%	(RPA SEIS, p. 4-16)
Alt. 5	-3.3% to -5.2%	(RPA SEIS, p. 4-16)

NMFS's failure to include any RPA alternative that halts the sea lion decline is simply another way of saying that NMFS has failed to include alternatives that avoid jeopardy and adverse modification. NMFS appears to take refuge in unsubstantiated theories of environmental change due to regime shifts to explain the inability to halt the sea lion decline, but the information and analyses in the Draft RPA SEIS provide no evidence that environmental conditions are driving or capable of driving the sea lion decline in the absence of fishing. Although NMFS maintains that sea lions would continue to decline in the absence of fishing, the Draft RPA SEIS fails to consider a no-fishing alternative that would provide a baseline by which to judge such a claim or to provide any other evidence to support it. In the absence of a no-fishing alternative, there is no way to know what the possible effects would be or to evaluate the claim by NMFS that sea lions would continue to decline in the absence of fishing.

NMFS also mischaracterizes Alternative 1 as the "no-action" alternative, stating that under this action sea lion protection measures would expire, which would violate the ESA. **RPA SEIS, p. 2-5**. However, under a proper interpretation of NEPA and the Magnuson-Stevens Act, the optional action in any fisheries-related context is the authorization of the fisheries themselves. NMFS is never obligated to authorize a fishery, and any fishery requires specific NMFS approval in order to go forward. If NMFS were to determine that any fishery it might authorize would jeopardize Steller sea lions and could not be mitigated, it could not authorize a fishery consistent with the ESA. Therefore, the "no action" alternative must be the decision not to authorize a fishery. This is yet another reason why NMFS must authorize a "no-fishing" alternative.

The failure to include even one alternative that may reasonably be expected to halt and ultimately reverse the decline of the endangered species renders this Draft RPA SEIS completely inadequate both as a NEPA document and as a basis for choosing among RPAs that satisfy the requirements of the ESA. The only alternative that departs significantly from the "baseline" in Alternative 1 is Alternative 2. NMFS says that Alternative 2 provides far more protection to sea lion critical habitat than any other alternative, disperses the fisheries in space and time to a much greater extent than any other alternative, and is the only alternative that reduces TAC levels from the "baseline" of Alternative 1 (no action), all of which are expected to produce positive effects for sea lions. For these reasons, the Council-appointed Steller sea lion RPA Committee provided analyses indicating that Alternative 2 would result in a positive annual Steller population growth rate of .7% per year. In the Draft RPA SEIS, however, NMFS now concludes that Alternative 2 will result in a continuing negative population growth between -1.4% and -2.3% per year. **RPA SEIS, p. 4-11**. The method for deriving this projected population trend is not disclosed in the analysis and appears to be entirely arbitrary:

> "*Based upon Steller sea lion population trends during 1998-2000, it is* <u>*assumed*</u> *that Alternative 2 will not result in a stable population, changes to the sea lion population would be within 4% of the current trend, and an overall decline would continue at –1.4% to –2.3% per year (Table 4.1-4).*" **RPA SEIS, p. 4-11**, emphasis added.

This *assumption* is the basis for the determination that Alternative 2 will result in only "marginally less" intensity of effects for harvest of prey species and spatial-temporal concentration of fisheries. **RPA SEIS, p. 4-25, Table 4.1-4.** The basis for this determination is difficult to understand given the statements elsewhere indicating that Alternative 2 confers substantial benefits from spatial-temporal dispersion of fisheries.[2] Alternative 2 is also the only alternative that reduces the overall TAC levels compared to Alternative 1, while Alternatives 1, 3, 4, and 5 all have the same TAC levels. **RPA SEIS, p. 4-23, Table 4.1-3.** But Alternative 2 would reduce overall TAC levels only 10% compared to Alternative 1, and this modest reduction in fishing levels appears to be the main reason for NMFS's determination that Alternative 2 has only "marginally less" intensity of effects on Steller sea lions (**RPA SEIS, p. 4-11, Tables 4.1-3,4**). On the basis of this "assumption," NMFS concludes that Alternative 2 will not result in a stable population, based on the 1990-2000 population trend:

> "*The overall TAC, however, is only 10% less than the other alternatives (Table 4.1-3), and thus the overall effect on the population may not be as intense.*" **RPA SEIS, p. 4-11.**

In the Draft RPA SEIS Cumulative Effects analysis (Sec. 4.13, pp. 378-79) NMFS concludes that 10% is not sufficient to avoid conditionally significant negative cumulative impacts at the global scale of competitive interaction:

> "*...uncertainty still exists whether a reduction in TAC of 10% is enough to affect the rate of decline of the species. Therefore, the measure(s) under this alternative are an improvement to Steller sea lions, however, the cumulative effect remains conditionally significant negative.*" **RPA SEIS, p. 4-378.**

Thus the only alternative considered in this Draft RPA SEIS that reduces the TAC levels globally fails to reduce TACs enough to affect the rate of decline of the species. Although NMFS maintains that sea lions would continue to decline in the absence of fishing under Alternative 2, the Draft RPA SEIS also fails to consider alternatives that reduce overall TAC levels more substantially than Alternative 2, thus there is no way to know what the possible effects would be or to evaluate the claim by NMFS that sea lions would continue to decline at some lower level of fishing. Given that the only alternative that contains any type of TAC reduction, Alternative 2, shows a significantly lower rate of decline than the status quo, it stands to reason that greater TAC reductions could actually result in a positive population response. The RPA SEIS therefore must consider both a no-fishing alternative and several alternative with higher TAC reductions, perhaps 25%, 50% and 75%. Only then will the true impacts of fishing be disclosed and analyzed, as NEPA requires.

2. The effects analysis in the Draft RPA SEIS is flawed and confusing.

In addition to the inadequate alternatives, the application of the significance criteria is arbitrary, lacking any objective methodology or clear standards for the "insignificance" ratings in Table 4-26. For an impact to be considered "significant," the only requirement is that "marginal" changes from the 1998 baseline would occur. For instance, NMFS says of the criteria ratings of significance:

> "*Percentages used in determining the significance of effects are given as a plausible point of departure to initiate discussion as opposed to being deemed statistically meaningful per se...to*

[2] At **RPA SEIS, p. 4-11**, NMFS says that Alternative 2 results "*in much less spatial and temporal concentration of fisheries removals of key Steller sea lion prey species than do measures under other alternatives*" and rates a positive effect for spatial/temporal concentration of fishing, using the significance criteria in Table 4.3-1.

achieve a rating of insignificant[,] marginal reductions in TAC levels or marginal decreases in the concentration temporal and spatial patterns of the fisheries must be reasonably expected to occur as a result of the implementation of the management measures contained in the alternative under consideration." **RPA SEIS, p. 4-21, 22.**

Thus the Draft RPA SEIS analysis indicates that "marginally less temporal and spatial concentration than 1998 fisheries" and "similar level of disturbance as that which occurred in 1998" are the basis for concluding that the proposed Alternative 4 RPA will have insignificant effects on sea lions. Yet the spatial and temporal concentration of the fisheries in critical habitat under the proposed Alternative 4 RPA would reflect 1998 levels, at which time NMFS concluded that such fishing jeopardizes sea lions and adversely modifies their critical habitat. NMFS has not quantified the extent to which such concentrated fishing disturbs the sea lion prey field and hampers foraging success, thus the conclusion that disturbance effects of the proposed Alternative 4 RPA are insignificant is based only on an absence of quantifiable data. The Draft RPA SEIS provides no reasonable basis for concluding that that the spatial/temporal concentration of the fisheries, harvest levels of sea lion prey species, and fishery disturbance effects that prompted findings of jeopardy and adverse modification in 1998 and 2000 are now "insignificant." This does not mean, however, that the effects of the action are "insignificant" from the point of view of a foraging Steller sea lion, but rather that the alternative has insignificant differences from the baseline, which the Draft RPA SEIS arbitrarily designates as 1998. Presenting the effects analysis in this way is highly confusing to the public, and present a false picture of the true effects of the alternatives.

The proposed Alternative 4 RPA would turn back the clock to pre-1999 fishery patterns in critical habitat and maintain levels of fishing that prompted successive findings of jeopardy to the species and adverse modification of critical habitat in 1998 and 2000. Thus the Draft RPA SEIS fails to demonstrate that the proposed Alternative 4 RPA will provide any reasonable assurance of avoiding jeopardy and adverse modification at *any* of the relevant temporal-spatial scales of competitive interaction identified in the November 30, 2000 FMP-level Biological Opinion.[3] The RPA SEIS conclusion that these fishery patterns are "insignificant" (except for harvest of prey species, which is rated conditionally significant negative) is arbitrary and capricious.[4] Nowhere does the RPA SEIS analysis demonstrate that either the spatial/temporal concentration of the fisheries or the disturbance effects envisioned under Alternative 4 are "insignificant," nor does the SEIS explain how a negative rating for harvest of sea lion prey species avoids jeopardy and adverse modification at the global temporal/spatial scale of competition.

3. The Draft RPA SEIS must explicitly consider recovery in framing alternatives and in analyzing the effect of those alternatives.

An agency's statutory obligations drive the choice of alternatives it must consider in an EIS. See, e.g., City of New York v. U.S. Dept. of Transportation, 715 F.2d 732, 743 (2d Cir. 1983) ("Statutory objectives provide a sensible compromise between unduly narrow objectives an agency might choose to identify to limit consideration of alternatives and hopelessly broad societal objectives

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[3] FMP BiOp, p. 289: "*This competitive interaction, occurring at the global, regional, and local scales has been shown to jeopardize the continued existence of Steller sea lions by interfering with their foraging opportunities for the three major prey species resulting in reduced reproduction and survival.*"

[4] **RPA SEIS, p. 4-26, Table 4.1-5** (Summary of Effects of Alternatives 1-5 on Steller sea lions).

that would unduly expand the range of relevant alternatives."). In its regulations implementing the ESA, NMFS has determined that the jeopardy inquiry requires a consideration of whether an action "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02 (emphasis added). In the RPA SEIS, NMFS says that "the Draft Biological Opinion does not ask if Alternative 4 helps the Steller sea lion population size recover to some specified level so that the species could be delisted, but rather asks if Alternative 4 will jeopardize the Steller sea lion's chances of survival or recovery in the wild." **RPA SEIS at ES-3.** Accordingly, the SEIS does not attempt to ask or answer that question, either.

By failing to tie the analysis in the SEIS to a recovery goal, NMFS has decoupled the SEIS from its statutory mission, which is to ensure the recovery of the Steller sea lion. If the measures in the SEIS are not gauged against a recovery goal, it is impossible to determine whether or not those measures will result in the recovery of the population. All alternatives must be judged against the recovery goal established in the recovery plan.

4. The RPA NEPA process is a sham justifying a decision already made.

NEPA's disclosure goals are two-fold: (1) to insure that the agency has carefully and fully contemplated the environmental effects of its action, and (2) "to insure that the public has sufficient information to challenge the agency." Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1151 (9th Cir. 1998); Robertson, 490 U.S. at 349. Accordingly, an "EIS's form, content and preparation [must] foster both informed decision-making and informed public participation." California v. Block, 690 F.2d 753, 761 (9th Cir.1982); Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1062-63 (9th Cir. 1998).

As the CEQ NPEA regulations make clear, an EIS is the vehicle for analysis of federal agency actions on the environment and consideration of reasonable alternatives that would avoid or minimize adverse impacts of those actions. 40 C.F.R. § 1502.1. The primary purpose of an EIS "is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government." 40 C.F.R. § 1502.1. Accordingly, an EIS "is more than a disclosure document" and is to "be used by Federal officials in conjunction with other relevant materials to plan actions and make decisions." Id. An EIS or Supplemental EIS must be prepared early enough in the agency's decisionmaking process "so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made." 40 C.F.R. § 1502.5; see also 40 C.F.R. § 1502.2(e) (an EIS "shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decision already made).

Here, the timing of the RPA SEIS process and BiOp make it clear that RPA SEIS is being used to justify a decision that has already been made. Comments are due on the Draft RPA SEIS on October 15, 2001, and the agency intends to release the final BiOp on October 19, 2001. The BiOp, however, only analyzes Alternative 4, rather than all the alternative analyzed in the SEIS. If the agency were to choose a different alternative than Alternative 4 in the ROD, NMFS would not be able, practically speaking, to have a biological opinion in place that analyzes this other alternative prior to the opening of the fisheries on January 1, 2002. As NMFS has made it clear that it intends to open the fishery on

January 1, 2002, the agency has little alternative other than to choose Alternative 4 as the preferred in the Final SEIS and ROD, and to move forward with a BiOp that confirms the selection of that alternative. With only four days between the close of the comment period on the EIS and the release of the final BiOp, there is simply no way that the analysis in the EIS will have any influence on the content of the final BiOp, begging the question of why NMFS has even engaged in the NEPA process in the first place. It appears that NMFS view the NEPA process as merely a "paperwork exercise," rather than an action-forcing process. NMFS simply cannot demonstrate that it is using this EIS in order to plan actions and make decisions. Rather, it is apparent that the agency has already made its decision, and the selection of Alternative 4 is a foregone conclusion.

In addition, the limited release of "revised" sections of the Draft SEIS, as occurred at the Seattle Council meeting earlier this month, suggests that NMFS is catering to a "super-public" of the Council, its committees, and those members of the public who attend Council meetings. If these "revised" sections of the document are part of the Draft SEIS, then they should be released to the general public, and the comment period extended so that the public can comment on their contents. Otherwise, one of the primary purposes of NEPA is subverted, with the process becoming nothing more than an "insider game."

5. The Draft RPA SEIS overemphasizes socio-economic issues at the expense of analysis of effects on Steller sea lions.

This catering to the Council/industry "super-public" is reflected in the preoccupation of the RPA SEIS with socioeconomic issues. This is apparent from a simple comparison of pages devoted to discussion of environmental and socioeconomic issues. For instance, section 4.12 ("Social and Economic Consequences") is approximately 74 pages long, while the section 4.1.1 ("Effects on Steller Sea Lions") is only 22 pages long. Similarly, the discussion of cumulative effects on Steller sea lions (section 4.13.2.2) is only 13 pages long, while "socioeconomic cumulative effects," an effects category it is doubtful the CEQ NEPA regulations even contemplate, is 38 pages long (section 4.13.13). While socioeconomic data is obviously relevant to a choice among RPA alternatives that all clear the jeopardy and adverse modification bar, it appears that chose to emphasize this information at the expense of taking a hard look at the environmental impacts of the proposed action. As recognized by the EPA in its review of the Draft Programmatic SEIS, filling an EIS with socioeconomic information is a poor substitute for ecological information and may in fact distort the analysis and cause the decision maker to give more weight to socioeconomic factors,[5] a result that would subvert the intention of NEPA to give decision makers access to important environmental data so that they may make a truly informed decision. The emphasis of this SEIS must be on effects on Steller sea lions and the ecosystem, with the effect on socio-economics being a secondary consideration. As written, just the opposite is true.

6. The Draft RPA SEIS is too complicated and confusing to be understood by the general public.

The CEQ regulations state that EISs "shall be written in plain language and may use appropriate graphics so that decisionmakers and the public can readily understand them." 40 C.F.R. § 1502.8. The Draft SEIS obviously deals with very complicated subject matter that is often difficult to explain in layman's terms. Many of the scientific discussions, however, are frequently difficult to understand for

[5] Undated letter of Judith Leckrone, EPA to Steve Davis, NMFS.

those who are not trained in marine biology. In order to facilitate ease of understanding by the general public, we recommend that the revised SEIS contain a glossary of all scientific terms and an explanation of key scientific concepts. Again, it appears that this is an "insider's" document, rather than one meant for the general public.

We also request that you re-organize the analysis of the impacts of each alternative, so that the analysis is presented alternative-by-alternative. The CEQ NEPA regulations require that agencies "use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives including the proposed action." 40 C.F.R. § 1502.10. The RPA SEIS does not meet this requirement, because as the document is currently structured, NMFS presents the impact analysis issue-by-issue, rather than alternative-by-alternative. This device makes it extremely difficult to understand the effects of any alternative as a whole, requiring endless cross-referencing in order to gain a comprehensive understanding of the effects of any single alternative. This frustrates NEPA's mandate to present the alternatives in "comparison form." 40 C.F.R. § 1502.14. Instead, we suggest that the effects of each alternative be presented in one place, so that the reader can understand the effects of that alternative, without having to engage in endless cross-referencing.

7. The Draft RPA SEIS does not comply with the CEQ NEPA regulation regarding incomplete or unavailable information.

In cases where there is incomplete or unavailable information to evaluate "reasonably foreseeable significant adverse impacts," the regulations implementing NEPA require that an environmental impact statement explicitly discuss this uncertainty and its relevance to the evaluation of those impacts – including impacts which have catastrophic consequences even if their probability of occurrence is low. 40 C.F.R. § 1502.22. This provision of the NEPA regulations is particularly crucial in the context of assessing the impacts of fisheries on the affected marine environment, since uncertainty and incomplete information pervade every aspect of fisheries management decisionmaking. Compliance with this regulation is necessary in order to implement the precautionary principle in fisheries management, especially in the context of the ESA, which mandates a policy of "institutionalized caution."

Under this regulation, in each situation where information relevant to reasonably foreseeable significant adverse impacts is incomplete or unavailable, NMFS must determine whether that information can be obtained without exorbitant cost. 40 C. F. R. § 1502.22. If it cannot be obtained without exorbitant cost, then NMFS must clearly state that the information is incomplete or unavailable and discuss its relevance in terms of being able to evaluate the impacts of the action. Then, the agency must summarize the "existing credible scientific evidence" relevant to analyzing those impacts and set forth the agency's analysis of the impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." Id.

While NMFS gives a nod to this regulation in its "Executive Summary" section, **RPA SEIS at ES-6**, the agency does not actually comply with the regulation. Although adding the qualifier "conditionally" to an effects determination may "provide[s] a heightened sense of where information is lacking," id., the NEPA regulations require far more. NMFS must clearly state the relevance of this absence of information in terms of being able to evaluate the impacts of the action, and then, more importantly, must summarize the "existing credible scientific evidence" relevant to analyzing those impacts and set forth the agency's analysis of the impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C. F. R. § 1502.22. It is nowhere apparent in the RPA SEIS what "theoretical approaches or research methods generally accepted in the scientific community" NMFS employed in reaching its determinations about the effects of the alternatives in the document. The point of the regulation is to make the agency's reasoning and methods explicit, rather than requiring the public to guess at them, as is the case here.

8. The Draft RPA SEIS criteria for determining the significance of alternatives on pinnipeds and sea otters fail to include consideration of the benthic habitat effects of fishing, despite the clear reliance of many pinnipeds as well as sea otters on epibenthic prey species and the clear potential for serious alterations of seabed habitat and prey availability by trawl fishing gear that is concentrated in sea lion critical habitat.

Unlike the criteria used to determine significance of alternatives on seabirds (**RPA SEIS, p. 4-228, Table 4.7-2**), which includes consideration of the impacts of fishing on benthic habitat, the criteria for determining significance of effects to pinnipeds and sea otters (**RPA SEIS, p. 4-21, Table 4.1-1**) do *not* include benthic habitat effects. Yet many of the pinnipeds as well as sea otters exploit epibenthic species. Any adequate determination of the significance of alternatives on Steller sea lions must certainly include consideration of the benthic habitat impacts of fishing gears. In the EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI,[6] NMFS provided four major reasons for recommending special management measures to prohibit trawling around rookeries in western Alaska, which included benthic habitat disturbances and changes in species composition due to the dragging of trawl gear over the seabed.

The Draft RPA SEIS contains no discussion or consideration of those previous agency findings, but the document does acknowledge that "*... common sense tells us that reducing bottom trawling and other types of fishing in critical habitat for sea lions will also mean fewer impacts to their prey species and associated habitats.*" **RPA SEIS, p. 3-154**. Given the intense concentration of trawl fisheries for pollock, Atka mackerel and Pacific cod in sea lion critical habitat, and the extensive use of bottom-trawling gear in those fisheries, there is every reason to believe that the cumulative effects of chronic trawling on seabed habitats will alter the substrates, change the composition of species, and adversely impact the availability of bottom-tending sea lion prey species within that critical habitat.

In the Draft Programmatic SEIS on the groundfish FMPs (NMFS 2001, **PSEIS Section 3.2.1.2**), NMFS cites research of McConnaughey et al. (2000) indicating that there are significant differences in benthic epifauna and overall diversity of sedentary organisms between heavily trawled and relatively untrawled areas of the eastern Bering Sea shelf. The results indicate "that long-term exposure to bottom trawling, at least in the experimental area, reduces diversity and increases patchiness of this epibenthic community" **PSEIS, Sec. 3.2, p. 5**. The disturbances and changes in structure of the benthic habitat caused by chronic trawling may enhance the abundance of scavenging species as well. McConnaughey et al. (2000) found sea stars (Asterias amurensis) more abundant in heavily trawled areas. There was a strong negative correlation between sea star abundance and overall benthic megafauna diversity. **PSEIS, Sec. 3.2, p. 10**. Intensive fishing may promote populations of opportunistic fish species that migrate into fished areas to feed on animals disturbed in the wake of a trawl tow. **PSEIS, Section 3.2, p. 13**.

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[6] NMFS 1991. EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI prohibiting groundfish trawling in the vicinity of sea lion rookeries.

A review of research on the effects of fishing gear on habitat by Auster and Langton (1999) indicated that mobile fishing gear reduced complexity in three ways: (1) epifauna are removed or damaged; (2) sedimentary bedforms are smoothed and roughness reduced; (3) species which produce structure are removed. **PSEIS, Sec. 3.2, p. 11**. Trawling also stirs up sediments and the suspended particles can reduce light levels, create anaerobic conditions near the sea floor, and smother benthic organisms when sediment resettles. **PSEIS, Sec. 3.2, p. 12**. Crucially, the PSEIS concludes that *findings from studies of trawling effects on seabed habitats can be applied to Alaska*. **PSEIS, Sec. 3.2, p. 11**. The key question, therefore, is what role chronic trawling throughout the Bering Sea, Aleutian Islands, and Gulf of Alaska may have on long-term changes in the benthos and community structure of species, and all indications are that trawling may play a major role in restructuring the benthic ecosystem:

> "*Although short-term changes in individual species distribution are not likely to substantially affect the ecosystem, the more important question is whether bottom trawl fishing causes long-term changes in the benthic community structure. Persistent changes in species dominance and depressed diversity in response to chronic trawling may profoundly affect the structure and function of the benthos (McConnaughey et al. 2000). Intensive fishing in an area can possibly result in such changes by promoting populations of opportunistic fish species that migrate into fished areas in order to feed on animals that have been disturbed in the wake of a trawl tow (Caddy 1973, Kaiser and Spencer 1994, 1996a)*" **PSEIS, Section 3.2, p. 13.**

NMFS provides no explanation or justification for the omission of consideration of the impacts of fishing on benthic habitat in the determinations of significance at **RPA SEIS, p. 4-26, Table 4.1-5** (Summary of Effects of Alternatives 1-5 on Steller sea lions). Nor does NMFS explain how the preferred Alternative 4 RPA can be construed as avoiding adverse modification of critical *benthic* habitat, which rates conditionally significant negative (CS-) for effects on habitat complexity and benthic biodiversity, including removal and damage to HAPC biota by bottom trawl gear, removal and damage to HAPC biota by fixed gear, modification of nonliving substrates and damage to epifauna and infauna by trawl gear, and changes to species mix. Any adequate list of criteria used to assess effects of alternatives on Steller sea lions must include consideration of the impacts of alternatives on benthic habitat.

8.1. The Draft RPA SEIS assessment of the impacts of alternative RPAs on Essential Fish Habitat (EFH) indicates substantial benefits to both EFH and Steller sea lion critical habitat under Alternative 2, but the analysis fails to treat the differential impacts of fishing gear explicitly or to justify the negative impacts of trawling in critical habitat envisioned under the proposed Alternative 4 RPA.

At Draft **RPA SEIS, p. 4-247, Table 4.8-5** (Summary of effects of alternatives on marine benthic habitat), NMFS has determined that Alternatives 1, 4, and 5 rate conditionally significant negative (CS-) for effects on habitat complexity and benthic biodiversity, including removal and damage to HAPC biota by bottom trawl gear, removal and damage to HAPC biota by fixed gear, modification of nonliving substrates and damage to epifauna and infauna by trawl gear, and changes to species mix.

Under Alternative 2, by contrast, all critical habitat (106,410 nm^2) would be closed to trawling for all groundfish species year-round. The Draft RPA SEIS Sec. 4.8.2 (Effects of Alternative 2 on Marine Benthic Environment) says; "*This alternative is the most protective alternative under* *consideration in terms of reducing competition for prey with Steller sea lions, and is also the most protective for EFH.* Within critical habitat, only fixed-gear vessels would be allowed to fish. Only pot vessels with a 60-pot limit, all jig vessels, and longline vessels <60' would be permitted to fish in the 3-10 nm zone, comprising 27% of critical habitat. **RPA SEIS, p. 4-242.** Catcher-longliners >60' would be excluded within 10 nm zones.

NMFS says the zonal approach to gear closures under Alternative 2 confers substantial benefits to EFH and HAPC species:

> "*...is quite protective of EFH and particularly of HAPC species and of nearshore HAPC areas. As described in Sec. 3.8.1, nearshore habitat provides spawning habitat for numerous fish species, including Atka mackerel, and the effect of this approach is that these nearshore areas are closed to all but the least invasive gear types.*" **RPA SEIS, p. 4-242.**

A large proportion of observed concentrations of gorgonian coral and sponges in the AI would be protected by these closures. **SEIS, p. 4-242.** Thus Alternative 2 is rated positive for its effect on HAPC species. "*In effect,*" NMFS says, "*it would create a large marine reserve, and the benefits to EFH could be substantial.*" **SEIS, p. 4-242.** Sec. 4.8.6 (Summary of effects on marine benthic habitat and EFH determination) concludes:

> "*Alternative 2 offers the highest degree of restriction to the fishing effort and sets aside the largest area, in order to offer maximum protection for Steller sea lions. The large reserve areas will protect EFH, including substantial amounts of living substrates classified as HAPC biota and nearshore HAPC areas. The fishing effort will probably not be displaced to new areas because of the reduction of TAC for Pacific cod, Atka mackerel, and pollock.*" **SEIS, p. 4-244.**

The interim final EFH rule requires that FMPs should analyze how fishing activities influence habitat function on an ecosystem scale. 50 CFR 600.815(a)(6)(i). The Draft RPA SEIS fails to provide an explicit analysis of the differential effects of gear types, including the impacts on habitat and bycatch, but the analyses cited above indicate that trawl gear has substantially larger effects on sea lion critical habitat and EFH alike. The difference between habitat impacts in Alternative 2 and the proposed Alternative 4 RPA is quite large, owing to the prohibition on trawling in sea lion critical under Alternative 2. The implications for differential effects of fishing gears on habitat are clear, but the Draft RPA SEIS fails to make these implications explicit. NMFS fails to justify the impacts of trawling on *benthic* critical habitat envisioned under the proposed Alternative 4 RPA.

Furthermore, despite the implications of its admissions, NMFS has yet to conduct the differential gear impact analysis that both Plaintiffs and the Council have been requesting of the agency for over a year. If decisionmakers are to be informed about the effects of their actions, they must have this information.

9. The Draft RPA SEIS fails to assess and the proposed Alternative 4 RPA fails to address cumulative reductions of prey biomass resulting from the Fishery Management Plan exploitation strategy ($F_{40\%}$ proxy for F_{MSY}) at the global scale of competitive interaction, as required in the November 2000 FMP BiOp.

The crash of Steller sea lions and the accompanying declines of other top predators in the North Pacific food web imply that there has been a major change in the structure of the ecosystem(s) in recent decades (Merrick 1997). What has changed so drastically in the last 30-odd years such that today the Gulf of Alaska, Aleutian Islands and Bering Sea ecosystems can only support about 10-15% of the sea lions that they supported in the 1960s? It would appear that the ecosystem carrying capacity for sea lions has collapsed in the past three decades – that is, for some reason food supplies are limited or reduced and the ecosystem(s) cannot support sea lion populations at the levels observed before the 1970s.

There is no evidence, however, to demonstrate that a natural decline in ecosystem productivity has occurred. To the contrary, large fisheries for walleye pollock, Atka mackerel, Pacific cod, halibut, yellowfin sole, rock sole, rockfish, sablefish and salmon (all sea lion prey items) have flourished during the entire period of the sea lion decline, becoming increasingly concentrated in prime Steller sea lion foraging habitat since 1980. Catches of Atka mackerel, Pacific cod, halibut and salmon all reached record levels in the 1990s, while catches of pollock were slightly above the historical average of about 1.1 million metric tons (2.4 billion pounds) per year in the Bering Sea and reached 100,000 mt in the Gulf of Alaska during the latter half of the 1990s. These have been very robust fisheries, indicating that ecosystem productivity has been fairly high throughout the period of the Steller sea lion decline.[7] When the preferred fishing grounds of the fisheries are considered spatially and temporally in relation to Steller sea lion critical habitat and areas of historical sea lion abundance, it is difficult not to draw the conclusion that the fisheries have, in effect, replaced Steller sea lions as top predator – a clear implication of the November 2000 FMP BiOp (NMFS 2000).

Two main possibilities are proposed to explain the declining carrying capacity of the ecosystem for sea lions, and it is possible that one may amplify the other: (1) effects of fishing on sea lion prey availability and (2) environmental change on decadal scales, known as "regime shift" theory. In the Draft RPA BiOp, NMFS acknowledges that it is unlikely that natural environmental changes alone have produced this scale of decline:

> "*It is clear given an almost 90% reduction in the western population of Steller sea lions, that the environmental carrying capacity has somehow been reduced...Given the equivocal data surrounding the dietary needs of Steller sea lions, the regime shift hypothesis and massive population declines, it is unlikely that natural environmental change has been the sole underlying cause for the decline of Steller sea lions.*" **RPA BiOp, p. 76.**

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[7] Although overall fishery *yields* have remained high throughout the period of U.S. management under the FMPs, intense spatial and temporal concentration of the fisheries in critical habitat has been accompanied by a disturbing pattern of fish stock declines indicative of serial depletion. Such a pattern has been documented for pollock in the Shelikof Strait (1981-1985), Bogoslof/Aleutian Basin (1987-1992), and Aleutian Islands (1990s), as noted in successive NMFS Biological Opinions. A pattern of serial depletion of the Gulf of Alaska Atka mackerel stock resulted in the closure of that fishery in the early 1990s, and a pattern of localized depletion in the Aleutian Atka mackerel fishery within sea lion critical habitat has been identified by NMFS (NMFS 1998). Intense pulses of fishing on spawning aggregations of Pacific cod within critical habitat are also occurring, and cod stocks have declined steadily during this period of record-setting catches in the 1990s.

The Bering Sea Ecosystem report (NRC 1996) concluded on the basis of the temporal and geographic pattern of fishing that fishery effects on Steller sea lion prey availability are the *only* causal factor considered to have a high likelihood of explaining the declines in western Alaska,[8] and further suggested that the large-scale groundfish fisheries in the Bering Sea constitute a significant limiting factor in the recovery of declining top predator populations:

> "*It seems extremely unlikely that the productivity of the Bering Sea ecosystem can sustain current rates of human exploitation as well as the large populations of all marine mammal and bird species that existed before human exploitation -- especially modern exploitation -- began.*"[9]

This is tantamount to saying that the current levels of fisheries removals are reducing carrying capacity and inhibiting recovery of wildlife competitors at the top of the food chain, and the BSE report recognized what this means if the goal is to have lots of mammal and bird predators in the long-run: "*ultimately fishing will have to be reduced.*"

The findings of the Bering Sea Ecosystem report foreshadowed the conclusions of the November 30, 2000 FMP-level Steller sea lion Biological Opinion ("FMP BiOp"), which marks the first time that NMFS has considered the policy of the fishery exploitation strategy to outcompete other consumers in the ecosystem and reduce overall availability of sea lion prey at the "global" temporal-spatial scale of the stock as a whole, *by design*. The relevant question, therefore, is the extent to which the global exploitation strategy reduces environmental carrying capacity cumulatively by reducing the overall prey base of Steller sea lions.[10] The Draft RPA SEIS fails to review and discuss in a detailed manner the findings of the FMP BiOp regarding the status quo $F_{40\%}$ "harvest" policy, and fails to provide a discussion of the cumulative effects of this policy in the cumulative effects analysis.

Earlier Steller sea lion BiOps failed to address the effects of the default $F_{40\%}$ harvest policy of the Fishery Management Plans (FMPs) on availability of prey at the ecosystem ("global") scale. In the December 3, 1998 Steller sea lion Biological Opinion on the pollock and Atka mackerel fisheries, NMFS concluded that intense concentration of the pollock fisheries spatially and temporally ("pulse fishing") within critical habitat jeopardizes Steller sea lions and adversely modifies sea lion critical habitat, but the total allowable catch (TAC) levels were unaffected. In other words, NMFS failed to consider the *cumulative* effects of fishing at current TAC levels (based on an F40% fishing mortality rate) on the food web or the sea lion prey base. Thus lower F rates and correspondingly lower ABC/TACs were not considered at all.

In the November 2000 Steller sea lion Biological Opinion on North Pacific groundfish Fishery Management Plans (FMPs), NMFS concluded that the cumulative effects of the FMP default $F_{40\%}$ "harvest policy" poses a cumulative competitive threat at the global scale of the entire range of the exploited stock by reducing prey stocks 40-60% on average over time (i.e., $B_{40\%}$ "target"), as intended under this MSY-based exploitation strategy:

> "*Differences between observed biomasses and those expected in the absence of fishing indicates that fishing likely has considerably reduced the potential spawning stock biomass of all species.*

[8] National Research Council. The Bering Sea Ecosystem. National Academy Press, Washington, D.C., 1996, p. 145, Table 4.18.
[9] National Research Council. The Bering Sea Ecosystem. National Academy Press, Washington, D.C., 1996, p. 4.
[10] See November 2000 FMP BiOp, pp. 223, 250, and Figs. 6.1, 6.3, 6.5, 6.16, 6.17, 6.18; and Table 6.5.

This cumulative effect has occurred over the last 20 years (Figures 6.16 and 6.17). This long-term reduction is reasonably likely to reduce the availability of prey to other components of the ecosystem." **FMP BiOp, p. 224.**

An exploitation strategy based on the $F_{40\%}$ "proxy" for MSY is "reasonably likely to reduce significantly" the prey base for Steller sea lions over time (**FMP BiOp, p. 225**) and to reduce the carrying capacity of sea lion critical habitat:

"*The harvest strategy used in the BSAI and GOA has resulted in biomass reductions of Steller sea lion prey species on the order of 40-60% from that of estimated unfished levels. After careful consideration of the best available scientific and commercial data available, a link was established in this effects section between this large-scale reduction in fish biomass and the carrying capacity of Steller sea lions in the BSAI and GOA. It is NMFS opinion that these biomass reductions of Steller sea lion prey species, along with other factors such as climate change, natural predators, etc., were a significant contributing factor of the reduction and current decline of the population of Steller sea lions.*" **FMP BiOp, p. 259.**

Thus, the cumulative effect of fishing at the global temporal/spatial scale is additive to the competitive effects of fishing at the regional and local temporal/spatial scales:

"*The reductions of biomass at larger spatial scales would exacerbate the effects of small-scale depletions caused by fishing; because the spawning biomass in the entire ecosystem is about half of what it would be without fishing, there are fewer spawning-aged fish to replenish areas where fishing has occurred.*" **FMP BiOp, p. 264.**

The *cumulative*, ecosystem-level ("global") effect of fishing down stocks under the MSY-based fishing exploitation rates is such that the value of critical habitat (the most important feature of which is prey) is effectively diminished even before fishing starts at the beginning of every year.

The Draft RPA SEIS fails to address contradictions between conventional single-species management goals and goals for protection of the ecosystem. Nowhere does NMFS explicitly ask or examine the question of why the default FMP "harvest policy" should be set at $F_{40\%}$ rather than $F_{50\%}$, $F_{75\%}$, $F_{90\%}$, or some other rate that is more consistent with goals for ecosystem-based management. Only in the Administrative Record for the FMP BiOp has any written record of question survived.[11] Only Alternative 2 contains TAC reductions, but the TAC reductions are not formulated as alternative harvest policy levels and translated into spawner-recruit ratios ($F_{x\%}$) that can be compared to $F_{40\%}$ directly. NMFS failed to include fishery TAC reductions in the proposed Alternative 4 RPA that its own findings require to foster recovery of sea lion populations in western Alaska.

[11] See FMP AR 172, p. 41, RE: Chap. 6, handwritten questions: *At least two main questions to be resolved: 1) How do we know how much we can reduce prey availability without significant adverse effects (i.e., should we fish at F40%, F60%, F80%, F90%)? And 2) How can we determine the safe level of removal from critical habitat?*

9.1. The Draft RPA SEIS Alternative 4 RPA "Global Control Rule" fails to avoid jeopardy and adverse modification at the global scale of competitive interaction, resulting from the cumulative effect of the $F_{40\%}$ MSY-based harvest policy.

At **RPA BiOp, p. 119**, NMFS now says: "*For sea lions, the relevant question is whether fishing under the prevailing exploitation strategy (the global control rule) results in such large overall removals of fish that sea lions are unable to forage at levels that prevent starvation.*" But NMFS concludes that this is a "moderate" concern now, and only "*if the biomass level for these species was to fall below 20% of its theoretical unfished biomass amount...*" **FMP BiOp, p. 116.** NMFS provides no new information or analysis to justify the conclusion that cumulative depletion effects of an MSY-based fishing strategy are a lesser concern this year than last year, or that a prey stock biomass reduced to only 20% of its average unfished biomass is sufficient to prevent food stress.

For instance, in an 11-16-00 draft of the November 2000 FMP BiOp RPA, NMFS said that stock declines below the *target*[12] stock size of the $F_{40\%}$ fishing strategy (i.e., $B_{40\%}$) impact SSL adversely by modifying the prey base and critical habitat: "*Adverse impacts on Steller sea lions occur whenever the biomass of any of these three species is below $B_{40\%}$.*" Although this sentence was deleted from the final RPA chapter, the final FMP BiOp (pp. 250-251 and 259) concluded that the $B_{40\%}$ stock level constitutes at the least an adverse modification threshold: "*However, it is our opinion that biomass reductions of important groundfish species below 40% of their unfished level would not insure the protection of listed species or their environment*" **FMP BiOp, pp. 250-51.**

NMFS also equated a stock size below the $B_{40\%}$ level with a "take" of Steller sea lions:

> "*The harvest strategy used in the BSAI and GOA has resulted in biomass reductions of Steller sea lion prey on the order of 40-60% from that of estimated unfished levels...As far as the level of effect that constitutes a "take" of Steller sea lions, based on concerns of their ability to forage effectively without reducing appreciable [sic] their likelihood of survival and recovery, take could be expected to occur whenever the biomass of pollock, Pacific cod, or Atka mackerel is below $B_{40\%}$*" **FMP BiOp, p. 259.**

Yet the proposed Alternative 4 Global Control Rule does nothing to prevent stocks from falling below the $B_{40\%}$ "target" stock size because it does not stop fishing until after the *estimated* stock biomass has dropped 50% below that target biomass, i.e., to $B_{20\%}$. Furthermore, the Draft RPA SEIS fails even to consider what alternative F rate (and corresponding TAC level) will avoid jeopardy and adverse modification at the global scale or provide any prospect of recovery of SSL above the current population level.[13] The analysis fails to analyze the operative assumptions of the $F_{40\%}$ harvest policy in the context of competing consumers in the ecosystem and fails to provide any explicit treatment of the harvest policy in the alternatives.

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[12] According to MSY theory, the $B_{40\%}$ spawner per recruit ratio is an *average* stock size representing 40% of the estimated stock biomass that would be found in the absence of fishing on *average*, recognizing that variability around these average stock sizes would be substantial: hence $B_{40\%}$ is a "target" biomass. Whether or not this theory has any empirical reality, it *is* the operative assumption of the $F_{40\%}$ fishing strategy.

[13] See FMP AR 172, p. 41, RE: Chap. 6, handwritten questions: *At least two main questions to be resolved: 1) How do we know how much we can reduce prey availability without significant adverse effects (i.e., should we fish at F40%, F60%, F80%, F90%)? And 2) How can we determine the safe level of removal from critical habitat?*

The global control rule fails to address key features of the jeopardy and adverse modification that NMFS has found reasonably likely to occur at the global scale of competitive interaction resulting from the FMP harvest policy, including:

- The November 2000 FMP BiOp finds that the goal of the MSY-based harvest policy is to remove fish before they are "lost" to natural mortality by other ecosystem consumers (FMP BiOp, p. 225). Single-species fishery exploitation rates are designed to out-compete the other parts of the ecosystem that contribute to natural mortality (M) for a particular species.[14]
- Fishing under the $F_{40\%}$ harvest policy has considerably reduced the potential spawning stock biomass of fully targeted species over the last 20 years. (FMP BiOp, p. 225)
- This long-term reduction on the order of 40-60% is reasonably likely to reduce significantly the availability of prey to other components of the ecosystem, such as Steller sea lions. (FMP BiOp, p. 225)
- This stock-wide reduction in biomass has decreased the effective carrying capacity for the Steller sea lions and altered critical habitat to the extent that its most important feature (the prey base) is diminished even before fishing begins at the start of each year (FMP BiOp, p. 259; FMP AR #139, p. 5-10).
- NMFS concludes that biomass reductions of important groundfish species below 40% of their unfished level would "not insure" the protection of listed species or their environment (FMP BiOp, pp. 250-51) and indicates that stocks sizes for pollock, cod and Atka mackerel below the $B_{40\%}$ target biomass constitute a "take" of Steller sea lions (FMP BiOp, p. 259).
- Lowering the fishing mortality (*F*) rate ("harvest policy") and correspondingly reducing TACs is the only way to avoid jeopardy and adverse modification at the global scale of competitive interaction and provide any reasonable likelihood of recovery of the Steller sea lion population toward historical levels – in other words, leave more prey in the water.

The Draft RPA SEIS fails even to consider setting the "target" stock biomass level at a higher level (e.g., $B_{50\%}$, $B_{75\%}$, $B_{90\%}$) to leave more fish in the water, along with corresponding MSST values, in order to avoid the uncertainties and ecological risks associated with the conventional MSY reference levels (as well as model errors at low stock sizes).[15] At the least, the RPA SEIS analysis should evaluate a more conservative rebuilding criterion that designates $B_{40\%}$ as a limit rather than a target reference stock size (i.e., setting MSST at $B_{40\%}$) in order to maintain higher minimum levels of forage for predators and avoid situations in which stock biomass falls to extremely low levels due to uncertainties and miscalculations in the model-derived ABC. A truly precautionary Global Control Rule that starts reducing the fishing rate *before* the estimated stock size reaches $B_{40\%}$ (e.g., $B_{50\%}$) should be adopted, in order to prevent the prey stocks from falling below the $B_{40\%}$ "take" threshold for Steller sea lions.

[14] NMFS 2001, Draft PSEIS 4.2, p. 5.
[15] See Section 7 below for discussion of model uncertainties and methods for addressing those uncertainties.

9.2. The Draft RPA SEIS fails to analyze the operative assumptions of the FMP harvest policy, including the theory of surplus production, or explain how these assumptions are consistent with needs of Steller sea lions and other consumers in the ecosystem.

The concept of "surplus production" underpins yield-based MSY theory, yet the Draft RPA SEIS fails to evaluate the basic premises of the fishery exploitation strategy as it relates to the declines of competing top predators in the ecosystem such as the Steller sea lion. At **RPA SEIS, Sec. 4.9, p. 4-252** (Effects of Alternatives on the Ecosystem), for instance, NMFS says: "*Fishery removal rates are based in the most basic sense on the amount of surplus production (the excess of reproduction and growth over natural mortality) (Hilborn and Walters 1992) for fish stocks.*" It is not explained how the concept of "surplus production" is consistent with natural energy cycling in an ecosystem. NMFS responds indirectly by claiming that, "*total fishing removals are a small proportion of the total system energy budget and are small relative to internal sources of interannual variability in production.*" Therefore NMFS concludes that, "*total removals under the no action alternative have a non-significant effect on the environment.*" **RPA SEIS, p. 4-257.**[16]

The MSY or MSY-proxy ($F_{40\%}$) fishing strategy assumes that any recruitment of juvenile fish to the adult spawning stock above the theoretical replacement line necessary to maintain the adult population at a given stock size is a "surplus" for the fishery; however, there is no surplus production in marine ecosystems, as noted in the November 2000 FMP BiOp.[17] A 10-02-00 draft of the FMP BiOp, Chapter 6, concludes that the $F_{40\%}$ fishing strategy and the resulting stock size reduction on the order of 40-60% is capable of creating an *extensive, persistent reduction of prey throughout the ecosystem.*[18] The $F_{40\%}$ fishery exploitation strategy ("harvest policy") can be expected to reduce the prey available to competing top predators:

> "*Differences between observed biomasses and those expected in the absence of fishing indicate that fishing likely has considerably reduced the potential spawning stock biomass of all species. This cumulative effect has occurred over the last 20 years (Figures 6.16 and 6.17). This long-term reduction is reasonably likely to reduce the availability of prey to other components of the ecosystem... Figure 6.18 illustrates the reduction in eastern Bering Sea pollock biomass by cohort resulting from this exploitation strategy applied over the period from 1982 to 1998. This long-term reduction is reasonably likely to reduce significantly the availability of prey to other components of the ecosystem, such as Steller sea lions. In effect, fisheries remove fish from the population before they are 'lost' to natural mortality (e.g., other consumers of groundfish).*"
> **FMP BiOp, pp. 224-225.**

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[16] At **RPA SEIS, p. 4-256**, however, NMFS also notes that the analysis did not consider space/time removals of prey by fisheries and concludes that Alternative 1 (no action) "*would result in a conditionally significant adverse impact regarding the spatial and temporal concentration of fisheries on prey species.*"

[17] FMP BiOp, pp. 208, 223-224. See also FMP BiOp Administrative Record #139, p. 48: "*There is no "surplus" production in the marine ecosystems waiting for humans to exploit. The reduction of the biomass of the groundfish stocks can be expected to decrease the effective carrying capacity of the marine ecosystem in the Bering Sea, Aleutian Islands, and Gulf of Alaska; for some species, the carrying capacity has been reduced to less than half of its predisturbance level.*"

[18] FMP BiOp AR #139, p. 5: "*Under the B40% management strategy, the BSAI and GOA groundfish fisheries lead to an extensive, persistent reduction of prey throughout the ecosystem. Such a reduction must reduce the environmental carrying capacity for other components of the ecosystem that are food-limited and depend on these stocks for prey. Such a reduction must also alter the nature of critical habitat to the extent that its most important feature is correspondingly diminished.*" FMP BiOp AR #139, p. 10: "*The environmental carrying capacity for a particular population may be reduced considerably by the ecosystem-wide reduction of standing prey biomass.*"

The finding of the November 2000 FMP BiOp that the fisheries jeopardize Steller sea lions and adversely modify critical habitat at the "global" scale of competitive interaction as well as the regional and local scales leaves little room for doubt: to foster the recovery of Steller sea lions, NMFS must reduce the fishery exploitation rate and corresponding TAC levels *as well as* the temporal-spatial concentration of the TACs in sea lion foraging habitat. For this reason, there should be several alternatives that substantially reduce TAC levels.

In summary, the Draft RPA SEIS fails to address adequately the assumptions and global-scale competitive effects of the $F_{40\%}$ fishery exploitation strategy in any alternative, according to NMFS's own analysis. This failure to consider available information violates NEPA.

9.3. The Draft RPA SEIS fails to demonstrate that fishing mortality rates and corresponding total allowable catch (TAC) limits under any alternative are adequate to address jeopardy and adverse modification at the global scale of competitive interaction.

Alternative 2 is the *only* alternative that reduces TAC levels globally from the "baseline" of Alternative 1 (see Table 4.8-3). **RPA SEIS, p. 4-242.** But Alternative 2 would reduce overall TAC levels only 10% compared to Alternative 1, and this modest reduction in fishing levels appears to be the main reason for NMFS's determination that Alternative 2 has only "marginally less" intensity of effects on Steller sea lions (**RPA SEIS, p. 4-11, Tables 4.1-3,4**), hence for NMFS's "assumption" that Alternative 2 will not result in a stable population, based on the 1990-2000 population trend:

> "*The overall TAC, however, is only 10% less than the other alternatives (Table 4.1-3), and thus the overall effect on the population may not be as intense.*" **RPA SEIS, p. 4-11.**

Although NMFS maintains that sea lions would continue to decline in the absence of fishing under Alternative 2, the Draft RPA SEIS also fails to consider alternatives that reduce overall TAC levels more substantially than Alternative 2, thus there is no way to know what the possible effects would be or to evaluate the claim by NMFS that sea lions would continue to decline at some lower level of fishing.

In the Draft RPA SEIS Cumulative Effects analysis (Sec. 4.13, pp. 378-79), NMFS says, "*the TAC of pollock, Pacific cod, and Atka mackerel under Alternative 2 is 1,627,859 mt which represents a substantial reduction (i.e., more than 5%) over Alternative 1.*" **SEIS, p. 4-378**. The overall TAC reduction is 10% from Alternative 1 (no action), but NMFS again concludes that 10% is not sufficient to avoid conditionally significant negative cumulative impacts at the global scale of competitive interaction:

> "*[U]ncertainty still exists whether a reduction in TAC of 10% is enough to affect the rate of decline of the species. Therefore, the measure(s) under this alternative are an improvement to Steller sea lions, however, the cumulative effect remains conditionally significant negative.*" **RPA SEIS, p. 4-378.**

Thus the only alternative considered in this Draft RPA SEIS that reduces the TAC levels globally fails to reduce TACs enough to affect the rate of decline of the species. Under Alternative 2, maximum TACs would be established as a percentage of the maximum ABC as follows:

- BS pollock TAC, 74.5% of ABC
- GOA pollock TAC, 44.8% of ABC
- AI Atka mackerel TAC, 33% of ABC
- BS Pacific cod TAC, 71.8% of ABC
- AI Pacific cod TAC, 71.8% of ABC
- GOA Pacific cod TAC, 55% of ABC

At **RPA SEIS Tables 4.2-1, 4.2-2, 4.2-7, 4.2-8, 4.2-11**, NMFS provides estimates of fishing mortality under each alternative for 2001-2005, expressed as an instantaneous fishing mortality rate on fully selected ages of fish. But the instantaneous "*F*" rates for 2001-2005 are not similarly expressed as a spawning per recruit ratio ($F_{X\%}$) to compare directly to the status quo fishery harvest policy ($F_{40\%}$). Only Table 4.2-1 for EBS pollock provides equilibrium fishing mortality values (expressed as instantaneous fishing mortality rate) at $F_{40\%}$ for each alternative, so that some comparative analysis of TAC levels for each alternative can be made. Nowhere does NMFS explicitly ask or examine the question of why the default FMP "harvest policy" should be set at $F_{40\%}$ rather than $F_{50\%}$, $F_{75\%}$, $F_{90\%}$, or some other rate that is more consistent with goals for ecosystem-based management. Nor does NMFS grapple with the conclusion of the FMP BiOp that the $F_{40\%}$ harvest policy changes the age and size structure of fish populations. **FMP BiOp, p. 226.**

Lacking such an analysis for each stock and each fishery, NMFS fails to provide a basis for considering what alternative *F* rate and lower TAC levels will avoid jeopardy and adverse modification at the global scale of competitive interaction and thus enhance the prospect of recovery of Steller sea lions.

10. The Draft RPA SEIS fails to analyze the telemetry tracking data or evaluate the interpretation of that data in the Draft RPA BiOp, which would constitute a radical departure from the treatment of critical habitat in previous Section 7 consultations, as defined in the final rule listing of critical habitat (NMFS 1993).

In designating nearshore critical habitat out to 20 nm around rookeries and haulouts in western Alaska (1993), NMFS did not distinguish between the relative importance of critical habitat between 0-10 nm and 10-20 nm, as noted in the RPA BiOp (p. 112) and as specified in the final rule designating critical habitat:

> 58 FR 45270 says that results of tagging experiments "*indicate that waters in the vicinity of rookeries and haulouts are important foraging habitats, particularly for post-parturient females and young animals...*" and 58 FR 45271 says that "*telemetry studies indicate that nearshore waters proximal to rookeries and haulouts are important foraging zones for females with pups during the breeding season and yearlings in the non-breeding season.*"[19]

[19] NMFS, Final Rule Designating SSL CH, FR Vol. 58, No. 165, Friday, August 27, 1993: 45270-71.

Clearly females with pups on rookeries and yearlings in the non-breeding season represent only one segment of the population. The at-sea distributions of older juveniles (subadults), adult females without pups, adult females with pups in the non-breeding season (fall, winter, spring), and adult males are not accounted for, but historical POP observations, Observer Program incidental catch records and previous telemetry research all indicate that these animals commonly forage beyond 10 or 20 nm. Even for that segment of the population considered most likely to utilize the nearshore critical habitat most extensively, both the new and the old telemetry locations indicate very significant use of areas beyond 10 and 20 nm, as indicated in the Draft RPA BiOp. **RPA BiOp, Table 5.1, p. 114**. In addition, the Draft RPA SEIS acknowledges that sea lions regularly utilize areas far beyond the vicinity of terrestrial haulouts, particularly in the non-breeding months:

> "*Overall, the available data suggest two types of foraging patterns: 1) foraging around rookeries and haulout sites that is crucial for adult females with pups, pups, and juveniles, and 2) foraging that may occur over much larger areas where these and other animals may range to find the optimal foraging conditions once they are no longer tied to rookeries and haulout sites for reproductive or survival purposes.*" **RPA SEIS, p. 3-10.**

In the Draft RPA BiOp, NMFS ignores past research and takes new data on pups and yearlings on face value as sufficient evidence that foraging habitat beyond 10 or 20 nm is not important to sea lions. Accordingly, the proposed "zonal approach" to critical habitat fails on its merits.

10.1. The RPA SEIS fails to provide any analysis or new information that justifies the RPA BiOp's approach to critical habitat, based on an arbitrary and capricious interpretation of the telemetry data.

Based on an *interpretation* of new telemetry data in the RPA BiOp, NMFS is now attempting to assess qualitatively the relative importance of the critical habitat using a "zonal" approach. At **RPA BiOp, p. 116**, NMFS says: "*The current interpretation of the telemetry information has allowed NMFS to partition these areas such that the zone previously thought to be most important for sea lions (0-20 nm) has now been reduced to 0-10 nm due to the level of specificity in the new analyses.*" NMFS acknowledges that there is considerable bias toward nearshore locations in the telemetry data, in addition to the fact that the most recent tracking information comes from young-of-the-year pups or yearlings that are known to remain closer to shore in their early development. Even so, Table 5.1 also indicates that there are quite significant percentages of telemetry "hits" *beyond* 10 or 20 nm in both (a) and (b) interpretations of the data, for both pup/juvenile and adult animals despite the tendency for these young animals to utilize nearshore areas more frequently.

In this new approach to critical habitat, NMFS does not consider information on the location of fishery removals in critical habitat. Such information is simply not considered relevant to the new analysis because the "zonal approach" is premised solely on the proportion of total telemetry locations within 10 nm (75%) and beyond 10 nm (25%), NMFS "speculates" that the percentage of telemetry locations inside 10 nm of critical habitat equates to a comparable amount of foraging effort:

> "*...therefore drawing from the information above that roughly 75% of the at-sea distributions occur within 10 nm from shore, we can then speculate that about 75% of the foraging effort*

occurs within 10 nm from shore, and that most of the observed activity by pups and juveniles occurs in this area."

Bowen et al. (2001), however, express considerable doubts about the reliability of the entire procedure:

"*...this conclusion is quite sensitive to how the location data are analyzed. Different assumptions result in strikingly different conclusions about the way in which Steller sea lions use the ocean. As such we have little confidence that this analysis provides a sound basis for drawing conclusions about the effect of the RPA on the dynamics of Steller sea lions.*"[20]

The Final RPA SEIS must discuss and relate the findings of the NPFMC-commissioned review panel to the Draft RPA BiOp's interpretation of the telemetry tracking data, approach to critical habitat, and assumption about avoiding jeopardy and adverse modification of critical habitat.

10.1.1. Telemetry location data does not equal foraging locations.

At **RPA BiOp, p. 112**, NMFS acknowledges that an assumption must be made that at-sea telemetry locations reflect foraging, even though this is only an inference:

"*The critical assumption that must be made here is that the observed at-sea distributions [of telemetry locations] are indicative of sea lion foraging. At this point we can still say very little about the foraging success of these animals while at sea, and therefore do not know if there are areas of ocean, a time of day or distance from land that is more or less important or effective for a foraging Steller sea lion.*"

NMFS further discusses the confounding biases in the new telemetry data (**RPA BiOp, pp. 112-114, and Table 5.1; ADFG 2001**) and recognizes that at-sea telemetry distributions are not necessarily reflective of *foraging*, yet NMFS is content to accept the information on its face value and create "zones of concern" for specific areas of critical habitat based on this admitted *interpretation* of the telemetry locations. **RPA BiOp, p. 117, Table 5.2.**

10.1.2. Prey distribution within the proposed Alternative 4 RPA "zones of concern" in critical habitat is unknown and the distribution of fishing within these zones is not analyzed in the Draft RPA SEIS, rendering the approach of Alternative 4 to critical habitat arbitrary and capricious.

NMFS could only argue that 10 nm trawl exclusion zones are adequate if the analysis could show that prey biomass is proportionally larger in the areas within 10 nm (in some cases as little as 3 nm) of the rookeries and haulouts, but the data does not support that argument. In fact, NMFS has abandoned the so-called Forage Ratio approach as outlined in Appendix 3 to the FMP BiOp precisely because the lack of survey information at the appropriate spatial/temporal scales makes estimates of biomass in critical habitat an exercise in pure guesswork. At **RPA BiOp, p. 40**, NMFS says:

[20] W.D. Bowen (chair), J. Harwood, D. Goodman, G.L. Swartzman. Review of the November 2000 Biological Opinion and Incidental Take Statement with Respect to the Western Stock of the Steller Sea Lion, with Comments on the Draft August 2001 Biological Opinion. Final Report. Prepared for the North Pacific Fishery Management Council, September 2001, p. 5.

"…we are not able to reliably describe their abundance, biomass, age structure, or temporal and geographic distribution within critical habitat with sufficient clarity and certainty to understand how they interact with Steller sea lions or other consumers, including fisheries…"

At **RPA BiOp, p. 145**, NMFS properly concludes that "*the forage ratio approach does not allow analysis of the spatial or temporal scales of interest,*" and therefore NMFS has decided not to use this approach in the current draft RPA BiOp. Thus NMFS fails to provide any rationale based on prey availability or the distribution of fishing for selecting only 3 nm or 10 nm instead of 20 nm trawl closure areas around the rookeries and haulouts identified for protection in the previous two jeopardy opinions. NMFS seems to be jumping at any pretext to justify the industry-preferred Alternative 4 RPA. Given the high degree of uncertainty in the telemetry data, however, the benefit of the doubt should go to SSL and NMFS should take the most protective approach to critical habitat.

The "zonal approach" (**RPA BiOp, pp. 115-117**) is the basis for largely repealing the temporal, spatial and catch limit provisions of previous RPAs in critical habitat beyond 10 nm, based on the new telemetry information. On the basis of this flimsy surmise, NMFS is willing to roll back protections of critical habitat: spatial dispersion is now considered to be a low priority given the frequency of telemetry locations beyond 10 nm. **RPA BiOp, p. 115**; temporal dispersion outside 10 nm is now considered to be a low priority given the frequency of telemetry locations beyond 10 nm. **RPA BiOp, p. 116**; catch limits within critical habitat areas beyond 10 nm "*that were previously considered to be integral to the RPA in the FMP biological opinion,*" are now considered unnecessary. **RPA BiOp, pp. 115-116.**

These conclusions fly in the face of previous Biological Opinions and are not based on any new information that would justify a wholesale abandonment of the approach to critical habitat in the final rule designating critical habitat (NMFS 1993) or of the principles and guidelines for RPAs laid out previously. NMFS has simply failed to disclose and analyze available information, including the agency's own section 7 consultation record.

10.2. The Draft RPA SEIS fails to consider substantial information relevant to the RPA BiOp's interpretation of the telemetry data, indicating that Steller sea lions forage extensively beyond 10 nm.

For critical habitat beyond 10 or 20 nm, NMFS says that these areas are of low concerns because "*most sea lions in this zone are presumed to be older juveniles or adults which are likely to have advanced diving and foraging capabilities.*" **RPA BiOp, p. 124**. Advanced or not, a foraging sea lion is not likely to be successful at finding adequate food if large pulse fisheries have removed substantial portions of the prey field in times and areas important to foraging sea lions.

NMFS simply dismisses any concerns associated with those catch levels in pelagic critical habitat by arguing that the areas beyond 10 nm were never important to sea lions, based on limited available telemetry data for adult females, even though those areas were known to contain large concentrations of important sea lion prey:

[These areas] "*were never considered to be important based on satellite telemetry (see Section 3.2.1). These areas were known to contain high abundances of prey species known to be* *important for Steller sea lions, and were therefore designated as critical habitat so that the agency and the public would be aware of their possible importance to the survival and recovery of Steller sea lions.*" **RPA BiOp, p. 125.**

Yet NMFS's own justification for designating large aquatic foraging habitat zones on pollock spawning grounds in the Gulf of Alaska (Shelikof Strait) and eastern Aleutian Islands (164-170W longitude), as well as Atka mackerel spawning grounds in the central Aleutian Islands, was based in part on their importance as foraging areas, in addition to being centers of large Steller sea lion populations 30 years ago and focal points for major trawl fisheries since the early 1970s:

"*These sites were selected because of their geographic location relative to Steller sea lion abundance centers, their importance as Steller sea lion foraging areas, their present or historical importance as habitat for large concentrations of Steller sea lion prey items that are essential to the species survival, and because of the need for special consideration of Steller sea lion prey and foraging requirements in the management of the large commercial fisheries that occur in these areas.*"[21] (Emphasis added.)

The double standard in NMFS's use of telemetry data and other sources of information is fully revealed in these new RPA BiOp statements, since NMFS is willing to discount all prior information and use the new telemetry location data for pups and yearlings to conclude that habitat beyond 10 nm is unimportant -- despite years of Platform of Opportunity Program (POP) sightings and the agency's own prior research and numerous Section 7 consultations which have found that sea lions forage extensively beyond 10 nm and are commonly found at the shelf break in the Gulf of Alaska and even in the central Bering Sea during the winter.

For instance, Loughlin et al. (1987) found that Steller sea lions commonly forage out to the continental slope waters and occur at the 200 m depth contour in the Gulf of Alaska.[22] NMFS (1993) has previously stated that large seasonal differences in foraging ranges may be associated with the seasonal movements of sea lion prey fishes:

"*Sea lions were seen during all months along the shelf break in the GOA. During October and November, observations of sea lions were primarily along the continental shelf and in shallow waters of the southeastern Bering Sea. They were also seen in other areas but their numbers tended to be progressively higher in the central Bering Sea during December to February. The tendency for sea lions to occur in deeper water during the winter may be associated with the movement of walleye pollock and other potential forage fishes (U.S. Dept. of Interior 1987; Pola 1985)*"[23]

Merrick (1995) also concluded on the basis of the available radio tracking data that seasonal changes in home-range area are related to prey availability:

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[21] NMFS, Final Rule Designating SSL CH, FR Vol. 58, No. 165, Friday, August 27, 1993: 45271.

[22] Thomas R. Loughlin, Michael A. Perez, and Richard L. Merrick. 1987. Mammalian Species No. 283, Eumetopias jubatus. 27 February 1987, The American Society of Mammalogists, pp. 1-7: "*While feeding at sea, E. jubatus frequently are seen near shore and out to continental slope waters; in the Gulf of Alaska they commonly occur near the 200-m depth contour (Kajimura and Loughlin, in press)...*"

[23] Loughlin, Thomas R. et al. 1993. Status and pelagic distribution of otariid pinnipeds in the Bering Sea during winter. NMML/AFSC/NMFS. OCS Study MMS 93-0026, March 1993: p. 7.

"WAF [winter adult female] sea lions did not forage as close to haul-out sites as SAF [summer adult females], suggesting that in winter prey availability is reduced near the site or that a richer prey supply is available beyond the summer forging range." Furthermore, *"Even without knowing local prey availability, one can infer that the increased home range area reflects reduced prey densities in winter because home range size typically depends on metabolic requirements and productivity of the foraging area."*[24]

Greatly increased foraging ranges and/or foraging effort of adult females tracked by satellite telemetry in winter suggested to Merrick and Loughlin (1997) that prey is harder to find in winter. In addition to finding prey more scarce in fall and winter months, adult females with young-of-the-year pups are nursing and carrying a fetus, which would place a much higher energy demand on the female.[25] Merrick and Loughlin (1997) reviewed SLTDR data for 15 animals and found similar seasonal differences in foraging and home ranges, as summarized in Table 1 (below). Radio tracking data, while limited, indicated that winter adult females (WAF) have much larger home ranges and longer trip distances, spend significantly more time at sea, and make deeper and longer dives than summer adult females (SAF):

"Results of these studies indicated that during summer, females with pups foraged close to rookeries, and made relatively short trips with shallow dives. <u>In winter, females had much longer trips and dove deeper than summer animals</u>."

However, nursing mothers appear to stay closer to shore even in winter in order to return to their pups regularly, while young weaned juveniles generally forage closer to shore and make shallower dives than adults.

Table 1. – Summary Results of Foraging Studies by Merrick and Loughlin (1997)		
	Mean trip distance	mean home range
5 summer adult females (SAFs)	17.1 km	319 km2
5 winter adult females (WAFs)	133 km	47,579 km2
5 winter young of the year (WYOY)	31 km	9,196 km2
Source: Merrick, Richard L. and Thomas R. Loughlin. 1997. Foraging behavior of adult female and young-of-the-year sea lions in Alaskan waters. Can. J. Zool. 75: 776-786.		

Additionally, high incidental catches of sea lions in trawl gear were reported during both the Shelikof Strait roe-pollock fishery of the early 1980s and the Bering Sea groundfish fisheries of the 1970s and 1980s, when sea lion populations were much larger. Woodley and Lavigne (1991) determined that over the period 1973-1987, northern sea lions accounted for 90% of the incidental mortality of marine mammals reported by U.S. observers aboard groundfish fishing vessels in the Gulf of Alaska and

[24] Merrick, Richard. 1995. The Relationship of the Foraging Ecology of Steller Sea Lions (Eumetopias jubatus) to their Population Decline in Alaska. Ph.D. dissertation, University of Washington, pp. 110-111.

[25] Merrick, Richard L. and Thomas R. Loughlin. 1997. Foraging behavior of adult female and young-of-the-year sea lions in Alaskan waters. Can. J. Zool. 75: 776-786.

eastern Bering Sea.[26] Research by Loughlin and Nelson (1986) on incidental catches of Steller sea lions in the walleye pollock joint-venture fishery in the Shelikof Strait found that both adult females and juveniles of both sexes were feeding on pollock of the same size range targeted by the fishery.[27] Clearly sea lions *do* utilize the larger aquatic foraging areas, contrary to the statements in the Draft RPA BiOp suggesting that these areas are unimportant to foraging sea lions.

In the EA/RIR for Amendments 25 and 20 to the FMPs for Groundfish of the GOA and BSAI (Proposed Prohibition to Groundfish Trawling in the Vicinity of GOA and BSAI Steller Sea Lion Rookeries, NMFS 1991), NMFS cited the research and observations indicating large seasonal differences in sea lion foraging ranges as a major reason why 10 nm rookery zones were insufficient to protect foraging areas of sea lions year-round:

> "*Available data indicate that 10 nm zones would not be sufficient to cover feeding trips of animals during the winter, females without pups throughout the year, and some feeding trips of postpartum females during the breeding season.*"[28]

On the basis of the available information and commonly observed at-sea locations of sea lions, NMFS determined as early as 1991 that a seasonal trawl closure strategy comprised of 20 nm closures in summer and 60 nm closures in winter (Oct 1-Apr 30) would better approximate Steller sea lion seasonal foraging patterns:

> "*This alternative approximates the maximum observed foraging distance of females with pups during the breeding season, and provides a large closed area during winter to better encompass winter foraging habitats and compensate for increased nutritional need and stresses*" (NMFS 1991).[29]

These repeated agency findings underscore the need for trawl closure areas in both the nearshore critical habitat areas *and* in the larger pelagic foraging areas beyond 10 and 20 nm, particularly in the fall and winter half of the year – contrary to the findings of the RPA BiOp that these areas are unimportant to foraging sea lions. Again, NMFS has failed to disclose and analyze available information, including the agency's own section 7 consultation record.

10.3. The RPA SEIS fails to review and relate previous ESA Section 7 consultation findings and independent scientific panel findings regarding the importance and treatment of critical habitat to the Draft RPA BiOp's radical new approach to critical habitat.

Despite the huge uncertainties in the interpretation of the telemetry data, NMFS arbitrarily draws a conclusion that critical habitat within 10 nm of land sites is proportionally three time more important

[26] Thomas H. Woodley and David M. Lavigne. 1991. Incidental Capture of Pinnipeds in Commercial Fishing Gear. International Marine Mammal Association Technical Report No. 91-01.
[27] Thomas R. Loughlin and Russell Nelson, Jr., 1986. Incidental Mortality of Northern Sea Lions in Shelikof Strait, Alaska. Marine Mammal Science, 2(1): 14-33.
[28] NMFS 1991. EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI prohibiting groundfish trawling in the vicinity of sea lion rookeries.
[29] NMFS 1991. EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI prohibiting groundfish trawling in the vicinity of sea lion rookeries.

that critical habitat beyond 10 nm. This is a major departure from the previous BiOps, in which "*NMFS previously considered all critical habitat to be equally as important to sea lion foraging.*" **RPA BiOp, p. 112.**

Previously NMFS has said that prey resources are the most important feature of sea lion marine critical habitat.[30] NMFS has said that prey resources determine the carrying capacity of that habitat for sea lions.[31] In the November 2000 FMP BiOp, NMFS concluded once again that prey resources effectively determine carrying capacity of sea lion critical habitat:

> "*Prey resources are not only the primary feature of Steller sea lion critical habitat, but they also appear to control the maximum size of the Steller sea lion population. Therefore, the concepts of critical habitat and environmental carrying capacity are closely linked: critical habitat reflects the geographical extent of the environment needed to recover and conserve the species.*" **FMP BiOp, p. 188.**
>
> "*The value of the marine portions of critical habitat that has been designated for Steller sea lions will be determined by the abundance and distribution of prey species. The abundance of prey within these foraging areas, over time, would determine the number of predators they could support in that time; as the abundance increased, the area would be able to support more predators, as the abundance decreased, the area would be able to support fewer predators. Similarly, the distribution of prey species will determine whether prey are available to foraging sea lions and will determine whether they can forage successfully.*" **FMP BiOp, p. 254.**

Although the decline of Steller sea lions and changes in sea lion vital parameters are consistent with a change in carrying capacity, that does not mean that the change is natural in origin.[32] Throughout the period of sea lion decline, large-scale trawl fisheries have operated in areas of former sea lion abundance, targeting prime sea lion prey. After 1980, under U.S. management, the fisheries became steadily more concentrated in critical habitat, taking record levels of the catches of pollock, Pacific cod and Aleutian Atka mackerel from areas designated as Steller sea lion critical habitat. The proposed Alternative 4 RPA would perpetuate this situation.

At **RPA BiOp, p. 119**, NMFS says spatial competition between fisheries and Steller sea lions can occur at the macro-, meso- and micro-scale. NMFS acknowledges that, "*fisheries can affect the distribution and abundance of groundfish in a region such as Shelikof Strait or Bristol Bay that is important to local groups of sea lions.*" **RPA BiOp, p. 119**. Such findings are consistent with a long history of preceding NMFS Section 7 Biological Opinions and independent assessments, all of which

[30] NMFS Biological Opinion on the groundfish FMPs of the BSAI and GOA. November 30, 2000.

[31] NMFS Biological Opinion on 2000 TAC Specifications for the BSAI and GOA and American Fisheries Act, December 22, 1999, p. 66. ADF&G. Overview of State-Managed Marine Fisheries in the Central and Western Gulf of Alaska, Aleutian Islands and Southeastern Bering Sea with Reference to Steller Sea Lions. Regional Information Report 5J00-10. October 12, 2000, p. 19: "*Prey resources are not only the primary feature of Steller sea lion critical habitat, but they also appear to determine carrying capacity of the environment for Steller sea lions.*"

[32] NMFS Biological Opinion on 2000 TAC Specifications for the BSAI and GOA and American Fisheries Act, December 22, 1999, p. 66. ADF&G. Overview of State-Managed Marine Fisheries in the Central and Western Gulf of Alaska, Aleutian Islands and Southeastern Bering Sea with Reference to Steller Sea Lions. Regional Information Report 5J00-10. October 12, 2000, p. 19.

concluded that the spatially concentrated groundfish fisheries may reduce abundance, availability and/or quality of prey stocks essential to foraging Steller sea lions:

- The April 1991 Biological Opinion on the Gulf of Alaska pollock fishery concluded that Steller sea lions and fisheries target large schools of fish to maximize forage efficiency and minimize effort, therefore large fishery harvest from schools of fish in close proximity to sea lion rookeries and haulouts are likely to decrease the amount of food available to sea lions.

- The June 1991 Biological Opinion concluded that the Gulf pollock fishery had become spatially and temporally compressed in nearshore waters over time, and that large pollock harvests over small areas and time periods may deplete local pollock stocks and reduce or limit availability of food to Steller sea lions.

- The January 1996 Biological Opinion for the BS/AI noted that fishery catches near Steller sea lion rookeries, haulouts and at-sea foraging habitats continue to be much higher than they were prior to the population decline and that the majority of the groundfish removals continue to be taken in rapid, intensive "pulse" fisheries concentrated in time and area.

- The National Research Council's Bering Sea Ecosystem report (1996) concluded on the basis of the temporal and geographic pattern of fishing that the fisheries have in some way contributed to the declines of species such as Steller sea lions and Pacific harbor seals, particularly on a localized basis. For that reason, the NRC included the recommendation to broaden the distribution of fishing effort in space and time, especially for pollock: "*The concentrated fishing for pollock in some places at specific times probably reduces the availability of food for marine mammals and birds, especially juveniles. Thus one step that might help improve the food supply for and reverse declines in marine mammals and birds would be to distribute fishing over wider areas and over longer periods.*"

- In December 1997, the North Pacific Council's SSC highlighted "*several multispecies concerns which lie at the interface of sea lion conservation and fisheries management... Prey availability is increasingly understood to be important to sea lion conservation and recovery. Thus the MAGNITUDE, TIMING, and LOCATION of major fisheries targeting sea lion prey species, particularly Atka mackerel and walleye pollock, become a focal concern. Foraging success for sea lions is clearly related to the probability of encounter with prey species, thus localized depletion of common target or forage species is an important issue. Localized depletion has been documented to some degree for Atka mackerel... We encourage further exploration of the tradeoffs between adjustment of fisheries removals, timing and location as a means to improve sea lion forage availability and/or reduced disturbance.*"

- In May 1998, NMFS cited evidence for localized removal rates as high as 40-94% in the Aleutian Atka mackerel fishery (Lowe and Fritz 1997; Fritz 1997, 1998; Lowe and Fritz, 1998; NMFS 1998). Fishery-induced localized depletions in critical habitat were cited as reason for proposing management actions to reapportion the Aleutian Atka mackerel fishery in order to reduce the risk of depleting the local prey base: "*If lack of available prey is an impediment to the recovery of the western population of Steller sea lions, then the evidence for fishery-induced localized depletions of Atka mackerel and the persistent distribution of the fishery within critical* *habitat support the hypothesis of sea lion fishery competition and fishery impacts on Steller sea lion population dynamics.*" (NMFS 1998)

In the December 1998 BiOp and October 1999 pollock RFRPA, NMFS concluded that competition from the pollock fisheries is reasonably likely to diminish the prey base and the value of critical habitat, posing a serious threat to Steller sea lion survival and recovery:

"*In the [3 Dec 1998] Opinion, NMFS concluded that it would be reasonable to expect this competition to appreciably diminish the value of critical habitat for both the survival and recovery of the Steller sea lion, and appreciably reduce their likelihood of survival and recovery in the wild*" **October 1999 Pollock RFRPA, p. 17.**

In the1999 pollock RFRPA, NMFS concluded that fisheries may alter the prey base over short and long time scales:

"*Fisheries alter these prey fields. They may have long-term consequences (over multiple years) such as changes in the local composition of biological communities They also have immediate or short-term (within-year) consequences related simply to removal of prey.*" **October 1999 Pollock RFRPA, pp. 31-32.**

In the November 2000 FMP BiOp, NMFS says that competition from the fisheries at multiple spatial/temporal scales can reduce carrying capacity of critical habitat:

"*The fisheries may reduce the abundance of prey within these marine foraging areas and would alter the distribution of groundfish prey in ways that would reduce the effectiveness of foraging sea lions. The reduction in the abundance of prey species and the alteration of their distribution could effectively keep the carrying capacity of critical habitat for Steller sea lions below the current population size.*" **FMP BiOp, pp. 264-265.**

"*The fisheries effects that give rise to these determinations [jeopardy/adverse modification] include both large scale removals of Steller sea lion forage over time, and reduced availability of prey on the fishing grounds at scales of importance to individual foraging Steller sea lions, particularly in critical habitat.*" **FMP BiOp, p. 271.**

Yet the proposed Alternative 4 RPA measures do not establish a fishing regime that effectively reduces and limits overall groundfish catches in sea lion critical habitat. NMFS abandons all but the most token catch limits in critical habitat for Bering Sea pollock and Aleutian Atka mackerel fisheries, while failing to implement catch limits in GOA critical habitat for either pollock or cod. Since there are virtually no limits on catch in critical habitat under the proposed Alternative 4 RPA (**RPA BiOp, p. 125**), NMFS expects catches taken from critical habitat in the Sea Lion Conservation Area (SCA) and the Aleutian Islands to increase again just as catches in critical habitat have remained high in the Gulf of Alaska (where catch limits were not established in previous RPAs). The proposed Alternative 4 RPA would allow as much as 70% of the Atka mackerel TAC to be taken from critical habitat to within 10 nm of rookeries and haulouts in the west-central Aleutian Islands, approximating the "historical" average over the past 10 years of the fishery, and would allow pollock trawlers to take as much as 75%

of the A-season pollock TAC within the SCA, also approximating the recent "historical" average of the 1990s:

> "*Because there are virtually no limits on catch in critical habitat (the exception is a limit of about 70-75% of each seasonal allowance in the SCA and Atka mackerel harvest limits of 70% in the AI), it is likely that the majority of the harvest will be concentrated in these zones. Previous experience with pollock in the GOA in 1999 and 2000 reminded us that even though most of the 0-10 nm areas of critical habitat were closed, that the overall fraction of the catch in critical habitat remained relatively the same as before [the RPAs].*" **RPA BiOp, p. 125.**

This approach flies in the face of the findings of the recent jeopardy and adverse modification opinions, and constitutes an additional failure to disclose and analyze available information, including the agency's prior section 7 consultation record.

11. The Draft RPA SEIS fails to provide any analysis or supporting evidence showing that the proposed Alternative 4 RPA trawl exclusion zones will eliminate competition between foraging Steller sea lions and the large trawl fisheries around rookeries and haulouts, as required in the December 1998 BiOp, the October 1999 Pollock RFRPA and November 2000 FMP BiOp.

The EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI (Prohibition to groundfish trawling in the vicinity of sea lion rookeries) recommended special management measures to prohibit trawling in certain areas because: (1) trawl fisheries account for the majority of the catch of species of concern in critical habitat; (2) trawlers have higher bycatch of non-target prey species including juvenile pollock, squid, octopus, salmon, herring, capelin, eulachon, and sand lance, as well as flatfish and shellfish, any number of which may serve as important seasonal or secondary items in the sea lion diet, depending on availability; (3) trawlers are the primary source of lethal incidental entanglements in nets; (4) trawlers are responsible for benthic habitat disturbances and changes in species composition (NPFMC/NMFS 1991).

In the December 3, 1998 BiOp NMFS cited the crucial importance of *eliminating* the potential for fishery competition for sea lion prey in the critical foraging areas around rookeries and haulouts:

> "*Complete exclusion of pollock trawl fishing is based on the available evidence that the regions around major rookeries and haulouts are so essential to the recovery and conservation of the western population that risk of competition from pollock trawl fisheries must be excluded completely. Such exclusions are particularly important to protection of prey resources for reproductive females and for pups and juveniles learning to forage.*" **December 3, 1998 BiOp, p. 119.**

The only way to *eliminate* the possibility of competition from the major trawl fisheries in nearshore critical habitat is to prohibit ALL trawling within a radius of 20 nm around these sites. But the proposed Alternative 4 RPA fails to prohibit pollock trawling or any other trawling across the full extent of designated critical habitat around rookeries and haulouts out to 20 nm. Given this failure, the agency has simply failed to justify its selection of Alternative 4 as the preferred alternative.

11.1. 10 nm trawl exclusion zones afford inadequate protection to foraging sea lions.

Previously, NMFS has concluded from available foraging studies that zones of 20-nm radii around rookeries and haulouts are a good approximate average distance that encompasses much sea lion activity throughout the species' range, including home ranges of summer adult females with pups and winter young-of-the-year pups (Merrick and Loughlin, 1997). Nursing mothers also appear to stay closer to shore even in winter in order to return to their pups regularly, while young weaned juveniles generally forage closer to shore and make shallower dives than adults (Merrick and Loughlin, 1997; NMFS 1999, RFRPA for the Pollock Fisheries in the BSAI and GOA with Supporting Documentation, October 1999: p. 25). The existing studies are consistent across all areas studied from Southeast Alaska, Gulf of Alaska, Eastern Aleutians, and the Russian Kuril Islands (e.g., Merrick 1992; Loughlin et al. 1993; Calkins 1996; Swain 1996; Loughlin and Merrick 1997; Loughlin et al 1998).

At the same time, Steller sea lions regularly forage much farther afield than 20 nm, especially in the fall, winter and early spring months. Steller sea lions are commonly found out to the continental slope waters in the non-breeding seasons and commonly occur near the 200 m depth contour in the Gulf of Alaska in *all* seasons.[33] Telemetry studies, Observer Program incidental catch data, and decades of POP observations indicate that adult female Steller sea lions have far more extensive home ranges in the non-breeding season, make longer foraging trips, spend more time at sea, and make deeper and longer dives than adult females on rookeries with pups in the summer (Loughlin et al. 1993; Merrick 1992, 1995; Merrick and Loughlin 1997; NMFS 1998, 2000). The Draft RPA BiOp acknowledges this information:

> "*Studies conducted after critical habitat designation suggested that juveniles and adult females in winter travel substantially greater distances (i.e., greater than 60 nm) during feeding bouts and during transits within their home range (Merrick and Loughlin 1997, Swain and Calkins 1997).*" **RPA BiOp, pp. 109-110.**

Although the stated regulatory intent of the rookery no-trawl zones established between 1991-1993 was to disperse trawl fisheries and minimize the likelihood that groundfish fisheries would create localized depletions of sea lion prey in critical sea lion habitats (Fritz and Ferrero 1997), the existing 10 nm "buffer" zones have proven totally inadequate. The reason is that areas within these rookery trawl exclusion zones were not heavily utilized by the groundfish trawl fisheries, with the exception of the Atka mackerel fishery. For instance, from 1984-1991 the annual percentage of pollock caught within 10 nm of rookeries and haulouts in the BS/AI ranged only from 1-7% and 0-3% in the GOA. **Fritz and Ferrero 1997; December 3, 1998 BiOp, p. 28.**

The inadequacies of the 10 nm rookery trawl exclusion zones were apparent to NMFS even at the time they were proposed.[34] NMFS initially recommended that trawl fishing be prohibited within 20

[33] Kajimura, H. and T.R. Loughlin. 1988. Marine Mammals in the Oceanic Food Web of the Eastern Subarctic Pacific. Bulletin of the Ocean Research Institute, University of Tokyo, No. 26 (Part II). See also: Loughlin, Thomas R., Michael A. Perez, and Richard L. Merrick. 1987. Mammalian Species No. 283, Eumetopias jubatus. Published 27 February 1987 by The American Society of Mammalogists, pp. 1-7).

[34] NMFS 1991. EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI prohibiting groundfish trawling in the vicinity of sea lion rookeries: "*Available data indicate that 10 nm zones would not be sufficient to cover feeding trips of animals during the winter, females without pups throughout the year, and some feeding trips of postpartum females during the breeding season.*"

nm of the listed Steller sea lion rookeries in the Gulf of Alaska (Aron memo, 16 May 1991). The 16 May 1991 recommendation was based on satellite telemetry data obtained from nursing females during the breeding season. The agency subsequently reduced the recommended trawl closure zones to only 10 nm around rookeries (Aron note, 30 May 1991). The 30 May 1991 memo demonstrated clearly that the 10 nm trawl closures would provide little protection to critical habitat foraging areas because very little groundfish fishing occurred in these areas, and most fishery removals occurred within 10.1 and 20 nm:

> "*Data collected by fisheries observers suggests that 10 nm closures around northern sea lion rookeries would not seriously restrict the pollock fishery. From 1980-89, an annual average of 88.2% of all pollock caught within 20 nm of rookeries was caught between 10.1 and 20 nm.*"

It is abundantly clear that the existing rookery trawl exclusion zones are inadequate for at least several crucial reasons:

- Since very little trawling occurred within the 10 nm rookery no-trawl zones, closing them was not likely to reduce the impacts of trawling significantly. The 10 nm zones have done nothing to prevent the fisheries from becoming more concentrated in Steller sea lion critical foraging habitats during the 1990s.

- Telemetry tracking studies of seasonal foraging patterns (Merrick and Loughlin 1993, 1997; Merrick 1992, 1993) and platform-of-opportunity sightings indicate clearly that 10 nm zones are "*too small to effectively separate the local effects of trawlers on sea lion prey from foraging sea lions.*" (NRC 1996)

- The 10 nm zones do not protect much larger areas of critical foraging habitat that are used in the non-breeding season, primarily from haulouts.

In addition to these shortcomings, the 10 nm no-trawl zones do not provide adequate protection to important but overlooked segments of the sea lion population whose health and nutritional status is crucial to the eventual recovery of the species. For example, Calkins and Pitcher (1982) and Calkins (1996) found that mature females without pups comprise a large portion of the adult female population in any given year -- 33-40% in the Kodiak area during 1970s and 1980s. Research by Calkins (1996) in Southeast Alaska indicates that summer adult females without pups travel longer distances and move more extensively between haulout and rookery sites in a given region even in the summer. Thus rookery no-trawl zones of 10 or 20 nm do not encompass foraging areas of this portion of the population even in the summer months. The RPA SEIS fails to analyze the potential efficacy of such 10 nm zones at reducing competition for Steller sea lion prey.

11.2. Expanded trawl exclusion zones are necessary to protect foraging areas in critical habitat beyond 10 nm, particularly during the winter half of the year.

Although 20 nm trawl buffer zones will provide expanded protection for core nearshore foraging areas around critical land sites, they do not encompass the extensive foraging ranges of Steller sea lions, particularly in the non-breeding months. Previously NMFS determined that a seasonal trawl closure strategy comprised of 20 nm closures in summer and 60 nm closures in winter (Oct 1-Apr 30) would better approximate Steller sea lion seasonal foraging patterns (NMFS 1991),[35] and that a large area of the eastern Aleutian Islands out to the continental shelf break contains critical winter foraging habitat on spawning grounds (NMFS 1993). A Section 7 Consultation on Amendment 18 to the BS/AI FMP, February 1992, found that "*increased fishing effort in the CVOA may diminish the availability of food resources to Steller sea lions that forage in this geographic region and may adversely affect their survival and recovery.*"

These larger, at-sea foraging areas were first recommended by the Steller Sea Lion Recovery Team in 1991 and encompass major pollock spawning grounds in the Gulf of Alaska (Shelikof Strait) and eastern Aleutian Islands (from Unimak Island to Islands of the Four Mountains, 164-170W longitude) as well as Atka mackerel spawning grounds in Seguam Pass. Although the Steller Sea Lion Recovery Team expressed the need for more information, the Recovery Team also noted that nutritional factors appeared to be involved in the population decline and emphasized the need for designating at-sea areas adjacent to population centers where sea lions were commonly known to forage, and where the groundfish fisheries, particularly for pollock, were heavily concentrated (SSLRT 1991). The Recovery Team recommendation led to designation of these areas as critical habitat by NMFS in 1993:

> "*These sites were selected because of their geographic location relative to Steller sea lion abundance centers, <u>their importance as Steller sea lion foraging areas</u>, their present or historical importance as habitat for large concentrations of Steller sea lion prey items that are essential to the species' survival, and because of the need for special consideration of Steller sea lion prey and foraging requirements in the management of large commercial fisheries that occur in these areas.*" (NMFS 1993)

The existing sea lion research suggests the importance of the larger at-sea foraging habitat in the Sea lion Conservation Area (SCA), particularly in the winter months when large schools of spawning pollock gather in the area:

> "*Satellite telemetry data from tagged eastern Aleutian sea lions indicate that the shallow portion of the CVOA is an important foraging area for Steller sea lions. Most of the tagged eastern Aleutian Islands animals generally foraged on the shelf area within the Krenitzen Islands and to the east on the north and south sides of Unimak Island. Winter sea lion distribution data indicate that the number of animals on rookery sites generally decreases after the summer breeding season whereas use of haulouts increases. In the eastern Aleutians, animals appear to move from rookeries to haulout sites closest to the eastern Bering Sea shelf and perhaps the western GOA shelf.*" (Mello memo, 8 September 1992)

Thus the agency has acknowledged that rookery and haulout no-trawl zones of 10 or 20 nm do not reflect broad seasonal foraging patterns and are not sufficient to protect accustomed winter foraging grounds farther offshore, which are necessary for the survival and recovery of the species in the SCA as well as the Shelikof Strait and central Aleutians around Seguam Pass (NMFS 1993). These acknowledgements must be disclosed, and their importance to jeopardy/adverse modification inquiry analyzed, in the RPA SEIS.

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[35] NMFS 1991. EA/RIR for Amendments 25 and 20 to the FMPs of the GOA and BS/AI prohibiting groundfish trawling in the vicinity of sea lion rookeries. "*This alternative approximates the maximum observed foraging distance of females with pups during the breeding season, and provides a large closed area during winter to better encompass winter foraging habitats and compensate for increased nutritional need and stresses.*"

12. The Draft RPA SEIS fails to provide a complete and adequate analysis of fishery catch distributions in and out of critical habitat during the period of U.S. management under the FMPs, or to compare levels of fishing that would occur in critical habitat under the proposed Alternative 4 RPA to previous RPA and pre-RPA levels of fishing in critical habitat.

NMFS does not provide any new information or analyses to show that the levels of fishing for pollock, Pacific cod and Atka mackerel in critical habitat as envisioned under the proposed Alternative 4 RPA regulations would avoid jeopardizing the Steller sea lions or adversely modifying their critical habitat. Since lack of available food supplies remains a leading hypothesis to explain the ongoing decline, protecting the prey base in essential foraging areas is crucial for the recovery and conservation of the species. Yet the Draft RPA SEIS fails to provide the adequate and complete analysis of the fishery catch distributions in and out of critical habitat during the period of U.S. management under the Fishery Management Plans (FMPs), or to compare levels of fishing that would occur in critical habitat under the proposed Alternative 4 RPA to previous RPA and pre-RPA levels of fishing in critical habitat. Nor does it present such a comparison among alternatives. Lacking that information, the Draft RPA SEIS fails to disclose vital information without which a meaningful analysis of the merits of SEIS alternatives is impossible.

12.1. The Draft RPA SEIS and BiOp fail to provide available Observer Program fishery catch statistics for all areas of critical habitat over multiple years to show how fishery catch distributions have changed over time relative to critical habitat, how fishing is currently concentrated or distributed in space and time, and how levels of fishing in the RPA SEIS Alternatives 1-5 would impact critical habitat.

The Draft **RPA SEIS, Appendix E2**, provides catch data by area and vessel type, gear and size for 1999 only. **Tables 2.5-7,8,9**, provide catch data by management areas for 1999 only, while **Tables 2.5-10,11**, provide estimated percentages of catch within 3 nm and 20 nm of rookeries and haulouts relative to total catch amounts for 1999 only, derived from Appendix E2. But the RPA SEIS inexplicably fails to provide catch data for the entire time series of available data and fails to provide catch distributions for each of the "zones of concern" identified in the proposed Alternative 4 RPA, in order to understand the distribution of the fisheries impacts under that alternative. At **RPA SEIS, Figures 3.1-33, 4.1-15,16,17**, NMFS provides aggregated observed locations of fishery data for 1998-2000, but maps are not provided for all fisheries and all industry sectors, and the maps are drawn on such a scale that they provide little meaningful information at relevant scales of concern – particularly for the Atka mackerel fishery, where a microscope would be needed to discern the plotted fishery locations. These are major shortcomings and omissions of analysis that fail to enable decision-makers to compare present to past fishery catch distributions relative to sea lion habitat, to understand the effects of alternatives on fishery spatial distributions, or to make informed decisions among alternatives.

The RPA SEIS and BiOp should provide readily available area-specific catch statistics *for the entire time period* of the sea lion decline, so that longer-term fishery distribution trends can be seen, compared and assessed relative to critical habitat and to RPA actions intended to address the impacts of the fisheries in critical habitat. For instance:

Bering Sea pollock percent and tons of catch taken from critical habitat (mostly from the SCA), 1977-2000 (1)

Year	%	Tons	Year	%	Tons	Year	%	Tons
1977	21.6	213,527	**1985**	20.2	242,334	**1993**	49.0	679, 586
1978	22.5	221,741	**1986**	22.7	268,967	**1994**	61.2	870,239
1979	10.6	97,684	**1987**	48.5	508,150	**1995**	69.1	849,556
1980	9.5	96,465	**1988**	53.7	418,933	**1996**	54.4	614,354
1981	26.3	270,334	**1989**	45.8	547,690	**1997**	55.9	594,065
1982	28.3	286, 885	**1990**	36.7	462,523	**1998**	58.4	607,760
1983	29.3	304,624	**1991**	52.6	587,160	**1999**	37.0	350,914
1984	25.2	295,064	**1992**	46.8	655,029	**2000**	19.0	217,847

(1)NMFS/AFSC unpublished observer blend data.

GOA Pollock Catches Inside Critical Habitat, 1999 (metric tons)						
Season	Months	610	620	630	640	Total GOA
A	Jan-Feb	6,885	11,556	13,063	92	31,596
B	June	5,315	7,207	6,379	-	18,901
C&D	Sept-Oct	4,975	10,499	9,613	-	25,087
	All year	17,175	29,262	29,055	92	75,584
Total GOA Pollock Catch Inside/Outside Critical habitat:						92,121
		Percentages Inside CH by area				
Seasons	Months	610	620	630	640	Total GOA
A	Jan-Feb	85%	93%	97%	5%	88%
B	June	82%	92%	97%		90%
C&D	Sep-Oct	58%	62%	96%		71%
	All year	74%	79%	97%	5%	82%

Similar catch statistics should be provided for all years and all regions of critical habitat by management areas, to facilitate ease of comprehension and use of information in the analysis of fishing impacts on critical habitat. Projections should then be made for each alternative. Lacking such information and analysis, the Draft RPA BiOp provides no basis for concluding that the Alternative 4 RPA will significantly alter the scale of fishing in critical habitat that prompted jeopardy and adverse modification opinions in the first place.

As noted elsewhere by NMFS, the percentages of the GOA pollock and cod TACs taken from critical habitat have remained high because there are no catch limits in critical habitat. Since the rookery no-trawl zones have been in place in the Gulf since 1991-1992, the pollock TAC has come primarily from 10-20 nm of rookeries or from 0-20 nm around haulouts, yet this readily available information was not provided and analyzed in the RPA BiOp. Using available (unpublished) Observer Program catch data, NMFS should provide a detailed analysis of percent and tons of pollock, Pacific cod, Atka mackerel and other groundfish taken from the "zones of concern" within critical habitat, to the extent that the data permits analysis at such spatial scales (e.g., 0-10, 10-20, >20 nm). For example, GOA pollock and Pacific cod taken from within 10-20 nm of GOA rookeries and within 0-20 nm of GOA haulouts over the entire time series of data is as follows:

YEAR	POLLOCK	PCOD
1977	2%	3%
1978	3%	3%
1979	6%	9%
1980	19%	53%
1981	24%	6%
1982	50%	17%
1983	57%	45%
1984	41%	47%
1985	77%	58%
1986	80%	48%
1987	5%	22%
1988	68%	52%
1989	97%	3%
1990	63%	53%
1991	44%	51%
1992	61%	53%
1993	75%	46%
1994	69%	55%
1995	61%	63%
1996	62%	61%
1997	58%	64%

From 1990-97, for instance, the Observer Program data show an average of 63% of the observed GOA pollock catch has come from within 20 nm of sea lion rookeries and major haulouts listed as critical habitat, with twice as much taken from 10-20 nm as from 0-10 nm (NMFS/AFSC unpubl. fishery data):

Average percent of observed GOA pollock catches within 10-20-40 nm of sites listed as critical habitat in the west-central Gulf of Alaska, 1990-97:

Within 10 nm	Within 20 nm	Within 40 nm
21%	63%	97.5%

(Source: NMFS/AFSC unpubl. fishery data, 1990-97)

NMFS should have provided this information in detail in the Draft RPA SEIS and BiOp, in order to assess trends in the distribution of fishing effort and catch relative to critical habitat for Alternatives 1-5 and for the proposed Alternative 4 RPA. Specifically, the final RPA SEIS BiOp should provide the historical catches by fishery, season and gear type within the zones of critical habitat using information from the Observer Program database and the Appendix to the 1999 EA/RIR for Final SSL Pollock RPA Regulations. Lacking such careful analysis of fishing effort and removals relative to "zones of concern" in the proposed Alternative 4 RPA, the analysis fails to demonstrate the validity of the RPA "zonal" approach to critical habitat "protection."

12.2. The Draft RPA SEIS and BiOp fail to provide adequate information explaining clearly how much critical habitat would be "protected" under the Alternatives and how this compares to previous RPA and pre-RPA protections.

The Draft RPA BiOp, Table 5.3, p.122, provides very crude percentage fractions of critical habitat that would be closed under Alternative 4. This information is inadequate to characterize the actual area (nm^2, km^2) and percent of critical habitat that would be "protected" from 0-3, 3-10, 10-20, and >20 nm under this alternative, including seasonal differences in area/percent protection. The Draft RPA SEIS, Table 4.8-2 (p. 4-240), provides an analysis of areas closed and partially closed to fishing under Alternatives 1-5, although seasonal differences in closure zones are not included in this table. As can be seen from the information provided for RPA SEIS Alternative 4, for example, it is impossible to add the area protective measures in order to derive total critical habitat that would be protected under this alternative, or to compare Alternative 4 to other alternatives and to previous RPA and pre-RPA protective regulations. Without such information, it is impossible to evaluate the merits of any alternative.

NMFS should combine the format of RPA BiOp Table 5.3 and RPA SEIS Table 4.8-2, providing information on the amount of area (nm^2, km^2) and percent of critical habitat that would be "protected" from 0-3, 3-10, 10-20, and >20 nm, by season, by gear type, and by fishery. We also request that the same information be provided for previous pollock RPAs and pre-1999 protective regulations dating back to 1991, specifying the total area protected and any differences in seasonal versus year-round protection for each separate action.

13. The Draft RPA SEIS fails to evaluate, explain or justify the basis for the arbitrary Draft RPA BiOp conclusion that food limitation and nutritional stress are less important factors in the current decline, based on limited comparative studies of rookery populations in the endangered western and threatened eastern stock.

The November 2000 FMP BiOp concluded that the fisheries cause both cumulative and regional/local declines in availability of prey stocks that are likely to jeopardize sea lions and adversely modify their critical habitat: "*The fisheries effects that give rise to these determinations [jeopardy/adverse modification] include both large scale removals of Steller sea lion forage over time, and reduced availability of prey on the fishing grounds at scales of importance to individual foraging Steller sea lions, particularly in critical habitat.*" **FMP BiOp, p. 271.**

In the Draft RPA BiOp, however, NMFS downplays the importance of fisheries effects on prey availability by concluding arbitrarily that food limitation and nutritional stress is not considered as important in current sea lion declines as in the past (1970s, 1980s) and that there is no longer any clear leading hypothesis to explain the ongoing decline. **RPA BiOp, p. 137.** The only real evidence cited in defense of this conclusion is the limited research and small samples of experiments comparing eastern and western breeding populations on rookeries in the summer:

> "*Body measurements taken from Steller sea lions in the western stock do not indicate that animals are suffering from nutritional stress.*" **RPA BiOp, pp. 71-72.**

The flaws and limitations of this research have been clearly identified by the very same Steller Sea Lion Recovery Team peer review that NMFS now cites in support of the RPA BiOp position that food stress does not appear to be a factor in the endangered western stock.[36] The Draft RPA SEIS fails completely to disclose this information, to provide any critical analysis of it, or to relate it to the BiOp conclusion that food stress is not a factor at present.

13.1. Steller sea lion physiology, reproductive biology, and foraging ecology is energetically expensive and highly vulnerable to shortages in prey availability.

Unlike true seals in the family of *Phocidae*, which build up large stores of insulating blubber and can withstand longer periods of fasting by living off the stored energy, sea lions and fur seals in the family *Otariidae* do not store large quantities of fat and are considered rather lean animals (low % body fat) even in the best of times. The relative leanness of sea lions and fur seals compared to phocid seals has implications for the energetic cost of thermoregulation (water has 24x the heat conductivity of air), foraging ecology and reproductive biology. Sea lions and fur seals live particularly close to the edge in this respect, since they need more or less constant supplies of food to maintain proper body condition in a hypothermic marine environment. Ready access to food supplies in the vicinity of sites where they haul out to rest, socialize and care for dependent pups is critical to their survival.

Food shortage was indicated in the past. Calkins and Goodwin (1988) found that girth, weight and length measurements of Gulf of Alaska sea lions during the 1980s were less than for animals collected in the 1970s, evidence indicative of food stress. Sea lions in the Kodiak region showed signs of food stress at the time of the peak harvests in the Shelikof Strait (1981-85), after which time pollock

[36] Steller sea lion recovery team (SSLRT) Physiology Workshop Peer Review, Seattle, February 8-10, 1999.

abundance collapsed: "*Sea lions near Kodiak Is. were smaller in size by age during 1985/86 than during 1975/76. This difference implies a hormonal imbalance and/or limited prey resources*" (Calkins and Goodwin 1988). A workshop report of the marine mammal working group from Alaska Sea Grant's 1991 symposium "Is It Food?" (Alaska Sea Grant 1993) concluded on the basis of data that there might be a "food availability problem" for Alaska pinnipeds, and that food limitation appeared likely:

> "*Therefore, based on the changing population demographics of pinnipeds, the presence of diagnostic indicators of food limitation, and a possible shortage of the appropriate type of prey items, the working group concluded that food supplies are limited for pinnipeds in and around Alaska waters.*"[37]

Food limitation remains a leading hypothesis to explain the ongoing Steller sea lion decline, although science can not presently test this hypothesis. Calkins et al. (1998) note that although observed declines in body growth of GOA sea lions from the 1950s to the 1970s-80s appear to be the result of declining nutrition, "*there is no solid evidence linking undernutrition to the decline* [of the population]." What is important to keep in mind, however, is that lack of adequate scientific data and high levels of uncertainty accompany other hypotheses associated with regime shifts, junk food theory, and killer whale predation.

13.1.1. Foraging ecology is adapted for highly productive ecosystems with concentrated and predictable prey.

The Draft RPA BiOp acknowledges that otariid energy expenditures during foraging are generally higher than for phocids, and reflect a "high energy strategy for foraging":

> "*In general, otariids have adopted an 'energy maximizer' type foraging strategy, which is characterized by high energy turnover. That is, sea lions expend comparatively (to phocids) high levels of energy to acquire relatively high levels of energy. This strategy is advantageous in highly productive ecosystems with concentrated and predictable prey (Costa 1993).*" **RPA BiOp, p. 51.**

Thus the foraging strategy of Steller sea lions makes them particularly vulnerable to changes in prey availability and nutritional stress. The Draft RPA SEIS fails to relate this information to the proposed Alternative 4 RPA and explain how the proposed RPA is consistent with the foraging strategy of sea lions.

13.1.2. Reproductive biology is energetically expensive and highly vulnerable to nutritional stress.

Steller sea lion reproductive biology, like that of other otariids, has been characterized as energetically expensive and therefore highly vulnerable to nutritional stress (Costa 1993; Pitcher et al. 1998). Unlike phocid seals, which largely meet energetic demands of lactation through stored blubber resources, otariids are dependent on continuous food supplies throughout an extended lactation period – as long as 1-3 years in Steller sea lions. Studies of Antarctic fur seals indicate that food shortages in one

[37] Workshop report of the marine mammal working group, Alaska Sea Grant's 1991 symposium "Is It Food?" Alaska Sea Grant, 1993.

season may affect pregnancy status of females in subsequent years and food shortages can block estrus, terminate pregnancy, and prevent lactation.[38] Thus sea lion and fur seal reproductive biology is optimal for prey that is concentrated and predictable (Pitcher et al. 1998).[39] Nursing and pregnant Steller sea lion females are particularly vulnerable to nutritional stress because they may need nearly twice as much food as non-nursing animals to maintain themselves and a pup over the course of a winter, while simultaneously carrying a fetus to term and delivering a healthy newborn in the following summer (NMFS 1998, 2000; Winship 2000).

Considerable evidence suggests that nutritional stress significantly reduced Steller sea lion reproductive success in the 1970s and 1980s.[40] Observed birth rates in Gulf of Alaska Steller sea lions (e.g., Pitcher and Calkins 1981; Calkins and Goodwin 1988; Pitcher et al. 1998) support the hypothesis that nutritional stress affected the reproductive performance of Gulf sea lions during the 1970s and 1980s, when "substantial embryonic and fetal mortality" occurred between late fall (when the embryo implants in the womb) and late gestation in the spring. **December 3, 1998 BiOp, pp. 45-46**. Pitcher and Calkins (1981) found significant differences in birth rates between Gulf of Alaska adult females sampled in the 1970s and 1980s. Pitcher et al.(1998) cite "*considerable evidence suggesting nutritional stress affected the reproductive performance of SSLs, during both the 1970s and 1980s through high levels of prenatal mortality,* [i.e., abortions] *and the effect was greater during the 1980s.*" These findings are consistent with research on Antarctic fur seals, whose pregnancy status and birth rates in the summer months appeared strongly related to food resources in the previous fall and winter seasons (Lunn and Boyd 1993; Boyd et al., 1995; Boyd 1996), and with the findings of research on fur seals and sea lions more generally (e.g., Costa et al. 1989; Trillmich and Ono 1991; Costa 1993; Pitcher et al. 1998; December 3, 1998 BiOp, pp. 45-46). Pitcher et al. (1998) concluded on the basis of the available information on sea lion body condition and failure of pregnancy during late gestation that "*undernutrition [in the 1980s] was the likely major cause of reproductive failures in Steller sea lions from the Gulf of Alaska.*" Again, the Draft RPA SEIS fails to relate this information to the proposed Alternative 4 RPA and explain how the proposed RPA is consistent with the foraging strategy of sea lions.

13.1.3. Survival of pups and young juveniles is linked to the health status of the mother for a long period, which is linked to prey availability.

Unlike seals and fur seals, which abruptly abandon their nursing pups after a few months, Steller sea lions nurse pups for about a year and may continue to nurse their offspring into their second and third year. The National Research Council (NRC 1996) noted that growth and survival of fur seal and Steller sea lion pups "is likely to be affected by the foraging success of females during the lactation period." **Bering Sea Ecosystem, p. 149**. Thus both pup survival *and* adult reproductive success are linked to the foraging success of adult females during the difficult fall and winter months. Furthermore, research has indicated that behavioral weaning (as distinct from metabolic weaning) may continue for some time as the pup makes the transition to nutritional independence. **December 1998 BiOp, p. 45.**

[38] N.J. Lunn and I.L. Boyd. Influence of maternal characteristics and environmental variation on reproduction in Antarctic fur seals. Symp. Zool. Soc. Lond. (1993) No. 66: 115-129.
[39] Kenneth W. Pitcher, Donald G. Calkins, and Grey W. Pendleton. "Reproductive performance of female Steller sea lions: an energetics-based reproductive strategy?" Can. J. Zool. 76: 2075-2083 (1998).
[40] Kenneth W. Pitcher, Donald G. Calkins, and Grey W. Pendleton. "Reproductive performance of female Steller sea lions: an energetics-based reproductive strategy?" Can. J. Zool. 76: 2075-2083 (1998).

Further, the length of the nursing period may also vary as a function of the condition of the adult female. **December 1998 BiOp, p. 45**. Thus juvenile survival is linked to the health status of adult females, a point underscored by NMFS in this latest Biological Opinion.

Immature or recently weaned animals are also more susceptible to changes in prey availability because their foraging skills are not fully developed yet they need to consume more food per unit of body mass than adults (Winship 2000).[41] Bioenergetics modeling indicates that immature animals, like lactating females, require more than 10% of their body weight in food per day (Winship 2000). On a daily basis, however, sea lion food consumption is probably not always adequate to meet average daily energy demands, therefore sea lions must make up for bad fishing days by consuming more than daily energy demands on days (or nights) when they do find large quantities of prey (Winship 2000). York (1994) modeled changes in age structure of the declining population indicating an increase average age for adult females sampled in the 1980s compared to the 1970s and concluded that high juvenile mortality (especially 1- and 2-year-olds) could explain the decline. The **December 3, 2000 BiOp, p. 59**, cited York (1994) and mark-recapture experiments of Chumbley et al. (1997) as evidence of decreased juvenile survival. As noted by **Bowen et al. (2001)**,[42] however, "*...no decline in SSL juvenile survival has been adequately documented, it has only been inferred from York's (1994) analysis of age-structure data which are now quite dated, and on observations of low survival from a very small sample of marked animals*." The current Draft RPA SEIS arbitrarily defines the problem as juvenile survival without considering the health status of adult females and its contribution to the survival of juveniles. If females are only pupping successfully once every two or three years, that would likely affect the population trajectory. Neither the Draft RPA SEIS, nor the Draft RPA BiOp, address this issue.

13.2. Neither the Draft RPA SEIS nor the Draft RPA BiOp provide new scientific evidence to justify the conclusion that food limitation and nutritional stress is less important in current sea lion declines.

The links between chronic low birth rates, reduced juvenile survival, and nutritional stress in adult females in the endangered population all underscore the importance of maintaining adequate food supplies to enhance both juvenile survival *and* adult female reproductive success. But the intent of the new RPA BiOp seems to be to downplay the food hypothesis and muddy the waters by mischaracterizing the historical food habits to suggest that food stress, if it is occurring, is a function of changing diets and oceanographic conditions. This approach, however, is not supported by the data that NMFS cites in the Draft RPA SEIS and BiOp.

Despite extensive information pointing to prey availability as an all-important determinant of the health status of adult females and pups, the Draft RPA BiOp concludes that food limitation and nutritional stress is not considered as important in current sea lion declines as in the past (1970s, 1980s) and that there is no longer any clear leading hypothesis to explain the ongoing decline. **RPA BiOp, p. 137**. In defense of the argument contra the food hypothesis, NMFS cites published and unpublished research comparing size and blood chemistry of nursing females from both the western and eastern stock between 1993-1997 indicating that animals in the western stock were rounder, longer and heavier, as well as studies showing no difference in energy intake of 40 pups at five rookeries in the eastern and

[41] Arliss J. Winship. Growth and Bioenergetic Models for Steller Sea Lions (*Eumetopias jubatus*) in Alaska. Masters Thesis, University of British Columbia (2000), pp. 90- 93.
[42] Interim Review of the November 2000 Biological Opinion, May 2001.

western populations and no signs of disease or malnutrition. **RPA BiOp, pp. 70-71.** NMFS also cites a poll of scientists attending the May 30-31 2001 symposium at Seward Sea Life Center (*Is It Food II Workshop*), in which a questionnaire asked the following question: "*Would you agree with the statement that 'nutritional stress is the leading hypothesis regarding the current decline of abundance of the western stock of Steller sea lions?*'" 10 of the workshop participants (42%) said yes, while 14 responded negatively.

The poll of scientists indicates scientific controversy, reflecting scientific uncertainty, but nothing in the *Is It Food II Workshop* provides evidence that food limitation is less likely as a factor in the current sea lion decline. In fact, the new food habits data summarized by Sinclair and Zeppelin at the end of the workshop summary report underscore the central importance of commercially targeted fishes to sea lions in western Alaska, particularly pollock, Atka mackerel, Pacific cod and salmon. The determination that food limitation is not as important a factor in the recent decline is arbitrary and capricious.

13.2.1. The available data comparing eastern and western rookery populations provide no basis for concluding that the western stock is currently not suffering from food shortages and food stress.

The determination that food limitation is not as important a factor in the recent decline based on limited research comparing body condition of animals on rookeries in the increasing eastern and declining western stocks is arbitrary and capricious. The SSLRT's own physiology review (1999) concluded that there are serious limitations to comparisons between SE AK and western AK animals, based on the available rookery research. If small samples of pups and mothers appear healthy on rookeries in the western stock, does that mean that food stress is not occurring in the western stock? What about the following fall, winter and spring when the demands of nursing and carrying a growing fetus are greatest for adult females, nearly doubling her energetic demands (Winship 2000)? How many females are successful at nursing a healthy pup and simultaneously carrying a fetus to term the next spring? How many adult females are aborting fetuses or prematurely weaning juveniles because the females are unable to sustain themselves, a pup, and a growing fetus over the course of the fall, winter, and spring? What about juveniles and adult females without pups that are not sampled on the rookeries? If it isn't food, what else (besides disease) would account for as much as 40-50% of the adult females not giving birth to pups in any given year? If females are only pupping successfully once every two or three years, how would that affect the population trajectory? The Draft RPA SEIS, like the Draft RPA BiOp, fail to ask much less address these crucial questions.

Merrick et al. (1995) found that mean pup masses at declining rookeries in western Alaska were significantly greater than the pups from rookeries with stable or increasing populations in the eastern stock. Merrick et al. not only showed that pups were heavier at rookeries in the declining western stock, but that mean pup mass at Marmot and Sugarloaf Island in 1992-93 was equal to or greater than the average of pups weighed at those sites in 1965 and 1975, prior to the onset of the decline (Merrick et al. 1995).[43]

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[43] Richard L. Merrick, Robin Brown, Donald G. Calkins and Thomas R. Loughlin. "Comparison of Steller sea lion, Eumetopias jubatus, pup masses between rookeries with increasing and decreasing populations." Fishery Bulletin 93: 753-758 (1995).

However, bigger pups in the western stock may be a function of a variety of factors that would not necessarily indicate that animals in the west are not subject to food stress, confounding attempts to infer food stress from pup sizes in the western and eastern stocks:

- Loughlin (1997) cited a cline of increasing pup masses from Oregon to the Aleutian Islands, indicating that western stock pups are bigger than eastern stock pups. Consistently larger average sizes of pups in the western stock may simply reflect phenotypic differences in western and eastern stocks (Loughlin 1997).

- Greater pup mass at rookeries in the western Alaska sea lion stock "could be a density-dependent response to reduced competition among adult females for food" (Merrick et al. 1995).

- Increases in average age of pup-bearing females in the endangered western stock could affect average pup sizes. Northern fur seal data indicate that larger and older females produce larger pups (Merrick et al. 1995; NMFS et al. 1995).

In addition, there are other weaknesses in the east vs. west rookery comparisons that further confound attempts to infer prey availability and food stress from the physiology of test subjects and the foraging trip data:

- The SSLRT Physiology Workshop Peer Review (1999) concluded that, "*Logistical constraints resulted in sample sizes that were so small in most physiological studies that few conclusions can be drawn*" (p.5).

- Differences in the bathymetry and width of continental shelf area around western and eastern rookery sites in the comparison studies may have accounted for differences in average foraging trip distance and time at sea. The SSLRT Physiology Workshop Peer Review (1999) concluded that comparisons between rookeries in the western and eastern stocks "*should have included more than one site in declining and stable areas to avoid the confounding effects of site variability and ensure than observed differences were really a product of the 'experimental' variable*" (p. 5).

- Test subjects were selected non-randomly among healthy survivors on the rookeries, and did not include weaned juveniles or adult females without pups that may not have been on the rookeries. The SSLRT Physiology Workshop Peer Review (1999) concluded that the rookery sampling protocol and logistical constraints biased comparisons of eastern and western breeding populations and pups because sites were not selected primarily for physiological research and test animals were selected non-randomly based on accessible, healthy animals "that could be repeatedly captured and anesthetized" (p. 5). Lack of prior information on test animals made it impossible to know if lactating test subjects were representative of their area and small sample sizes allowed few conclusions to be drawn (p. 5).

- Research programs are not likely to find differences using measurements of successful survivors and their young on rookeries during the earliest period of lactation. The SSLRT Physiology Workshop (1999) recommended that future research should focus on times and place that may be important *later* in the nursing period, as pups move beyond the buffering influence of their mothers (p. 10). There is a need more focus on non-summer and year-round observation and sampling of animals.

- The Alaska Steller Sea Lion Recovery Team (2001) also concludes that although current data are insufficient to determine if nutritional stress in juvenile animals is the cause of the second phase of decline since the 1990s, "*it remains a viable hypothesis due to the lack of contemporary data from all life stages of Steller sea lions in all seasons.*" **RPA BiOp, p. 72.**

Thus the relative handful of comparisons between healthy survivors on rookeries in the eastern and western stocks should not, by themselves, be taken as face value as evidence that the western stock currently shows no signs of food stress. The least likely time and place to find signs of food stress is in the successful breeding population on rookeries in the summer, when many prey stocks may be available relatively close to shore. At such low population sizes compared to the historic baseline, the survivors on the western rookeries should be fat and happy. The only remarkable thing is that the population continues to produce fewer and fewer pups in survey after survey.

Given the biology of the Steller sea lion, the energetic costs of foraging, thermoregulation, reproduction, and lactation, and the extended nursing period by sea lion mothers, there is every reason to assume that prey availability is a key factor in the survival and recovery of the population, and that food availability is an equally important consideration for adult females as well as pups and juveniles:

- Given the energetic costs of reproduction, the adult female population's success or failure at producing and rearing healthy pups hinges on availability of food resources on a more or less continuous basis, perhaps enhanced at critical junctures in the year. It has been noted many times, by many different researchers, that declines in food availability can be expected to cause a decline in otariid reproductive rates, lactation, and pup survival.

- Survival of juveniles, whose higher metabolic rates, smaller body size, and limited foraging skills make them especially vulnerable to food stress, similarly hinges on availability of food resources on a continuous basis, perhaps enhanced at critical junctures; but it should also be noted that yearlings and older juveniles are commonly observed nursing in the Alaska Steller sea lion population,[44] thus the health status of the mother may determine the health of juveniles for multiple years.

- In addition, behavioral dependence on the mother may continue well beyond weaning. Adult females and juveniles were routinely killed incidentally in trawl nets during the heyday of the Shelikof pollock fishery in the early 1980s, when sea lions were still abundant in the central Gulf of Alaska. If juveniles must learn seasonal locations of prey from their mothers, their success in surviving to adulthood may depend on the mother even beyond weaning.

The RPA SEIS must disclose and analyze this important information.

[44] Kenneth Pitcher and Donald G. Calkins. Reproductive Biology of Steller Sea Lions in the Gulf of Alaska. J. Mamm., 62(3): 599-605 (1981).

13.3. The Draft RPA SEIS misrepresents and distorts the limited sea lion food habits data from earlier decades, making sloppy generalizations about sea lion prey consumption that are not supported by the data.

In the introduction to the Draft RPA SEIS, NMFS acknowledges that nutritional stress may be occurring and cannot be ruled out as a leading factor in the ongoing decline of sea lions:

> "*Nutritional stress may be occurring, and if it is, it may be due to competition with the fisheries and/or environmental change. Available data are inadequate to evaluate whether nutritional stress is currently affecting Steller sea lion adults or juveniles in the winter. Additional information from weaned pups and juveniles from other seasons and other areas are needed to resolve uncertainties regarding the nutritional stress hypothesis. To date, studies have not linked nutritional stress with the actual decline of numbers.*" **RPA EIS, ES-4.**

NMFS also acknowledges that food stress was likely a critical factor in the past declines:

> "*Considerable evidence also exists to suggest that decreased reproductive success may also contribute to the decline. Young females collected in the 1980s were smaller than those of the same age collected in the 1970s and may have been more likely to mature later, thus reducing lifetime pup production and leading to declining populations. Late season pregnancy rates of lactating females in the 1970s were statistically significantly higher (63%) than those found in lactating females collected in the 1980s (30%), suggesting these females were less able to support a fetus.*" **RPA EIS, ES-4.**

But NMFS then proceeds to offer the following statement indicating that changes in diet are somehow implicated in the food stress:

> "*Differences between recent (1990s) and somewhat historical (1960s) diet studies indicate that the diet of Steller sea lions has shifted. In 1960s studies, their diet was dominated by forage fish such as capelin and herring; studies conducted since the mid-1970s have found a high occurrence of pollock, an increasing importance of Pacific cod in winter, and arrowtooth flounder in the Gulf of Alaska.*" **RPA EIS, ES-4.**

At **RPA SEIS, p. 3-12**, NMFS indicates that "diet and the decline of Steller sea lions is linked," and the **RPA SEIS, pp. ES-4, 5**, says that a shift in diet may have affected the amount of energy available to Steller sea lions. But the discussion of "historical" sea lion diet at RPA SEIS, Section 3.1.1.7.3 (Prey Species and Size) is totally inadequate to explain how purported changes in diet may have affected sea lion energetics in such a way as to contribute to the decline. Instead, NMFS makes sweeping assertions about changes in the sea lion diet from 1960s to 1990s that appear to endorse simplistic and unscientific assertions of the proponents of junk food theory. The Draft **RPA SEIS, p. 3-13**, states:

> "*Overall, the most common prey items in studies prior to the mid-1970s included: capelin, sand lance, cephalopods, herring, greenlings, rockfishes, and smelts. Capelin, which were important in Steller diet through the 1970s (Fiscus and Baines, 1966; Pitcher, 1981) do not have an*

occurrence greater than 5% in recent studies...The occurrence of flatfish, especially Arrowtooth flounder, in the Gulf of Alaska is substantially higher now than any previous studies...."

We find this cursory review of past research misleading, mostly because of what it *does not* say. The writers of the SEIS text are glossing over nearly all the relevant facts associated with this historical food habits information and, in the process, perpetuating confusion about what has been said in the past on this subject.

For instance, Fiscus and Baines (1966) analyzed a *very small* number of Steller sea lion and California sea lion stomachs from animals collected off California, Oregon and Alaska from 1958-1963. The cursory review fails to discuss sample size (22 Steller sea lions with stomachs containing food) and the bias in seasons sampled:

- *Mallotus villosus*, capelin, showed up most frequently in Unimak Pass (EAI) during May 1962 (n = 1), June 1962 (n = 4), September 1962 (n = 1). Capelin also showed up at Afognak Island (CGOA) during May 1960 (n = 2).

- *Ammodytes hexapterus*, Sandlance, comprised the major items in one sample from Unimak Pass in September 1962, one sample at Little Koniuji (CAI) in June 1960, and one sample at Marmot Island, May 1960.

- *Theragra chalcogramma*, walleye pollock, comprised the only items in one sample from the Aleutians at Amak Island (EAI), May 1960.

- *Clupea harengus pallasi*, Pacific herring, comprised 95% by volume in one sample from Sitka Sound (SEAK), March 1960.

- *Sebastes* (rockfish) comprised 30% by volume in one sample from Marmot Island, May 1960, and 5% of one sample from Cape Fairweather (EGOA), May 1958. *Sebastodes* (rockfishes) comprised the contents of 3 out 4 Steller sea lions taken off California and Oregon in March 1958 (n = 1), March 1959 (n = 1) and April 1961 (n = 1).

- Pleuronectids (unidentified flounder) comprised the only item in one sample from Unimak Pass, September 1962.

- Cottids (sculpins) comprised the major items in one sample from Unimak Pass, July 1960 and 30% (by volume) of one sample from Marmot Island, May 1960.

- Salmonids comprised 95% by volume of one sample from Cape Fairweather, May 1958.

Why are none of the particulars mentioned? Why is there not, at the least, an acknowledgement of the sample sizes and seasonal biases involved? Instead, the impression is created that the statement "*capelin...were important in Steller diet through the 1970s*" is a well-established fact, and Fiscus and Baines are cited in support of that statement, along with Pitcher (1981). But, again, what did Pitcher actually say in 1981? Pitcher reported that the stomach contents of 250 Steller sea lions collected in the Gulf of Alaska between 1975-78 consisted of 95.7% fishes and 4.2% cephalopods by volume:

- Walleye pollock was the predominant prey, composing 67% by frequency of occurrence and 58% of the total volume of prey samples.

- Capelin and salmon appeared to present seasonal foraging opportunities mainly in the spring and summer when those species were abundant in nearshore waters.

- Other prey included Pacific herring, Pacific cod, sculpins, flatfishes and rockfishes.

- Utilization of pollock appeared to increase between 1958-60 and 1975-78.

Pitcher's source for the period during 1958-60 is Thorsteinson and Lensink (1962),[45] but they only assessed territory-holding males in the summer, which hardly seems like a strong basis for claims about what sea lions were or were not eating in that earlier period. Our point is not that sea lions were not eating capelin in significant amounts, but that it is impossible to make definitive statements about sea lion prey consumption in that earlier period based on the existing studies and small sample sizes. The cursory summary statements contained in the Draft RPA SEIS and BiOp only play to the simplistic argument in favor of regime shift and junk food theory, without any rigorous analysis of the data and its shortcomings.

Another example from this same page of the Draft RPA SEIS is the summary of the findings of Imler and Sarber (1947). The Draft RPA SEIS states (somewhat in favor of the idea that pollock *were* available in the GOA and eaten by sea lions the past): "*...when Imler and Sarber (1947) reported pollock in 2 stomachs collected near Kodiak Island in 1945-1946.*" Imler and Sarber indeed found that seals and sea lions were eating "scrap fish" such as pollock in the mid-1940s in the Gulf of Alaska, but there were more than 2 animals whose stomachs contained remnants of pollock (and flounders). Of the eight Steller sea lions collected in Southeast Alaska in May1945, *all but one* had fed principally on pollock. The other specimen had eaten a skate and an octopus. Three sea lions collected in July, 1945, on the Barren Islands had eaten a wide variety of prey, including pollock, starry flounder, tom cod, arrowtooth flounder, Pacific halibut, and octopus. Two of three sea lions collected in July 1945, on the Chiswell Islands, had eaten salmon, including an eight-pound sockeye that had been swallowed whole. Two sea lions collected August, 1945, near Bumble Bay on Kodiak Island had eaten pollock and arrowtooth flounder. Imler and Sarber concluded on the basis of their sea lion data:

> "*It appears from the examination of 15 stomachs that "scrap" fish made up most of the Alaskan sea lion's food. Salmon and common halibut, which were the only fish of commercial importance found in sea lions, comprised 14 per cent of their stomach contents.*"

In Southeast Alaska, Imler and Sarber found that harbor seals were also eating substantial amounts of gadids and flounders: the most common food items in Pacific harbor seal stomachs (N = 99) were gadids (pollock and tom cod, 22.6%), followed by herring (16.4%), flounders (11.1%), and lesser amounts of eulachon, salmon, sculpins, rockfish and blennies. Shrimp (*Caridea*) comprised 17.3% of food found in some samples but was found only at certain sites, mostly in July and August. Diet varied widely depending on locale and month. On the Copper River Delta in late May and June, the most

[45] Fredrik V. Thorsteinson, and Calvin J. Lensink. Biological Observations of Steller Sea Lions Taken During an Experimental Harvest. Journal of Wildlife Management, Vol. 26, No. 4, October 1962.

common food in seal stomachs (N = 67) was eulachon (64 stomachs contained only eulachon, 2 contained salmon, 1 cod).

Thus the Draft RPA SEIS mischaracterizations of the research data are very troubling and totally inadequate. If ever there was a subject about which NMFS should take greatest pains to be exacting and detailed, surely this is the subject. A few extra pages of detailed exposition of the historical data would avoid further confusions about what the researchers concluded or did not conclude. The RPA SEIS should provide detailed analyses of the "historical" food habits data and should carefully assess the biases and limitations of the data, including the sizes of samples, the seasons in which samples were collected, and any area-specific differences. The RPA SEIS should also provide an updated appendix summarizing the available food habits studies for sea lions as contained in the December 3, 1998 Biological Opinion.

13.4. The Draft RPA SEIS fails to explain precisely what environmental pressures are acting on Steller sea lions to such an extent that the population can be expected to decline in the absence of all fishing, as claimed in the Draft RPA BiOp.

The Draft RPA SEIS fails to explain or justify the basis for the statement, "*Even if fishery related impacts to Steller sea lions were eliminated completely, we would expect that decline to continue as a result of environmental pressures that area also acting upon, and reducing the survivability of this population,*" as stated in **RPA BiOp, p. 139**. The Draft RPA SEIS fails to explain how this statement relates to and is consistent with NMFS's analyses and determinations in the Draft RPA SEIS that, for instance, Alternative 2 results in a positive sea lion population increase, or that reduced fishing effort will change the sea lion population trajectory. The Draft RPA SEIS also fails to explain how this statement is consistent with our understanding of the life history strategy of sea lions and the expected population response of sea lions to natural environmental changes to which they are presumably well adapted.

Top predators such as the Steller sea lion have evolved life history strategies that should be expected to buffer them from drastic population responses to normal and recurrent environmental fluctuations of the kind implied by regime shift theory (Merrick 1997). At **RPA BiOp pp. 139-140**, NMFS says that sea lions have K-selected life history characteristics (e.g., long life, slow growth and maturity, multiple reproductive years, etc.) that should buffer them against short-term environmental fluctuations caused by periodic oceanographic events such as an El Nino. "However," NMFS adds, "this life-history strategy cannot protect Steller sea lions from changes in birth rates and juvenile survival that continue for two or three decades." If this decades-long decline is caused by regularly occurring "regime shifts," as some claim, it implies that sea lions are not very well adapted to their environment.

Other factors may have contributed to the sea lion population decline, including oceanographic "regime shifts," but NMFS has acknowledged that the coincident development of the large-scale fisheries in modern times is *precisely* what distinguishes the present conditions from previous eras of natural change in the North Pacific:

"*Sea lions have lived through many regime shifts in the few million years they have existed. What may be different about this most recent shift is the coincident development of extensive fisheries targeting the same prey that sea lions depend on during warm regimes. Fisheries in the Bering*

Sea and GOA expanded enormously in the 1960s and 1970s. The existence of a strong environmental influence on sea lion trends does not rule out the possibility of significant fisheries-related effect. The cause of the sea lion decline need not be a single factor. To the contrary, strong environmental influences on the BSAI and GOA ecosystems could increase the sensitivity of sea lions to fisheries or changes in those ecosystems resulting from fisheries."[46]

Clearly Steller sea lions are well adapted to natural variability in the climate and ocean conditions of the North Pacific over the past three million years or so of their existence as a species, otherwise they would not have survived into the present era. What Steller sea lions have *not* adapted to over the past three million years are the impacts on prey availability and habitat wrought by the spread of modern industrial groundfish fisheries, which are superimposed over natural fluctuations and disturbance regimes.

Although some scientists hypothesize that sea lions declined due to an oceanographic "regime shift" and an "explosion" of gadids, NMFS's findings in the November 2000 FMP BiOp indicate that pollock were abundant before the regime shift and did not take over the ecosystem after the regime shifted. **FMP BiOp, p. 134**. Both the FMP BiOp and current Draft RPA BiOp conclude that conditions for many wildlife prey species actually improved with the 1976-1977 "regime shift," and the benefits of increased productivity from a large number of potential prey stocks would be as likely to increase the ecosystem carrying capacity for top predators as to decrease it. **FMP BiOp, p. 137**; **RPA BiOp, p. 76.** In addition, the mid-1970s regime shift coincided with a major expansion of the groundfish fisheries in the BSAI and GOA, confounding the ability to differentiate between natural and human effects. The Draft RPA SEIS does not discuss these findings or relate them to the claims in the SEIS.

NMFS fails to provide *any* evidence that supports the contention that sea lions would continue to decline in the absence of fishing due to environmental pressure. The RPA BiOp must explain precisely what "environmental pressures" NMFS has in mind, and the precise mechanism(s) by which these pressures are thought to be capable of causing continued sea lion declines in the absence of fishing. If NMFS is suggesting junk food theory as a mechanism, which seems to be the implication, how is that consistent with the FMP BiOp's findings that pollock abundance before the regime shift was high and that the proportion of pollock in the diets of the increasing eastern and declining western stocks are similar? **FMP BiOp, p. 136; Fig. 4.5**. Lacking that integrated analysis, the Draft RPA SEIS fails to provide any basis for assessing the merits of the regime shift theory as an explanation for sea lion population trends.

13.4.1. The Draft RPA SEIS fails to discuss and explain the inconsistencies in the evidence for the effects of the 1976-1977 "regime shift" and how this long-term *average* temperature change could affect the ecosystem and the food supply of Steller sea lions to such an extent that sea lions would continue to decline in the absence of fishing.

The popularized version of regime shift theory goes something like this: *Ocean temperature changes in the late 1970s caused dramatic shifts in fish species in the North Pacific. Species such as shrimp, crab, capelin and herring declined in response to less favorable ocean conditions. As these fatty*

[46] NMFS, December 22, 1998 Biological Opinion on 1999 TAC Specifications for Groundfish Fisheries in the BSAI and GOA, p. 88.

forage fishes declined, pollock, cod, flatfish and salmon took over. Seals, sea lions and seabirds lost their "preferred" prey and suffered declines as they shifted to species such as pollock with lower fat content. While it is reasonable to suppose that environmental conditions affect recruitment and abundance trends for many of these species, the Draft RPA SEIS fails to provide any hard evidence that such conditions are capable of driving the sea lion decline in absence or fishing. NMFS also fails to explain how it can distinguish between natural changes in prey availability and fishery-related effects, since fisheries that are capitalized on abundant stocks will amplify any natural declining trend.

The operative assumption of regime shift theory is that North Pacific ecosystems have multiple equilibrium states based on changes in climate regimes. In a cold regime, capelin and other nourishing fatty forage fishes are supposed to flourish, favoring top predators; in a warm regime, nutritionally challenged pollock, cod, salmon and flatfish are supposed to flourish, disadvantaging top predators. That is a hypothesis, not supported by the evidence presented by NMFS in successive Biological Opinions and in the Draft RPA SEIS. There are many anomalies and inconsistencies that do not fit the theory's narrative timeline for the 1977 regime shift. For instance, although proponents of regime shift theory have contended that pollock were less abundant before 1977, the claim is not readily supported by the data from the Russian and Japanese trawl surveys of that earlier period. For instance, Soviet-era research trawl surveys in the eastern Bering Sea from 1957-1964 encountered pollock (as well as large flatfish populations) in the same areas as today, and the Russians considered pollock one of the commonest Bering Sea fishes:

- Shuntov (1972) cited Russian exploratory trawl surveys in the Bering Sea from 1957-64 indicating that flatfish were abundant during that earlier period, and so were walleye pollock, a principal prey fish: "*Such migrations [to shoaler waters in spring-summer months] are also performed by the walleye pollock, one of the commonest Bering Sea fishes and staple food of large halibut, as well as other fish species.*"[47]

- Serobaba (1972) cited Russian research data from the late 1950s and 1960s identifying large aggregations of prespawning pollock in the southeast Unimak Area beginning in December: "*During spawning, part of the walleye pollacks, constituting the prespawning concentration in the Unimak area, rises to depths of 80-140 m, while another part remains in the previous location [at great depths between the Pribilof and Unimak islands].*"[48]

- Serobaba (1972) noted that pollock was widespread across the North Pacific and abundant in the eastern Bering Sea in the late 1950s: "*The walleye pollack, regarded as a subarctic-boreal species by Andriyashev (1935), is widespread in the North Pacific...During the Bering Sea expedition beginning from 1957 survey and fishing vessels on the eastern Bering Sea shelf often landed walleye pollacks, sometimes in large quantities.*"

Furthermore, pollock has been a known important prey for fur seals in the eastern Bering Sea since at least the late 1800s, when fur seal stomachs were examined during the pelagic seal hunt

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[47] V.P. Shuntov, "Seasonal Distribution of Black and Arrow-Toothed Halibuts in the Bering Sea," in Soviet Fisheries Investigations in the Northeastern Pacific, Part V, P.A. Moiseev (ed), Tinro, Izvestiya, Vol. 72, 1972: 397-407.
[48] I.L. Serobaba, "Distribution of Walleye Pollack Theragra Chalcogramma (Pallas) in the Eastern Bering Sea and Prospects of its Fishery, in Soviet Fisheries Investigations in the Northeastern Pacific, Part V, P.A. Moiseev (ed), Tinro, Izvestiya, Vol. 72, 1972: 442-451.

(Springer 1992). Walleye pollock has consistently comprised a large percentage of fur seal diets during the breeding and pupping season (June-October) on the Pribilofs Islands since observations began in the 19th century, a fact noted by Fiscus et al. (1964).[49] After reviewing past and recent food habits data, Sinclair et al. (1994) concluded that the diet of female and juvenile male northern fur seals in the eastern Bering Sea has probably not changed much since the turn of the century.[50]

Contrary to the widely held (but undemonstrated) belief that effects of changing oceanographic conditions resulted in large increases in gadids such as pollock after the 1976-1977 shift, the November 2000 Steller sea lion FMP-level Biological Opinion indicates that pollock was abundant even before the 1977 regime shift. For instance, the model estimates of pollock biomass from the early 1970s (indicating low pollock biomass) are at odds with the catches of pollock in the Bering Sea from the mid-1960s to mid-1970s:

> "*Catches of pollock spawned before the regime shift were high...The data presented here suggest that walleye pollock comprised the majority of groundfish catches in the BSAI and GOA for almost a decade before the regime shift.*" And: "*While biomass was high before the shift, it is also reasonable to conclude that the 19760-1977 regime shift produced some very large year-classes of gadids (walleye pollock and Pacific cod). At the same time, the regime shift produced large year classes of other groups, including salmonids (Pacific salmon), clupeids (Pacific herring), scorpaenids (sablefish, Pacific ocean perch, and other rockfish), anoplomatidae (sablefish), and pleuronectids (Pacific halibut) among others (see Beamish 1993). The effects of the regime shift on the productivity of marine species was not limited to the BSAI and GOA. Large year classes were produced as far south as California (Beamish 1993)*" (FMP BiOp at p. 133).

Regime shift theory is a hypothesis and should be characterized as such unless NMFS can provide evidence to the contrary. Scientists have not demonstrated a clear relationship between cycles of environmental change and productivity of individual fish populations, as NMFS has acknowledged in the November 2000 BiOp and again in the new RPA BiOp. There is not good long-term baseline abundance information to compare recent conditions with past conditions. The available evidence from the fisheries and research programs, however, does not support the theory that a naturally occurring "regime shift" has decreased the carrying capacity of the ecosystem for top predators such as the Steller sea lion. The available evidence indicates that conditions for many sea lion prey species actually *improved* with the 1976-1977 "regime shift:"

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[49] Clifford H. Fiscus, Gary A. Baines, and Ford Wilke. Pelagic Fur Seal Investigations, Alaska Waters, 1962. U.S.F.W.S. Fisheries No. 475 (1964): "*Theragra, Mallotus, and squids have consistently been the principal food of seals in the Bering Sea.*" Fiscus et al. noted that Lucas (1899) listed *Theragra* and Squids as major food items of northern fur seals, as did Wilke and Kenyon (1954): "*Wilke and Kenyon (1954) noted that bones and otoliths of gadids are the most common material disgorged on the Pribilof Islands. From 17 June to 20 July 1955, they collected 204 fur seals between Unimak Pass and the Pribilof Islands. In stomachs from seals collected near Unimak Pass and the Aleutian Islands, Mallotus was the dominant food item, being replaced offshore by Theragra and squids...In 1962, Mallotus, Theragra, and squids again were leading food items*" Fiscus et al. (1964), p. 42.

[50] Elizabeth Sinclair, Thomas Loughlin, and William Pearcy. Prey Selection by northern fur seals (Callorhinus ursinus) in the eastern Bering Sea. Fishery Bulletin 92 (1994), pp. 144-156: "*...fur seal consumption of walleye pollock, gonatid squid, and bathylagid smelt in the eastern Bering Sea is consistent throughout historical records, despite the wide variety of prey available to fur seals within their diving range.*"

"...the regime shift produced large year-classes of [gadoids and] other groups, including salmonids, clupeids, scorpaenids, anoplomatidae, and pleuronectids among others (see Beamish 1993). The effects of the regime shift in the productivity of marine species was [sic] not limited to the BSAI and GOA. Large year-classes were produced as far south as California" (Beamish 1993)." **FMP BiOp, p. 137.**

In fact, the benefits of increased productivity from a large number of potential prey stocks would be as likely to *increase* the ecosystem carrying capacity for top predators that prey on those stocks as to decrease it:

"Conversely, the other side of this debate accepts that the climatic regime shifted in the mid-1970s and that the regime shift produced large year-classes of groundfish in 1976-1977 (NMFS 1998). This would not necessarily reduce the carrying capacity of the system for pinnipeds, such as Steller sea lions, northern fur seals, harbor seals, kittiwakes, or murres. In fact, it could possibly increase the carrying capacity." **FMP BiOp, p. 137.**

The FMP BiOp concludes that the hypothesis about the regime shift and pollock and cod abundance is unsupportable, based on the available evidence:

"NMFS cannot support the hypothesis that the regime shift favored gadids in a way which would allow them to outcompete other fish species and dominate the ecosystem, although the absolute level of biomass is not well known...From the information available, it seems reasonable to conclude that gadids (i.e., pollock and Pacific cod) were abundant before the regime shift, and that sea lions relied on them for food before the decline. Therefore, it is unlikely that a change in the structure of the ecosystem, resulting in a dominance of gadids, is the sole cause of the current decline." **FMP BiOp, p. 134.**

Indeed, pollock stocks have declined 88% in the annual Gulf of Alaska (Shelikof Strait) acoustic surveys from the early 1980s to the present, and 50-88% in the Aleutian Islands and Bogoslof Island/ regions. These trends hardly support an argument for the "explosion" of gadids after the 1977 regime shift. Proponents of the regime shift theory do not explain how these trends fit their theory.

Furthermore, proponents of regime shift theory claim that fatty-rich herring were an important prey item before the regime shift, based on food habits research by Fiscus and Baines (1966) and Pitcher (1981). In fact, herring abundance in the Gulf of Alaska was so low during the 1960s that the decades-old herring reduction fishery was closed in 1966, while the herring stock in the eastern Bering Sea was reportedly fished to low levels of abundance by Soviet trawlers during the 1960s.[51] Additionally, herring recruitment is favored by warm regimes, as noted in the Bering Sea Ecosystem (NRC 1996),[52] and the 1977 "regime shift" was accompanied by a strong herring year class in the North Pacific. Proponents of the regime shift theory do not explain how these trends fit their theory of environmental forcing as an explanation for sea lion declines, based on changes in prey availability. The Draft RPA SEIS fails to

[51] If the eastern and western Bering Sea herring catch records are accurate, they suggest that herring abundance at that time was about one-tenth the size of the eastern Bering Sea pollock. See NRC 1996, pp. 162-163, Figure 5.4, and p. 172, Table 5.1.

[52] See NRC 1996, p. 206: "...the three largest year classes of [EBS] herring (1957, 1958, and 1977) occurred at times of significant warming in the North Pacific..."

include any consideration of this information or to relate it to the claim that Steller sea lions would continue to decline in the absence of fishing, based on environmentally driven changes in prey availability.

The evidence for regime shift as a culprit in the changes in abundance of herring, shrimp, crab, salmon and groundfish is made equivocal by the appearance of large fisheries for herring, crab, shrimp, salmon and groundfish, which also parallel fish stock declines and show clear patterns of serial depletion. Orensanz et al. (1998) made a compelling case for serial depletion in the crab and shrimp fisheries of the Gulf of Alaska during the 1970s and 1980s.[53] In the Bering Sea, red king crab crashed around 1980 after heavy exploitation for a decade, after which time the crab fishery shifted its effort to Tanner crab. When that stock crashed, the fishery shifted to snow crab and now that stock has crashed. Presumably these trends in crab stock abundance occurred within the same "regime," but sequentially over the course 20 years. Again, the case for sequential depletion is compelling, while the explanation from regime shift theory lacks any hard evidence and fails to demonstrate a mechanism that would cause such a pattern of decline. If conditions were indeed suboptimal for crab stocks in the eastern Bering Sea after 1977, fishing pressure would only hasten their demise. When the effects of trawl bycatch and seabed habitat destruction are added to fishing pressure, conditions for crabs in the Bering Sea could be lethal even in the absence of a "regime shift."

Finally, 1997 and 1998 were two of the warmest years on record in the Bering Sea, 1999 and 2000 two of the coldest. Which regime are we in? The Draft RPA SEIS provides no discussion and makes no attempt to relate this information to the operative assumption that environmental conditions will cause sea lions to continue to decline in the absence of fishing. This past winter (2001) there was no ice over most of the eastern Bering Sea south of St. Lawrence Island. Some species of fish and shellfish do better in cold conditions; some do better in warm conditions. Variability in warm versus cold conditions such as seen in recent years would presumably confuse any strong recruitment signal in fish populations one way or the other, and that may be the norm for all we know. Given large year-to-year variations in environmental conditions within a given "regime," the RPA SEIS should explain precisely how long-term *average* sea temperature changes are expected to cause sea lions to decline in the absence of fishing.

13.4.2. The Draft RPA SEIS fails to provide any evidence that "Junk Food" theory could explain the declines of Steller sea lions in part or whole.

In the Draft RPA BiOp, NMFS seems to be implying that Junk Food theory is the operative mechanism that would cause sea lions to continue to decline in the absence of fishing. But NMFS fails to explain how that mechanism is consistent with the FMP BiOp's findings, e.g., that pollock has been abundant throughout the modern factory fishing era and that the proportion of pollock in the diets of the increasing eastern and declining western stocks are similar. **FMP BiOp, p. 136; Fig. 4.5.**

Following the listing of Steller sea lions under the ESA in 1990, the pollock industry began promoting what one former NMFS official (and now industry consultant, D.L. Alverson) dubbed the

[53] See J.M. (Lobo) Orensanz, Janet Armstrong, David Armstrong, and Ray Hilborn. 1998. Crustacean resources are vulnerable to serial depletion – the multifaceted decline of crab and shrimp fisheries in the Greater Gulf of Alaska. Reviews in Fish Biology and Fisheries, 8, 117-176.

"Junk Food" hypothesis[54] in a transparent campaign aimed at debunking pollock's importance as a major prey of sea lions and other top predators in Alaska. The Junk Food theory is premised on the assumption that too much pollock (just how much is not specified) is bad for sea lions and other predators because pollock have generally lower fat content than species such as capelin and herring. Some proponents of this theory go so far as to claim that sea lions "prefer" other forage fishes such as herring and capelin, though NMFS provides no evidence to suggest that prey preferences for Steller sea lions are known.

As noted in the Draft RPA SEIS, however, the net energy gain to sea lions from any particular prey is a function of multiple factors of which lipid content is an important but not the only determinant. **RPA SEIS, p. 3-14**. Relevant factors that must be considered when assessing the nutritional value of prey include: (1) prey vary in energy density throughout the year;[55] (2) the nutritional value of any particular prey type is not determined solely by its fat content but includes the cost to the predator of capturing it;[56] (3) pollock clearly is one of the most widely available prey for sea lions now, and fishing out pollock on the theory that fatty forage fishes (herring, capelin) will fill the empty niche (and thereby save the sea lions) has not been demonstrated in regions of western Alaska where pollock stocks have plummeted in the wake of heavy fishing,[57] and (4) the proportion of pollock in the diet of the eastern stock of Steller sea lions in Southeast Alaska, where the population has been increasing since the 1970s, is approximately the same as in the endangered western stock.[58]

The Draft RPA SEIS fails to put this discussion into historical context. Pollock has been an important prey item since scientists first started looking at predator diets in the Bering Sea. Jordan and Evermann (1898) characterized pollock as "*Excessively common throughout the Bering Sea, swimming near the surface, and furnishing the greater part of the food of the fur seal,*"[59] as did Jordan et al. (1898).[60] The scientific genus *Theragra* means "beast food," from the Greek *Ther* = beast, *agra* = prey or food, in recognition of pollock's importance to marine predators as far back as the 19th century:

> "*...it may be said that the examination of several hundred stomachs shows that the food of the fur seal in the Bering Sea consists mainly of squid, Alaskan pollock, and a small, smelt-like fish unknown save through bones obtained from the seals. The squid is no direct value to man, the pollock has never been taken for economic purposes, and the "seal-fish" never taken by man.*"[61]

Clearly pollock is a key forage species in the North Pacific, perhaps the keystone forage species in the eastern Bering Sea food web as well as a top-ranked forage fish in the Gulf of Alaska. Additionally, the proportion of pollock in the diets of the increasing eastern and declining western stocks is similar. **FMP**

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[54] D.L. Alverson. A review of commercial fisheries and the Steller sea lion: The conflict arena. Rev. Aquat. Sci. 6 (1992): 203-256.
[55] NMFS 2001 Draft RPA SEIS, p. 3-17.
[56] NMFS 2001 Draft RPA SEIS, p. 3-14. See also NMFS. Biological Opinion on 2000 TAC Specifications for BSAI and GOA Groundfish Fisheries and the American Fisheries Act, December 22, 1999, p. 74.
[57] NMFS. Biological Opinion on 2000 TAC Specifications for BSAI and GOA Groundfish Fisheries and the American Fisheries Act, December 22, 1999, pp. 81.
[58] NMFS 2000 FMP BiOp, p. 136; Fig. 4.5. NMFS 2001 Draft RPA SEIS, p. 3-18.
[59] Jordan, D.S., and B.W. Evermann. The fishes of North and Middle America: a descriptive catalogue of the species of fish-like vertebrates found in the waters of North America north of the Isthmus of Panama. Bull. U.S. Natl. Mus. No. 47, 1898.
[60] David Starr Jordan, Leonard Stejneger, Frederic Augustus Lucas, and George Archibald Clark. Second Preliminary Report of the Bering Sea Fur Sea Investigations, Government Printing Office, 1898.
[61] David Starr Jordan, Leonard Stejneger, Frederic Augustus Lucas, and George Archibald. Second Preliminary Report of the Bering Sea Fur Seal Investigations, Washington, D.C., Govt. Printing Office. 1898.

BiOp, p. 136; Fig. 4.5. Other important "forage fishes" include Pacific herring (*Clupea pallasi*), capelin (*Mallotus villosus*), Pacific sand lance (*Ammodytes hexapterus*), and rainbow smelt (*Osmerus mordax*), but none approach pollock in abundance. Pollock's higher abundance may be attributable in part to the fact that pollock are broadcast spawners in open-ocean environments while most other forage fishes have demersal eggs and spawn in more specialized intertidal habitats (DOI/MMS 1987, Forage Fishes of the Southeastern Bering Sea).

Presumably prey diversity can only benefit predatory generalists and opportunists, enhancing the chances that SSL will encounter prey -- especially if one prey species becomes less available. The ability to switch prey provides some buffer against the effects of ocean variability on individual prey species. However, as noted in successive Biological Opinions, if species such as pollock, Atka mackerel and Pacific cod are what Steller sea lions are eating in greatest quantities now, the one thing NMFS *can* do is to ensure that fisheries targeting those species are not affecting their availability to sea lions. The impact of the big factory fisheries on prey availability is the one thing over which the management system has any control, a point underscored by the Council-commissioned Peer Review Panel report on the earlier December 1998 Biological Opinion.[62]

14. The Draft RPA SEIS and BiOp fail to evaluate large confidence limits around the model-derived point estimates of stock size or the risks associated with ABC levels based on such estimates, as well precautionary control rule measures to address these uncertainties, including a global control rule that begins to take effect *before* stock size estimates reach "target" and "limit" reference levels.

The Draft RPA BiOp fails to evaluate uncertainty in model point estimates of stock biomass and ABC recommendations as discussed in the November 30, 2000 Steller Sea Lion FMP BiOp (Section 6.3.2.7), which provides the following assessment of stock assessment advice for eastern Bering Sea pollock:

> "*One stock assessment modeling format used to assess some North Pacific stocks, AD Model Builder, explicitly computes variance estimates on certain model outputs. An illustration of the variance in one model output, yield, for the EBS pollock stock was presented by Ianelli et al. (1999). Their Figure 1.26 (reproduced here as Fig. 6.4) indicates the uncertainty in expected yield under three fishing mortality rates, F_{MSY}, $F_{40\%}$ and $F_{30\%}$. Under the $F_{40\%}$ regime, the mean[63] estimated yield was 1.013 million metric tons. The 50% confidence limits for the estimate were about 0.6 mmt and 1.7 mmt. These wide confidence limits suggest that yields are estimated with uncertainty and this should be recognized by decision-makers, and incorporated into the overall management approach. Further, the analysis points out that there is about a 30% chance that harvesting at the point estimate for F would result in overfishing. Again, this analysis was performed for EBS pollock, the stock for which we have the most information. We would expect that uncertainty for other stocks to be even higher than for pollock. The use of modeling formats that permit computation of confidence limits on model outputs is encouraged, as is the explicit recognition of uncertainty in the setting of the TACs.*" **FMP BiOp, p. 209.**

[62] Steller Sea Lion Peer Review Panel Report, April 26-28, 1999: "*The panel emphasizes that although understanding the relative influence of these [environmental] and other factors compared to the effects of human activities on Steller sea lion numbers would be desirable, it is only human activities that we can modify to promote the recovery of this stock.*"
[63] Actually the median value.

In other words, the pollock acceptable biological catch was set at the midpoint of the probability distribution curve in Fig. 6.4 and therefore had a 50-50 chance of being "right." Being "right" in this instance is understood as being at or below the target ABC value (F_{MSY} or proxy $F_{40\%}$) that reduces the stock size to a level that theoretically produces maximum sustainable yield (B_{MSY} or proxy $B_{40\%}$), which is believed to be approximately 30-40% of its unfished average stock size. Since MSY parameters for EBS pollock are uncertain, the stock currently falls into Tier 3 of the overfishing definition and the fishing mortality "target" rate is set at the slightly more conservative default rate ($F_{40\%}$), a level of fishing considered to be an *approximation* of F_{MSY} that aims to reduce the spawning stock size (measured as spawning per recruit) to 40% of the unfished condition (Mace 1994).[64]

There is an equal risk of being "wrong" in the example above – i.e., overfishing, or fishing above the target ABC level. Although NMFS says that the stock assessment ABCs and TACs are "conservative" and take uncertainty into account, clearly a great deal of uncertainty remains unaccounted for in the model-generated ABC point estimate. Given that the MSY-based "harvest policy" aims at a "target" (average) stock size 60% lower than the average unfished size, the margin for error is small. Since the stock is expected to drop below the "target" stock size half the time, the margin for error is even smaller half the time. When uncertainties in the *survey* biomass estimates of stock size (on which the models are built) are factored in, along with uncertainties about the effects of predation mortality, environmental variability, observer error, etc., the risk of making mistakes is compounded.

Leaving aside for the moment the question of what such a harvest policy does to competing top predators whose prey base has been reduced well below half on average, why is it NMFS's official policy to set stock assessment ABCs based on a 50% probability of choosing the true F_{ABC} value (in a single-species context)? In the Draft RPA SEIS, as in the status quo TAC-setting process, there is a resounding silence with regard to this question. Would the Corps of Engineers build a bridge or a dam that has a 50% probability of failure? If society expects that bridges and dams should be built to standards that require a much higher probability of success, what reason justifies the lower standard in fisheries TAC-setting? The setting of fishing quotas is held to a much lower standard for no good reason, as far as we can tell, other than that NMFS has not deemed such things important enough to require a higher degree of certainty and a lower risk of making terrible mistakes. The Draft RPA SEIS fails to provide any discussion of the reasons or basis for choosing the 50% confidence limit to set ABCs for groundfish.

To be more precautionary and account more fully for the uncertainty in the stock assessment advice, the RPA SEIS alternatives should set the ABC value at the lower bound of a confidence limit. One example that provides a modest increase in risk aversion is the lower 50% confidence limit, as described in the FMP BiOp passage quoted above. Use of this limit to set the ABC increases the chance of being "right" to 3 out of 4 or 75%, since 75% of the probability distribution is to the right of the lower 50% confidence limit. However, setting the ABC at the lower 50% confidence limit reduces the ABC by 40% relative to the mean (actually the median) in the example shown in Figure 6.4, or to approximately 600,000 mt. Thus, a relatively large decrease in ABC achieves a relatively modest gain in risk-aversion. A much more risk-adverse policy would be to set the ABC at the lower 90% confidence

[64] Pamela M. Mace. Relationships between Common Biological Reference Points Used as Thresholds and Targets of Fisheries Management Strategies. Can. J. Fish. Aquat. Sci., Vol. 51, 1994.

limit, which increases the chance of being "right" to 95%, but decreases the ABC to approximately 100,000 mt, a 90% decrease in yield.

Currently the managers at NMFS and the North Pacific Council SSC do not normally consider using the lower 50% or 90% confidence limit to set the ABCs, but these examples underscore the large amount of uncertainty associated with stock assessment advice and illustrate an approach to address that uncertainty in yield determinations. FMP BiOp Fig. 6.4 provides a graphic representation of uncertainty in the stock assessment advice that even non-technical decision-makers and members of the public can readily grasp. The model-generated probability distribution curve is a picture worth a thousand words. It succinctly illustrates levels of uncertainty associated with a given level of fishing, and what it would cost (in terms of foregone catch) to purchase more "insurance" against overfishing. It enables decision-makers to *see* and evaluate more clearly the level of uncertainty involved in setting the annual TACs, which is the all-pervasive feature of fishery management everywhere, as noted in the Draft Groundfish Programmatic SEIS (NMFS 2001):

> "*AD model builder... provides a suite of statistical tools for evaluating uncertainty. Using AD model builder, it is possible to obtain confidence limits for current stock size that reflect the uncertainty in the input parameters and how well the model fits the data. These confidence limits may be rather large for many groundfish stocks.*" **Draft PSEIS 2.7, p. 57.**

For sea lion prey stocks that can be assessed with AD model builder (see **Draft PSEIS 2.7, Table 9**, for examples), NMFS should employ the AD model builder statistical tools to evaluate and illustrate levels of uncertainty in the mathematical models and the risks associated with stock size and ABC recommendations. NMFS should evaluate a range of values using the lower bound of a confidence limit, including the lower 50% and 90% confidence limits, to address uncertainties in the stock assessment advice. The Draft RPA SEIS fails to provide this analysis.

In addition, the Draft RPA BiOp fails even to consider setting the "target" stock biomass level at a higher level (e.g., $B_{50\%}$, $B_{75\%}$, $B_{90\%}$), along with corresponding MSST values, in order to avoid the uncertainties and ecological risks associated with the conventional MSY reference levels and model errors at low stock sizes. At the least, the RPA BiOp should establish a more conservative rebuilding criterion that designates $B_{40\%}$ as a limit rather than a target reference stock size (i.e., setting MSST at $B_{40\%}$) in order to address uncertainties in the model-derived ABC and maintain higher minimum levels of forage for predators. A truly precautionary Global Control Rule that starts reducing the fishing rate *before* the estimated stock size reaches $B_{40\%}$ (e.g., $B_{50\%}$) should be adopted, in order to prevent the prey stocks from falling below the $B_{40\%}$ "take" threshold for Steller sea lions.

15. The Draft RPA SEIS fails to provide an integrated, adequate analysis of the direct, indirect, and cumulative effects of the fisheries on Bering Sea, Aleutian Islands and Gulf of Alaska ecosystems.

It has been said that marine ecosystems are at least as difficult to understand as it is to predict the stochastic movement of individual water molecules in a pot of boiling water:

> "*On the broad scale, we know that when sufficient heat is applied the water will boil, just as we know that severe perturbations to an ecosystem will cause major changes (e.g., El Nino). But on*

a finer scale, the movement and interactions of water molecules and the probability that certain bubbles will touch or affect one another is impossible to predict. And what happens under conditions that are not severe, but merely alterations away from "normal" conditions (moderate heat on the burner)?"[65]

Fisheries can be considered as large-scale perturbation experiments.[66] The available evidence indicates that large-scale removals of marine fish biomass and habitat disturbances *can* and *do* have significant short-term and long-term effects on food webs, habitats and the community of species in exploited marine ecosystems, and that they can be ecosystem-altering in their cumulative effect (Sherman 1990; Parsons 1992; Apollonio 1994; NRC 1996; Hilden 1997; Fogarty and Murawski 1998; Fluharty et al. 1999; NRC 1999; NMFS 2000). The Marine Ecosystem Principles Advisory Panel (EPAP 1999)[67] concludes that large-scale marine fisheries can be expected to have top-down structuring effects on exploited marine ecosystems much as any natural predator would exert control on the system:

"*Fishing can be viewed as a keystone predator; the ecological effects of fishing are therefore substantially greater and more complex than simply the biomass removed. Thus, we should expect that substantial changes have or could occur in those ecosystems due to fishing. We have witnessed changes in the landscape around us with the advent of technology evolved from the axe and the plow. We should expect equally profound ecological changes from modern, large-scale uses of the hook and net*" (Ecosystem-Based Management, p. 10).

At **RPA SEIS 4.9, pp. 251-262** (Effects on the Alternatives on the Ecosystem), NMFS devotes a scant eleven pages to a cursory and completely inadequate analysis of the direct, indirect and cumulative effects of the large-scale groundfish fisheries on the exploited ecosystems of the North Pacific. In the analysis of Alternative 1 (no action), fishing removals are said to be 1% of total ecosystem biomass, represent a small proportion of the total system energy budget relative to internal sources of variability in production, and have an insignificant effect on the environment. **RPA SEIS, pp. 256-57**. "*Thus,*" NMFS concludes, "*total removals under the no action alternative have a non-significant effect on the environment.*" NMFS does not explain how these estimates of aggregate ecosystem biomass were derived or provide confidence intervals for those estimates. At **p. 4-256**, however, NMFS also notes that the analysis did not consider space/time removals of prey by fisheries and concludes that Alternative 1 (no action) "*would result in a conditionally significant adverse impact regarding the spatial and temporal concentration of fisheries on prey species.*" **RPA SEIS, p. 256.**

In the Draft RPA SEIS analysis of the effects of Alternative 1 on the ecosystem, the failure to consider the spatial/temporal removals of fisheries on predator-prey relationships and spatial/temporal fishing effects on energy flow and balance is a major shortcoming that renders the analysis completely

[65] T.R. Loughlin, Irina N. Sukhanova, Elizabeth H. Sinclair, and Richard C. Ferrero. Summary of Biology and Ecosystem Dynamics of the Bering Sea. In: Dynamics of the Bering Sea, T.R. Loughlin and Kiyotaka Ohtani, eds. University of Alaska Sea Grant. Fairbanks, 1999: 387-407.
[66] MRAG Americas, Inc. A Review of Approaches to Fisheries Management Based on Ecosystem Considerations. Prepared for NMFS/AFSC, Contract No. 40HANF000102, Sept. 2000.
[67] The reauthorized Magnuson-Stevens Fishery Conservation and Management Act, aka the "Sustainable Fisheries Act" of 1996, Sec. 406, tasked NMFS with convening a panel to develop recommendations "*to expand the application of ecosystem principles in fishery conservation and management activities.*" 16 U.S.C. 1882.

inadequate. **RPA SEIS, p. 4-256.**[68] Large factory fisheries for walleye pollock, Atka mackerel, Pacific cod, halibut, yellowfin sole, rock sole, rockfish, sablefish and salmon have flourished during the entire period of the sea lion decline, becoming increasingly concentrated in space and time since 1980. Although overall fishery *yields* have remained high throughout the period of U.S. management under the FMPs, the intense spatial and temporal concentration of the fisheries has been accompanied by a disturbing pattern of fish stock declines indicative of serial depletion. Such a pattern has been documented for pollock in the Shelikof Strait (1981-1985), Bogoslof/Aleutian Basin (1987-1992), and Aleutian Islands (1990s), as noted in successive NMFS Biological Opinions. A pattern of serial depletion of the Gulf of Alaska Atka mackerel stock resulted in the closure of that fishery in the early 1990s, and a pattern of localized depletion in the Aleutian Atka mackerel fishery within sea lion critical habitat has been identified by NMFS (NMFS 1998). Intense pulses of fishing on spawning aggregations of Pacific cod within critical habitat are also occurring, and cod stocks have declined steadily during this period of record-setting catches in the 1990s.When the preferred fishing grounds of the fisheries are considered spatially and temporally in relation to areas of historical wildlife abundance, it is difficult not to draw the conclusion that the fisheries have, in effect, replaced top predators such as the Steller sea lion – a clear implication of the November 2000 FMP BiOp (NMFS 2000). The analysis in the Draft RPA SEIS fails to address these spatial and temporal effects of fishing in relation to the ecosystem and to indicator species such as the endangered Steller sea lion.

The analysis also fails to address fundamental differences in objectives for Maximum Sustainable Yield (MSY) and protection of predator-prey relationships. For instance, an MSY or MSY-proxy ($F_{40\%}$) fishing strategy assumes that any recruitment of juvenile fish to the adult spawning stock above the theoretical replacement line necessary to maintain the adult population at a given stock size is a "surplus" for the fishery. However, strictly speaking, there is no surplus production in marine ecosystems, as noted in the November, 2000 Steller Sea Lion FMP BiOp (pp. 208, 223-224). In the Draft PSEIS, NMFS acknowledges that single-species fishery exploitation rates are designed to out-compete the other parts of the ecosystem that contribute to M for a particular species.[69] Similarly, the November 2000 FMP BiOp finds that the goal of the MSY-based harvest policy is to remove fish before they are "lost" to natural mortality by other ecosystem consumers.[70] Yet the Draft RPA SEIS contains no organized discussion of these findings or their relevance to the unresolved conflict between the single-species exploitation strategy in the North Pacific and goals for ecosystem-based management.

The concept of "surplus production" underpins yield-based MSY theory, yet the Draft RPA SEIS fails to evaluate the basic premises of the fishery exploitation strategy as it relates to the declines of competing top predators in the ecosystem such as the Steller sea lion. At **RPA SEIS, Sec. 4.9, p. 4-252** (Effects of Alternatives on the Ecosystem), for instance, NMFS says: "*Fishery removal rates are based in the most basic sense on the amount of surplus production (the excess of reproduction and growth over natural mortality) (Hilborn and Walters 1992) for fish stocks.*" The analysis does not explain how the concept of "surplus production" is consistent with goals for protecting predator-prey relationships and natural energy cycling in an ecosystem. NMFS only responds indirectly in the analysis of the effects of

[68] At **RPA SEIS, p. 4-256,** NMFS notes that the analysis did not consider space/time removals of prey by fisheries and concludes that Alternative 1 (no action) "*would result in a conditionally significant adverse impact regarding the spatial and temporal concentration of fisheries on prey species.*"
[69] NMFS 2001 Draft Groundfish Programmatic SEIS, Section 4.2, p. 5.
[70] FMP BiOp at p. 225: "*In effect, fisheries remove fish from the population before they are 'lost' to natural mortality (e.g., other consumers of groundfish).*"

Alternative 1 (no action) by claiming that, "*total fishing removals are a small proportion of the total system energy budget and are small relative to internal sources of interannual variability in production.*" **RPA SEIS, Sec. 4.9, p. 4-252**. Therefore NMFS concludes that, when analyzed *at the aggregate level*, "*total removals under the no action alternative have a non-significant effect on the environment.*" **RPA SEIS, p. 4-257**. As noted above, however, the analyses did not consider space/time removals of prey fisheries.

The fundamental conflict between developmental tendencies of naturally adapted ecosystems and human goals for production in exploited ecosystems lies at the heart of the debate over sustainability in fisheries management in the North Pacific. According to Odum (1969),[71] for instance, ecological succession (the "strategy" of ecosystem development, figuratively speaking) "*culminates in a stabilized ecosystem in which maximum biomass (or high information content) and symbiotic function between organisms are maintained per unit of available energy flow.*" The ultimate "goal" or end of ecological succession from this view is to maximize stability or protection from the perturbations of the physical environment:

> "*In a word, the 'strategy' of succession as a short-term process is basically the same as the 'strategy' of long-term evolutionary development of the biosphere – namely, increased control of, or homeostasis with, the physical environment in the sense of achieving maximum protection from its perturbations.*"

Similarly, Leopold (1953) noted that the trend of evolution is to elaborate and diversify the biota. But if developmental trend of evolution and ecosystems tends toward biomass accumulation, complexity/diversity of structure, nutrient conservation, symbiosis and stability,[72] human goals for maximum production move in the opposite direction, that is, trying to obtain the highest possible *yields* from ecosystems:

> "*For example, the goal of agriculture or intensive forestry as now generally practiced, is to achieve high rates of production of readily harvestable products with little standing crop left to accumulate on the landscape – in other words, a high P/B [Production to Biomass ratio] efficiency. Nature's strategy, on the other hand, as seen in the outcome of the successional process, is directed toward the reverse efficiency – a high B/P ratio…Man has generally been preoccupied with obtaining as much 'production' from the landscape as possible, by developing and maintaining early successional types of ecosystems, usually monocultures.*"[73]

Thus the selection pressure of human modifications of ecosystems favors shorter-lived, rapidly growing species with high net production and yields ("*r*-selection" in the jargon of growth equations) over slower-growing, longer-lived species with low yields ("*K*-selection"). The ecosystem-altering effects of intensive human use of terrestrial ecosystems are readily visible and generally well understood. Modern agricultural or forestry techniques are prime examples of systematic human modifications to maintain

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[71] Eugene P. Odum. The Strategy of Ecosystem Development. Science, Vol. 164, 18 April 1969, pp. 262-270. *In*: Leslie A. Real and James H. Brown, eds., Foundations of Ecology, Classic Papers with Commentaries. The University of Chicago Press, 1991, pp. 596-604.

[72] We recognize the importance of natural disturbance regimes (e.g., fire, storms) in resetting the successional cycle to earlier stages of development, as well as the dynamic nature of ecosystem "stability," but ecosystems are well-adapted to such disturbance regimes and these disturbances normally do not result in wholesale alteration of the system.

[73] Eugene P. Odum. The Strategy of Ecosystem Development. Science, Vol. 164, 18 April 1969, pp. 262-270.

ecosystems at developmental stages that favor growth of higher-yield "crop" species. Apollonio (1994) cites similar selection pressures on exploited aquatic ecosystems:

> "*Industry practices and economic forces work against the innate stabilizing mechanisms of naturally evolved, pre-exploited systems. Managers, therefore, must recognize that their regulations must balance – indeed, must overcome – a variety of powerful, destabilizing forces.*"[74]

The Draft RPA SEIS fails to provide any adequate and complete analysis of the direct, indirect and cumulative effects of fisheries on ecosystems. The criteria for determining the significance of effects of the alternatives on ecosystems include predator-prey relationships, energy flow and balance, and diversity. **RPA SEIS, p. 4-260, Table 4.9-2**. But *habitat* was not included in the list of criteria considered, a shortcoming that must be corrected. Habitats of fish, shellfish, mammals and birds must be considered in any credible assessment of the effects of fishing on ecosystems. The failures of analysis cited above render the summary rating of effects of Alternative 1-5 on the ecosystem arbitrary and capricious in the extreme. **RPA SEIS, p. 4-262, 4.9-3**.

16. Conclusion

The analyses, information, and alternatives contained in the August 2001 Draft RPA SEIS fail to provide the decision-maker and the public a clear basis for choosing among RPAs that will satisfy the Endangered Species Act requirements to (1) avoid jeopardizing the survival and recovery of the species and (2) avoid adversely modifying the species' critical habitat, which is essential to survival and recovery of the species.

The Draft RPA SEIS offers no real choice among the RPA alternatives because NMFS failed to include an alternative that would result in positive population growth for the endangered Steller sea lion in western Alaska. The failure to include even one alternative that may reasonably be expected to halt and ultimately reverse the decline of the endangered species renders this Draft RPA SEIS completely inadequate both as a NEPA document and as a basis for choosing among RPAs that satisfy the requirements of the ESA.

Sincerely,

for John Passacantando
Executive Director
Greenpeace

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[74] Spencer Apollonio, The use of Ecosystem Characteristics in Fisheries Management. Reviews in Fisheries Science, Vol. 2(2): 157-180 (1994).

FOR

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Attachments Comment letter 0008-0010 repeat

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The Ocean Conservancy

October 15, 2001

RE: Steller Sea Lion Protection Measures Draft Supplemental EIS Comments

Dear Mr. Balsiger,

The Ocean Conservancy appreciates the opportunity to provide these comments on the Draft SEIS for Stellar Sea Lion Protection Measures (August 2001) (hereinafter "DSEIS").

The Ocean Conservancy's mission is to protect ocean ecosystems and conserve the global abundance and diversity of marine wildlife through science-based advocacy, research, and public education. Headquartered in Washington, D.C., The Ocean Conservancy has regional offices in Alaska, California, Florida and Maine, field offices in Santa Barbara and Santa Cruz, California, the Florida Keys and the U.S. Virgin Islands, and the Office of Pollution Prevention and Monitoring in Virginia Beach, Virginia.

The purpose of the National Environmental Policy Act ("NEPA") is to analyze and promote efforts "which will prevent or eliminate damage to the environment."[1] To that end, this DSEIS was prepared to address the impacts of groundfish fishery management efforts in the Gulf of Alaska and the Bering Sea/Aleutian Islands on, among other species, the Steller sea lion. Unfortunately, The Ocean Conservancy believes that this DSEIS falls short of NEPA's legal requirements. Specifically, the DSEIS fails to offer a reasonable range of alternatives to give both the decision maker and the interested public an opportunity to analyze the efficacy of the proposed measures. Moreover, the DSEIS fails to present and analyze the full range of alternatives from a "no fishing" alternative to the "no action" alternative. We therefore urge NMFS to revise the DSEIS as provided in 40 C.F.R. § 1502.9(a) rather than move forward with the final SEIS at this time. The revised DSEIS should: (1) provide a more appropriate range of alternatives; (2) take a "hard look" when analyzing each alternative; and (3) select a preferred alternative that eliminates or mitigates damage to the environment and to Steller sea lions in particular.

The Ocean Conservancy strives to be the world's foremost advocate for the oceans. Through science-based advocacy, research, and public education, we inform, inspire and empower people to speak and act for the oceans.

[1] 42 U.S.C. § 4321 et seq.

I. Introduction

The Ocean Conservancy is very concerned about the health and biodiversity of the North Pacific ecosystem, the recovery of the Steller sea lion, and the health of the Pacific cod, Atka mackerel, and pollock stocks at issue in this DSEIS. The Ocean Conservancy is particularly troubled by the continued decline of the Steller sea lion, whose western population (i.e., west of 144 degrees long.) has seen a decline of over 80% in the past twenty years, and was upgraded from 'threatened' in 1993 to 'endangered' in 1997. The Ocean Conservancy views this DSEIS and the measures adopted under it as an opportunity to reverse this alarming trend that is unfortunately mirrored in the continuing steep decline of other North Pacific mammal populations such as sea otters, which have declined by 90% during the 1990s in the Aleutian Islands,[2] Northern fur seals, which have declined by 50% since the 1950s,[3] and harbor seals, which have declined by between 75% and 80% in areas such as Tugidak Island south of Kodiak.[4] These declines are occurring not only in mammal populations of the North Pacific, but also in other species such as Spectacled eiders,[5] Red-legged kittiwakes,[6] and Short-tailed albatrosses.[7]

Given the overall decline in many North Pacific species, The Ocean Conservancy is concerned that the DSEIS and its purported reorientation of fisheries management not only fail to adequately address the decline of Steller sea lions, but also fail to move in the direction of actual ecosystem-based management, a move necessary to address the failing health of the entire North Pacific ecosystem. Indeed, while NOAA, NMFS and the North Pacific Fisheries Management Council seem to be concerned only with "getting over the jeopardy bar" under the Endangered Species Act ("ESA"), their actions, deficient even in this goal, fail completely to achieve the underlying purposes of the ESA to protect ecosystems upon which endangered species rely.

While this larger failure to protect the North Pacific ecosystem is even more egregious than failing to adequately ensure the continuing survival and recovery of the Steller sea lion, The Ocean Conservancy nonetheless offers the following comments on the DSEIS in relation to the failure of NOAA and NMFS to comply with its obligations under both the ESA and the National Environmental Policy Act.

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[2] "Fisheries and Wildlife Declines in the North Pacific." Alaska Oceans Network. 2001. (Internal citations omitted).

[3] Id.

[4] Id.

[5] Id.

[6] Id.

[7] Id.

II. Range of Alternatives

The DSEIS fails to offer a reasonable range of alternatives to give the decision maker and the interested public the proper analytical parameters to determine the effects of the proposed action upon Steller sea lions and other affected species. Under 40 C.F.R. § 1502.1, the DSEIS is supposed to consider alternatives that avoid or minimize the impacts of the underlying actions of the agency and are broad enough to give a true picture of the trade-offs involved. NMFS has failed in this requirement. This is apparent in several ways. First, there are no alternatives analyzed that may have a high probability of a positive effect on Steller sea lion populations. Second, the alternatives that are presented offer only a narrow range of management changes. Specifically, this DSEIS focuses its range of alternatives almost entirely on the "where, when, what, and how" of fisheries management, but almost totally ignores the "how much" issue.[8]

For example, none of the analyzed alternatives offers any significant reduction in Total Allowable Catch ("TAC"). Indeed, the DSEIS states that Alternatives 1, 3, 4, and 5 all have a 0% reduction of specific TACs for pollock, Pacific cod, and Atka mackerel, while Alternative 2 offers only an overall reduction across these fisheries of 10%. This failure to offer alternatives that significantly reduce the TAC subverts the basic function of the DSEIS, which is to offer a range of reference points for evaluating the possible effects of contrasting alternatives on the proposed action. While the 0% reductions in TAC may perpetuate or exacerbate the present rate of decline in Steller sea lion populations, the 10% TAC reduction in Alternative 2 ultimately provides for a lowered rate of decline, and thus has slightly beneficial effects, but does not reverse the decline. Without providing at least one, and preferably several, alternatives that significantly reduces the TAC, the reviewer and interested public are not offered an opportunity to review an alternative that may have greater beneficial effects on Steller sea lion populations, and that may ultimately lead to a recovery of the species as well as the ecosystem as a whole.

As a starting point, The Ocean Conservancy firmly believes that NMFS should have presented and developed the "no fishing policy," or setting the TAC at zero, as a full-fledged alternative. NMFS' rationale for rejecting further consideration of this alternative – that it "would be inconsistent with the objectives for the FMPs and the Magnuson-Stevens Act" – is insufficient. NEPA requires an EIS to examine all reasonable alternatives to a proposal, including those alternatives that may conflict with certain statutory requirements. Here, although a "no fishing" alternative might conflict with NMFS' interpretation of the requirements of the Magnuson-Stevens Act, it is unquestionably within NMFS' authority under the ESA to shut down a fishery that

[8] See DSEIS at ES-2.

is jeopardizing a threatened or endangered species.[9] Thus, NMFS' justification for excluding this analysis in not well-grounded in law. Analysis of the "no fishing" alternative is essential to a full picture of the range of possible effects and outcomes of different management regimes and also gives the decision maker and reader a perspective on what level of intensity the fisheries' interaction with Steller sea lions actually has.

Similarly, NMFS should have presented and developed a range of alternatives falling between the "no fishing" alternative and the "existing TAC with modifications" alternatives actually presented in the DSEIS. The Ocean Conservancy believes that, at a minimum, NMFS should have presented an alternative that would set the TAC at 50% of its current levels, in addition to other alternatives falling between the 0% and 100% points. Only through a full analysis of these alternative TACs can the agency decision maker, and the public at large, gain an informed understanding of the environmental implications of the options facing the agency.

The DSEIS also claims, at ES-5, to have applied the precautionary approach to the NEPA analysis when considering the range of alternatives. In the face of uncertainty, NMFS claims that it makes risk-adverse management decisions in the TAC setting process. Presumably, NMFS makes this assertion in an effort to avoid the need to analyze alternatives that significantly reduce the TAC under this DSEIS. This approach is inappropriate. NMFS own analysis of North Pacific-Alaska fisheries notes that 60% of fish populations tracked in the region are "fully utilized," indicating that many fish stocks are under heavy fishing pressure.[10]

NEPA requires that a "reasonable number of examples, covering the *full* spectrum of alternatives, must be analyzed and compared in the EIS."[11] By ignoring the range of alternatives that analyze significantly lower TACs, NMFS has simply failed to provide an adequate DSEIS to both the decision maker and the public.

Accordingly, The Ocean Conservancy strongly suggests that the FSEIS recommends that NMFS revise the DSEIS to comply with NEPA by presenting and analyzing a reasonable range of alternatives. At a minimum, this reasonable range should include a "no fishing" alternative that would operate as a baseline from which the reader and decision maker could examine the relative impacts of the fisheries on Steller sea lions and the North Pacific ecosystem[12] and a TAC reduction option of

[9] Furthermore, the question of whether NMFS has the authority to manage a fishery at a zero TAC level is not germane to whether or not NMFS should analyze such an alternative. See 40 C.F.R. § 1502.14(c).
[10] NMFS, "Our Living Oceans", at pg. 109 (1996).
[11] CEQ's Forty Most Asked Questions Concerning the National Environmental Policy Act Regulations, 46 Fed. Reg. 18026.
[12] This would also alleviate the basic analytical flaw, discussed below, of using the 1998 fishery as an environmental baseline.

50% to act as a gauge by which to assess the tradeoffs between socioeconomic and environmental effects.[13]

III. The Preferred Alternative

The Ocean Conservancy strenuously objects to the DSEIS' selection of Alternative 4 as the preferred alternative. This alternative fails to meet the stated Purpose and Need of the DSEIS, which is to ensure that the pollock, Pacific cod, and Atka mackerel fisheries "do not jeopardize the continued existence of Steller sea lions or adversely modify their critical habitat."[14] As stated in The Ocean Conservancy's previously submitted comments on the Draft Biological Opinion ("BiOp4"), incorporated herein by reference, The Ocean Conservancy believes that the analysis in BiOp4 is legally insufficient and the conclusions drawn are not based on a sound interpretation of credible scientific evidence. Moreover, Alternative 4's outcome is to continue the very same percentage of decline of Steller sea lion populations that have led to both an upgrade of the western population to 'endangered' from 'threatened' and a previous determination of 'jeopardy' from the fisheries.[15] It is inconceivable that an alternative that continues the fundamental mismanagement of fisheries and the concurrent decline in populations that have brought us to this point will now somehow avoid jeopardy. This point is made very clearly in the DSEIS, which states that although Alternative 1 is presumed illegal under the ESA,[16] Alternative 4, which has "virtually the same" effect on harvest of prey species for Steller sea lions as Alternative 1, is presumed legal under the ESA.[17]

This presumption of legality is apparently based on the temporal and spatial distribution of the fisheries.[18] The effects of this spatial and temporal distribution, however, are based upon a flawed interpretation of unfinished and unreviewed telemetry data, the significance of which the DSEIS does not adequately disclose.[19] Furthermore, this spatial and temporal distribution is rated as being only as beneficial to Steller sea lions as the spatial and temporal distribution in place in 1998, a fishery that brought us to the conclusion of jeopardy and the continued decline of the Steller sea lion populations.

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[13] The Ocean Conservancy also recommends that NMFS consider strategies that deviate from the present TAC setting process of fishing species down to 40% of their virgin biomass.
[14] DSEIS, pg. 1-2 ("Purpose and Need")
[15] Alternative 4 is predicted to continue the "same" population decline as has characterized the Steller sea lion population decline in the 1990s by being within 2% of this 5% trend. DSEIS, pp. 4-14 to 4-16.
[16] DSEIS, pg. 2-5.
[17] DSEIS, pg. 4-15.
[18] This is the only difference in effects from Atlernative 1. See Table 4.1-5.
[19] See The Ocean Conservancy's Comments on the Draft Biological Opinion, Sept. 21, 2001.

Alternative 4 thus represents little in the way of change from previous management measures. This is driven home in the analysis in Table 4.1-5. Of the key effects indicators listed and compared to a 1998 baseline,[20] none represents any improvement over the 1998 fishery. In fact, one ("Harvest of Prey Species") is even considered conditionally significantly negative in comparison. Thus, by the DSEIS' own analysis, Alternative 4 is worse than the 1998 fisheries, a result which can hardly be said to get the fishery "over the jeopardy bar."

The flaws in Alternative 4 extend beyond Steller sea lion management to its impacts upon other species and the North Pacific ecosystem as a whole. While The Ocean Conservancy applauds the acknowledgement that NMFS and the Council have given to ecosystem-based management, the selection of Alternative 4 over an alternative that provides beneficial or mitigated effects on the North Pacific ecosystem reveals an intention to manage based upon a philosophy of maximum extraction. This is apparent in the effects on listed and non-listed cetaceans, Northern fur seals, harbor seals, other pinnipeds, sea otters, the marine benthic habitat with high concentrations of Habitat Area of Particular Concern species, and the ecosystem overall. These effects are all listed as being the same or worse than the fishery of 1998, a fishery that has been part of the mismanagement that has put the agencies in a position to have to implement greater protective measures for the benefit of declining species.

IV. Adequacy of Analysis

The DSEIS fails to take the requisite hard look at the environmental consequences of the proposed action by providing in-depth and meaningful analysis. Specifically, the DSEIS fails to clearly summarize existing credible scientific evidence relevant to evaluating environmental impacts or to analyze such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. This failure is present throughout the document, and occurs in several areas, which are explained in greater detail below. A summary of these failures include:

- The DSEIS fails to state the unavailability and relevance of unavailable and incomplete information to evaluating reasonably foreseeable significant adverse impacts on the environment

- The DSEIS determines significance of impacts upon an environmental baseline (the 1998 fishery) that is not adequately documented or rationalized and thus leads to a skewed analysis of what impacts are truly insignificant and an inability for the reader to compare the preferred alternative to the baseline

[20] Harvest of Prey Species, Spatial/Temporal concentration of fishery, and Disturbance.

- The DSEIS fails to present an analysis and synthesis of historical information

- The DSEIS fails to adequately analyze critical features of the preferred alternative in enough site specific detail to explain the purported beneficial use of a complex system of closures in critical habitat that vary in distance depending on the area and are the heart of the preferred alternative's rationale

- The cumulative effects analysis fails to discuss whether all impacts deemed insignificant have a synergistic and negative long term effect

- The DSEIS analysis overemphasizes socioeconomic data at the expense of offering detailed analysis of environmental impacts

- The DSEIS is difficult to read, poorly organized, and is not arranged in a logical manner

A. Unavailable or Incomplete Information

As previously discussed in The Ocean Conservancy's comments on BiOp4, the conclusions that a temporal and spatial distribution of fisheries as incorporated into the preferred alternative would have a beneficial effect on sea lions is highly tenuous. This conclusion, like the majority of the DSEIS, is based upon unavailable and incomplete information. While the DSEIS is replete with qualifiers in its tentative conclusions[21], NMFS has not undertaken any significant analysis of what effect this incomplete and unavailable information has on the evaluation of reasonably foreseeable significant adverse impacts. This is crucial because "reasonably foreseeable significant adverse impacts" include impacts that could have catastrophic consequences, even if the probability is low.[22] NMFS' equivocation on these matters is certainly understandable given the significant lack of information regarding some of the key aspects of both the DSEIS and the affected marine environment, but the failure to inform the reader of the magnitude of this lack of information is unacceptable. NEPA regulations explicitly require that the DSEIS include a "statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment."[23] These statements need to be explicitly made throughout the document.

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[21] Examples include statements such as "broad dispersal [of foraging] **may** be essential to sea lion populations" (pg. 2-12) and that trawling "**may** profoundly affect the structure and function of the benthos." (pg. 3-160). (emphasis added)
[22] 40 C.F.R. § 1502.22(b)(3).
[23] 40 C.F. R. §1502.22(b)(2).

The DSEIS compounds this problem by failing to properly summarize existing credible scientific evidence relevant to evaluating the reasonably foreseeable significant adverse impacts on the environment or give their evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. NMFS' discussion of the telemetry data regarding Steller sea lion foraging provides an example of this failure. The Purpose and Need of the DSEIS states that

> new information about Steller sea lion movements based on telemetry studies and new analysis of Steller sea lion scat samples have become available since the issuance of the 2000 Biological Opinion. An examination of that information as it relates to necessary protection measures is warranted.[24]

The DSEIS further states "[t]he question of whether competition exists between the Steller sea lion and BSAI or GOA groundfish fisheries is a question of sea lion foraging success."[25]

Upon reading these two statements, the decision maker and reader, who must turn to the appendix containing BiOp4 to realize that the new information on Steller sea lion "movements" is being interpreted loosely as "reflect[ing]" Steller sea lion foraging patterns,[26] must attempt to discern whether this new information, which is central to the determination of whether competition exists between the groundfish fisheries and Steller sea lions, is actually credible. This information, contained in BiOp4, is never explicitly integrated into the main body of the DSEIS. Section 3.1.1.7 (Prey and Foraging Behavior), while containing a subsection entitled "Methodology and potential biases," does not disclose the significant caveats concerning interpretation of the new telemetry data,[27] which, according to BiOp4, is central to the measures that would allow Alternative 4 to avoid jeopardy. Instead it discusses only the problems associated with scat samples. The DSEIS must disclose, discuss the significance of, and use theoretical approaches or research methods generally accepted in the scientific community to evaluate the possible impacts to Steller sea lions of basing Alternative 4 upon NMFS/NOAA's interpretation of the new telemetry data.

This failure is made all the more egregious in the following subsection of 3.1.1.7 entitled "Foraging Distribution and Depths" in which the DSEIS states that foraging

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[24] DSEIS, pg. 1-2.
[25] DSEIS, pg. 3-15.
[26] As pointed out in The Ocean Conservancy's Sept. 21, 2001 comments on BiOp4, this is a tentative conclusion at best and is beset with caveats and statements by scientists that foraging pattern conclusions cannot be based upon this limited new information.
[27] These caveats are laid out in The Ocean Conservancy's Sept. 21, 2001 comments on BiOp4.

range or distribution of Steller sea lions is best explained through POP databases.[28] This is in direct contravention to BiOp4 which bases its determination of no jeopardy or adverse modification of critical habitat on assumptions regarding Steller sea lion foraging patterns that have been gleaned from the telemetry data. This subsection also contains two paragraphs generally describing Loughlin *et. al*, 2001's study of telemetry data. This data, which, along with ADFG 2001, has been the focus of public meetings, advisory committee debates, and caveats from the author, the Scientific and Statistic Committee, and, most recently, the Blue Jean Panel, is not properly analyzed as a central assumption under which the entire proposed action is based. Indeed, the reader cannot even discern that this is an important part of the decision making process. The DSEIS must incorporate a lengthy discussion and analysis of the uncertainty surrounding this data and must explicitly, in the main body of text, explain NMFS' rationale for relying upon conclusions from this data.

These failures are inherently problematic and are indicative of the overall lack of scientific coherence of the document. As discussed above, NMFS presents almost every scientific conclusion upon which it relies as an equivocation. While acknowledging the incomplete and unavailable information and drawing conclusions based upon explicit and scientifically sound methodologies and approaches would alleviate some of these problems, NMFS' distinct reliance upon unreviewed telemetry data as a basis for its reinterpretation of critical habitat and creation of Alternative 4 is scientifically unsound and points to the document's questionable scientific integrity.[29]

B. Environmental Baseline

Another egregious error that undergirds the entire analysis is that the DSEIS is largely an evaluation of the preferred alternative's effects in relation to the status quo. In determining the impacts of the alternatives to impacted areas, NMFS/NOAA has inexplicably chosen 1998 as the environmental baseline for determining significance to Steller sea lions and then proceeds to inform the reader that the preferred alternative has largely "insignificant" effects as compared to the baseline. What is not readily explained is that insignificance largely means that the impacts of the preferred alternative are almost the same as the 1998 fishery, a fishery that is responsible for both the continued decline of Steller sea lions and a biological opinion that stated that the North Pacific fisheries caused jeopardy and thus violated the ESA. How NMFS/NOAA determined that the impacts of the 1998 fishery were "insignificant" is unexplained.[30]

[28] DSEIS, pg. 3-9.

[29] This has been unequivocally repeated by the scientific community through both the Scientific and Statistical Committee and the Blue Jean Panel of scientists.

[30] The DSEIS explains only that 1998 was chosen because there was no trawl injunction. While this explains why it better represents the status quo, it does not explain why an impact that is the same as 1998 is "insignificant."

The reader, besides being given no valid reason why 1998 is the baseline for comparing impacts and determining their significance, is similarly not explicitly told that this is the framework under which NMFS/NOAA has decided that significance will be determined. Although the DSEIS originally states that most significance criteria are based upon a three year span (1997-1999),[31] a comparison of the individual discussions of pinnipeds and cetaceans reveal that several times only 1998 was used.[32] This is extremely significant because the criteria for determining effects on Steller sea lions falls under Table 4.1-1. Thus the impact of fisheries on Steller sea lions is determined to be significant only if it is worse than 1998, a bar that even the preferred alternative cannot clear. Thus, after being told that most effects of the fishery are "insignificant" when in fact they are as significant as a fishery pushing Steller sea lions closer to extinction, the reader is also informed that the preferred alternative is "conditionally significant negative" in regards to removal and harvest of prey species.[33]

Finally, the differing levels and types of analyses conducted to determine the significance of impacts and effects are confusing and based upon varying criteria. Although NMFS/NOAA states that their analysis of effects tracks NAO 216-6, Sec. 6.02, NMFS/NOAA has instead applied a continually changing standard for impacts analysis.[34] This further compounds the general difficulty and readability of the document discussed in more detail below.

C. Lack of Information and Analysis of Historical Trends

The skewed analysis that results from an environmental baseline that only considers the recent fisheries is further compounded by the failure of the DSEIS to provide information on historical trends from which the reader and the decision maker can determine the overall amount of change generally within the North Pacific and specifically within Critical Habitat of the Steller sea lion. Ultimately, should the reader or decision maker manage to determine that the environmental baseline is skewed toward 1997-1999, there is insufficient information presented and, more importantly synthesized, from which to conduct an independent analysis based on a true picture of the historical impacts of the fishery to Steller sea lions.[35]

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[31] DSEIS, pg. ES-19.
[32] See Table 4.1-1 ("Criteria for determining significance of effects to pinnipeds and sea otters"), Table 4.1-6 ("Criteria for determining significance of effects on cetaceans").
[33] DSEIS, Table 4.1-1.
[34] NAO 216-6, Sec. 6.02 requires an analysis of the intensity of an action through examining the type, duration, magnitude, and degree of risk. This includes (1) potential for jeopardizing the sustainability of any species, (2) substantial damage to ocean and coastal habitats and or essential fish habitat, (3) impacts on public health or safety, (4) impacts on endangered or threatened species, marine mammals, or critical habitat of these species, (5) cumulative adverse effects, (6) impacts on biodiversity, (7) significant social or economic impacts, and (8) degree of controversy.
[35] This is not, of course, an undertaking that should have to be done, but is illustrative of the multiple layers of the analytical deficiencies contained within the DSEIS.

D. Lack of Adequate Site Specific Analysis

The preferred alternative, and thus the analysis in the DSEIS, is predicated upon an approach including "essential measures." These include "fishery specific closed areas around rookeries and haulouts, together with seasons and catch apportionments."[36] This approach, as NMFS recognizes throughout the document, is incredibly complex and calls for varied closures of different distances in different areas. As such, it is imperative that the DSEIS undertakes not only an explanation of when and where these closures occur, but also why certain areas of Critical Habitat merit lessened restrictions and what the environmental impacts and benefits to Steller sea lions would be. An example of this is at pp. 2-26 through pp. 2-34, where the DSEIS lists the varied use of Critical Habitat closures in the various management areas throughout the North Pacific. These closures include many exceptions,[37] none of which is explained in significant detail. The reader and the decision maker are thus left without important information regarding the efficacy of restrictions that supposedly are the key to the new management plan.

It is important to include a discussion of these site-specific deviations from protection of critical habitat for several reasons. First, the DSEIS must indicate if these areas remaining open are historically heavily fished areas. Second, the DSEIS must indicate why these deviations from critical habitat are being implemented. Lacking this discussion, there is no way to know if the management regime is truly being implemented for the beneficial protection of sea lions or in order to open an area to the fishing industry. Third, it is key to understanding whether or not the management measures are actually even being implemented in a manner that has any real effect on changing historic patterns. Finally, the DSEIS must disclose this information because it is key to an understanding of both what the proposed action actually is and what the cumulative effects of these multiple openings of Critical Habitat might be.

E. Cumulative Effects Analysis

In concert with the above deficiencies, the DSEIS fails to undertake a meaningful cumulative effects analysis. In effect, by comparing the preferred alternative to an environmental baseline of 1997-1999,[38] NMFS is able to explain away impacts as fairly "insignificant" across the board and thus give the reader and decision maker the impression that the preferred alternative does not have large long-term and synergistic effects. It is unacceptable for NMFS to continue a strategy of terming effects individually insignificant without considering the cumulative impacts from an action that does not deviate from previous fisheries that have brought us to the

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[36] DSEIS, pg. 2-26.

[37] An example is from the directed pollock fishing description for Area 1, which closes all of Critical Habitat, **except** around Middleton Island. DSEIS, pg. 2-29. This pattern is repeated throughout the section.

[38] As explained above, NMFS sometimes also uses only 1998 data as a baseline.

present Steller sea lion, and related North Pacific ecosystem, decline. It is clear from the present species declines that the cumulative effects of continuing to manage fisheries at their present unsustainable level are of an extraordinary magnitude and the DSEIS needs to acknowledge and discuss these impacts holistically.

As discussed above, a lack of scientific information and data is no excuse for the failure to either completely analyze the significance of an impact or take a scientifically acceptable approach to evaluating the possible impacts. For example, in the cumulative effects analysis that is offered, NMFS recognizes that trawling "may profoundly affect the structure and function of the benthos," will possibly cause a change in the species diversity and a reduction in the habitat complexity, and that although information is lacking, "the weight of evidence should be of concern."[39] Despite the profound long-term impacts on the ecosystem and its effects on Steller sea lions, the discussion of the cumulative and long-term effects of trawling warrants a scant page and a half. While it is encouraging that the DSEIS then includes a discussion of historical patterns of trawling in Alaska, this information, central to a cumulative effects analysis, is neither integrated neither into the description of what information is lacking nor into an analysis of cumulative effects and its significance. A second example of this failure is found within the evaluation of the cumulative effects of the action on the benthic environment, in which the DSEIS concludes that the cumulative effects under the preferred alternative, although previously listed as conditionally significant negative for nearly all effects,[40] are unknown for four out of five categories.[41]

F. Lack of Balance Between Environmental and Socioeconomic Analysis

Another concern regarding the overall inadequacy of the entire DSEIS is the lack of in-depth analysis of ecological issues that is provided for socioeconomic issues.[42] While this socioeconomic data is helpful and should be analyzed under NEPA's auspices, it appears that NMFS was either overwhelmed by the volume of this information or chose to emphasize this information at the expense of taking a hard look at the environmental impacts of the proposed action. As recognized by the EPA in their review of the DPSEIS, this information is a poor substitute for ecological information and may in fact distort the analysis and cause the decision maker to give more weight to socioeconomic factors,[43] a result that would subvert the intention of NEPA to give decision makers access to important environmental data so that they may make a truly informed decision.

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[39] DSEIS, pg. 3-160 through 3-161.
[40] DSEIS, Table 4.8-5.
[41] DSEIS, Table 4.13-37.
[42] The percentage of the DSEIS devoted to socioeconomic issues dwarfs the percentage considering relevant ecological issues. Section 4.12 ("Social and Economic Consequences") is approximately 74 pages long, while Section 4.1.1 ("Effects on Steller Sea Lions") is only 22 pages long.
[43] Undated letter of Judith Leckrone, EPA to Steve Davis, NMFS.

A less generous interpretation of this approach is that NMFS is only concerned with this information in making their decision and that the document reflects the general approach of the agency in fisheries management. While the Magnuson-Stevens Act may give the agencies conflicting mandates in terms of environmental versus socioeconomic tradeoffs, the ESA allows no such latitude.

As NMFS is preparing this document in accordance with an attempt to comply with the ESA, it is all the more imperative that the decision maker be presented with a complete picture of environmental impacts.

G. General Readability and Layout

The DSEIS contains serious structural flaws. These flaws make it very difficult for the reader and decision maker to follow and easily understand the document.

A major structural flaw is that the analysis of impacts is laid out for all alternatives by what is being affected rather than by disclosing all impacts of each alternative. To adequately distinguish between all of the effects of each alternative, the reader has to jump back and forth between affected species or habitat. A presentation designed with an explanation of impacts under each alternative would allow the reader to gain a full sense of what overall impact each alternative would have. For a cross check of the impacts of the various alternatives, the reader could simply reference Table ES-2. While it could be argued that the reader could simply reference Table ES-2 to discern the impacts of each alternative, the layout as designed does not have the advantage of giving the reader the in-depth picture of what an alternative does. Since most readers are undoubtedly most concerned with the effects of the preferred alternative, it would make better sense to present these effects in their entirety.

A final layout problem with the DSEIS is that many of the graphs and diagrams are illegible and often placed in areas that are inappropriate. Regarding illegibility, an example is the many graphs that must have originally been in color, such as those contained on 2-45 and 2-46. While this graph attempts to disclose the trends of harvest of various groundfish, the reader cannot distinguish between the dozen different species, individually represented by, and graphed as either black or white. Without the original color, these graphs are useless. Also, the scale of some maps render them meaningless.[44] Regarding inappropriately placed charts and graphs, a good example is the information placed between section 4.1.7.6 ("Summary of Effects on Sea Otters") and section 4.2 ("Effects on Target Commercial Fisheries"). The information sandwiched between these sections includes graphs on Bering Sea groundfish trawl incidental catch of Steller sea lions, graphs of projected daily removal rates for each groundfish species at issue in the DSEIS, a percent

[44] Examples include Figure 3.2-2, the distribution of GOA pollock trawls, Figure 3.1-12 POP Data, and Figure 3.1-13 Commercial Groundfish Fishery Take.

frequency of prey items found in Steller sea lion diets by regions, visual presentations of the Loughlin *et. al*, unpublished telemetry data, and maps of cod and mackerel trawls. While these graphics are informative and interesting, they must be incorporated into corresponding sections of analysis to be meaningful.[45]

V. Conclusion

The Ocean Conservancy strongly urges NMFS to immediately begin work on a new draft SEIS. We believe that the current DSEIS fails to meet the requirements of NPA because it (1) does not analyze the full range of alternatives from a "no fish" alternative to the "no action" alternative; and (2) the preferred alternative fails to protect Steller sea lion populations as required under federal law and allows for the continued decline of this endangered species. The revised DSEIS should (1) provide a full spectrum of alternatives; (2) rigorously explore and objectively evaluate each alternative; and (3) select a preferred alternative that eliminates and mitigates the damage to the environment, and to Steller sea lions in particular.

Moreover, the DSEIS process was initiated in response to the jeopardy opinion issued by NMFS in 2000 on the operation of the North Pacific groundfish fisheries with respect to the Steller sea lion, and the Council's rejection of the reasonable and prudent alternatives set forth in that opinion. Given this history, it is remarkable that the DSEIS textual framework fails to incorporate an analysis of BiOp4 which, although central to the agency's purported rationale, is left as a free-standing appendix that itself is not adequately supported. Given the severe analytical flaws we have identified in the DSEIS as well as the draft of BiOp4, we strongly recommend that NMFS redo its biological opinion based on a preferred alternative selected after the completion of a new draft SEIS.

Thank you for the opportunity to submit The Ocean Conservancy's comments on the draft SEIS. Please do not hesitate to contact me if you have any questions about any of the comments in this letter.

Sincerely,

Whit Sheard
Fish Conservation Program Manager

[45] The Loughlin *et. al*, unpublished representations, although controversial and central to the rationale of the DSEIS and preferred alternative are not even labeled for source or discussed at length and analyzed in the main body of the document.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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Seattle, Washington 98101

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Reply To
Attn Of: ECO-088

OCT 15 2001

98-077-NOA

James W. Balsiger
National Marine Fisheries Service
Alaska Regional Office
P.O. Box 21668
Juneau, AK 99802

Dear Mr. Balsiger:

The Environmental Protection Agency (EPA) has reviewed the draft Supplemental Environmental Impact Statement (SEIS) for *Steller Sea Lion Protection Measures* in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. This SEIS supplements programmatic EISs developed for the Bering Sea and Gulf of Alaska groundfish fisheries, the most recent draft having been issued on January 18, 2000. The current *Steller Sea Lion* SEIS examines alternatives to mitigate potential adverse effects as a result of competition for fish between Steller sea lions under a no action alternative as well as four action alternatives that would alter the fisheries to different degrees. A draft biological opinion was prepared according to the Endangered Species Act for Alternative 4, the preferred alternative.

EPA is concerned that the alternatives do not contain sufficient protective measures to conserve Steller sea lions. Pages 2-3 and 2-4 describe the history of Steller sea lion protection measures. Measures that have been implemented to protect Steller sea lions to date include preventing willful and accidental deaths of Steller sea lions and the limiting of fishing activities both temporally and spatially. All action alternatives, except alternative 2, are continuations of these same themes and we are concerned that a larger ecosystem approach may be needed to maintain viable populations of Steller sea lions, specifically by lowering the total allowable catch in the fishery as a whole. Our concern is based on two things. First, the SEIS does not clearly state what the cumulative impact is over time of continually removing a portion of the remaining target species. This raises concerns that a continuous slimming of the fish population might result in significant changes in the fishery over time including the age and size class distribution of the remaining fish. This, of course, will affect the number, size, and location of fish available for Steller sea lions.

Second, fish move between protected and unprotected areas of the fishery. While spatial and temporal fishing restrictions in areas inhabited by Steller sea lions might provide some short-term relief, a continued reduction in the amount of fish in the ecosystem beyond a critical point would make such protective measures superfluous. For these reasons, we believe that the SEIS must clearly state both the annual and long-term reduction in target species biomass from fish activities and analyze the effects of that reduction on Steller sea lions (see 40 CFR 1508.7). Ultimately, the SEIS, Biological Opinion, and other decision-making documents for the fisheries must demonstrate that proposed actions conserve listed species, other marine mammals, and target species per the Endangered Species Act, Marine Mammal Protection Act, and Magnuson-Stevens Act, respectively.

Finally, we are concerned about the reasonable and prudent measures described on page 2-6. All four are monitoring efforts. EPA strongly supports the use of monitoring to assess the effects of actions on sensitive receptors. Monitoring, however, merely indicates that there is or is not a problem, but does not represent a way to mitigate the problem. We recommend that the biological opinion also specify trigger levels or observations that would set in motion follow up actions. This type of information is necessary to mitigate for uncertainties and risks associated with predicting environmental outcomes.

EPA has concerns about the readability of the SEIS that are similar to the ones we raised on the 2000 *Alaska Groundfish Fisheries* PEIS. For that EIS, we stated that the jumbled arrangement, extensive use of jargon, inclusion of overwhelming reams of data versus abbreviated summaries and analyses of that data lessened the readability and thus the value of the document to the public and decisionmakers. Similarly, this SEIS is a bulky document that utilizes scientific jargon and a somewhat unyieldy arrangement. For example, the portion of the executive summary that describes the environmental consequences of the proposed actions consists of research questions, answers, and indications of the National Marine Fisheries Service's (NMFS) confidence in their analyses. Although this information may be relevant, the format in the SEIS forces the reader to jump back and forth between the list of research questions and the answers. Moreover, this section is not written in a narrative fashion that would interest the reader. Instead, it reads like a dictation of someone reading the tables found at the back of the executive summary. In addition, information in the SEIS is not arranged in a manner that a person can predictably find all relevant information about an aspect of the project based upon knowledge about developing an EIS (per NEPA regulations) and the table of contents. We strongly recommend that NMFS continue to use technical writers and editors when developing EISs to bridge the communication gap between the agency and readers of its EISs.

We have rated the draft SEIS, EC-2 (Environmental Concerns-Insufficient Information). This rating and a summary of our comments will be published in the *Federal Register*. A copy of the rating system used in conducting our review is enclosed for your reference. Please contact Chris Gebhardt at (206) 553-0253 if you would like to discuss issues raised in this letter. Thank you for the opportunity to comment.

Sincerely,

Judith Leckrone Lee

Judith Leckrone Lee, Manager
Geographic Implementation Unit

Enclosure

2

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION*

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment.

0791

AMERICAN OCEANS CAMPAIGN

TELEFAX: (907) 586-7557

October 15, 2001

James W. Balsiger, Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802

RE: ***Comments on the EFH components of the Steller Sea Lion Protection Measures Draft Supplemental EIS ("RPA SEIS")***

Dear Mr. Balsiger:

American Oceans Campaign (AOC) submits these comments to the National Marine Fisheries Service (NMFS) on the EFH components of the proposed Steller Sea Lion Protection Measuers Draft Supplemental Environmental Impact Statement ("RPA SEIS") for the North Pacific Bering Sea/Aleutian Islands and Gulf of Alaska groundfisheries. See 66 Fed. Reg. 45984 (August 31, 2001). These comments specifically address the EFH and environmental analysis in the RPA SEIS. AOC is also submitting joint comments with other plaintiffs in the continuing Steller sea lion litigation that address the adequacy of the Biological Opinion and its Draft Supplemental EIS. We request that these comments are included in the formal record for the RPA SEIS.

Introduction

Protecting marine habitats is an essential component to conserving healthy marine ecosystems and sustainable fisheries. Healthy ecosystems are those where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself. Marine habitats play an important role in marine ecosystems by sustaining high levels of marine diversity and enhancing fisheries productivity. Fisheries can have negative environmental effects as they disturb and destroy marine habitats by removing benthic and marine organisms, and rework and homogenize once-diverse habitat types so they lose their vertical complexity, emergent epifauna, and benthic colonies. This can reduce their ability to maintain high levels of diversity as they lose their value to commercial fish and other marine life. This results in a loss of not only productivity, but also of marine biodiversity through extinction, overfishing, localized depletion, and migration due to habitat modification. Therefore, proper management of fisheries and their effects on EFH is crucial to ensure that ecosystem disruption is minimized.

Mr. James W. Balsiger
October 15, 2001
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In passing the 1996 Sustainable Fisheries Act, Congress agreed that fishery managers must make protecting marine habitats from fishing and non-fishing activities a priority in their management of fisheries nationwide. Congress amended the Magnuson Fisheries Conservation and Management Act to require, among other things, that Councils minimize the adverse effects of fishing practices on essential fish habitat by October 1998. 16 U.S.C. sec. 1853(a)(7). This direct mandate was clarified by NMFS in the preparation of implementing regulations (EFH Interim Final Rule) and technical guidance.

Furthermore, the Magnuson-Stevens Act and the EFH Interim Final Rule require that fishery management councils and NMFS minimize adverse effects on EFH from fishing activities to the extent practicable. According to the EFH Interim Final Rule, "adverse effect" means "any impact which reduces quality and/or quantity of EFH. Adverse effects may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions." 50 C.F.R. sec. 600.810(a). Furthermore, it states that fishing activities that adversely affect EFH may include "physical, chemical, or biological alterations of the substrate, and loss of, or injury to, benthic organisms, prey species and their habitat, and other components of the ecosystem." 50 C.F.R. sec. 600.815(a)(3)(i). Councils should act to minimize adverse effects if there is evidence that a fishing practice is having an identifiable adverse effect on the EFH.

The Bering Sea/Aleutian Islands and GOA groundfisheries, and especially those fisheries that predominantly use bottom-tending mobile gear, are damaging and destroying corals, sponges and other living and non-living substrate that provide fish food and shelter from predation. According to the SEIS:

- between 1997-1999, the groundfisheries caught approximately 12 million pounds of long-lived gorgonian corals, and higher amounts of sponges and anemones. SEIS at 4-239 (Table 4.8-1)

- Studies by Freese et al. (1999) found that a single bottom trawl pass damaged 70% of vase sponges, 55% of sea whips, over 20% of brittle stars, and 13% of finger sponges. SEIS at 3-158

- Trawl gear resuspends significant amounts of sediments, smooths boulder and cobble piles, and reduces complex geological habitats

These physical, chemical and biological disturbances to seafloor habitats are included in the definition of "adverse effects" under the EFH Interim Final Rule, and must be minimized, consistent with the EFH requirements of the Magnuson-Stevens Act. As the Steller sea lion Biological Opinion is considering alternatives that can significantly benefit or harm EFH, NMFS is required under the Magnuson-Stevens Act to conduct a through analysis of the effects of the various alternatives on EFH, and choose the alternative that minimizes the adverse effects of fishing practices on EFH.

Inadequacies in the SEIS' description of the Affected Environment (Chapter 3)

According to NEPA regulations, an EIS must describe the environment of the area to be affected by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. 40 C.F.R. sec. 1502.15. Chapter 3 of the SEIS fails to accomplish this because: (1) it fails to adequately describe the various habitats and EFH occurring within and outside the Affected Area; and (2) it fails to contain the basic information about fishing practices necessary to conduct a proper EFH and environmental analysis.

Chapter 3 of the SEIS fails to contain adequate descriptions of the types of habitats and benthic invertebrates found in the Affected Environment. The SEIS is devoid of fundamental information necessary for a description of benthic habitats, including: (1) a species-by-species description of benthic invertebrates commonly found in the Affected Environment; (2) an adequate description of the types of habitats found in the Affected Environment; (3) a description of the types of EFH found in the Affected Environment; and (4) any discussion of what benthic habitats occur outside the Affected Environment. The extent of the SEIS' discussion of habitats is a short discussion of identified HAPCs by the North Pacific Council. But this discussion does not state to what extent these habitats occur in the Affected Environment, or their relationship to designated EFH. By failing to include this essential information, the SEIS fails to provide the basic information necessary for decisionmakers and the public to ascertain the actual environmental effects the proposed alternatives can have on the Affected Environment.

Instead, Chapter 3 attempts to conduct a preliminary analysis of habitat effects. See Section 3.8.2 ("Effects on Habitat: Observations on Effects of Fishing Applicable to Alaska"). By doing so, it puts the cart before the horse. Without any adequate discussion of the Affected Environment as a foundation for a gear effects analysis, the SEIS' habitat discussion in Section 3.8.2 is disconnected from the reality in the Affected Environment, contrary to NEPA requirements. This disconnect is best seen as Section 3.8.2 of the SEIS only provides short summaries of scientific studies it finds to be applicable to Alaska[1], but does little in terms of explaining the relevance of these studies or applying the findings of these studies to determine the environmental effects of the various proposed alternatives on EFH or the environment in the Affected Environment.

Furthermore, by not including adequate information about predominant fishing gears and practices occurring in the fisheries, the SEIS makes it impossible for the reader to assess the actual effects of the alternatives on the Affected Environment, based on the studies cited in Chapter 3. For example, the SEIS fails to include: (1) any description of the predominant gears used in the fisheries; (2) any description of common fishing practices; (3) any description of the size, length, width, or weight, of bottom trawl gear and fixed gear used in the groundfishery; (4) any description of how much area is affected by trawling under the status quo and other alternatives. While the SEIS does provide some description of the use of long-lines in the fisheries, it fails to provide adequate description of other gears

[1] The SEIS fails to provide any discussion of how it identified the studies it used – out of the 450 or more studies worldwide on gear effects – as the best scientific information available.

used in the fishery, namely bottom trawls and pelagic trawls, and fails to put the observed effects of long-lines in context with other fishing practices, namely bottom trawling.

For these reasons, NMFS must revise Chapter 3 of the SEIS to include an adequate description of the Affected Environment. Specifically, it should contain a comprehensive and systematic description of each habitat type, benthic species and megafaunal assemblage found in the Affected Environment, and each designated EFH within the Affected Environment.

Inadequacies in the SEIS' analysis of the effects of the various proposed alternatives (Chapter 4)

Section 4.8 ("Effects of the Alternatives on Marine Benthic Habitats) has similar deficiencies. The major deficiency is that it fails to analyze the effects of the various alternatives on specific EFH occurring within the Affected Environment. Instead, the focus of the discussion is on the effects of the alternatives on Habitat Areas of Particular Concern (HAPC) – a subset of EFH designations. The Magnuson-Stevens Act requires an analysis of the adverse effects of fishing practices on all EFH, not just designated HAPCs. Without such analysis, it is impossible to determine which fish species are most affected by adverse impacts to EFH.

Section 4.9 ("Effects of the Alternatives on the Ecosystem") similarly provides an inadequate environmental analysis that is disconnected from the Affected Environment, and only discusses the effects of the various alternatives in the abstract, without a proper benchmark for determining effects. The SEIS compares the environmental effects of the various alternatives to fishing practices occurring in 1999 – an inadequate baseline as NMFS has failed to provide an adequate EIS analysis of status quo management in its Draft Programmatic Supplemental EIS (2001). The RPA SEIS needs to evaluate fishing effects by comparing the alternatives to a baseline of no fishing. Analysis of the "no fishing alternative" provides a benchmark, "enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives." 46 Fed. Reg. 18026-18038 (March 23, 1981).

Furthermore, the discussion of ecosystem effects is illegally broad, as it characterizes fishing effects as removing only 1% of total system biomass, SEIS at 4-252, and ignores space/time removals of prey by fisheries. SEIS at 4-256. Such overly broad analyses provide little information to decisionmakers and the public as to the benefits of the various alternatives on the Affected Environment. What it does accomplish is to illegally dilute the local and regional ecosystem effects of fishing practices to make them seem insignificant. This approach is similar to viewing clear-cut harvesting of old growth redwoods as having little environmental effect, because they only account for less than 1% of total forestry resources in the United States. A proper approach would analyze the effects of fishery removals of target and non-target species on individual fish populations and ecological relationships at the local, regional and global level. The SEIS fails to do this.

NMFS' Preferred Alternative?

The SEIS identifies Alternative 2 as having the greatest benefit to habitat, as its closed areas will significantly reduce trawling effects on habitat, including significant removal of biota, habitat

Mr. James W. Balsiger
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modification, and reduction in species diversity. Furthermore, the SEIS concludes that, of the other considered alternatives, Alternative 2 provides the most protection to Steller sea lions. As the SEIS states, "[Alternative 2] is the most protective alternative under consideration in terms of reducing competition for prey with Steller sea lions, and is also the most protective for EFH." SEIS at 4-241. The SEIS also finds that Alternative 1 (status quo) and Alternative 4 will likely have significant negative effects on EFH and the environment and will result in the greatest rates of decline for the Steller sea lion population.

Considering these findings, it is unclear how NMFS can select Alternative 4 as its preferred alternative over Alternative 2, as Alternative 4 does not comply with either the EFH requirements of the Magnuson-Stevens Act or the requirements of the Endangered Species Act.

Sincerely,

Christopher J. Zeman
Fisheries Program Counsel
American Oceans Campaign

Comments on the August 2001 Steller Sea Lion Protection Measures, Draft Supplemental Environmental Impact Statement

Submitted to NMFS
by dave fraser
PO Box 771
Port Townsend WA 98368

It is not entirely clear to this reviewer to which EIS this DSEIS is a supplement. The cover letter indicates is supplemental to EIS's undertaken for prior actions. As such, the current document "tiers off" other documents, including the series of BiOps related to the RPAs that have governed the BSAI/GOA groundfish fisheries since 1998. This DSEIS also makes reference to the Draft Programatic SEIS. Because this DSEIS makes reference to assumptions or conclusions found in other documents it seems necessary to reiterate comments that have been made in the context of those documents.

Comments on Measure Applied to the P. Cod Fishery

Alt. 4 is the Best Choice of the Alternatives in the DSEIS

Given the range of Alternatives presented in the DSIES and the finding in BiOp4 that "status quo" would not avoid jeopardy and adverse modification for SSL, the Council made the best choice possible in selecting management measures for the 2002 groundfish fishery.

However, it would also be possible to create a set of management measures that would have less negative economic and social impacts on the North Pacific fishing community if the P. Cod fishery were not included in temporal measures.

Measures Applying to Cod Go Beyond What is Needed to Avoid Jeopardy

It is not clear that the P. Cod fishery should be part of this whole mess. NMFS did not find jeopardy or adverse modification relative to the P. Cod fishery in BiOps 1 and 2. It got sucked into BiOp3 based on 'cumulative impacts' following the preparation of a Draft EA that was reviewed by the Council in September of 2000. It is not clear from BiOp3 just how the cod fishery contributes to jeopardy in combination with a particular set of management measures for Pollock and Atka mackerel, given the level of knowledge incorporated into the BiOp3 analysis.

Both the Draft Cod EA and BiOp3 failed to include a qualitative conceptual model that makes use of quantitative inputs, where ever possible, to provide a frame of reference or context, within which to evaluate the significance of removing a given percentage of certain size classes of the cod biomass from CH in a given time period.

Attached to these comments are comments i prepared in the context of the Draft Cod EA and that have previously been submitted to NFMS and the NPFMC. i believe that they remain relevant in the context of this DSEIS, in evaluating whether the Alt. 4 measures are sufficiently (or overly) precautionary with regard to the P. Cod fishery and SSL. Section 3.9 "*Elements of a Probability Analysis on Overlap and Restrictive Competition - An example based on the best available scientific and commercial data for the Aleutian Island area*" is particularly relevant in that it is the remains the only attempt to produce a "probability analysis" for the P. Cod fishery.

P. Cod Fishery Should Not be Assumed to Create Jeopardy Based on Prior Analysis

Because we are constrained by the timeline of opening the fishery next year, i am not suggesting that the analysis is necessarily deficient for lack of consideration of an alternative that would have fallen between "status quo" and Alt. 4 and would have left the P. Cod fishery as it was managed prior to 2001. However, i am concerned that there is a tacit acceptance in this DSEIS of the conclusions of BiOp3 relative to the role of the P. Cod fishery and cumulative impacts amounting to jeopardy and adverse modification.

The DSEIS does note (section 2.2.3 page 2-5) that the SSC concluded that BiOp3 was "scientifically deficient." Additionally, the review panel of Bowen, et al, had numerous criticisms of BiOp3. They stated that evidence presented in BiOp3 "is almost entirely circumstantial" and that there is "no direct data bearing on the specific mechanisms of the effects of fishing on SSL" and that the arguments in BiOp3 "are constructed on the basis that such effects are possible, biologically imaginable, and are not contradicted by the available data." In regard to this last phrase, i would go one step further and state that "they are not contradicted by the available data brought to bear on the question in BiOp3."

P. Cod Fishery Is Close to "Ideal" from BiOp3 Perspective

The P. Cod fishery is spread out over every gear type and processing mode, no fishery in the North Pacific is as spatially and temporally dispersed. Pollock and Mackerel are pursued by a single gear type, cod is spread over four gear types, each of which are split between CPs and CVs and between at-sea and shorebased processing. The shorebased processing 'nodes' for cod are also spread out over many more ports than pollock processing. All of this serves to disperse the fishery spatially and temporally. Salmon and Herring are pursued by various gear types, but the seasons are highly compressed in time and in space, in contrast the P. Cod fishery is spread out over the entire year and over most of the continental shelf.

Individual elements of the P. Cod fishery were found to be "spatially and temporally" concentrated in BiOp3 when viewed in isolation. However, neither BiOp3 nor the current DSEIS looked at the P. Cod fishery in a holistic context.

Appendix E of the DSEIS presents a series of figures (E2.2-2,3,4,5,6, 9,10,11,12) that present the harvest rate by week for each gear type and processing mode. However, the metric for the Y axis is the percent of harvest by a particular gear group. The appropriate metric would be the percent of the TAC or percent of biomass. It would also be useful if a figure were included that looked at the harvest rate by week of all gear types combined.

These figures also show the percent of harvest within 3 miles and within 20 miles. Given the new telemetry data that suggests that the area beyond 10 is relatively less important it would also be useful to show the percent of harvest within 10 miles. While the fishticket_database doesn't provide that level of resolution, it would be possible to present the percentage of observed hauls by gear type by distance from land.

Comments on Conditional Significance

The recent DPSEIS introduced a new (to the NPFMC) evaluation methodology which assigns ratings of "conditional" significance (CS+/-). While this may be a useful tool, it can also lead to confusion if the methodology is not clearly explained and applied consistently.

Two aspects of the CS+/- rating system are confusing:

1- The lack of clarity about the "metric" or what is being measured. Is it change in harvest rate on a given harvested species (primary impact), change in population trend of harvested species (secondary impact), impact of change in population trend of harvested species on another species (tertiary impacts, e.g. impacts on SSLs).

2- Baseline alternative for "0" impact on a +/- scale

The Metric:

Measuring change and assigning it a CS+/- significance can result in some questionably meaningful resulting evaluations. Taking the instance of smelt as an example:

Primary –
An alternative which reduces the TAC for pollock by 40% might reduce smelt bycatch by 40% as well. If the metric being used for evaluation is the change in harvest rate, this 40% reduction rates as CS+ (and according to page ES-9 of the SEIS, a >50% reduction rates a S+ with no "conditionality")

There is equal uncertainty about the likely impact of changing the pollock TAC on the resulting bycatch harvest of smelt, whether the TAC change is 49% or 51%. It is unclear why "conditionality" it associated with magnitude of change at the primary level.

Secondary-
However, if the metric is the impact on the rate of change in the population of smelt, it is necessary to compare the harvest of smelt to the biomass of smelt. Based on information in the DPSEIS, the biomass of smelt is in the neighborhood of 300,000 mt, and the bycatch is in the neighborhood of 39 mt in the BSAI and 61 mt in the GOA.. It would seem highly unlikely that a change in the harvest of smelt of 50% (20 mt in the BSAI) could have any impact which would result in a meaningful change in the smelt population. There is reasonably certainty associated with such a conclusion.

Tertiary-
If the basis for valuation is how that change in availability of smelt in the ecosystem impacts seabirds or pinnepeds, in this instance the likely impact is essentially "0".
Though if the prey species under consideration where age 1 pollock, the tertiary effect on other ecosystem consumers of reducing pollock TAC can not be assumed to necessarily be positive.

Mixing Metrics:

This SEIS jumps around, picking primary impacts in some cases, (effects on harvest rate for forage fish and PSCs) and secondary (effects on stock dynamics for groundfish target species) or tertiary (indirect effects on marine mammals) in others. In some cases, the assumptions about tertiary impacts are tied to changes at the primary level, when logically they should be tied to impacts at the secondary level (e.g. is "prey availability" for pinnipeds a linear function of change in the amount groundfish harvested, or a function of the change in the amount of groundfish biomass remaining as an effect of the harvest on the stock dynamics of the groundfish species?)

These "mixed metrics" can lead to an alternative racking up a lot of CS+'s or CS-'s based on changes in harvest rate that have no real world significance at the secondary or tertiary level. They can also confuse the reviewer who goes to the summary tables and makes comparisons of the numbers of +'s or –'s an alternative has in total.

Chapter 4 presents the assumption behind each table of CS+/- ratings, but much of this is lost on a reader of the executive summary or in viewing the summary tables. While the assumptions are presented, it is not clear why the particular metrics or scales were selected, and if a consistent set of rules governs those selections.

Tables should be labeled correctly and/or footnoted to explain more fully what is being measured. The results should also track the substantive conclusions in the text of the SEIS and BiOp. Table 4.1-5, for example, is currently labeled "Summary of effects on Steller Sea Lions", but that is not what is actually being evaluated in the table. Furthermore, the BiOps (3 and 4) have concluded that the harvest strategy being employed on the subject target species does not adversely effect SSLs—as long as the control rule is in place.

The Baseline:

If "status quo" is the baseline case in an analysis, it would seem that the "status quo" alternative could never have a CS+/- rating of anything other than "none" if what is being measured is "change."

On the other hand, if the analysis is considering the absolute amount of the harvest of a species, it may be appropriate to assign a +/- value to the impact of that harvest under status quo. However, there are several instances in which "alt. 1" receives a CS-. This apparently is a function of using a baseline of average 97-99 TACs. If the effects are absolute change in rate of harvest of a particular species this might make sense, but if the effects are relative change in the rate of harvest, or particularly if the effects are relative changes in the population of the species, it doesn't make sense.

Comments on POP Data

The DSEIS (section 3.1.1.7.2, page 3-9) refers to the POP data as providing "our <u>best</u> overall view of the foraging range or distribution of Steller sea lions." The text goes on to provide a series of caveats about relying on POP data. There are additional caveats that aren't covered. When all these caveats are taken together, the characterization of the POP data as the "best" data doesn't stand up to scrutiny except at the most general level. The telemetry data is currently our "best" source of information for real understanding of SSL foraging.

Telemetry tagging can be done in a systematic fashion, but the POP data was randomly generated on an opportunistic basis. As a result, POP data is heavily biased to the location of fishing boats with observers. Because large trawlers account for most of the observer coverage days, the best use of the POP dataset may be to define the range of where those vessels operated. It also reflects the regulatory structure under which the vessels operated. For a large portion of the last decade, trawlers were restricted from fishing near rookeries. Trawlers with the higher observer coverage levels also faced an array of other nearshore fishing restrictions for other management reasons including bycatch reduction and fish allocation (e.g. CVOA summer closure to catcher-processors, Bristol Bay pot sanctuary, chum salmon closure area, etc.). The larger vessels were also designed to fish offshore, and they do so as fishing conditions dictate. The combination of these factors effects the distribution of observations that make up the POP data set.

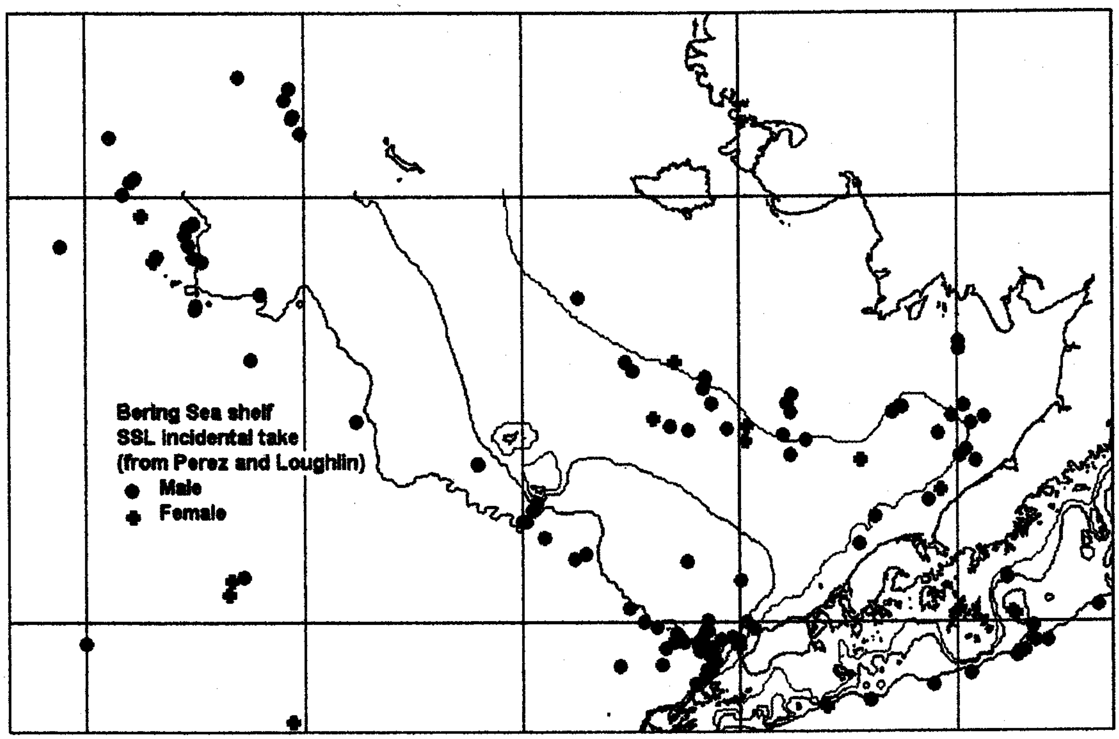
As a result of the distributional pattern of observations the data is downwardly biased against the nearshore areas of high importance to sea lions. Opportunistic sampling in the POP data means they are heavily "pre-filtered." Older POP data, gathered prior to the decade of the 1990's, reflect a far different level of abundance of Steller sea lions at that time. Prior to the regime shift, when the population of Steller sea lions was at higher levels, one would expect an expanded range of area use. When the population contracts, with both fish and marine mammals, the range of a wild animal usually contracts to its core area of dependence.

In addition, the POP data does not distinguish whether the animals sighted were adults or juveniles, does not identify the sex of the animal, and cannot determine whether the same animal has been sighted several times by different vessels. To the extent that the recovery of the population is limited by juvenile survival and female reproductive success, and to the extent their distribution differs from that of adult males (a well documented phenomena for other marine mammals such as walrus), it is important to make such distinctions in the use of habitat.

NMFS and ADF&G representatives have stated to the RPA Committee and to the Council that the telemetry data represents the best available scientific data for understanding Steller sea lion foraging ecology. The analysis should clearly state the limitations of the POP data and the improvement in scientific information that has resulted from the collection of telemetry data.

Comments on Incidental Take

The DSEIS (figure 3.1-10, page 3-35) presents Incidental Take data by gear type. The same data was mapped by SSL sex and presented against the bathymetric contours in the following figure.



A couple observations can be made about the IT data. First, the ratio of males to females suggests a greater use of offshore areas by males (while females and juveniles are the component of the population that are the focus of most concern.) Second, there is not a simple correlation with intensity of fishing effort and likelihood of incidental take (that is, it appears that the rate of take is higher in non-pollock and cod fisheries along the inner shelf than in the Pollock and cod fisheries along the outer shelf, when this data is viewed in the context of where various fisheries occur.)

Comments on Eco-system Issues

The DSEIS (section 3.9, page 3-165 to 3-175) provides a discussion of eco-system issues. This is an abbreviated version of the section 3.9 of the Draft Programmatic SEIS. Some relevant information from the DPSEIS ought to be included here to amplify this section, such as:

DPSEIS Section 3.9.1.2 GOA Ecosystems, page 3.9-4 It states the "total biomass of commercially fished species…increased since 1984, despite a considerable concurrent increase in harvest effort." And the "controlling factor for these increases appears to be environmental…" Page 3.9-5 continues, "the transitions in dominance lagged behind the shift in water temperature, strengthening the argument that the forcing agent was environmental…different species respond temperature shift with differing time lags. This was most evident for species at higher trophic levels…"

If nutritional stress is currently the issue determining Steller sea lion population levels, it would not appear to be fishing induced by the groundfish fisheries.

DPSEIS Section 3.9.1.3 Eastern Bering Sea Ecosystem, page 3.9-8 "Cannibalism by adult pollock explained some of the recruitment variation of pollock…a great deal was unexplained and appeared to be related to climate variation." It notes that there are large differences in the predictions of single versus multispecies models when comparing F40 to no-fishing. A multispecies model (Fig.3.9-6) shows little change in pollock biomass under no-fishing. "The main reason for the difference is that the multispecies model predicts that predators increase their consumption of prey when there is no fishing. The model results indicate that when pollock fishing is ceased, the largest beneficiary is pollock themselves…because adult pollock consume mostly younger (age 0 and age 1) pollock while other predators consume mostly older (age 1 and older) pollock. **In the long term, adult pollock get the 1st opportunity to benefit from the increased abundance of juveniles when fishing stops."**

This suggests the 'low and Alternative 2, ultimately doesn't provide more prey for Steller sea lion to eat. This information should be incorporated into findings regarding the "conditional significance" of TAC reductions as a protective benefit to Steller sea lion under the evaluation of question 2.

DSEIS Section 3.9.2.1 Bering Sea, page 3.9.12 – There is a discussion of the use of ECOPATH to examine impacts of whaling in the 50's & 60s. The results "suggest that harvesting in the Bering Sea at present is a level that has been sustained over long periods." It is interesting to note that whale harvests required 47% of the net primary production of the Bering Sea in the 50's, while fisheries of the 80's required only 6.1% of primary production. There is a statement on DPSEIS page 3.9-13 that, "The Bering Sea appears to be more mature than other modeled ecosystems," and that "It also has ecosystem measures that indicate it has strength in reserves, which makes it more resilient or resilient to perturbations compared with other ecosystems."
This section of the DPSEIS also discusses the use of the ECOSIM model. In equilibrium mode, ECOSIM suggests that "Increasing fishing pressure on pollock would have little effect on their biomass," while "increasing fishing pressure on large flatfishes would result in increased Stellar sea lion populations through removal of a competitor." ECOSIM was also used in dynamic mode in a variety of scenarios. One simulation suggested that "commercial harvesting of fish and whales had little likelihood of producing the changes in actual pollock populations since the 1950's." "Another dynamic simulation showed that, contrary to what might be expected, stopping the commercial pollock harvest had a slight negative effect on Steller sea lions. This is because two of the Stellar sea lion prey items, small pelagic fish and juvenile pollock, declined when adult pollock increased (adult pollock are cannibalistic and compete with small pelagic fishes for large zooplankton prey in this model)."

"More recent versions of this model now show that juvenile pollock actually increase under this scenario, but Stellar sea lions still show a slight negative effect. This is presumably because of the assumptions of the dominance of small pelagic fish as a prey item for Steller sea lions. Small pelagic fish still decline under the assumption of increasing pollock because adult pollock compete with them for large zooplankton prey.'

The summary on DPSEIS page 3.9-17 suggests "climate driven changes are responsible for a great deal of the multispecies and ecosystem level changes that have been observed." And, "Fishing was not largely implicated with the system changes that occurred in the last two decades." Though in other ecosystems "with much larger fishing pressures indicated that fishing, in combination with climate changes can be a strong trigger that can change…an ecosystem."

All of this is relevant information in the context of evaluating the Alternatives in the current DSEIS.

Comment on Effects on Cod

The DSEIS (section 3.2.2 page 3-109) there is a reference to cod spawning biomass. In section 4.2.3.1, page 4-125 the reference is to "female spawning biomass" and that appears to be the case on page 3-109 as well, though it is simply called "spawning biomass.". However, it should be made clear since both male and females spawn, and the reader might mistake the reference in this instance and conclude the exploitation rate was double its real value. It would also be useful if the full biomass were presented on page 3-109 as well (it is presented on page 4-125 as 1,508,000 MT) to provide perspective.

Comment on Miscellaneous Figures

Figure 3.1-2, page 3-27. The Y axis labels on these figure seem to be wrong. They are identical, but the values are different between the two figures. Nor do the values add to match with the preceding figure 3.1-1.

Attachment follows:

MARINE
CONSERVATION
ALLIANCE

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ANCHORAGE, AK 99501

(907) 345-0622

Petition 793-802

October 15, 2001

Records Management Office
National Marine Fisheries Service
Alaska Regional Office
P.O. Box 21668
Juneau, Alaska 99802

Attn: Lori Gravel

Re: DRAFT Supplemental Environmental Impact Statement (SEIS): Steller Sea Lion Protection Measures in the Alaska Groundfish Fisheries

To Whom It May Concern::

We are writing on behalf of the Marine Conservation Alliance ("MCA") to comment on the above-referenced Draft SEIS. The MCA is a broad-based coalition of Alaska coastal communities, fixed and mobile gear fishermen, vessel owners, processors, support industries, Western Alaska native villages and related Community Development Quota (CDQ) organizations, fishing organizations, consumers and others who are directly or indirectly involved in various aspects of the Alaska groundfish fisheries. The coalition members have joined together to support science-based policy that protects the marine environment and the North Pacific fishing community.

Our comments are attached. If you have any questions about them, please feel free to contact any one of the signatories to this letter.

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Comments

On the DRAFT Supplemental Environmental

Impact Statement (SEIS):

Steller Sea Lion Protection Measures

in the Alaska Groundfish Fisheries

by the

Marine Conservation Alliance

645 G Street, #573

Anchorage, Alaska 99501

Submitted to the

National Marine Fisheries Service

Alaska Regional Office

October 15, 2001

TABLE OF CONTENTS

Chapter 3, Section 3.8 Effects of Fishing on Habitat, Including Essential Fish Habitat

Introduction:

This section and related sections regarding effects of fishing on fish habitat are essentially a repackaged synopsis of the discussion presented in Section 3.2.1.1 of NMFS' draft Programmatic Supplemental Environmental Impact Statement (PSEIS) released for comment earlier this year. MCA presented extensive comment on that section of the PSEIS including expert comments of Dr. Franz Mueter, a benthic ecologist who has studied habitat and fish assemblages off Alaska. Additionally, we are aware that representatives of the freezer longline industry and a collection of companies and fishery associations dependent on trawling also submitted substantial comments on the analysis and conclusions of the habitat effects sections of the PSEIS. NMFS has not responded to those comments and has not taken them into account in preparation of this SEIS. NMFS is required to respond to those comments when publishing the final PSEIS, which, of course, has not yet occurred. However, NMFS should certainly have reviewed and utilized those comments in preparing this section of the SEIS, rather than leaving the public to have to reiterate its concerns and recommendations. Our comments provide excellent input on the analysis and its conclusions so as to improve the baseline of information on the fisheries and their effects, and should have been used to improve the SEIS.

Section 3.8.4 of the sea lion SEIS incorporates a discussion of the effects of pelagic trawl gear that, as the document admits, is based solely on anecdotal evidence. Section 3.2.1.1 of the PSEIS did not include such a discussion of pelagic gear, although one of the alternatives was based on presumed benefits from a requirement to use pelagic definition nets in certain rockfish fisheries. An assessment of fishing effects and benefits from gear modification is a critically important analysis with potentially significant economic effects on the fishing industry. It should not be based on non-scientific, anecdotal data, but on the results of well-planned and executed research.

We understand that NMFS has recently hired someone to lead the habitat division of the Alaska Region. We request that the new habitat division chief meet with representatives of the MCA to discuss the issue of EFH in general as well as interim approaches for describing the habitat effects of fishing in the SEIS documents that are developed while the draft PSEIS is still under review.

<u>Specific Comments on Chapter 3, Section 3.8 Effects of Fishing on Habitat, Including Essential Fish Habitat</u>

While it was certainly more convenient for NMFS to pull sections from the benthic habitat effects of fishing gear sections of the PSEIS analysis for the sea lion SEIS, given that the latter is principally directed at ensuring adequate foraging opportunities instead of creating protections for benthic habitat. We feel, however, that the analysis should have addressed the aspects of the sea lion management action vis-à-vis any changes in benthic habitat effects of the sea lion alternatives. The analysis should have revisited the habitat effects of fishing gear baseline and the available information on effects of fishing gear on EFH available for the fisheries in question: pollock, cod, and Atka mackerel. In our opinion, this would have made the baseline section of the SEIS on habitat effects of fishing more relevant to the action being considered. In lieu of the repackaged PSEIS material, such a baseline would also have been more useful to the consideration of EFH effects of different alternatives that occurs in Section 4.8.

In our view, there are many aspects of the general description of scientific information on benthic habitat effects of fishing gear that are not relevant to the characteristics of the fisheries in question for the sea lion action. To illustrate this, we have listed below several issues and factors which, we feel, illustrate the inapplicability of the baseline information appearing in the section. These points serve to argue that the habitat effects of fishing gear section should be completely revamped and we strongly recommend that occur.

1. Bottom contact with fishing gear for the three fisheries of interest in the sea lion SEIS (cod, pollock, Atka mackerel) occurs within the general depth range where natural disturbances affects EFH. The point here is that many of the studies cited in this SEIS as indicative of the general scientific findings on benthic effects of on-bottom trawling are from studies of fishing effects in much deeper waters which are likely less affected subjected to natural disturbance. Many of these studies were conducted in substrates characterized by mud and silt bedforms in waters much deeper than those fished for the

three subject fisheries. These studies may be inappropriate in describing the potential benthic effects of the above fisheries

2. The trawl gear used for the three fisheries of interest in the SEIS is otter trawl gear. As is discussed below, otter trawl gear is thought to be less disruptive to the benthic environment than beam trawls, the gear that is the basis of most trawl effects studies. Beam trawls achieve spread and tend bottom through dragging a heavy metal beam along the bottom. Most of the papers and reviews cited in the general gear effects section of the sea lion SEIS are, in fact, studies of effects of beam trawls, not otter trawls. These may not be appropriate to describe the trawl fisheries in question.
3. Scientific studies of habitat effects from areas around the country or world where overfishing is affecting stocks may not be relevant to the description of the effects of fishing on habitat off Alaska where stocks are managed in a more precautionary manner. Stocks of pollock, cod, and Atka mackerel are not overfished. If fishing effects on EFH are related to fish stock condition and to fishery production, as the SEIS suggests, then the lack of decline in stocks suggests that fish habitat are not be impaired and fishing practices may not be adversely affecting habitat. The SEIS' reliance on studies on habitat effects from areas where overfishing is occurring may actually overemphasize the importance of potential for "habitat effects" in the management equation for Alaska. It may, in fact, be difficult to discern habitat effects of fishing for stocks managed in a precautionary manner. This is because allowed fishing levels are adjusted downwardly if stocks decrease and this would simultaneously reduce fishing effects on EFH.

4. Scientific literature on effects of fishing on both living and non-living substrates for fisheries similar to the fisheries and gears of interest in the SEIS may not be relevant to effects off Alaska. This is because the intensity of fishing for these species in areas that have been studied may be considerably higher than occurs off Alaska. To date, no comparative studies of fishing intensity to attempt to answer this question have been undertaken.

In our view, the SEIS should have acknowledged and discussed the above issues because any discussion of fishing effects off Alaska based mostly on studies of fishing effects in other areas needs to recognize this important context. This was not done for this SEIS so we will comment on the repackaged Section 3.8 EFH effects "abridged version" of the PSEIS section on habitat effects by providing a synopsis of many of the points made as comments on the draft PSEIS. Once again, we feel it is important to put on the record that the opinions expressed by NMFS on effects of fishing on EFH are not universally accepted in the scientific or fishing communities.

Comments on Chapter 3, Sections 3.8.2 Effects on Habitat: Observations on Effects of Fishing Applicable to Alaska and Section 3.8.3 "Trawling Patterns in Alaska Waters"

Sections on effects of bottom trawling

Just as in the PSEIS habitat effects sections, Section 3.8.2 starts out by attempting to interpret and synthesize the findings of a selection of works in the scientific literature on trawl effects. An extensive body of scientific literature on the effects of trawling exists and different studies present markedly different conclusions about the effects of trawling on benthic habitat. This section attempts to decide which literature and which literature survey review is appropriate for characterizing effects of trawling off Alaska. Section 3.8.3 attempts to demonstrate how the selected general conclusion can be reconciled with the scant scientific work that has evaluated trawl effects off Alaska. We find serious flaws in these sections individually and in combination, as are discussed below.

This section effectively assumes away the possibility that trawling is not having a significant adverse effect on EFH (one that affects production or ecological function) and adopts (for effects on living substrates anyway) the controversial conclusions of a paper by two east coast researchers, professors Auster and Langton (Auster and Langton 1999). While parts of the Auster and Langton (1999) paper which evaluate the findings of acute and chronic (instantaneous and long-term) physical effects of trawling are less controversial, the conclusions in the sea lion SEIS follow the lines of the PSEIS which essentially embraces the conclusion that bottom trawling necessarily reduces habitat complexity and benthic bio-diversity to the detriment of sustainable fish stocks based mostly on the findings of that one literature survey (Auster and Langton 1999).

While the Auster and Langton (1999) piece is one opinion on what the body of scientific work reveals about trawl effects, other works on trawl effects may be equally or more relevant to the North Pacific ocean. For instance, as an alternative to the Auster and Langton (1999) paper, SEIS authors could have relied on the conclusions reached in one of the most encompassing studies of trawl effects (Hall 1999) which evaluates what is known about different types of physical effects on substrates and benthic communities. Regarding evidence for long-term trends in benthic communities in the North Sea, studies presented in Hall (1999) lead to the conclusion that "the case for invoking fisheries as a primary cause for the recorded changes is not very strong" (Hall 1999).

Other reviews (ICES 2000, Collie et al. 2000, ICES 1988, Hutchings 1990, Messieh 1991, etc.) have evaluated what is known about trawling and reached the conclusion that trawl effects depend greatly on the type of trawl gear, type and depth of substrate fished, degree of natural disturbance, fishing intensity, and other factors. To our knowledge, no published review paper prior to or subsequent to the Auster and Langton (1999) paper has claimed that available scientific studies establish that trawling irrevocably reduces "habitat complexity" (frankly, a rather subjective concept) and benthic diversity in all cases.

For a sample of the divergence of scientific opinion on the effects of trawling, consider the degree to which the conclusions embraced in the Auster and Langton (1999) paper differ from other studies. For instance, the ICES (2000) literature survey is considered by many scientists to be the most definitive evaluation of empirical studies on trawling to date. The findings of that paper directly contradict NMFS' apparent conclusion that trawling necessarily affects long term habitat complexity and bio-diversity.

In fact, many of the studies reviewed for the ICES (2000) paper were undertaken in areas in Europe that have been subjected to trawling effort similar to or greater than those in Alaska and with types of trawl gear that are thought to create more disturbance of substrates than otter trawls (Bergman and Santbrink 2000, Collie et al. 2000). Despite this, the ICES (2000) paper, in fact, concludes that although some aspects of fish habitat can be modified by trawling in areas where intensive fishing occurs, the effects of natural disturbance on changes in the relative abundance and species composition are at least as important a factor in determining changes of benthic communities as fishing gear effects. By dismissing this rather different conclusion, the sea lion SEIS follows the direction of the PSEIS which arbitrarily minimized an important area of scientific dispute.

An underlying issue for both the ICES (2000) and the Auster and Langton (1999) papers is whether beam trawl studies are applicable or at least valuable in assessing the effects of otter trawls. This is because both of these literature reviews rely heavily on individual studies of beam trawl effects. Beam trawls are recognized to be more severe than otter trawl effects because beam trawls use heavy, rigid beams to spread the net and keep it on the ocean floor while otter trawls, like those used off Alaska, employ footropes equipped with discs or rollers. Otter trawls use floatation on the headrope and other areas of the trawl to compensate for much of the displaced weight of the footrope gear, and in some cases achieve close to neutral buoyancy. So studies of beam trawl effects are probably only useful in determining an upper bound for disturbance of substrates and otter trawl effects fall well below that bound (Bergman and Santbrink 2000).

From a scientific balance perspective, it is troubling that the ICES (2000) literature survey paper and other literature surveys that have conclusions different from the Auster and Langton (1999) survey are dismissed as irrelevant, yet the Auster and Langton (1999) paper is accepted.

In fact, three of the long term effects studies reviewed by Auster and Langton (1999) to prove their thesis of indisputable negative effects of trawling (Reise 1982, Riesen and Reise 1982, and Holme 1983) were reviewed by Hall (1999) who found that the observed changes reported in each of these studies could not be attributed to fishing effects.

Another shortcoming to the PSEIS and the portions reproduced for the sea lion SEIS habitat effects sections is the attempt to essentially corroborate the use of the Auster and Langton (1999) paper describing the general effects of trawling by pointing to supposed similarities in the findings from two empirical studies of trawl effects off Alaska. The Alaska studies referred to in this section are in no way efforts to discern the general effects of trawling off Alaska. For instance, the Freese et al. (1999) paper is a rather narrow "what if" study to evaluate experimentally the effects of trawling in extremely rough and rocky areas in the Eastern Gulf of Alaska (a study area that most in the industry feel is "un-trawlable"). The area has dense coral, sponge, and related invertebrate assemblages. Freese et al. (1999) is not a study of the effects of actual trawling practices in the fisheries in the Gulf of Alaska and there is ample evidence to show that the trawl fisheries off Alaska successfully avoid fishing such rough-bottom areas.

Regarding the other empirical work that the SEIS authors offer as corroborating evidence of confirmation of the Auster and Langton view of the world is a narrow study of differences in the species composition of trawled versus less-trawled or un-trawled areas over a fairly long period of time (McConnaughey et al. 2000). That paper is not in any way proof that trawling, as it is currently conducted off Alaska, reduces habitat complexity and benthic diversity. This is because although the paper concludes that there is a statistically significant difference in the number of some benthic organisms between the unfished control and fished treatment, this in no way establishes or attempts to establish any ecological importance of the apparent difference between the fished and unfished areas. In cases where some organisms are more abundant in the unfished or fished areas, the fact that there is a statistically significant difference in occurrence rate proves that we can tell that a statistically significant difference exists, not that the difference (the difference is small in most cases) means that habitat function or diversity is really any different between the two areas.

Another troubling aspect of the attempt to link fisheries off Alaska to the earlier section's conclusions on general effects of trawling is the discussion of intensity of trawling in 3.8.3. This section states that in the Aleutian Islands, "intense" bottom trawl effort has been directed at Atka mackerel and Pacific ocean perch. It goes on to conclude that "During a period from 1990-1998, a total of 57,948 tows were observed in the GOA and 35,498 in the Aleutian Islands.... Density of trawling in the entire Aleutian Islands region was 0.56 trawls/km sq. The eastern Aleutian Islands had the area of highest density of 1.56 trawl/km sq. over an area of 7,909 km sq." (pgs. 3-161 and 162).

The discussion in this section centers on the intensity of trawling in the fisheries off Alaska, presumably as a factor to explain the habitat effects of fishing there. Yet the key issue with regard to intensity of trawl disturbance is not how intensely one area off Alaska is trawled or fished in general, but how intensely trawled or fished the areas of Alaska may be compared to other areas where effects of fishing have been studied and in some cases observed.

The reason this is important is that there is no real evidence of a habitat effects problem for the groundfish fisheries off Alaska. In fact, the PSEIS habitat protection alternative section actually concludes:

In conclusion, the linkage between fishing and habitat characteristics is not known with great precision for Alaskan fisheries. The absence of fish stocks below their minimum stock size thresholds (Section 4.4) implies that the status quo fishery has not had significant impacts on the productivity of stocks in the BSAI and GOA. (SEIS page 4.7-39).

For whatever reason, fisheries remain productive off Alaska and one possible explanation is that the intensity of trawling and other fishing activities that affect fish stocks and fish habitat in our region is lower than other areas where habitat effects of fishing have been identified (or at least have been asserted).

Rather than just presenting information on the degree of trawling in one area off Alaska compared to another, it would be instructive to provide information in this section on the intensity of trawling off Alaska relative to other areas in the country or worldwide where effects of trawling have been studied. With information on relative intensity of fishing, it will be possible to place into context the likely effects of the fishery compared to the other areas where effects have been more rigorously studied. Other factors need to be included into these comparisons, such as types of trawl gears used (for instance the beam trawls used predominantly in the North Sea vs. otter trawls used off Alaska), types of substrates fished, and degree of natural disturbance where fishing occurs. With this information, one can make more informed inferences on the effects of trawling in one area versus what the effects of trawling are off Alaska. In the absence of such information, the analysis simply compares fisheries off Alaska against each other and appears to grade their intensity on a relative curve where some necessarily have to be more "intense" than others.

The issue of intensity is equally applicable to the section on the effects of trawling on non-living substrates. Most of the references to studies reporting compaction of sediments or winnowing of sediments are from areas where fishing intensity is likely to be far greater than off Alaska and, in some cases such as the East Coast, chronic overfishing of some stocks has occurred. Fishing becomes increasingly inefficient when stocks are overfished and this may mean that effects on substrates in those areas far exceed effort in other fisheries where CPUE remains high. We feel the selection of reference studies on effects on non-living substrates should take this into explicit consideration.

Chapter 3, Section 3.8.4 "Effects of Other Gear Types"
Pelagic trawl gear:

This section departs from the PSEIS which generally ascribed habitat protection benefits to the use of pelagic trawls and described the purported benefits of conversion of certain rockfish fisheries from bottom trawl gear to pelagic trawl gear. The section accurately depicts the configuration of pelagic trawls used off Alaska in terms of the doors achieving spread through water resistance alone rather than a combination of bottom contact and water resistance, as is the case for bottom trawls. Additionally, the hysical and mechanical description of pelagic trawl gear and the unprotected configuration of the bottom section of the trawl are also accurately reported. A troubling aspect of this section is that it asserts that midwater pollock nets are fished in contact with the seafloor "more often than not" (SEIS page 3-162), and bases this unsubstantiated piece of information on anecdotal evidence.

Additionally, the section states that the effects of pelagic trawls that come in contact with the seafloor have never been evaluated scientifically but then the analysis goes on to report that "it can be expected that when pelagic gear contacts the seafloor it will have similar impacts to standard on-bottom gear" (P. 3-162). As far as we understand it, a scientific approach to knowledge involves refraining from making assertions when information and data are not available to validate the hypothesis. No explanation or argument to lend any credence to this baseless assertion is even offered. Such speculation is unacceptable and serves to further discredit the entire section on effects of fishing gear on benthic habitat.

Longline Gear:

This section is a synopsis of the PSEIS section on effects of longline gear. As MCA commented in the public comments on the PSEIS, there are no scientific studies on the effects of longline and other fixed gears off Alaska presented to support the statements made in this section. The paper referenced for the description of possible effects (High 1987) is observational at best and not a controlled empirical study of effects of the gear or of comparative effects of different gears. Given that it is not a controlled study of effects of fishing gear, the paper's use as the scientific underpinning of potential effects of bottom longline fishing is questionable. To our knowledge, there are no reviewed empirical studies of effects of bottom tending fixed gears used off Alaska. As was pointed out from mobile fishing gear above, studies from other regions configurations may not be relevant to Alaska in terms of types of substrates fished and intensity of fishing. As was pointed out in our comments above, the health of the three groundfish stocks of concern for this SEIS and all groundfish stocks off Alaska, does not suggest that longline gear, the major gear used for targeting Pacific cod off Alaska, is having any deleterious effects on fish habitat.

Chapter 4, Section 4.8 Effects of the Alternatives on Marine Benthic Habitat. This Section applies the baseline from Section 3.8 to the sea lion management. As explained above, we do not buy into the hypothesis and the characterization of effects of fishing on EFH and we do not think the baseline description of fishing effects in Section 3.8 from outside studies is appropriate for Alaska. We feel therefore that the determinations made on the effects of alternatives based on this flawed baseline are equally inappropriate for describing EFH effects of the specific measures of the sea lion SEIS. We also believe that had the establishment of a scientific baseline acknowledged the specifics of the three fisheries in question, as suggested in the bullet points above, and addressed the relevance of the information in Section 3.8 to fisheries off Alaska, a far different set of conclusions about the alternatives may have resulted.

If one temporarily accepts the underlying assumptions that the SEIS makes about the effects of fishing on EFH off Alaska (at least for purposes of argument), Section 4.8.4 still appears somewhat inconsistent in its assignments of potential environmental benefits. Further, the attribution of habitat protection benefits to the alternatives is only made where fishing is restricted by large scale closures and accompanying TAC reductions. Thus sea lion Alternative 2 scores highest, Alternative 3 (the November 30th Biological Opinion scores high relative to Alternative 4 and so on. In our view, these ratings are questionable and do not follow logically and consistently from the author's conclusions on gear effects and other available information in the SEIS.

Specifically, Alternative 2 would shift all trawling outside of sea lion CH and reduce TACs. For the trawl fisheries under Alternative 2, effort to catch the remainder of the TACs would be conducted in waters outside CH, which based on accepted information on bathymetry would force trawling into a zone of relatively deeper waters. This zone could involve increased fishing effects in waters that may be less adapted to natural disturbance, which could increase effects of fishing on benthic habitat. Likewise, fishing would be increased in an area where gear effects have occurred to a lesser degree and in some cases not at all.

Given the concern raised repeatedly in the SEIS as to the vulnerability of long-lived sessile emergent epifauna, such as tree corals and sponges, this redirection of trawl effort flies in the face of concerns for protecting fragile invertebrates because it would increase fishing outside CH. It seems likely that the fragile invertebrates outside of CH have been less exposed to fishing effects and may be in a less modified state than those where fishing occurs in CH. The SEIS argues that some of these long-lived invertebrates can be injured or removed by a single gear set. Given that fishing has been concentrated in some portions of sea lion CH in the past, a wholesale shift of fishing by some sectors to areas outside of CH appears to potentially increase effects on these fragile organisms.

The analysis states that for the Aleutian Islands, most of the vulnerable sponge and coral substrates are located within CH. It is not known whether this coincidence results from most of the current fishing occurring within CH. If the methodology to identify locations of these epifauna is based in whole or in part on observer data, then the opportunity to observe these invertebrates in CH would be far greater because that is where most of the fishing has occurred in the past.

Even if trawl survey data were considered, survey stations are mostly inside the 200 meter contour so there this too may understate the relative occurrence of fragile invertebrates outside of sea lion CH. The known depth range of such invertebrates exceeds 200 meters, and they are certainly found in the GOA in areas deeper than 200 meters, as seen in the observer data for the GOA presented in the PSEIS. The SEIS' assertion that fragile invertebrates are mostly concentrated in sea lion CH may be incorrect and thus the potential for negative effects of increasing fishing outside of CH can not be dismissed in the Aleutian Islands and other areas off Alaska.

From an industry perspective, there is little doubt in our experience that fragile emergent epifauna are found outside of sea lion CH. Likewise, it is then possible that measures that increase fishing outside of CH may increase effects on fragile invertebrates. In this light, Alternative 2 might create an expansive Marine Protected Area of some sort in an area where negative effects of fishing are assumed by the analysis, but have not been established. The new closed area, as the analysis admits, would already have been altered in terms of the long-lived fragile invertebrates, species for which recovery rates are not known but presumed to be slow. This would come at the cost of forcing fishing into a new zone to some extent, where some fragile HAPC are known to exist and data to determine their extent is not very complete.

It is perhaps an assumption of the SEIS authors for this section that the "cost" in terms of shifting fishing to possibly equally fragile, potentially less modified habitat is not likely to be realized in the end. This may have been assumed away in the hope that the fisheries would be unable to make up catches outside CH, therefore any negative effects of fishing are short-lived or possibly never occur because the economics of the industry are devastated by the CH closure. In any case, what seems even more peculiar about the SEIS' scoring for Alternative 2 is that it assumes that Steller sea lion CH is a biologically sound MPA, the area that would be most valuable for protecting groundfish stocks as delineated by sea lion activities measured via the early marine mammal sighting "platform of opportunity" data.

Another question that merits attention here is whether it is necessarily the best approach to strive to create a large scale MPA in sea lion CH in lieu of multiple small scale sites that result from the types of gear restrictions and closures found in the RPA committee proposal (Alternative 4)? When did the network of small refugia idea become necessarily inferior to one or a few large scale closures and does anyone really know which is a better prospect to protect EFH and fish stocks?

Likewise the same arguments apply to varying degrees for the discussion of the comparison of Alternative 3 to Alternative 4. What we find puzzling about the analysis of Alternative 4 is that the authors, should we once again accept their view of fishing effects on EFH, see no habitat protection benefits to minimizing the shift of fishing to new areas. We think there are actually many examples of potential protections to EFH within Alternative

4, but they are different from Alternative 2 and 3, and mostly smaller scale restrictions than for those other alternatives.

The potential EFH benefits of Alternative 4 should not be minimized because there may be a great deal of value to avoiding a redirection of fishing activities to new areas and no one really knows the relative consequences of any approach to EFH protection at this point. At the same time, Alternative 4 provides fishing restrictions for substantial areas such as the Bogoslof area (Area 9) and Area 4 in the GOA, which are areas where little or no fishing has occurred in the past. These areas have generally had little disturbance from fishing in recent times, so existing EFH effects may be low and habitat quality may approximate its pristine state (at least not modified by fishing). While not intended as a habitat protection measure, this makes sense in terms of the baseline NMFS established for EFH protection.

One additional shortcoming of the analysis of Alternative 4 is that it glosses over the possible habitat protection benefits of more subtle fishing restrictions contained in the alternative. For instance, the limitation of no trawling inside sea lion CH for Atka mackerel west of 178 degrees West Longitude is trivialized by the analysis because, according to the authors, it still allows some kinds of trawling west of 178 degrees West. In actuality, this broad-brush dismissal of possible benefits such as the separation of the cod and mackerel fisheries at the 178 degrees West line ignores the fact that although cod fishing is allowed west of 178 degrees West, cod are fished in completely different areas and depths than mackerel. So a large expanse of productive fishing area around Seguam Pass would now effectively be closed to mackerel trawling and an extensive area will not be trawled at all.

This and other examples of possible habitat protections that are not as broad scale but still significant should not be overlooked. In order to recognize these more subtle restrictions, however, NMFS analysts are going to have to evaluate the actual spatial conduct of fisheries more carefully. Such information may not be available from standard GIS mapping color fills which, we feel, often dramatically overstate the area fished in order to achieve a readable scale for the reader intent on looking at broad areas. It is also possible that fish use habitat on a scale more akin to relevant depth strata protections available in Alternative 4 measures. Fishermen know a great deal about where fish are found and they assign a lot of importance to depth, bottom type, and effects of currents. These factors make areas unique and productive and the spatial scale of fishing, identification of fish habitat, and protections thereof should be considered in this frame of reference.

Chapter 4, Section 4.11.3.2 Vessel Monitoring System. In 2000, all participants in the Atka mackerel fishery voluntarily installed VMS units. NMFS provided the units and installation on each vessel. Subsequently, NMFS regulations mandated VMS for participation in the mackerel fishery. Although the program has been successful, there should be an allowance for vessels carrying the units to be allowed to continue fishing should their VMS unit fail to operate. Despite the reported fail safe operation of the VMS units there was recently a recall of the units, which were subsequently replaced by NMFS, and some vessels have experienced problems with the units failing, possibly because of the vessels unstable power source that can occur sometime during fishing operations. Some problems have also occurred when vessels come out of shipyard maintenance periods where the VMS unit was not powered down prior to shifting to or from shore power. Depending upon the vessel's electrical power configuration and engineering capabilities, some reliability problems may occur while the boat is fishing. NMFS should make some provision that doesn't penalize vessel owners for the unit's failure. Note that the units are tamper proof and the vessels currently operating with VMS in Alaska have 100% observer coverage.

Section 4.1. Effects on Marine Mammals

The comments below address SEIS Section 4.1 Effects on Marine Mammals, and in particular the rationale for and appropriateness of the analysis which concerns "core question" number 2: "Does the alternative management regime result in fisheries harvests on prey species of particular importance specific to marine mammals, at levels that could compromise foraging success (harvest of prey species)?" The MCA recommends that core question number two and all of its associated analysis be deleted from the SEIS. In making this recommendation, we rely on findings from prior NMFS Biological Opinions on the Alaska groundfish fisheries as well as statements by the Science and Statistical Committee (SSC) of the North Pacific Fishery Management Council (NPFMC). Our objection to the inclusion of core-question two concerns both the analysis as presented in the NMFS draft SEIS dated August 20, 2001 and the revised Section 4.1 text distributed at the October, 2001 meeting of the NPFMC (references are to tables as numbered in the revised text).

The core-question two may be characterized as referring to the global (as opposed to local) harvest by the commercial fisheries of prey species of particular importance to marine mammals at levels that could compromise foraging success (local depletion is core-question three). Of the four core-questions listed in SEIS Section 4.1, all but question two have been considered explicitly by NMFS marine mammal experts in prior Section 7 consultations on the Alaska groundfish fisheries. The reason that question two has not been elevated to an evaluation criteria in prior Section 7 consultations is that these NMFS opinions have repeatedly found that current groundfish exploitation strategies and harvest levels do not jeopardize Steller Sea Lions (SSLs; e.g., see NMFS 2000, Appendix 3 Steller Sea Lion Case Study, and NMFS 2001a at p 147, lines 18-21) or other listed species (NMFS 2000 at p. 250, lines 46-49) or create any fishery-induced changes in trophic diversity or genetic differences between groundfish stocks (NMFS 2000 at p.250, lines 17-21). An important grounds for these findings is that, looking globally within the Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) management areas, groundfish harvests are small relative to the biomass of groundfish that remains available within the ecosystem, even after accounting for natural mortality of groundfish due to predation by other groundfish, marine mammals, and birds (Livingston et al. 1993, NMFS 2000, Appendix 3). For example, the 2000 eastern Bering Sea (EBS) pollock assessment reserves for natural mortality a portion of the exploitable biomass roughly twice as large as the harvest (NPFMC 2000, Stock Assessment Section 1 Walleye Pollock).

The importance of the size of the biomass remaining as available prey has been emphasized repeatedly in recent years (e.g., see the references noted above), with informed discussion of marine mammal and bird forage needs focusing appropriately on the absolute size and composition of the biomass remaining in the forage areas used by marine mammals and seabirds, and not on the amount of "removals" by the pollock, cod and Atka mackerel (pollock, cod and mackerel) fisheries globally (see also SSC 1998, 1999, 2000). Given the grounds rules set out in the first paragraph of SEIS Chapter 4, one would have expected a similar level of informed discussion in the SEIS, where it is stated:

> "This section forms the scientific and analytic basis for the issue comparisons across alternatives. As a starting point, each alternative under consideration is perceived as having the potential to significantly affect one or more components of the human environment. *Significance is determined by considering the context in which the action will occur and the intensity of the action. The context in which the action will occur includes the specific resources, ecosystem, and the human environment affected.*" (emphasis added)

Unfortunately, this does not seem to have been the case.

For example, it is well known that EBS pollock are highly cannibalistic (Lynde 1984, Lang and Livingston 1996). In fact, the recent draft Programmatic SEIS for the Alaska groundfish fisheries (PSEIS; NMFS 2001b) recognizes the cannibalistic nature of pollock as well as the fact that the largest source of mortality of young pollock (fish of the size predominately eaten by SSLs) is predation by large pollock (the size predominately taken in the pollock fishery). Further, the same document reports results from a multispecies model of predator-prey interactions among dominant EBS groundfish species which indicate that, due primarily to pollock cannibalism, the EBS pollock biomass would change little even if there were no fishing for pollock (Figs. 3.9-5+6, pp. 3.9-9+10) - there would just be more large pollock and fewer small pollock. If a re-assessment of global prey availability is needed, then logically such an assessment should consider harvests in relation to the size of the remaining fishable stocks of prey plus the biomass of any pre-recruit groundfish that are important prey.

In addition, according to a PSEIS review of the results of a dynamic ecosystem model of the eastern Bering Sea, cessation of pollock fishing may be anticipated to have a slight, negative effect on SSLs (NMFS 2001b, bottom of page 3.9-13). That is to say, it is projected that, with no pollock fishing, SSL populations would decline due to increased cannibalism of small pollock and consumption of large zooplankton by adult pollock . Given this context, which according to the analysis ground-rules should govern the judgment of the significance of an action, it could logically be presumed that decreases in the EBS pollock TAC would result in increased cannibalism of small pollock by a larger biomass of adult pollock, and so a concomitant decrease in small-pollock forage for marine mammals and sea birds (see also SSC 2001b, "Competition between Adult Pollock and other top predators" and "Forage Fish").

A further misconstruing of the context within which the significance of the alternative actions are judged concerns the use of the 1998 TAC amounts as reference points or criteria against which the future environmental consequences of harvests can be judged. While it remains difficult to discern whether in fact these TAC levels are used in the revised text (e.g., Table 4.1-4 includes no reference to TAC levels in 1998), there is nevertheless no rationale provided in the SEIS for the adoption of the 1998 TACs as reference points. The 1998 TAC for EBS pollock was significantly lower than that for 2000 and the 2000 TAC was significantly higher because the fishable biomass of pollock for 2000 was estimated to be significantly larger than for 1998 (about 10 million tons compared to 7 million tons). If NMFS believe that the 1998 TAC levels are valid reference points, then they should justify them within the context of the significance ratings they propose, which for the most part include intervals of only five-percent change. In particular, the text should clearly explain how it is that judgments of significant human-induced TAC changes of five percent are squared with circumstances where over two years pollock stock-growth alone may change the TAC by more than forty percent. It should also have been noted that due to the increased biomass of EBS pollock, even though the 2000 harvest was slightly more than 40% larger than for 1998, the exploitable-stock harvest-fraction was about the same.

Finally, during a September, 2001 NPFMC meeting public testimony and comments by the SSC focused on shortcomings and inconsistencies which pertained to the employ of global TAC levels as criteria for assessing the environmental consequences of commercial fishing. Unfortunately, instead of abandoning the employ of TACs as criteria, the authors of the SEIS continued with their use, and further presented a revised analysis at an October, 2001 NPFMC meeting that compounded many of the flaws in the initial analysis. Specifically, the revised analysis broadened the misguided focus of the initial analysis by including an assessment of global daily harvests. It is our opinion that the daily harvest analysis does not meet the minimum standards of a scientific work product; the analysis is subjective and inconsistent, both in its conclusions and the ways in which it presents them; and due to the way in which harvests are aggregated across space (management areas) and species, many of the "results" in the analysis will be deemed incomprehensible, both by the Alaska groundfish industry and those that advocated for analysis of global harvest restrictions.

Comments on specific aspects of the analysis include:

- The analysis repeatedly states that the deviations from mean daily removals are not additive, yet they are arrived at by adding daily catches across areas. Adding the catches is in effect adding the deviations. Thus, why it is that the deviations are not additive should be clearly explained.

- The Figure 4.1-6 deviations graphs do not contain any units on the Y-axis. The large deviations shown during November and December for Alternative 2 and during January for Alternative 4 do not seem plausible in a relative sense given that the areas under the curve show the calculated deviations of the combined BSAI pollock and cod fisheries.

- The analysis adopts the mean daily average removals of the five alternatives added together as the reference point against which all of the alternatives are compared. Yet, no justification for why this reference point is appropriate is provided.

- The analysis includes the statement "Actual daily fisheries removal rates may be higher or lower than this value." (page 4-6, revised text), and then goes on to present results which the above statement renders completely meaningless.

- The analysis makes false statements such as " In Figure 4.1-6, the deviation of this daily average removal rate on February 1 in Alternative 4 is about -0.1, suggesting that, compared to the other four Alternatives, less pollock and cod in the EBS will be removed on that day under Alternative four than with the other Alternatives." It is believed that the intended comparison is with the average of the alternatives, and that the confusion results from cut-and-paste "research." The deviation for Alternative 3 is reported to be -0.2.

Finally, the Section 4.1 analysis does not summarize any of the research results that concern the evaluation of hypothesized localized depletions caused by the Alaska groundfish fisheries. Though largely hypothetical when applied to migrating species like pollock and cod, localized depletion is the primary building block in the determination that commercial fishing activities compete with Steller sea lions for prey. Further, it is this concept of a potential for, or a possibility of, localized depletion that is the cornerstone on which the RPA principles were developed, requiring harvest restrictions to spread the fisheries in time and space and to protect near-shore waters surrounding SSL rookeries and haulouts. However, the analysis should also state clearly that there is no evidence of any localized depletions of pollock or cod in the BSAI and GOA management areas. For Atka mackerel in the Aleutian Islands area, one unpublished study (Fritz 1998) indicates reduced catch rates over time at some locations, but assumptions made to carry the analysis forward appear to have been violated by the real-world circumstances of the fishery.

In summary, it is recommended that NMFS revise the Section 4.1 analysis to delete core-question two and focus the remaining analysis precisely on what is known about the Bering Sea ecosystem and its commercial fisheries. It is clear that the data-based incidental-take projections and field observations of SSL behavior around commercial fishing operations allow for confident judgments that all of the alternatives will have insignificant effects as regards core-questions one and four (although the level of confidence associated with the ranges of incidental take is not reported). For core-question three, the analysis should begin with a summary of the available analysis of the hypothesis of localized depletion in the pollock, cod and mackerel fisheries. In addition, pollock, cod and mackerel fisheries stock levels today should be compared to levels estimated for the stocks on average historically, and during periods when SSL stock abundance was higher. This comparison should also consider as context the recent work of Sinclair and Zeppelin (submitted) on the frequency of occurrence of prey species in the diet of SSL by region and month within the BSAI and GOA management areas. In particular, the analysis should include the Figure 4 from this work instead of the Figures 4.1-11+12 from NMFS 2000. Finally, the authors of the SEIS should accept the recent statements of the NPFMC SSC that the local-area interaction of the commercial fisheries and the SSL is unknown (SSC 2001b,c), and so revise Table 4.1-6 Spatial/temporal concentration of fishery to reflect this state of knowledge.

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COMMENTS ON MAGNUSON-STEVENS ACT NATIONAL STANDARDS AND OTHER APPLICABLE LAW

1. The national standards and other applicable law dictate the selection of Alternative #4 as the preferred alternative.

As mentioned above, the MCA supports the SEIS's identification of Alternative #4 as the "preferred alternative." A review of the Magnuson-Stevens Act and other laws governing the fisheries management process confirms that Alternative #4 is the only acceptable choice. The Magnuson-Stevens Act specifically requires that fishery management measures comply with a series of ten national standards and "other applicable law." Such "other applicable law" includes, among other laws, the Endangered Species Act, the National Environmental Policy Act, the Regulatory Flexibility Act and various Executive Orders. These requirements and their applicability to the choice of a "preferred alternative" are described below. The "other applicable-laws" will be dealt with first, to be followed by a discussion of the national standards.

We will start with a discussion of the Endangered Species Act since the ESA sets the minimum standard that an alternative must meet in order to remain a viable choice. Alternatives that meet the ESA's threshold requirements must then be evaluated in the context of the national standards and the other applicable laws.

(a) Endangered Species Act (ESA). Whenever a proposed Federal action (such as authorization of the groundfish fisheries off Alaska) might impact an endangered species (such as Steller sea lions), the ESA requires the agency involved to ensure that the proposed action does not jeopardize the continued existence of the species or adversely modify its critical habitat (the so-called "jeopardy/adverse modification" test).

In this particular case, five alternatives have been identified for analysis, including Alternative #1, the "no-action" alternative. The agency has determined that Alternative #1 would fail the ESA's jeopardy/adverse modification test (See BiOp#3, November 2000). That alternative is, therefore, an unacceptable choice.

Of the remaining alternatives, Alternative #4 has already been evaluated insofar as its potential impacts on Steller sea lions is concerned and the agency has issued a preliminary "no jeopardy/no adverse modification" finding. (See BiOp#4, August 2001). As for Alternative Nos. 2, 3 and 5, the MCA will presume for the purpose of these comments that they pass the ESA's "jeopardy/adverse modification" test as well. The preferred alternative must be selected from the four remaining alternatives (2-5) based on the criteria specified in the national standards and the other applicable laws identified above.

(b) National Environmental Policy Act (NEPA). NEPA requires an agency to consider the environmental consequences of a proposed action along with a range of reasonable alternatives insofar as their comparative impacts on the human environment is concerned. As required by NEPA, the SEIS evaluates the comparative environmental impacts of the various alternatives insofar as the "human environment" is concerned, including the socio-economic impacts associated with each. The SEIS enables us to evaluate the comparative costs and benefits that would be associated with alternatives 2-5, and the degree to which they affect the interests of disadvantaged communities, small entities, fishing communities, various sectors of the groundfish fishing industry, and otherwise comply with the other goals and objectives identified in the national standards and other applicable law.

Most of the analysis contained in the SEIS is devoted to a comparison of the relative environmental and socio-economic impacts of Alternatives 2 and 4. Tables provided throughout the document compare the relative costs and benefits of those two alternatives insofar as a variety of factors are concerned. Tables 4.12-19 and 4.12-29, for example, compare Alternatives 2 and 4 insofar as their respective impacts on jobs, ex vessel value of harvests, processing value, and a variety of other socio-economic factors are concerned. These tables indicate that Alternative #2 could have annual costs, on a region-wide basis (all sectors) of as much as $180,000,000 in foregone harvest value (ex vessel), $609,000,000 in foregone processing value and as many as 4,740 lost jobs as compared to the status quo. To a greater or lesser extent, these impacts would be shared by all sectors, all gear types and all regions involved in the Gulf of Alaska and Bering Sea/Aleutian Island groundfish fisheries.

The upper range of estimated costs associated with Alternative #4 on the other hand, would be far less: $31,000,000 in foregone harvest value (one sixth of the levels associated with Alternative #2); $51,000,000 in foregone processing value (one twelfth of the levels imposed by Alternative #2); and 513 lost jobs (one ninth of the levels imposed by Alternative #2) as compared to the status quo.

Although the SEIS does not provide comparable tables for Alternatives 3 and 5, the management measures associated with these alternatives, which are much more restrictive than the measures associated with Alternative #4, would indicate that the socio-economic costs that could be anticipated under either of those alternatives would be closer to the costs expected under Alternative #2 than the costs projected under Alternative #4.

Another NEPA consideration is the so-called concept of "Environmental Justice." Pursuant to Executive Order 12898, the Council on Environmental Quality (CEQ) regulations which govern NEPA compliance include a requirement that decision makers pay particular attention to the impacts that a proposed measure may have on economically disadvantaged and minority populations, including native communities such as are found in Western Alaska.

It is clear from the SEIS that the measures contained in Alternative #2 would impose devastating impacts on the native residents of the low-income coastal communities that are involved in the Community Development Quota (CDQ) program in Western Alaska. (See Tables 4.12-53 in the draft portions of the SEIS presented to the North Pacific Council at its October 2001 meeting on Seattle.) With regard to Alternative #2, the SEIS concludes, at page 4-372, as follows:

> "In summary, depending on the socioeconomic variable chosen, Alternative #2 is projected to reduce CDQ Community participation in the groundfish fishery by between 27 and 51% for pollock, between 21 and 64% for Pacific cod, between 67 and 81% percent for Atka mackerel or approximately 19 and 51% in total/when combined. Given the relative dependency upon the groundfish fishery in general, and the pollock and Pacific cod components of the fishery in particular, **this would result in significant impacts to the CDQ groups/communities engaged in the fishery/fisheries."** (emphasis added)

Table 4.12-59 indicates that the cost of such impacts on the CDQ communities might run in excess of $20,000,000 per year. This would be a crippling blow to the economically distressed native communities in Western Alaska. On the other hand, the SEIS concludes at page 4-373 that Alternative #4 would have negligible impacts on the residents of the Western Alaska region:

> "Thus, while Alternative #4 would have some effects upon CDQ communities participation in the fishery, for the most **part such effects would be expected to be no worse that those experienced from "normal" fluctuations in the fishery."** (emphasis added)

(c) <u>Regulatory Flexibility Act (The RFA)</u>. Similar issues are presented by the Regulatory Flexibility Act. The RFA requires agencies to consider the impacts of proposed measures on small entities. The measures contained in Alternative #2 would not only impact the residents of Western Alaska as described above, they would adversely impact the residents of small coastal communities in the Gulf of Alaska and in the Bering Sea (eg. Dutch Harbor, Atka, Adak and St. Paul); as well as the fleets that operate out of those communities. In addition, many of the companies and fishermen that are based outside Alaska (eg. in Seattle and other non-Alaskan fishing communities that are dependent on the Alaskan groundfish fisheries) are small entities as well. The MCA represents many of those fishery-dependent communities and the fishermen who operate out of them. In fact, MCA representatives helped develop the package of measures contained in Alternative #4. Those measures reflect a delicate balance of competing interests that will protect Steller sea lions while preserving the commercial fishing industry upon which coastal fishing communities depend. Alternative #4 is clearly the preferable choice insofar as RFA-related considerations are concerned.

(d) The National Standards. The Magnuson-Stevens Act requires that management measures be consistent with a series of ten national standards which, among other things, require management measures to:

National Standard #1. - prevent overfishing while achieving optimum yield;
National Standard #2. - use the best scientific evidence available;
National Standard #3. - manage fish stocks as a unit;
National Standard #4. - be fair and equitable among fishermen;
National Standard #5. - consider efficiency in the utilization of fishery resources.
National Standard #6. - recognize and consider variations among and contingencies in fishery, fishery resources and catches;
National Standard #7. - minimize costs and unnecessary duplication;
National Standard #8. - consider the importance of fishery resources to fishing communities, minimize economic impacts on such communities and provide for their sustained participation in the fisheries;
National Standard #9. - minimize bycatch; and
National Standard #10. - promote the safety of human life at sea.

Comparison of Alternative #4 and Alternative #2 insofar as the national standards is concerned indicates that Alternative #4 is the preferred alternative under 9 of the 10 national standards.

- National Standard #1 (prevent overfishing and achieve optimum yield). The SEIS indicates that there are no measurable differences between the two alternatives insofar as overfishing is concerned. Neither alternative results in overfishing of the commercial fish species in Alaska (See ES-18). In terms of optimum yield, however, the SEIS

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clearly demonstrates that Alternative #4 is more effective at maximizing the value of the groundfish resource insofar as the value of groundfish produced, jobs and other economic activity created and food for consumers is concerned. (See Table ES-3).

- National Standard #2 (use of best scientific evidence available). Alternative #4 reflects the most recent data available concerning sea lion foraging patterns, dietary habits and nutritional condition. It is specifically structured to provide protection in the areas most critical to the survival of sea lion pups and juveniles and focuses on the regions where sea lion declines have been most pronounced. In contrast, Alternative #2 applies broad-based measures that have drastic effects on the individual fisheries involved without recognizing the differential importance of areas in close proximity to rookeries and haulouts (especially those rookeries and haulouts where sea lion declines have been most pronounced) insofar as meaningful protection for sea lions is concerned.

- National Standard #4 (fairness and equity). Alternative #4 recognizes the importance of Environmental Justice insofar as the need to give extra considerations to economically distressed communities and minority populations is concerned. It also reflects a carefully balanced set of trade-offs negotiated by the affected fishery groups and fishery-dependent communities that is designed to protect sea lions on the one hand while minimizing impacts on the fishing industry and fishery dependent communities on the other. Alternative #2 makes no effort to strike such a balance. (See Table ES-3).

- National Standard #5 (efficiency in the utilization of fishery resources). As described in connection with National Standards 1 and 4 above, Alternative #4 is specifically designed to minimize adverse impacts on the fisheries and fishery dependent communities. Efficient use of the groundfish resources was one of the prime considerations involved in its development. Alternative #4 avoids the unnecessary closures, seasonal disruptions and extra operating costs that would be unavoidable under Alternative #2.

- National Standard #6 (variations among and contingencies in fisheries). As indicated above, Alternative #4, was specifically structured to reflect operational differences between fisheries, sectors and gear types. It reflects the combined efforts of all sectors to devise a management system that recognizes the differences between such sectors and gear types and to minimize the impacts tha sea lion measures would have on them.

- National Standard #7 (minimize costs and unnecessary duplication). See discussion above in connection with National Standard Nos. 1, 2, 4, 5 and 6. See also, the discussion of Alternative #2 on page ES-19 of the SEIS.

- National Standard #8 (importance of fishery resources to fishing communities). As discussed above, Alternative #4 is specifically designed to minimize the adverse impacts of sea lion measures on fishing communities. As demonstrated in table ES-3 of the SEIS, Alternative #4 protects sea lions at a minimal cost to such communities. Instead of imposing costs that could run in the hundreds of millions of dollars per year to such communities, as would Alternative #2, Alternative #4 provides an adequate measure of sea lion protection at less than one tenth the cost to fishermen and communities. See also the discussion regarding Environmental Justice above.

- National Standard #9 (minimize bycatch). Here again, Alternative #4 was designed to enable the groundfish fisheries to continue in a way that facilitates efforts to keep bycatch to a minimum. By avoiding wholesale closures of important fishing grounds, Alternative #4 enables fishermen the flexibility to move from area to area and to otherwise conduct their fishing operations at times and places that keep bycatch to a minimum. Alternative #2, on the other hand, arbitrarily closes prime fishing grounds thereby displacing effort to areas where CPUE rates are lower and PSC bycatch rates oftentimes higher.

- National Standard #10 (promotion of safety of human life at sea). As noted at page ES-15 of the SEIS, Alternative #2 is predicted to impose the largest operational changes on the fishery (eg. the need to transit greater distances between port and open fishing grounds, fish farther offshore, and aggravate the race for fish). For these reasons, the SEIS finds that "Alternative #2 is expected to have a higher potential to increase the risk of accidents and injury per unit of catch." Alternative #4, on the other hand, maintains traditional fishing practices and fishing grounds to the maximum extent possible consistent with the need to protect sea lions.

The SEIS identifies the RPA committee's recommendation (Alternative #4) as the "preferred alternative." The MCA agrees. Alternative #4 not only avoids jeopardy and adverse modification, but it does so in a manner that allows the groundfish fisheries to continue in a way that avoids the wholesale dislocations and costs that the other alternatives would impose on the groundfish fishing industry, fishing communities, support industries, consumers and other parties with an interest in maintaining a viable groundfish fishery in Alaska. It complies with the requirements of the ESA, NEPA, the RFA and is the alternative that is most consistent with the National Standards. It is clearly the preferable choice.

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Expanded Analysis of Telemetry Data

The purpose of these comments is twofold.

First, they serve as an example of how NMFS might expand their analysis, to examine in more detail the probability of overlap between areas used by Steller sea lions and those used by groundfish fisheries, through the integration of telemetry and observer data.

Second, they substantiate that NMFS conclusions regarding the relative importance of areas within 0-10 miles, and areas beyond 10 miles are valid, by using GIS analysis of telemetry data of individual Steller sea lions accounting for nearly 90% of location data beyond 10 miles.

Appendix A to the August 2001 Draft SEIS includes an extensive discussion of the telemetry data which constitutes an important component of the new information that serves as the basis for reinitiating consultation on a new set of management measures to address concerns about Steller sea lions. On page 112, line 34 of Appendix A there is a discussion of a "critical assumption" concerning the telemetry data and sea lion foraging. It states, "we can then speculate that about 75% of the foraging effort occurs within 10 miles from shore..." Based on our examination of the telemetry data, we believe that the word "speculate" is inappropriately equivocal.

In a review of the November 2000 BiOp with comments on the draft August 2001 BiOp by Bowen, et al, (the "Blue Jeans" panel) the authors point out on pages 34 and 35 that "there are limitations to the current data, which suggest that the conclusions drawn may not be reliable."

The review panel does not find that NMFS conclusions concerning the relative importance of the area within 10 miles are in error, but that the conclusion "is extremely sensitive to the assumptions made in analyzing the data. As such we have little confidence that this analysis provides a sound basis for drawing conclusions about the effects of the RPAs on the dynamics of SSL."

The "Blue Jeans" panel goes on to discuss the 90% filtering of locations within 2 miles of shore to compensate for a suspected bias in the success of transmissions near shore. The panel suggests that:

1 - there are less arbitrary ways of taking account of bias
2 - the appropriate sampling unit is the individual
3 - pooling location data as in table 5.1 results in overrepresentations of individuals

We have undertaken a further analysis of the telemetry data in a manner that attempts to incorporate the panel's suggested approach. This was done using the Location, and Time Line message data provided by NMML for the tagged animals in the Western stock of Steller sea lions.

The location data was examined based on two approaches:

- percent of hits by area, partitioned into area bins
- direct examination of time spent by area using GIS

Location "Hits"

Any evaluation of the potential for competition between SSL and fisheries outside the areas protected by the Alt. 4 buffers must examine whether use of that area is also partitioned in some way between SSL and fisheries. A review of observer data makes it clear that there is no fishing for cod or mackerel seaward of the continental shelf break (defined as the 1000 fathom contour for purposes of this analysis), and very limited Pollock fishing. A review of the telemetry data suggests that a significant fraction of SSL locations outside 10 miles are also seaward of the 1000 fathom contour.

Using the telemetry data set provided by NMFS, the filtering process outlined on page 4 of the July 2001 ADF&G/NMFS "white paper" was followed. This process eliminates invalid locations based on Argos classification, illogical locations based on speed, and locations which fail the Keating error index . The entire data set of "acceptable" values (i.e. those that survived Keating and swimming speed tests) included 4897 points. The data was divided on a seasonal basis into "winter" and "summer" using the definition of October-April for winter and May-September for summer. Locations "hits" were assigned to area bins based on distance from shore, inside or outside ten miles, and outside 20 miles. All hits outside 10 miles were also evaluated to determine if they were also outside the continental shelf edge as represented by the 1000 fathom contour.

In the first analysis of pups and juveniles, first only points that passed Keating and swimming speed tests were retained, then only animals for which either timeline or transmitter status (on land or at sea) was available were used in this run. Only confirmed at-sea values were used. Null values (land/sea status unknown) were excluded from the analysis. There were 25 animals in this run.

In the second analysis of all ages (of all hits, including and excluding those from waters deeper than 1000 fm), the land/sea status was ignored since it was assumed that animals must be at sea if they are out over 1000 fm. There were 52 animals in this run. The results of this process are reflected in the following table.

Table 1 – Percentage of Locations Outside 10 Miles And Outside 1000 Fathoms

Summer	A	B	C
	N hits outside 10 miles	N hits beyond 1000 fathoms	B (beyond 1000 fathoms) as % of A
Pup/Juveniles	99	62	63%
All Ages	173	118	68%

Winter	A	B	C
	N hits outside 10 miles	N hits beyond 1000 fathoms	B (beyond 1000 fathoms) as % of A
Pup/Juveniles	60	2	3%
All Ages	194	95	49%

These data suggest that in summer roughly 2/3rds of the locations outside 10 miles are also beyond the shelf edge. In winter roughly half of the outside hits are also beyond the shelf edge for adults. Only a small percentage of pups and juveniles locations were beyond the shelf edge in winter, however, as reported in table 5.1 of BiOp4 only a very small proportion of these animals are outside 10 miles in winter.

While this may not precisely mirror the filtering used by NMFS, we suggest that NMFS undertake a similar analysis using the approach of partitioning hits outside the shelf break.

GIS Examination of Time Spent by Area

The analysis presented in the BiOp and the accompanying "white papers" examines tabulated telemetry data on the basis of location "hits" by area. This approach is appropriate and useful, but has some limitations. One of the limitations is a result of changing telemetry technology and programming of tags over the last decade (this is described in detail in Loughlin, et al, draft paper "Immature Steller Sea Lion Foraging Behavior" pages 5-7). Another limitation arises from the changing focus of tagging studies as NMFS has directed its efforts toward the population segment thought to be of greatest concern.

These factors result in a need to sub-divide the data not only by age class, sex, distance from land, bathymetric bins, and season, but also by transmitter type and programming specifications, as well as by deployment area. The next logical step is to employ GIS to look at each animal individually, within the context of the bathymetry of its home range and fisheries that might occur in those areas.

Using GIS mapping, each animal's telemetry data was examined individually, to track its activity over time. All Pollock and P. Cod groundfish fishery observer data for the last decade was plotted with the sea lion telemetry data to determine the potential spatial and temporal overlap with the fishery. After using the same data filtering process as described in the "white paper," transmissions by each individual sea lion were sequenced and date/time stamped, they were then plotted using GIS, and finally trip segments were identified.

A set of sample GIS plots (Figures 1-28) is attached and a summary of the results is as follows:

1. Pre-1999 Buffers: Overlap with the groundfish fisheries was limited even prior to the 1998 RPAs, when the sea lion protection measures were limited to the rookery buffers. This was particularly true for pups less than one year old.

2. Proposed Alt. 4 Buffers: The trawl closures around rookeries, haulouts and RPA sites under Alt. 4 significantly diminished any overlap between fishery observed locations and sea lion telemetry locations.

3. Natural Offshore Area Partitioning: A GIS temporal examination of the location data indicates further partitioning of the use of area outside the Alt. 4 buffers between sea lions and trawl fisheries. Of the animals from the western stock of sea lions tagged by NMFS, only six animals had substantial activity (more than 10 locations that passed the Keating and speed filters) outside ten miles. These same six animals also had more than 10 hits outside 20 miles (see Table 3 below). Half of these animals went well offshore, past the thousand-fathom continental shelf break. Sea lions traveling or foraging in the area beyond the continental shelf break will not meet competition since no trawl fisheries occur in that area.

4. No Overlap Past 1000 Fathom Contour: To the extent that the data shows a second mode that is well outside the shelf break, SSL activity in that bin does not represent overlap with the fishery. There is no fishing for mackerel or cod outside the continental shelf edge, and there is very limited pollock fishing. In an examination of the relative importance of the area inside

and outside 10 miles based on sea lion activity in the context of overlap and potential competition, the area outside the 1000 fathom edge needs to be treated as a separate data bin.

5. Area Between 10 Miles and Shelf Edge of Minimal Importance: The analysis shows a bi-modal distribution of sea lion locations. The first, and primary, mode consists of inshore hits (inside ten miles). The second mode consists of offshore hits beyond the shelf edge, past the area where any trawl fishing occurs. Even when the 90% filter is applied to the inshore hits, when the hits beyond the shelf edge are also removed (because there is no potential overlap), and/or a discount factor such as identified in table 1 above is applied to hits outside 10 or 20 miles, then NMFS conclusion that the area inside ten miles is at least three times as important as the area between ten miles and the shelf edge remains valid.

6. Temporal Partitioning: Given the time constraints in preparing these comments, a limited number of figures were produced to show temporal overlap (or the lack thereof) between fisheries use of areas and sea lion use of those areas by season. No figures were produced matching the temporal use of areas by the fishery with the temporal use by sea lions. Each plot of fishery observer data includes all tows over the last decade. A plot of the use of an area by a sea lion in a particular season is portrayed against the use of the area by fisheries over the whole year, and thus overstates the degree of temporal overlap. Based on records of fishery openings and closures it is clear that activity by juvenile sea lions outside 10 miles (e.g., in the case of SSLID 74 or 78 in the month of May) that no pollock, mackerel, or cod fisheries were open in those areas during that month.

The foregoing inferences are supported by the attached set figures, however this is not offered as a formal analysis. We suggest that NMFS undertake an analysis using elements of the approach described above to detail the degree of spatial and temporal overlap between fisheries and Steller sea lions.

The following table (Table 2) provides information on the individual animal represented in each figure. These animals were selected either because they had the most locations hits for their age class, or the longest data series over time for their age class. Additional animals were examined after an initial scoping identified those with a significant number of location hits outside 10 miles (see Table 3). As a result the individual SSL represented in the selected figures represent the "worst case" within the NMML telemetry data set for the western stock of Steller sea lions.

Table 2 – Information by Individual SSL Presented in Attached Maps

Fig. #	SSLID* #	PTT #	Tag Site	Tag Deployed	Sex	Age Class	Months	Duration Days	At-Sea Location Hit #'s
						Pups			
8	54	14070	Long Is.	2/5/1993	M	P	8	41	92
7	63	14080	Long Is.	1/16/1996	M	P	7	79	72
18 & 19	74	14163	Seguam	2/29/2000	M	P	9	104	206
1 - 3	75	14164	Aiktak	3/8/2000	M	P	9	98	203
6, 21-28	78	21094	Long Is.	3/12/2000	M	P	9	66	130

						Yearlings			
10	58	14078	Long Is.	12/7/1994	F	Y	18	58	53
11	59	14077	Marmot	12/9/1994	M	Y	18	40	59
4 & 5	60	14072	Aiktak	4/13/1995	F	Y	22	56	47
9	77	14170	Long Is.	3/12/2000	M	Y	21	94	210
						Adult Females			
13	19	9956	Chirikof	12/7/1990	F	AF		174	33
14	25	14073	Chirikof	3/7/1991	F	AF		121	171
15-17	49	14072	Akun	3/8/1992	F	AF		67	217

* Note: Because PPT tag numbers were used for more than one animal, a unique identifier (SSLID) was created for purposes of this analysis.

Table 3 –Individual SSL with substantial activity outside 10 miles.

PTT	SSLID	Count >10 miles	Count > 20 miles	Count > 1000 fathoms	% of > 10, outside 1000 fm	% of > 20, outside 1000 fm
14073	25	144	144	144	100%	100%
14163	74	76	76	66	87%	87%
21094	78	24	8			
14077	59	21	13	1	5%	8%
14078	58	19	15			
9956	19	17	14	11	65%	79%

Notes on interpreting the attached Figures

Map layers:
These figures are made up of several layers of data, described as follows:

Observer data:
NMFS observer data from the NORPAC database was used for the period from 1990 through 2001, to produce contoured plots of all pollock and cod haul locations based on density of tow locations. Hauls were grouped by .01 degree blocks (less than 1 square mile) and the number of hauls by block calculated. The display covers all months of the year.

Legends for the observer data.

Cod, # of hauls, # of locations		Pollock, # of hauls, # of locations	
allhauls_c by CountOfHaul		allhauls_p by CountOfHaul	
26 to 89	(204)	15 to 85	(681)
9 to 26	(737)	6 to 15	(2890)
4 to 9	(1724)	3 to 6	(9497)
2 to 4	(3798)	2 to 3	(11845)
1 to 2	(9920)	1 to 2	(31551)

Cod tows are represented in shades of green, pollock in shades of blue to purple.

Over the last decade there have been 9920 locations at which only one or two cod tows have been made, these are represented at the light end of the scale. At the top of the scale there are 204 locations where more than 26 cod tows have been made, there are 681 locations where more than 15 pollock tows have been made.

Buffers:
Each rookery and haulout is plotted with its appropriate trawl closure buffer under Alt. 4. In the case of the Aleutian Islands, cod buffers differ from pollock buffers in size, and so both are plotted.

Bathymetry Contours:
The 100, 200, and 1000 fathom curves are represented in red, green and blue respectively.

Fishery & Buffers:
When plotting multiple layers of data, the last layer plotted covers up the preceding layer. In most of the figures Alt. 4 Buffers were plotted first, then fishery data, then SSL locations. This allows the viewer to see displaced fishing effort resulting from incremental closures over the last decade, and to see effort that will be displaced by the new measures. In some instances, the buffers were plotted over the fishery data to show areas where potential overlap between targeted groundfish fisheries and SSL will be eliminated under the new regulations.

SSL Locations:
Sea lion locations were always plotted last so they would not be obscured by other layers. The are represented by a "+" symbol and are generally labeled, either with a date or a counter number to indicate when in the sequence of transmissions a hit occurred.

Transmission Quality:
In several of the figures there is a note referencing either "B" or "-8" quality indexes for SSL locations. These are locations that passed the filtering process outlined in the "white paper," but are of the lowest quality for the remaining data. When these positions occur in isolation from other hits in the sequence, there is a high probability that they do not reflect the position of the SSL at that time. The Argos rating system (3, 2, 1, 0, A, B, Z [*in earlier units negative numbers were assigned to lower quality transmissions]*) assigns accuracy estimates to transmissions rating above 0, but makes no estimate for A and B quality locations (Z are discarded as invalid by Argos.) A paper by Robson (2001) describes baseline testing performed on telemetry units in a Pribilof fur seal study. That study found a mean error for B class locations of 10.1 km. Loughlin, et al, in their draft paper on "Immature Steller Sea Lion Foraging Behavior" choose to discard A and B class locations. However, they appear to be included in the calculations for table 5.1 of the BiOp and so were retained for purposes of this examination

Scale: The scale varies between figures, and was set to encompass the full range of at-sea locations in the initial figure for each animal, that met the filter criteria described on page 4 of the ADF&G/NMFS "white paper." Generally, the scale can be inferred from the 10- and 20-mile buffers; in some cases a scale was added to the figure. For some animals, especially those that made a migration, there are multiple figures per animal which capture its range for a subset of time.

Notes on data processing steps in location analysis:

The 8312 total records were divided based on those that passed the speed and Keating filters.

Table 4

filtered	# of location hits
0 = Retained	6135
1 = Deleted	*2177*

Table 5 Locations and their Delete status based on speed and Keating filters

DeleteStatus	# hits	Delete cause
-10	27	Argos label for no good
-99	89	PTT operating off animal
0	6135	No error
21	10	PTT # for animal removed from dataset
KE	344	Removed by Keating
S1	38	Removed by speed > 100 km/hr over 1 min
S5	1611	Removed by speed of 10 km/hr over 5 minutes
SA	43	Removed by speed greater than 500 km/hr
Z	15	Argos label for no good

The 6135 retained records were further divided out between at sea versus on land.

For land/sea determination, the closest position in time, from the set of land/sea records was used for each point in the PTT database. The Nwet and Ndry fields show how many wet (at sea) vs. dry (on land) mode receptions occurred 20 minutes before or after receiving the closest (in time) status record. Next the timeline data was used in the same fashion, although 3 hours rather than 20 minutes was used for the period over which to count timeline values for Nwet and Ndry. Finally a LandSeaFinal field was derived that is "0" if the animal was on land based on land/sea mode OR based on timeline (that is, timeline overrides transmitter status). If no value was available from either time window in either data series the value was considered Null (which means the land sea status was indeterminate.) All other values in this field (NULL or 1) were assumed to indicate at sea (as best we can tell, although all the 9xxx series were missing land/sea.)

Table 6 – At sea and land locations

filtered	# of hits	LandSeaFinal
0	1561	Null = sea (?)
0	2200	0 = land
0	2374	1 = sea
1	*345*	*Null*
1	*957*	*0*
1	*875*	*1*

To limit the analysis to animals in the Western stock the data set was limited to positions west of 140 longitude. The 4784 retained records were divided out by at sea vs. land (null value counted as at sea).

Table 7 – At sea and land location for western stock SSLs

filtered	# of hits	LandSeaFinal
0	1417	Null = sea (?)
0	1745	0 = land

0	1622	1 = sea
1	*262*	*Null*
1	*724*	*0*
1	*566*	*1*

The subset above was then queried to determine the number of locations west of 140 which were outside 10 miles from land. This resulted in 394 locations (103 records between 10 and 20).

Table 8 – At sea and land locations outside 10 miles

filtered	# of hits	LandSeaFinal
0	205	Null = sea (?)
0	26	0 = land
0	163	1 = sea
1	*75*	*Null*
1	*104*	*0*
1	*158*	*1*

The subset above was then queried to determine the number of locations west of 140 longitude which were outside 20 miles from land, and outside 1000 fathoms. This yielded 225 locations outside 1000 fm and outside 20 miles.

Table 9 - At sea and land locations outside 20 miles and outside 1000 fathom edge

filtered	# of hits	LandSeaFinal
0	161	Null = sea (?)
0	1	0 = land
0	64	1 = sea
1	*38*	*Null*
1	*12*	*0*
1	*38*	*1*

Table10 – At sea locations* by distance and bathymetric bins

PTT	SSLID	At-sea hits based on land/sea data*	N hits greater than 10 nm from land	% of all at-sea hits > 10 nm from land	N hits > 20 nm from land	N hits from water deeper than 1000 fm	% of hits > 10 nm and deeper than 1000 fm	% of hits > 20 nm and deeper than 1000 fm
9963	7 - AF	NA*	1	NA	0	0	0%	
9958	9 - AF	NA	1	NA	1	1	100%	100%
9962	11 - AF	NA	1	NA	0	0	0%	
9955	18 - AF	NA	1	NA	1	0	0%	
9956	**19 - AF**	**NA**	**19**	**NA**	**16**	**12**	**63%**	**75%**
14071	23 - AF	NA	1	NA	1	0	0%	0%
14072	24 - AF	NA	1	NA	1	0	0%	0%
14073	**25 - AF**	**NA**	**144**	**NA**	**144**	**144**	**100%**	**100%**
14081	35 - AF	NA	1	NA	1	0	0%	0%
14085	39 - AF	NA	2	NA	1	0	0%	0%
2322	44 - PM	10	2	20%	0	0	0%	
14080	47 - AF	NA	5	NA	0	0	0%	

14072	**49 - AF**	**NA**	**5**	**NA**	**0**	**0**	**0%**	
2326	50 - PM	31	2	6%	1	1	50%	100%
2323	51 - AF	NA	4	NA	1	0	0%	0%
2327	52	7	1	14%	0	0	0%	
14070	**54 - PM**	**109**	**8**	**7%**	**2**	**0**	**0%**	**0%**
14072	55 - AF	NA	3	NA	2	1	33%	50%
14071	56 - PM	16	2	13%	0	0	0%	
14074	57 - PM	61	3	5%	0	0	0%	
14078	**58 - YF**	**48**	**19**	**40%**	**15**	**0**	**0%**	**0%**
14077	**59 - YM**	**56**	**21**	**38%**	**13**	**1**	**5%**	**8%**
14072	**60 - YF**	**42**	**1**	**2%**	**0**	**0**	**0%**	
14079	62 - PF	36	1	3%	0	0	0%	
14080	**63 - PM**	**66**	**6**	**9%**	**1**	**0**	**0%**	**0%**
14075	64 - PF	21	1	5%	0	0	0%	
14076	65 - YF	29	1	3%	0	0	0%	
14081	66 - PM	50	2	4%	0	0	0%	
14111	71 - PF	80	2	3%	0	0	0%	
14163	**74 - PM**	**199**	**76**	**38%**	**76**	**66**	**87%**	**87%**
14164	**75 - PM**	**200**	**3**	**2%**	**2**	**0**	**0%**	**0%**
14170	77 - YM	207	1	0%	0	0	0%	
21094	**78 - PM**	**130**	**24**	**18%**	**8**	**0**	**0%**	**0%**

- * "NA" indicates land/sea not supplied to MCA. For these animals, valid locations greater than 10 nm from shore were assumed to be at-sea, while "Null" locations closer than 10 nm were omitted from the analysis.
- A = adult, Y = yearling, P = Pup, M = male, F = female
- Individuals in **Bold** are shown in attached figures.

About 2/3rd of the SSL with at sea location data, including "nulls," (for animals in the 9000 series of PTT tags no land/sea data was provided) had any activity outside 10 miles. In most of these cases, the percentage of locations outside 10 nm was well under 10%. The remaining 1/3rd showed no activity outside 10 miles, and are listed in the following table.

Table 11 – SSL with no At sea locations outside 10 miles

PTT	SSLID	# At sea hits
	SSL with no at sea hits outside 10 miles*	
9950	6 - AF	NA / 85
9967	10 – AF	NA / 6
9960	12 – AF	NA / 4
9961	13 – AF	NA / 77
9968	14 – AF	NA / 59
9952	15 – AF	NA / 7
9953	16 – AF	NA / 3
9955	17 – AF	NA / 43
9957	20 – AF	NA / 8
14087	40 – AF	NA / 19
14089	42 - AF	NA / 2
2321	43 – PM	10
2324	45 – AF	7
14070	46 – AF	NA / 1

2325	48 – PF	42
14114	72 – PF	73
14116	73 – PF	76
14167	76 - PF	58

* NA / xx - "NA" indicates land/sea data not supplied for this animal – "xx" indicates number of valid locations received.

The animals selected in the attached figures represent ~42% of the at sea locations, but they represent ~88% of the locations greater than 10 miles offshore.

List of Figures:

Late 0803

MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
BETHESDA, MD 20814

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19 October 2001

James W. Balsiger, Ph.D.
Alaska Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 98102-1668

Dear Dr. Balsiger:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed and offers the following comments on the draft Supplemental Environmental Impact Statement for Steller Sea Lion Protection Measures in the Federal Groundfish Fisheries off Alaska (draft SEIS). The draft SEIS contains alternative sets of protective measures designed to avoid jeopardy to the western population of Steller sea lions and adverse modification of its critical habitat, as required by the 30 November 2000 programmatic biological opinion on the fishery management plans for the Alaska groundfish fisheries. The draft SEIS is therefore closely linked to the 30 November 2000 opinion. It also is closely linked to the 18 January 2001 draft programmatic SEIS on the Alaska groundfish fisheries and the August 2001 draft biological opinion on Steller sea lion protective measures. Although the Commission's comments pertain directly to the current draft SEIS, they also are relevant to these other related documents.

Full disclosure of effects

National Environmental Policy Act (NEPA) regulations specify that an environmental impact statement is to provide full and fair discussion of significant environmental impacts and inform decision-makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment (40 CFR 1502.1). Despite assurances in the draft SEIS that the necessary information and analyses have been provided, the Marine Mammal Commission is concerned that the draft SEIS and associated documents have not fully described and thoroughly analyzed the full range of possible effects of the fisheries as implemented under the fishery management plans and as would be implemented under the reasonable and prudent alternatives (RPAs) for Steller sea lion protection.

The most significant omission pertains to the long-term reduction in spawning stock biomass of the targeted fish stocks that results from the single-species fishing strategy based on the concept of maximum sustainable yield (MSY). By design, the strategy lowers the spawning biomass of these stocks to a level near that which produces the maximum excess recruitment, or recruitment in excess of that

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needed for replacement of spawning stock. This "excess" recruitment is treated as "surplus" production, the harvesting of which is assumed to pose no significant risk to the target stock. Importantly, this fishing approach, as outlined in the fishery management plans for the Alaska groundfish fisheries, can reduce spawning stock biomass by as much as or more than 60 percent. Such reductions in biomass may have significant ecosystem consequences not considered in the single-species MSY approach. One important possible consequence could be a significant reduction in prey available to predators in the ecosystem. Such decreases in available prey may reduce their foraging success, thereby potentially affecting somatic growth, reproduction, survival, and, ultimately, population status. These effects may be compounded by other factors (e.g., oceanic regime shifts), accelerating population decline or further inhibiting recovery.

Description and analysis of these long-term effects are directly related to the second of four questions used to guide the effects analysis for each alternative in the draft SEIS (p. 4-3): "Does the alternative management regime result in fisheries harvests on prey species of particular importance to marine mammals, at levels that could compromise foraging success?" The draft SEIS later states (e.g., p. 4-377) that the "[p]resent and predicted effect on prey abundance is TAC [total allowable catch] for prey species of the Steller sea lion," focusing on the annual catch, but not addressing the long-term reduction in prey availability. Inasmuch as the long-term effects of the alternative management regimes are not described, this question has not been adequately addressed and the analyses in the SEIS therefore appear to be incomplete.

The immediate and long-term reductions in available prey for sea lions and other predators occur as a direct consequence of setting total allowable catch (TAC) levels from stocks with age classes that are subjected to repeated annual fishing mortality. The process for setting annual TAC levels is set forth in the fishery management plans for the fisheries, and the assumptions and effects of this process are crucial considerations that should have been analyzed in the 30 November 2000 biological opinion and the draft programmatic SEIS on the fisheries. Had such long-term cumulative effects been described and analyzed in previous documents, they would not need to be addressed fully in the draft SEIS, as NEPA regulations allow tiering, or the referencing of other documents to avoid redundancy. However, because this was not done, a description of those effects is essential at this stage to ensure that decision-makers and the public are appropriately informed.

Full disclosure and thorough analysis of possible environmental effects have a number of important benefits. First, they provide the necessary framework for understanding important environmental issues, including the identification of areas of uncertainty and controversy. The discussion of the long-term reduction of fish biomass brought about by applying an MSY-based management strategy is an important element in the debate over the effects of the Alaska groundfish fisheries. Inadequate description and analysis of this issue limits the reader's understanding of the potential for competitive interactions between the fisheries and Steller sea lions and other predators, and denies decision-makers access to essential information concerning the long-term effects of the current MSY-based management strategy.

Second, full disclosure and thorough analysis provide a better basis for developing well-reasoned remedies to adverse effects. The development of reasonable and prudent alternatives is a case in point. In recent related section 7 consultations on the Alaska groundfish fisheries, the problems identified in the effects analyses and the reasonable and prudent alternatives developed to address those problems have focused almost entirely on the temporal and spatial distribution of annual fishery catch to reduce the potential for localized depletion of Steller sea lion prey. The consultations, however, have not described the long-term reduction in prey biomass that results from the annual removal of the TAC and thoroughly analyzed how these long-term reductions may contribute to the problem of localized depletion of prey. Thus, reasonable and prudent alternatives limited to spatial and temporal dispersion may, by themselves, be inadequate to remedy problems that may arise from such long-term reduction, as described in our 31 July 2001 letter (enclosed) commenting on the draft programmatic SEIS for the Alaska groundfish fisheries. The "global control rule," as described in the 30 November 2000 programmatic biological opinion and modified by the alternatives in the draft SEIS, is based on the assumption that reduction of the spawning stock biomass of the target stocks is safe at the ecosystem level. However, this crucial assumption has not been thoroughly analyzed as required under both NEPA and the Endangered Species Act (ESA).

Third, full disclosure and thorough analysis of effects are essential for identifying areas of uncertainty that require additional research. A number of studies have attempted to investigate the relationship between fishery catches and Steller sea lion population trends in restricted geographic areas. The studies, however, have been limited to investigating the effects of annual fisheries removal on prey availability. Thus, the interpretation of their results may have been incorrect because they did not consider the long-term reduction in prey biomass, which may be an important determinant of regional prey availability, Steller sea lion foraging success, and, ultimately, Steller sea lion population dynamics.

Fourth, by fully disclosing and thoroughly analyzing the effects of fisheries, the SEIS will better inform decision-makers and the public about any needs for immediate or long-term adjustments to the fisheries. With such information, decision-makers are better able to ensure healthy and stable socio-economic conditions in the coastal communities where fishing provides an important, and perhaps the only, base for economic stability and prosperity.

In summary, full disclosure and thorough analysis of these possible long-term fishery effects are essential to ensure that decision-makers, the public, and the research community are informed, can manage the fisheries and environment according to the best available information, and can conduct the research needed to resolve the debate over the ecosystem effects of fishing. The Marine Mammal Commission recommends that the draft SEIS be revised to include a full description and thorough analysis of the long-term reduction in prey biomass resulting from the single-species MSY-based strategy as applied to the management of the Alaska groundfish fisheries.

Analytical methods

The analytical methods used in an environmental impact statement determine, in part, whether the statement provides the important benefits the National Environmental Policy Act was intended to achieve. In this regard, the Marine Mammal Commission is concerned that the analytical methods used in the draft SEIS may confound, rather than further, its purpose.

The analyses in the draft SEIS examine the effects of the alternatives as compared with the current state of the fisheries and the affected environment, or the state of the fisheries and the environment in 1998. Section 7 consultations under the ESA, however, have concluded that the 1998 fisheries regime for pollock and the current regime for groundfish fisheries in general are likely to jeopardize the western population of Steller sea lions and adversely modify its critical habitat. Thus, use of those fishing regimes -- which fail to satisfy the requirements of the ESA -- and the affected environment under those regimes as standards for comparison may lead to confusion. Such relative comparisons may be misleading if an alternative represents no improvement or even some improvement relative to past (1998) or current conditions, and therefore receives an insignificant, significant positive, or conditionally significant positive rating, but still causes significant adverse effects. To say that an alternative represents a relative improvement does not necessarily mean that an alternative avoids the problems identified in the 30 November 2000 biological opinion.

In our 31 July 2001 letter commenting on the draft programmatic SEIS on the Alaska groundfish fisheries, the Marine Mammal Commission recommended that a no-fishing alternative be used as the appropriate standard or reference for comparison. The Commission reiterates that recommendation here. The full effects of the fisheries will be revealed only if the management alternatives are compared to a no-fishing alternative, which would be expected to have the least impact on the affected ecosystem.

In the draft SEIS (e.g., p. 4-11 and Table 4.1-4), alternatives are analyzed and compared on the basis of their expected effect on growth rate of the western population of Steller sea lions. These analyses and comparisons imply a level of precision that does not seem justified. The western population of Steller sea lions has been declining since the 1970s, or perhaps earlier, and since that time scientists and managers have been unable either to explain or to predict the observed changes in Steller sea lion numbers on a range-wide or area-specific basis. Since 1990, when the Steller sea lion was first listed as threatened under the ESA, a number of actions have been taken to conserve the species. None has proven to be effective or has had a predicted level or type of effect on the population dynamics of Steller sea lions. To suggest in the draft SEIS that scientists and managers can discriminate among alternative protective measures on the basis of the predicted small effects on sea lion growth rates seems to overstate their understanding of the interactions of the relevant factors and may lead to overconfidence on the part of the public and decision-makers with respect to our ability to assess the risks of the various alternatives and to design an appropriately precautionary approach to management. For these reasons, <u>the Marine Mammal Commission recommends</u> that the SEIS be revised to include a basis for the implied level of understanding or to more accurately reflect the level of uncertainty associated with the expected effects of the measures under consideration.

The difficulty of understanding the relationship between fishery management measures and Steller sea lion population trends raises an important point about the power of research and science to detect significant effects when they occur. When the effects of the various actions under review cannot be predicted or described with reasonable certainty, it is important to explain the sources of uncertainty, the statistical or research approaches needed to resolve the uncertainty, alternative hypotheses about the nature and level of possible effects, and the ability of scientists to detect adverse effects and distinguish among alternative hypotheses. For example, the draft SEIS suggests that there is no clear evidence that fishing is a cause of species fluctuations through food web effects (p. 4-256). It is not clear how this conclusion was reached, particularly in light of the considerable declines of Steller sea lions, northern fur seals, harbor seals, and a number of seabird species in these regions concurrent with the growth of the groundfish fisheries, and the current inability of scientists to separate the effects of fisheries from the effects of other phenomena that may alter the amount of prey available at various trophic levels. Thus, there may be no clear evidence that fishing is the cause of species fluctuations through food web effects, but there is also no clear evidence that it is not the cause of such effects.

Certainly, there is indirect evidence that fisheries have affected Steller sea lions and other species in these ecosystems.

Similarly, the draft SEIS concludes that disturbance of the North Pacific right whale by fisheries does not appear to have had population-level effects and assumes that any such effects are insignificant. However, it is not clear from the discussion of this issue in the draft SEIS that scientists have sufficient information on which to base such conclusions. Fisheries could affect right whales in a variety of ways, for example, by disturbing the whales and causing them to avoid preferred feeding areas. For that reason, the NEPA document should distinguish between a conclusion of 'no effects' and the fact that the information available may not be sufficient to assess effects that might occur. In such instances, a more accurate and informative approach would be to describe the uncertainty that exists in the available information, identify the information or research needed to resolve those uncertainties, discuss alternative hypotheses, and conclude that the effects of the actions being considered cannot be determined on the basis of the existing information.

The Marine Mammal Commission therefore recommends that the draft SEIS be revised to include information on the nature of the studies conducted to investigate possible effects, the sources of uncertainty that confound such investigations, and the power of existing scientific efforts to detect, and explain the causes of, significant effects if they occur.

The preferred alternative

The National Marine Fisheries Service's choice of alternative 4 as its preferred alternative seems inconsistent with the analyses and conclusions presented in the draft SEIS. The SEIS (p. ES-19) states that under alternative 4 "conditionally significant negative effects would occur on the harvest of prey species for the Steller sea lion." In the same sentence, however, the SEIS states that "a 'no jeopardy and adverse modification' opinion has been obtained from the NMFS" on this alternative. As described in the SEIS (p. 4-2), the term 'conditionally significant negative' is intended to mean a "[c]onditionally significant adverse effect in relation to the reference point; it is based on insufficient data and information, however, professional judgement is that the alternative will cause a decline in the reference point condition." The reference point for Steller sea lions is the current population trajectory. This description implies that a section 7 consultation has concluded no jeopardy/adverse modification for this alternative, in spite of the fact that it will contribute to a further decline of the western population of Steller sea lions. This apparent inconsistency requires clarification.

The Commission is also concerned with the statement on page ES-19 that a no-jeopardy conclusion has already been obtained for alternative 4. The draft SEIS was transmitted for review on 20 August 2001. The comment period on the draft biological opinion for the reasonable and prudent alternatives was open until 21 September 2001. Thus, the draft SEIS indicates that conclusions had already been reached regarding the biological opinion and alternative 4 before the end of the comment period on the underlying document. At best, this suggests that the process of soliciting comments was no more than perfunctory.

The preferred alternative appears to roll back some protections already in place for the Steller sea lion. For example, alternative 4 appears to reduce the area (or volume) of water protected, possibly by as much as 75 percent, around certain rookeries that were previously protected out to 20 nautical miles. These reductions in protected habitat appear to be based on a new interpretation of satellite telemetry data, as described in the August 2001 draft biological opinion on possible reasonable and prudent alternatives. That interpretation is based on a number of important assumptions, including the following.

- *Animals studied* – The August 2001 biological opinion assumes that the animals studied are representative of the population at large or of the portions of the population that may depend on prey resources in the region from 10 to 20 nautical miles outside selected rookeries. This assumption may be unwarranted, as few females (either with or without pups) or subadults have been studied. The poor representation of those sex/age classes is based, in part, on the assumption that the decline is due almost solely to juvenile mortality. Past studies indicate that adults also may be affected (e.g., through reproduction), and current studies are not sufficient to assess effects on adult reproduction or survival. Thus, at this time, it is not possible to conclude that juveniles are the only portion of the population that might be affected.

- *Sampling unit* – The new interpretation of the telemetry data assumes that the appropriate sampling unit is an observation of an individual tracked animal (e.g., Table 5.1). This assumption emphasizes foraging patterns of animals from which a greater number of observations were obtained. For example, if a large number of observations were from an animal that tended to stay close to the rookery or haulout, that animal's movement patterns would have more influence on study results and conclusions than an animal that moved farther offshore but was observed on fewer occasions. Because of the small sample sizes involved, this assumption could lead to spurious conclusions unless all age/sex classes of concern are represented in the dataset by the appropriate number of observations.

- *Distinguishing behavior* – The new interpretation is based on the assumption that observed locations were indicative of foraging behavior, which is almost certainly false in many cases. Sea lions at rookeries and haulouts may enter the water to thermoregulate, interact with other animals, explore nearshore habitat, avoid disturbance, etc. Animals engaged in such behaviors will be wet, and locations received from these animals will be recorded as "at sea." Such activities may be unrelated to foraging and could significantly bias interpretation of foraging patterns. Since many of those activities are likely to occur near rookeries and haulouts, this bias would result in an incorrect interpretation that animals are foraging close to land.

  Even animals on feeding trips do not forage the entire duration of each trip; considerable time may be spent transiting to foraging locations. If, for example, an animal's foraging trips were 20 hours in duration, it transited at 4 knots, foraged at 15 nautical miles from a rookery, traveled straight to and from the foraging location, and was equally likely to be observed during foraging and transiting, then 25 percent of its observed locations would occur within 10 nautical miles of the rookery, even though it did not forage in that area.

- *Resource partitioning* – The interpretation assumed that prey resources in the zone from 0 to 10 nautical miles out to sea can be fully protected or partitioned by a line dividing fishing and no-fishing areas. Such partitioning seems questionable, as many species of Steller sea lion prey are highly mobile resources in a fluid environment. Fish move and, to the extent that areas outside of 10 nautical miles serve as sources of fish for areas inside 10 nautical miles, fishing around closed areas may have significant impact on the amount of prey resources within those areas. With respect to the issue of competition due to prey removal, the concern is not just where the fisheries operate but also where the effects of those fisheries are realized, and that is a function of fishing activity and prey movement patterns.

- *Referenced population* – The new interpretation of the telemetry data assumes that the foraging patterns observed in the present endangered population are indicative of the prey or foraging requirements of a recovering or recovered population. To the extent that closed areas are tailored to the existing population, they may not be adequate to allow for recovery.

- *Effects of MSY-based reduction in prey* – As noted above, the closures are also based on the assumption that prey resources inside the closures are not affected by the long-term reduction in prey biomass that results from the MSY-based harvest strategy. If the fish in these protected areas originate outside the protected areas, or originate inside the areas but move outside for spawning, migration, feeding, or other purposes, then they are not fully protected and their abundance may be diminished significantly by the fisheries.

Based on the above assumptions and concerns, the Marine Mammal Commission recommends that the Service review its interpretation of the satellite telemetry data and corresponding protective measures to assure that the western population of Steller sea lions is not jeopardized and its critical habitat not adversely modified by the effects of the groundfish fisheries.

Please contact me if you have any questions about these comments.

Sincerely,

Rob Mattlin

Robert H. Mattlin, Ph.D.
Executive Director

Enclosure

Response to Comments

Response to Comments

Introduction

According to CEQ regulations for implementing NEPA (40 CFR §1503.4), an agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement Possible responses are to:
(1) Modify alternatives including the proposed action.
(2) Develop and evaluate alternatives not previously given serious consideration by the agency.
(3) Supplement, improve, or modify its analyses.
(4) Make factual corrections.
(5) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

The public comment period for the draft of the Steller Sea Lion Protection Measures SEIS ran from August 31, 2001 through October 15, 2001 (45 days). Comments were also solicited separately for the draft Biological Opinion that was included as Appendix A to the Draft SEIS. The comment period for the Draft Biological Opinion ran from August 20, 2001 through September 21, 2001. In reply to both solicitations for comments, the lead agency received thirty unique written comments (original letters, petitions, meeting reports) and over 1000 iterations of the same letter signed by different people. The comment letters were numbered in order of receipt. Letters with more than one signatory were assigned a series of numbers to represent each signatory.

In accordance with 40 CFR 1503.4(b), the comments received are attached to this final statement (first part of this Volume III) whether or not the comment is thought to merit individual discussion by the agency in the text of the statement. Comments related to the SEIS are being responded to in the section immediately below. The comments are paraphrased from the comment letters and organized by the following themes.

Comments specifically directed to the draft Biological Opinion were taken into consideration prior to finalization of the Biological Opinion, but they are not being responded to in the same manner as the comments we viewed as being directed at the NEPA part of the analysis. This procedure is somewhat unique because NMFS is experimenting with public review of draft biological opinions. This particular draft Biological Opinion was one of three released for public review as part of that experiment (see NMFS correspondence dated March 7, 2001, and May 30, 2001), and the only one of the three that was prepared in parallel with an environmental impact statement. This trial procedure will be evaluated in the near future, prior to consideration as a permanent part of National Marine Fisheries Service standard operating procedures.

One substantive letter of comment (#803) was received from the Marine Mammal Commission on October 23, 2001, after the comment period for the Draft SEIS had ended. Time constraints prevented us from drafting point-by point responses to their comments. However, that letter has also been reproduced in its entirety and is included in this first part of this volume with the other comment letters.

Response to Comments

Theme 1. Comments related to the effects of this proposed action on Steller sea lions.

Comment 1: NMFS fails to explain or justify the selection of a RPA alternative that will, by NMFS' own estimation, result in continuing negative growth rates and declines in the Steller sea lion population. Why was there no further consideration of Alternative 2, which would have resulted in positive growth rates?
Response: NMFS disagrees that any of the alternatives would result in positive growth of the sea lion population. In order for that to occur, the actions would have to result in an increase in the observed percentage change in the population of over 6% which would change the intrinsic rate of natural increase (r) to 0.5%. NMFS concluded that both Alternatives 2 and 3 were conditionally significant positive for spatial and temporal concentration of the fisheries, but did not conclude that either was likely to result in positive r, or increased potential for population growth.

The selection of alternatives was instead based on whether or not a suite of fishery management actions adequate to avoid jeopardy and adverse modification of critical habitat as defined under the ESA could be contrived, and then, the extent to which a particular alternatives imposed the least disruption to fishing practices. Under the ESA, to "jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

Comment 2: We concur with NMFS's selection of Alternative 4 as the preferred alternative.
Response: Statement of constituent's position noted.

Comment 3: The SEIS fails to evaluate the large confidence limits around the model-derived estimate of prey stock size or the risks to Steller sea lions associated with those confidence limits.
Response: Confidence limits are statistical terms that communicate degree of reliability around a particular estimate. Whether a large or narrow confidence limit is calculated depends primarily on the sample statistics available to factor into the model. Without more exhaustive sampling, confidence limits will remain large. More frequent surveys and surveys at different times of the year (winter) are desirable, however, budget and logistical constraints are quite real.

Comment 4: The SEIS fails to explain precisely what environmental pressures are acting on Steller sea lions to such an extent that the population can be expected to decline in the absence of all fishing.
Response: NMFS does not know exactly what environmental factors are acting on sea lions such that the population continues to decline. The factors include those that directly affect sea lions; those that affect the sea lion's prey; and those that affect the prey of the sea lion's prey. All of those factors act either independently or synergistically throughout the ecosystem. It is this complexity that makes identification of factors affecting only sea lions so difficult. Over the course of evolutionary history, numerous factors have acted on sea lions such that natural selection has favored those that we presently see. It would be gross speculation for NMFS to identify which ones are presently dominant and are driving the population decline.

Comment 5: The SEIS fails to provide an adequate analysis of fishery catch distributions inside and outside of critical habitat during the period of U.S. management under the FMPs or to compare levels of fishing that would occur in critical habitat under the proposed Alternative 4 to previous levels of fishing inside critical habitat.
Response: NMFS thinks the analysis of fishery catch distributions inside and outside of critical habitat is adequate. During the period of U.S. management, regulations and area restrictions have changed markedly, as have catch-data reporting-protocols. 1999 data were chosen as representative of current management measures for some parts of the analysis, and other, longer, series of data were used when those series were more appropriate to the particular questions being addressed. Appendix E provides data on target species, harvest amounts, location, participating vessel sizes, and time of harvest (by week) in these fisheries for the action area (see Appendix E Table E1-1 for 1999 catch (in metric tons) of Atka mackerel, Pacific cod, and pollock in the BSAI and GOA target groundfish fisheries by gear type, federal reporting area (Zone), and processing mode). Catch inside critical habitat was totaled and labeled "at risk" in order to predict how much catch might be foregone under the alternatives (Appendix C (Regulatory Impact Review)). To set up the analysis for all resource issues, projections of catch, acceptable biological catch, spawning biomass, and total biomass under the five alternatives were made using a model set with harvest amounts of the average of years 1997-1999 (see section 4.2.1 for a description of the projection model and the output tables 4.2-1 for Eastern Bering Sea pollock, 4.2-2 for Gulf of Alaska pollock, 4.2-7 for Eastern Bering Sea Pacific cod, 4.2-11 for BSAI Atka mackerel, and Table 4.2-12 for GOA Atka mackerel). The prohibited species impact analysis used data from 1997-1999 (see Table 4.5-1).

Comment 6: Expanded trawl exclusion zones are necessary to protect foraging areas in critical habitat beyond 10 nm particularly during winter months. NMFS has acknowledged that no-trawl zones of 10 or 20 nm do not reflect broad seasonal foraging patterns and are not sufficient to protect winter foraging grounds. These acknowledgments must be disclosed and their importance analyzed in the SEIS.
Response: Statement of constituent's position noted. NMFS disagrees that the no-trawl zones as described in Alternative 4 are insufficient to protect winter foraging grounds.

Comment 7: Prey distribution within the Alternative 4 "zones of concern" in critical habitat is unknown and the distribution of fishing within these zones is not analyzed in the SEIS, rendering the approach of Alternative 4 to critical habitat arbitrary and capricious.
Response: NMFS concurs that prey distributions within the zones of concern are unknown and has therefore chosen a conservative management scheme embodied in Alternative 4. Distribution of fishing relative to Steller sea lion critical habitat is displayed in the analysis (see response to comment 5.). NMFS disagrees that its choice of Alternative 4 is arbitrary and capricious.

Comment 8: It is not necessarily the best approach to create large scale protected areas in Steller sea lion critical habitat as suggested in Alternative 2. It may be best to create a network of small refugia as suggested in Alternative 4.
Response: Statement of constituent's position noted.

Comment 9: Longline fishing causes local aggregations of fish, not localized depletions. Three studies supporting this are attached.
Response: NMFS has reviewed the attached studies and the final Biological Opinion was revised to reflect the information they contain. NMFS agrees that the evidence indicates that some species of fish aggregate in the vicinity of longlines. The studies to date, however, have concerned Atlantic cod (*Gadus morhua*), and haddock (*Melanogrammus aeglefinus*), species not found off Alaska.

Comment 10: The SEIS fails to consider a reasonable range of alternatives because NMFS failed to include an alternative that would result in positive population growth for Steller sea lions in western Alaska.
Response: NMFS has opined that no option, including no fishing at all, would result in positive population growth for Steller sea lions during the next seven years.

Comment 11: NMFS fails to explain why they have measured the impacts of alternative RPAs on the Steller sea lion population as a whole, while ignoring regional trends.
Response: The only period when analyses based on regional trends are valid is during the sea lion breeding period (late May to early July). Before and after this period, Steller sea lions typically move throughout their range and do not remain in any one site for a long period. Analysis of impacts on a regional scale could therefore include those animals from that region, as well as those from nearby regions. Thus, for instance, the effects of an action in the central Gulf of Alaska, could be seen from southeastern Alaska to the Aleutians. For these reasons, effects are best measured on a population rather than regional scale.

Comment 12: NMFS mischaracterizes Alternative 1 as the "no-action" alternative, stating that under this alternative, Steller sea lion protection measures would expire, which would violate the ESA. However, under NEPA and the Magnuson-Stevens Act, the optional action is the authorization of the fisheries themselves. NMFS is never obligated to authorize a fishery. Therefore, the "no-action" alternative must be to not authorize a fishery.
Response: NMFS disagrees. The alternatives were accurately defined. The scope of this analysis was deliberately defined as being within the parameters of the existing Secretary of Commerce approved FMPs. The FMPs are not at this point in time being considered for withdrawal.

Comment 13: Alternative 4 allows excessive harvest of BSAI pollock from inside the SCA during the critical winter season. The 75% allowed inside the SCA mirrors the pollock fishery average from 1991 to 1998 and NMFS provides no justification for allowing such a large percentage of the catch to be taken from inside the SCA.
Response: The amount of harvest in the SCA before April 1 is limited to 28 % of the annual pollock directed fishing allowance. To protect the critical areas for Steller sea lions, a portion of the SCA is closed to pollock fishing in the A season (January 20 - June 10). The Bering Sea Pollock Restriction Area includes waters of the Bering Sea subarea south of a line connecting the points 163° 0'00" W long ./55°46'30" N lat., 165°08'00" W long./54° 42'9" N lat., 165°40'00" long./54°26'30" N lat., 166°12'00" W long./54°18'40" N lat., and 167°0'00" W long./54°8'50" N lat. This ensures that all rookeries and haulouts within the SCA are protected from pollock fishing to at least 10 nm of shore and that additional shoreline likely to be used by Steller sea lions for foraging is also protected. The abundance of pollock in the SCA has been determined to be

sufficient to allow limited directed fishing for pollock and to provide adequate prey resources to Steller sea lions. The Bering Sea Pollock Restriction area and the Bogoslof Foraging Area closures will reduce the risk of localized depletion of prey.

Comment 14: NMFS provides no rationale for a lack of caps on [pollock] catch in the SCA or spatial dispersion of harvest during the summer/fall season. This ignores previous agency analyses and RPA recommendations.
Response: A cap on the harvest of pollock in the SCA at 28% of the annual pollock directed fishing allowance will be implemented. Spatial dispersion of pollock harvest in the summer and fall will be accomplished through area closures around haulouts and rookeries, a prohibition on directed fishing for pollock by non CDQ catcher processors in the SCA during the "B" season, and the closure of the Seguam and Bogoslof foraging areas. The protection measures were developed with consideration of the analyses contained in the November 30, 2000 and October 19, 2001, Biological Opinions and the SEIS.

Comment 15: The SEIS determines that Alternative 4 would have a conditionally significant negative effect on the harvest of prey species of Steller sea lions. This appears to be based on the fact that Alternative 4 would not reduce the TAC by more than 5 percent over the 1998 level. Given that the Biological Opinion determines that the global availability of prey is adequate to meet the foraging needs of Steller sea lions, we believe that overall TAC should not be used to determine significance of the alternatives.
Response: The analysts preparing this document agree with this point. The criteria for determining effects on harvest of prey species for Steller sea lion and the other marine mammal species and groups has been expanded to include consideration of daily removals compared to deviations from the mean daily removals calculated for all alternatives. See the discussions of question 2, harvest of prey species of importance to marine mammals, in section 4.1 Effects on Marine Mammals.

Comment 16: All alternatives propose restrictions on cod management year-round in all areas when cod is only an important Steller sea lion dietary component in the winter. This is inappropriate.
Response: NMFS disagrees. The causes of dietary shifts at different seasons of the year are not fully understood at this time. As a precautionary approach, therefore, the alternatives attempt to spread cod fishing effort out across all seasons, including winter.

Comment 17: Alternative 2 would have severe negative impacts on fisheries, socio-economics, management and enforcement.
Response: Statement of constituent's position noted. NMFS found that the nature and scope of those impacts have been set forth clearly in the analysis.

Comment 18: Alternative 4 fails to provide any reasonable assurance that groundfish catch levels and spatial/temporal distribution at the regional and local scales of competitive interaction will avoid continued jeopardy to Steller sea lions or adverse modification of nearshore and pelagic foraging habitat. [Rationale is on page 4 of comment letter #0008]
Response: The determination that the fishery management measures in alternative 4 are adequate to avoid jeopardy and adverse modification of critical habitat was made in the NMFS 2001 Biological Opinion. Commenters have made statements of their position on the matter both agreeing and disagreeing with the conclusions. The agency will continue research and monitoring of fisheries, Steller sea lion, and environmental conditions as explained elsewhere. The agency will also reinitiate section 7 consultation when the one of the triggers for reinitiation are met. For now, and for the proposed fisheries management measures

in Alternative 4, the determination is that the measures are adequate to avoid continued jeopardy to the species or adverse modification of nearshore and pelagic foraging habitat.

Comment 19: Alternative 4 fails to eliminate jeopardy for Steller sea lions and fails to prevent adverse modification of critical habitat.
Response: Statement of constituent's position noted. See Response for comment 18 for similar discussion.

Comment 20: NMFS fails to explain or justify the choice of a preferred alternative that will, according to its analysis, result in continued Steller sea lion population declines.
Response: NMFS has opined that no option, including no fishing at all, would result in positive population growth for SSLs during the next seven years. See Response for comment 1 for more discussion.

Comment 21: In the 2000 Biological Opinion, NMFS concludes that competitive interactions with groundfish fisheries as a whole jeopardize the survival and recovery of Steller sea lions and cause adverse modification of critical habitat. NMFS says that the RPAs must avoid adverse modification at three scales where competitive interaction occurs (global, regional, and local). An adequate RPA package can only do this by reducing groundfish catch levels, dispersing groundfish fisheries in time and space and eliminating the possibility of direct food competition. Only Alternative 2 meets these tests.
Response: The November 30, 2000, biological opinion was developed in response to the Court, which had determined that NMFS had not successfully prepared a comprehensive, FMP level opinion. For that opinion NMFS determined that the action (authorization of the BSAI and GOA FMPs) were likely to jeopardize Steller sea lions and adversely modify their critical habitat. NMFS developed an RPA as required by regulation that involved both FMP level and project level elements. For example, the implementation of a global control rule was an FMP level element of the RPA, while fishery closures for pollock in certain areas was a project level element. In 2001, substantial new information on the location of Steller sea lions and the relative location of their assumed foraging trips to fisheries became available. This prompted the Council to develop a new fishery management regime for pollock, Pacific cod, and Atka mackerel based on the new information and the need to avoid jeopardy and adverse modification of critical habitat. Consultation was requested by the Sustainable Fisheries Division on the new proposed action. This new proposed action was not an RPA. Additionally, the scope of the consultation was for the Atka mackerel, Pacific cod, and pollock directed fisheries (project level consultation). The agency determined that the proposed action did not require NMFS to prepare a new biological opinion for the full scope of the FMPs because the only element of the proposed action that was hardwired into the FMPs was the global control rule. The global control rule was not being substantially changed from the previous consultation, and therefore the November 30, 2000, biological opinion still meets NMFS's requirements to consult on the FMPs. The October 19,2001, opinion meets the agency's requirements to consult at the project level on all federal actions.

The October 2001 biological opinion incorporates much of the Nov. 2000 opinion as an overarching guiding document for the fisheries. However, at the project level, the October 2001 opinion utilized new information not available in Nov. 2000 to determine whether the proposed action is likely to jeopardize Steller sea lions or adversely modify their critical habitat. The October 2001 biological opinion relies more heavily on protection of nearshore areas than on the temporal and spatial distribution of the fishery, in large part due to the limited interaction between fisheries and sea lions as determined from the new telemetry information. It should be noted that as new information becomes available, NMFS is required to re-initiate consultation if that information would change the way in which NMFS manages fisheries in order to avoid jeopardy and adverse modification of critical habitat.

See the response to comment 22 regarding the alleged uniqueness of Alternative 2 in meeting ESA requirements for the management of fisheries relative to the needs of Steller sea lion.

Comment 22: We urge NMFS to support Alternative 2, the Sea Lion Recovery Alternative, for the following reasons: it promotes recovery of Steller sea lions, by the agency's own calculations it will result in a population increase of .7% per year; it eliminates competition for prey from industrial fishing by setting catch limits and restricting fishing in critical habitat areas; and it allows for continued fishing opportunities for small scale, family based boats in critical habitat. [Over one thousand copies of this or similar letters were received. Letter of comment #0033 has been reprinted as an example].
Response: Statement of position is noted. Over a thousand written copies of this same comment were received during the public comment period. The comment notes that NMFS has an obligation under the Endangered Species Act to promote recovery of Steller sea lions. NMFS actively acknowledges that all federal actions must be in compliance with the Endangered Species Act; stewardship of living marine resources for the benefit of the nation through science-based conservation and management is the stated mission of the organization. Conservation of Steller sea lions is of paramount importance to the agency. Reconfiguring the fisheries so they do not jeopardize the continued existence of Steller sea lions or adversely modify their critical habitat was the primary purpose of this action.

The comment goes on to say, however, that "rather than supporting an alternative that will continue the road to extinction for Steller sea lions, we urge NMFS to support the approach taken in Alternative 2..." None of the proposed alternatives considered as possible options for management of the action fisheries are likely to lead to the species' extinction. In fact, all alternatives contained management actions and conservation efforts to enhance sea lion survival. The agency has determined that Alternative 4 is the preferred alternative based on a full analysis of biological, social, and economic considerations. If impacts to Steller sea lions alone were used, then Alternative 2 has less adverse impact than Alternative 4. But, Alternative 2, by itself, is unlikely to result in a positive population growth. It is more likely that the rate of SSL population decline would only be slightly less (and it is equivocal that this change in rate could even be measured given the constraints and biases of monitoring schemes available to scientists). At the rate the Steller sea lion population is presently declining, a little over -5 % per year, and given the animal's reproductive and life history parameters, the effects of any management action are not likely to reverse the decline in the near term.

<u>Theme 2. Steller sea lion research tools and status of research</u>

Comment 23: Alternative 4 fails to address large seasonal differences in sea lion foraging ranges or the need to protect the large aquatic foraging areas beyond 20 nm in Shelikof Strait and the Aleutian Islands.
Response: NMFS disagrees. Large differences in sea lion foraging ranges were addressed. The analysts were aware of differences in use of foraging areas by seasons and considered relative use in their analysis, but concluded that the sample sizes were too small and that the data did not provide compelling evidence for altering their conclusions. Recent telemetry and behavioral data suggest that the large aquatic foraging areas still need protection in terms of their designation as critical habitat, but there are no data to suggest that current fishery practices or the preferred Alternative 4 would degrade these locations to a level that would compromise the survival of sea lions foraging in those areas.

Comment 23: TAC projections were used as the basis for the take estimates in Table 4.1-2. Given the weakness of the nutritional stress theory, and the concerns about using TAC to make determinations of significance, it appears that these estimates are valueless. If included, they should be described as effects without suggesting the legal conclusions about take.
Response: Some incidental take is a result of (or associated with) harvest activity. Takes are infrequent, and their rates vary by location and time, but it is fairly safe to assume that harvest activity will occasionally result in some take. Though the agency would prefer a more refined proxy than total removals to predict take rates, one is not available at this time. Ongoing debates of the nutritional stress theory are not related to whether TAC projections are used as the basis for estimating incidental take.

Comment 25: The available data comparing eastern and western rookery populations provide no basis for concluding that the western stock is currently not suffering from food shortages and food stress.
Response: Available data are insufficient to determine whether the western stock is, or is not, suffering from food shortages. Studies conducted in the 1970s and 1980s , which provided the original data from which researchers concluded that the western stock was food limited, have not been repeated. Thus, one can not argue one way or the other as to whether the current population is under the same nutritional stress as the population was 20 years ago.

Comment 26: The SEIS fails to put the discussion of the "junk food" hypothesis into its proper context and fails to present historical evidence that pollock has always been an important part of the Steller sea lion diet.
Response: NMFS disagrees. Section 3.1.1.7.3 has a discussion of the evidence, both pro and con, that pollock has historically been an important part of Steller sea lion diet.

Comment 27: Alternative 4 fails to address cumulative impacts of the fishing exploitation strategy at the global scale of competitive interaction.
Response: Statement of constituent's position noted. Alternative 4 includes a harvest control rule that addresses these cumulative impacts. Further, assessment of fishing exploitation strategy is ongoing with respect to effects on listed species. Re-initiation of section 7 consultation will occur as necessary. Further adjustments to fishery management measures will be made if concerns are identified.

Comment 28: The validity of the nutritional stress hypothesis should be tested and quantified and the impacts of different gear types on localized depletions should be tested so that each fishery can bear the burden of its own impacts, if any.
Response: NMFS agrees that further research into these, and other, aspects of the relationships between Steller sea lions and the groundfish fisheries are needed. Many aspects of such research are either planned or underway.

Comment 29: The SEIS asks the reviewer to take a "leap of faith" and accept the nutritional stress hypothesis. As a consulting agency we strongly encourage a more thorough consideration of the issues raised in the Bowen et al September 2001 report and the State of Alaska ASSLRT August 2001 report.
Response: Comment noted. NMFS acknowledges that the causes of the decline in SSL populations are not known with certainty. NMFS plans to continue to support this research and further analyze this issue.

Comment 30: Based on the analysis, the only alternative that reduces TAC levels globally (Alternative 2) fails to reduce TAC enough to affect the rate of decline in Steller sea lions.
Response: NMFS has opined that no option would result in positive population growth for SSLs during the next seven years.

Comment 31: There is no explanation of the "pattern of dispersal of fishing vessels" in areas outside 20 nm. There is no discussion of the edge effect or an explanation of why it is not an issue for the zonal approach. If the "edge" has been moved inside CH to within 10 nm of rookeries and haulouts, why is there no consideration of the effects on prey availability within 10 nm as a result of concentrated trawling in the 10-20 nm zone.
Response: Based on the best available information, NMFS has determined that areas from 0-10 nm from shore are the most important to foraging Steller sea lions. At this time there is no information to determine the edge effects of fishing adjacent to this zone. Ongoing research on migration patterns of Steller sea lion prey species, as described in section 3.7 of the Biological Opinion may allow for this type of analysis and discussion in the future.

The commenter may also be interested in following the progress on one of NMFS Alaska Fisheries Science Center's research projects designed to measure the effects of fishing on the distribution and abundance of walleye pollock on the east side of Kodiak Island. It is taking place near Chiniak Gully off Kodiak Island. Survey design calls for comparable treatment (fished) and control (unfished) sites.

Comment 32: The method for deriving the projected Steller sea lion population trend under Alternative 2 is not disclosed and appears to be arbitrary: The Council's Steller sea lion RPA committee provided analysis that indicated Alternative 2 would result in positive growth rates of 0.7 percent per year. The draft SEIS assumes a figure of -1.4 to -2.3 percent. This assumption is a poor basis for determining that Alternative 2 will result in only marginally less intensity of effects than the other alternatives.
Response: The analysis projects that Alternative 2 results in marginally less intensity of fishery effects; this level of effect translated into a change in the observed population of 3%-4%. The resultant calculated change of the intrinsic rate of increase (r) would be -2.3% and -1.4%, respectively. What this means is that the decline would continue but at a much slower rate (even with an observed increase in the population of 3-4%). It would require at least a 6% increase in the observed population before the population becomes stable (e.g., 0.5% rate of increase). These values are calculated based on population trends over the past decade. It was the opinion of the analysts that Alternative 2 would result in marginally less intense effects. NMFS has received no data or arguments to the contrary to alter the opinion of its analysts.

Comment 33: The SEIS misrepresents and distorts the limited Steller sea lion food habits data from earlier decades, making sloppy generalizations about Steller sea lion prey consumption that are not supported by the data.
Response: NMFS disagrees. While some disagreements among researchers may exist on specific aspects of specific research, we have used the best available information to draw reasoned conclusions. Complete agreement on interpretation of data as complex as these is unlikely in the near term.

Theme 3. Interpretation of the effects of the alternatives on marine habitat and essential fish habitat.

Comment 34: Bottom contact with fishing gear for the fisheries of interest occur within the general depth range where natural disturbances affect EFH. However, many of the studies cited are from the effects of fishing in much deeper waters. These studies may be inappropriate for describing the potential effects of the above fisheries.
Response: The studies cited in the review represent a wide range of fishing conditions and do not focus only on deep water examples. The discussion in Section 3.8 has been further expanded to better relate the outside studies to Alaska fishing practices.

Comment 35: Most of the studies cited concerning the effects of trawl gear on EFH involved potentially overfished stocks. This may not be relevant to the fisheries in question since they are managed in a precautionary manner. It may be difficult to discern habitat effects of fishing for fisheries that are managed in a precautionary manner since fishing levels would be adjusted downward if stocks decrease, which would simultaneously reduce fishing effects on EFH.
Response: Overfished stocks may make EFH effects more detectable at the population level, but few of the studies cited operate at that level. Although the comment may be valid for any studies that directly tie stock reduction to habitat degradation, most studies describe mechanisms for habitat effects that are not dependant on fish stock condition. Precautionary stock management may mitigate to some extent against EFH impacts. Downward reductions in stock levels, however, will result in lower catch per unit effort. Reductions in TAC, therefore, will not necessarily result in proportionate reductions in fishing effort.

Comment 36: Many of the studies cited concerning the effects of fishing on EFH may not be relevant to areas off Alaska because fishing intensity is lower.
Response: The intensity of trawling is one factor considered among many, including differences in gear type, bottom habitat, and species mix. Any of these differences should be considered but do not necessarily invalidate the application of studies from other areas to the Alaska situation.

Comment 37: The SEIS attempts to corroborate the Auster and Langton (1999) review of the general effects of trawling by pointing out supposed similarities in the findings from two empirical studies of trawl effects off Alaska. However, the cited studies are narrow in scope and not applicable to statements concerning the general impact of trawling.
Response: The two studies do not answer the full question of the effects of trawling in Alaska, but they are certainly relevant and tend to corroborate certain of Auster and Langton's conclusions.

Comment 38: The baseline section of the SEIS on habitat effects of fishing should be more relevant to the action being considered. The analysis should have revisited the habitat effects of fishing gear baseline and the available information on the effects of fishing gear for the fisheries in question (pollock, Pacific cod and Atka mackerel). Instead, the analysis is simply a repackaging of the Draft Programmatic SEIS analysis.
Response: The discussion in Section 3.8 has been expanded and updated to clarify the relevance of outside studies to Alaska fishing practices.

Comment 39: The SEIS discussion of the effects of pelagic trawl gear are based solely on anecdotal evidence. An assessment of fishing effects and benefits from gear modification is important, with potentially significant economic effects on the fishing industry. It should not be based on non-scientific, anecdotal data.
Response: NMFS disagrees. The discussions are based on the best information available. References are included throughout the analysis. See chapter 7 for information about citations appearing throughout chapters 1-4, and separate reference lists that appear at the end of each appendix.

Comment 40: Trawling effort for Atka mackerel is described in the SEIS as "intense". However, this is only in relation to other fisheries off Alaska. It would be instructive to provide information on the intensity of trawling off Alaska relative to other areas where the effects of trawling have been studied. This would allow the reader to place in context the likely effects of the fishery compared to other areas where the impacts have been more rigorously studied.
Response: Many factors differentiate Alaska fisheries from others that have been studied. Differences in gear type, bottom habitat, and species mix could influence the outcome of these studies, as could the intensity of trawling. Such differences should be considered but do not necessarily invalidate the application of studies from other areas to the Alaska situation. Ongoing research will hopefully lead to more quantitative methods of describing intensity.

Comment 41: There is an incorrect reference [on page 4-489] to a conditionally significant adverse effect for removal and damage to HAPC by mobile gear. If this conclusion is correct it should be explained in light of the non-pelagic trawl ban.
Response: The reference to use of mobile gear in State managed fisheries was inadvertent. The text has been modified accordingly. The conclusion still remains, as it was based on several factors.

Comment 42: Alternative 2 would shift all trawling outside of SSL critical habitat. This would force trawling into relatively deeper waters. This could cause increased effects on EFH in waters that may be less adapted to natural disturbance. It would also cause fishing to occur in areas where gear effects have occurred to a lesser degree or not at all.
Response: Alternative 2 lowers the TAC for all three species. The TAC would be lowered to 33% of maximum ABC for Atka mackerel, 55% of ABC in the GOA and 72% in the BSAI for cod; 45% of ABC in the GOA, 74.5% in the Bering Sea for pollock. Major concentrations of Atka mackerel occur before the shelf break in the Aleutian Islands and all are being fished, according to fishermen's testimony at Council meetings. The larger aggregations of Pacific cod are also already being targeted. Some displaced effort would occur with increased pressure on fishing grounds, but the environmental benefits of the large no trawl reserves and of lowering overall TACs are expected to be strong enough to earn this alternative a positive rating.

Comment 43: The SEIS expresses concern for the vulnerability of long-lived sessile emergent epifauna, arguing that some of these long-lived invertebrates can be injured or removed by a single gear set. Alternative 2 would move fishing effort into areas that have experienced less fishing effort thereby potentially increasing the impact on these organisms. This possibility should be analyzed.
Response: Fishing effort displaced from areas being closed would increase pressure on the areas that have received less fishing effort, but Alternative 2 includes large reductions in TAC which will in turn reduce effort.

Comment 44: The analysis states that, for the Aleutian Islands, most of the vulnerable sponge and coral substrates are located within Critical Habitat. If the methodology used to identify the locations of these substrates is based on observer data, then the opportunity to observe these invertebrates inside Critical Habitat would be greater since that is where most of the past fishing effort has occurred. Even if trawl survey data were considered, survey stations are mostly inside the 200 meter contour so may understate the relative occurrence of fragile invertebrates outside Critical Habitat.
Response: The methodology involved trawl surveys that were not limited to areas under 200 meters in depth. The survey stations are allocated on the basis of area available within each depth strata.

Comment 45: NMFS, in its comparison between Alternatives 3 and 4, sees no habitat protection benefits from minimizing the shift of fishing to new areas. We think there are many examples of potential EFH benefits in Alternative 4 that were not analyzed.
Response: To whatever extent a particular type of fishing gear effects benthic habitat, any shifts in management will result in relief in some areas and increased pressure in others. The explanation in Section 4.8.4 has been expanded in response to this comment.

Comment 46: Most of the studies cited concerning the effects of trawl gear on EFH involved beam trawls. This may not be relevant to the fisheries in question since they do not involve the less disruptive otter trawl.
Response: More studies on otter trawling have become available since the draft programmatic SEIS was published. Section 3.8 has been expanded to take account of these studies.

Comment 47: NMFS has not yet responded to comments made by MCA concerning EFH and the habitat effects sections of the Draft Programmatic SEIS. These comments, and the research of Dr. Franz Mueter, were also not taken into account during the preparation of this SEIS.
Response: Revisions to this analysis take into account MCA's comments and some of the papers cited by Dr. Mueter. The groundfish Programmatic SEIS is still under preparation.

Comment 48: The SEIS assessment of the impacts of the alternatives on EFH indicate substantial benefits to EFH and Steller sea lion critical habitat under Alternative 2 but the analysis fails to treat the differential impacts of fishing gear explicitly or to justify the negative impacts of trawling in critical habitat under Alternative 4.
Response: The explanation of differential impacts of fishing gear in Section 3.8 has been expanded drawing from international literature but also focusing on literature applicable to Alaska. The negative impacts of trawling to EFH from implementing alternative 4 are likely to be intermediate between alternatives 1 or 5, which are less protective, and 2 or 3, which are more protective.

Comment 49: The SEIS does not give sufficient credence to the possibility that trawling does not have a significant adverse effect of EFH or that the effect of trawling varies greatly depending on the type of trawl gear, depth, substrate type, degree of natural disturbance, fishing intensity and other factors. [comment letter 793 gives several citations].
Response: While some disagreements among researchers may exist on specific aspects of specific research, we have attempted to use the best available information to draw reasoned conclusions. Complete agreement on interpretation of data as complex as these is unlikely in the near term.

Comment 50: The SEIS fails to adequately describe the various benthic habitats that exist inside and outside the affected area. It lacks a species by species description of benthic invertebrates commonly found in the area or a description of the types of EFH found in the area.
Response: Descriptions of benthic habitat and species by species habitat requirements descriptions are available in the draft Programmatic SEIS and in the environmental analysis that was prepared to inform the five fishery management plans' EFH amendments. For more information see the website at http://www.fakr.noaa.gov/habitat/efh.htm. It incorporates the EFH information from printed sources, and allows data queries.

Comment 51: The SEIS fails to analyze the effects of the various alternatives on specific EFHs occurring within the affected environment. Rather, the analysis focuses solely on HAPC areas.
Response: EFH off Alaska was defined as a general distribution for a species' life stage, for all information levels and under all stock conditions. Given the broad definition of EFH, identification of Habitat Areas of Particular Concern (HAPCs) has been undertaken but not completed. HAPCs are areas (such as pinnacles) or types of habitat (such as corals and other living substrate used for shelter) that may be especially important or vulnerable, and has emphasized identifying and protecting such areas and types of habitat.

Comment 52: Section 3.8.4 should be expanded to explain the effects of pot gear on EFH. It should be made clear that pots are heavy (500-700 lbs.), hauled under way, may drag along the bottom for an undetermined distance and are frequently lost.
Response: The pot section under "gear effects" in Section 3.8 has been expanded and now includes some material on pots in a new subsection on gear used in Alaska.

Comment 53: The observations of High (1998) are uncorroborated and untested grey literature they should be removed from the SEIS.
Response: NMFS disagrees. While peer reviewed research is obviously of greater value in any analysis, all existing information relevant to the issue is reviewed and included as appropriate.

Comment 54: The analysis states that bycatch of benthic epifauna by longline gear is substantial. Table 4.8-1 indicates an average annual rate of coral bycatch of 1,482 kg/yr. Most of this is small branches and is taken over an area of 200,000 square miles. We disagree that this constitutes substantial bycatch.
Response: In terms of the regional population of corals, NMFS agrees with the commenter, and has clarified the explanation.

Comment 55: The SEIS states that the effect of trawls that come in contact with the bottom have never been evaluated scientifically but then states that "it can be expected that when pelagic gear contacts the seafloor it will have similar impacts to standard on-bottom gear (page 3-162). No explanation or argument to defend this baseless assumption is offered.
Response: Section 3.8 has been revised and the discussion of the effects of pelagic trawl gear expanded.

Comment 56: The SEIS asserts that midwater pollock nets are fished in contact with the seafloor "more often than not" (page 3-162). This is based on unsubstantiated anecdotal evidence.
Response: The discussion in Section 3.8 has been expanded to include the incentives for and likely effects of fishing pelagic gear in contact with the seafloor.

Comment 57: No studies of the impact of longline gear on benthic epifauna have been conducted in Alaska and studies conducted elsewhere may not be relevant.
Response: NMFS agrees that the impacts of longline gear on the benthic environment are not well known and that this is especially true off Alaska. The best available data has been included in this analysis and, where appropriate, limitations associated with those data are discussed.

Comment 58: The analysis [in section 4.1] makes false statements.
Response: NMFS disagrees. While some disagreements among researchers may exist on specific aspects of specific research, the best available information has been drawn on for reasoned conclusions. Complete agreement on interpretation of data as complex as these is unlikely in the near term.

Comment 59: The section on the effects of the alternatives on marine benthic habitat relies on a flawed baseline description of fishing effects, from outside studies. We believe that the determinations based on this flawed baseline are inappropriate. We also believe that had the establishment of a baseline acknowledged the specifics of the three fisheries in question a far different set of conclusions about the alternatives may have resulted.
Response: The discussion in Section 3.8 has been expanded to better relate the outside studies to Alaska fishing practices. Although some disagreement exists between them, all the review studies have drawn some conclusions about the potential deleterious effects of trawling, and most advocate a precautionary approach.

Comment 60: The SEIS bases its discussion of the effects of longline gear on a single study (High 1987) that is empirical and unrelated to fishing activities off Alaska. The health of the three groundfish stocks of concern for this SEIS does not suggest that longline gear is having any deleterious effects on fish habitat.
Response: NMFS agrees that the degree to which longline gear may impact the environment is unknown. Many kinds of information that are needed to make such an assessment are unavailable. The text has been augmented to clarify that. In such a case, it is important to collect what reliable information is available to better understand the possibilities. The High (1998) reference, while not peer reviewed, includes observations by an experienced scientist that are relevant to the possibility and potential mechanisms for longline effects on benthic habitats. As such, they provide some context for the bycatch observations in the observer data. NMFS has clarified the section on observer data and included some of the commenter's points.

<u>Theme 4. Stock assessments and impacts on resources other than Steller sea lions and habitat</u>.

Comment 61: The SEIS states that: "Species level diversity, or the number of species, can be altered if fishing essentially removes a species from the system" This insinuates that the fisheries managed off Alaska have been managed in a manner that results in such occurrences. This should be removed from the text.
Response: NMFS disagrees. The discussion is a general one and is not meant to be read as only applicable to Alaskan fisheries or to imply that fisheries occurring in waters off Alaska have had that result.

Comment 62: Alternative 4 creates a very complex fisheries management scheme but, other than requiring VMS, does very little to ensure that it is enforced. Given the size of the quotas, NMFS should require higher levels of observer coverage and ensure that all catch is weighed. Given the sophistication of the fisheries, it is ridiculous that scales are not required on all factory trawlers.
Response: NMFS agrees that the complexity of fisheries management in the North Pacific is increasing and that catch-monitoring must evolve as well. NMFS notes that catcher/processors and motherships engaged in the pollock fishery are required to weigh all catch. Further, NMFS and the Council are proposing to

require that shoreplants which take delivery of AFA pollock must provide for enhanced catch weighing and monitoring. Further, NMFS will be assessing the changes to the Atka mackerel fishery to determine whether the existing provisions for catch monitoring are sufficient. At that time NMFS will determine whether additional observer coverage, observer sampling stations or catch weighing should be required.

NMFS acknowledges that catch weighing is currently not required on all catcher/processors. That issue, however, is beyond the scope of the current analysis.

Comment 63: All of the alternatives to protect Steller sea lions have significant negative impacts on northern fur seals. These alternatives are unacceptable if they trade negative impacts on Steller sea lions for negative impacts on a depleted species.
Response: All alternatives were judged to have conditionally significant effects on northern fur seals relative to the harvest of prey species and the spatial/temporal concentration of the fishery. These determinations were based on available data suggesting that critical habitat protections for Steller sea lions as well as the increased duration of the summer/fall Bering Sea pollock fishery may have shifted the location of the fishery northward into northern fur seal foraging habitat. These observations indicate that protective measures directed solely at Steller sea lion conservation may have negative impacts on other species within the Bering Sea community.

NMFS will continue to assess these potential impacts, especially on declining populations of protected species such as northern fur seals, and initiate actions to mitigate such impacts if deemed necessary.

Comment 64: The SEIS states: "Introduction of nonnative species may occur through the emptying of ballast water in ships from other regions." This is not a fishing effect and does not belong here.
Response: NMFS disagrees. Given that portions of the fishing fleet may travel to other regions and may pump ballast water originating from other regions, it is a possible mechanism of non-native species introduction. No documentation of such an introduction by a fishing vessel exists to our knowledge, however, such documentation is not something we are set up to collect.

Comment 65: When comparing population trends and foraging locations for northern fur seals around St. Paul and St. George Islands, there is an indication that the no trawl protection zones around St. Paul may have contributed to population stabilization. There is also evidence that the protection zone around St. Paul may have resulted in a reduction of trawl associated debris.
Response: While these conservation areas are likely to offer some degree of protection to foraging fur seals, no-trawl zones around St. Paul and St. George islands exclude trawling from areas that are used less intensively by lactating fur seals during summer and fall. Foraging studies indicate that northern fur seal females from both islands forage extensively at distances greater than 81 nm. The Pribilof Islands Conservation Area is located primarily in the foraging habitat of females from northeast St. Paul Island and the boundary is approximately 65 nm at the most distant point from Northeast Pt. on St. Paul Island. The majority of pollock trawling occurs in the outer shelf domain in the foraging habitat of females from southwest St. Paul and St. George islands. Unfortunately, during the 1990s, St. Paul Island pup production has been assessed in alternate years on a sub-sample of rookeries making it difficult to determine whether habitat protection in specific foraging areas has been beneficial to specific sub-populations. While nearshore no trawl protection zones may prevent marine debris from becoming entrained in the circulation pattern around the Pribilof islands, there is no direct evidence to link entanglement to population trends based on the distribution of fisheries relative to protected areas.

Comment 66: We believe that a more balanced fishery management approach (that would afford greater protection to northern fur seals) should include an exclusive fishing area around both of the Pribilof Islands for those fishermen who are willing to reduce bycatch of non-target species, comply with MARPOL Annex V and are willing to have a portion of the catch directly fund environmental monitoring and research programs in the area.
Response: This comment is beyond the scope of this analysis. It is, however, important to note that care should be taken in establishing exclusive fishing areas that may concentrate deleterious effects. This is especially relevant in the case of northern fur seals, given the large distances from the Pribilof Islands over which they forage during the breeding season. Additionally, all fishermen are required to comply with MARPOL Annex V and bycatch limits on non-target species.

Comment 67: Information regarding studies of entanglement of northern fur seals in marine fishing debris is not included in the evaluation of any of the alternatives. [comment letter 761 gives citation]. This information should be included and used in the evaluation of direct effects of the alternatives on fur seals.
Response: The commenter is correct in stating that information on northern fur seal entanglement during the 1990's was not cited in the document. Section 4.1.4.1, however, has a summary statement regarding the decline in the incidence of entanglement in the 1990s and the shift in the occurrence of polypropylene packing bands relative to trawl net fragments reflecting the general conclusions of these studies.

Comment 68: Alternative 2 would increase the spatial and temporal interactions of the groundfish fisheries with northern fur seals by redistributing fishing effort.
Response: Comment noted. This possibility has been noted in the analysis.

Comment 69: The cumulative effects analysis fails to discuss whether all impacts deemed insignificant have a synergistic and negative long term effect.
Response: NMFS disagrees. The cumulative effects analysis has addressed reasonably foreseeable adverse cumulative effects that are both significant and insignificant in nature.

Comment 70: NMFS is able to "explain away" cumulative impacts by comparing the alternatives to a 1997-1998 baseline. This gives the false impression that the preferred alternative does not have large, negative, long-term effects.
Response: NMFS disagrees. On a resource by resource basis, the cumulative effects analysis looked past effects and baseline that in some cases went much further back than 1997-1998. Long-term adverse cumulative effects are addressed through evaluating past lingering effects in the cumulative effects.

Comment 71: The seasonal apportionments described in Alternative 2 would increase bycatch of halibut and incidental take of short-tailed albatross.
Response: NMFS agrees that any reapportionment of Pacific cod TAC into the summer months, or from trawl to hook and line gear, has the potential to increase incidental take of short-tailed albatross. NMFS notes, however, that this would be mitigated by the revisions to seabird avoidance measures currently being considered. NMFS also agrees that such reapportionments could increase halibut bycatch or, to the extent that the cod fishery is limited by available halibut prohibited species catch limits, reduce the opportunity to harvest available amounts of cod.

Comment 72: Alternative 4 includes a 60/40 seasonal split for GOA Pacific cod. Under this plan, the fleet will be forced to fish in non-traditional areas on un-aggregated stocks at unusual times of year. This will result in higher bycatch of halibut, increase total effort and will fail to disperse the fleet temporally and spatially.
Response: NMFS agrees that in the second season Pacific cod will be less aggregated and potentially increase the level of effort by the fleet to harvest the allocation. Halibut bycatch estimates based on an average over 1998 and 1999 indicates that bycatch rates will increase by 1% under alternative 4 over the base line alternative. Overall, the amount of halibut bycatch will continue to be limited by the halibut PSC caps recommended by the Council. Seasonal apportionment of TAC will ensure temporal distribution of the GOA Pacific cod harvest. It is likely that as portions of the GOA critical habitat remain closed to fishing and the stocks become less aggregated, the fleet will have to disperse over a larger area providing spatial dispersion. NMFS has also established a number of open areas in traditional fishing grounds near King Cove, Sand Point, Kodiak and Seward for vessels using non-trawl gear.

Comment 73: The SEIS criteria for determining the significance of alternatives on pinnipeds and sea otters fail to include consideration of the benthic habitat effects of fishing, despite the clear reliance of many pinnipeds as well as sea otters on epibenthic prey species, and the clear potential for serious alterations of seabed habitat from trawling activity.
Response: Sea otters do depend on epibenthic prey species. Of the pinnipeds, only walrus and bearded seal exhibit dependence on the epibenthic habitat for prey resources. In this regard, NMFS did consider the possible effect of trawling activity in the action area on these predators and concluded that it was insignificant. The action areas for trawl fisheries rarely overlap with the occurrence of bearded seals, which only occur in the southeastern Bering Sea during winter as they migrate south and north with the ice edge. Walrus and sea otter rely more on benthic prey, but the trawl fisheries for pollock and cod in areas where they overlap rarely contacts the sea bed. The trawls typically catch these fish in mid water. Walrus do not occur in the Gulf of Alaska and sea otters rarely occur off shore where trawling occurs. The fishery for Atka mackerel in the Aleutian Islands occurs over rocky terrain that could catch and damage trawl nets if contacted; the fishery, therefore, takes extra caution to fish above the bottom to keep from damaging their nets. Consequently we think there is very little, if any, degradation of habitat with the Atka mackerel fishery.

Comment 74: The global TAC reductions envisioned by Alternative 2 are unnecessary because most Steller sea lion locations are within 10 nm of land.
Response: Alternatives 2, 3, and 4 include similar, though not identical, harvest control rules. While it is unlikely that Atka mackerel, pollock or Pacific cod spawning stocks will fall below 20% of the unfished level, the provision to formally prohibit directed fishing for these stocks does preserve the prey resource for top trophic level foragers should such an event occur. The spatial distribution of Steller sea lion foraging does not affect the need for the provision to preserve prey resources when stocks decline. Atka mackerel, pollock and Pacific cod occupy broad distributions inside and outside of 10 nm of land. The control rule is one of several actions that, in concert, reduce the likelihood of competition between sea lions and groundfish fisheries.

Comment 75: The global TAC reductions envisioned by Alternative 2 are unnecessary because the current TAC setting process is already precautionary and has a proven track record of preventing overfishing.
Response: Alternatives 3 and 4 include a provision to stop harvest of Atka mackerel, pollock and Pacific cod if the female spawning stock biomass drops below 20% of the unfished level. If recruitment variability continues to follow the pattern observed since 1977, it is unlikely that this provision will be implemented. The most recent estimate (2001) of stock status shows the Aleutian Island Atka mackerel, Eastern Bering Sea

and Gulf of Alaska pollock, and BSAI and GOA Pacific cod stocks are above the $B_{20\%}$ level and are likely to remain above this level in the near future.

Alternative 1, the no action alternative contains the tier 3 harvest control rule adopted by FMP amendments 56/56 which is precautionary in that the maximum permissible fishing mortality rates are formally reduced when the stock falls below $B_{40\%}$. In addition, stock assessment authors often recommend fishing mortality rates that are below the maximum permissible level. These constraints are intended to accelerate the recovery of the spawning stock biomass when stock levels are low.

Although the harvest control rule adopted in Amendment 56 is precautionary, it is important to note that the proposed harvest control rule does provide an explicit policy to stop directed fishing if the female spawning stock biomass dropped below to the $B_{20\%}$ level. The harvest control rule would stop directed fishing before the stock was declared overfished. Under current harvest guidelines (Alternative 1) directed fishing would not necessarily be stopped if the stock was in an overfished condition. NMFS is required to develop a rebuilding plan if the stock is overfished, but rebuilding plans do not necessarily prohibit directed fishing. Thus, the proposed harvest control rule provides added protection to the stock and sea lion prey base if the spawning stock biomass exhibits a severe decline.

Comment 76: The discussion of ecosystem effects is illegally broad, as it characterizes fishing effects as removing only 1 percent of total system biomass. By ignoring spatial and temporal variation in the removal, the analysis fails to provide useable information to decision makers.
Response: The analysis contains more than just this one estimation of harvest removals per total system biomass. Several levels of information useful to characterize spatial and temporal removals are provided throughout the analysis. See Table 4.1-4 and all the tables in section 4.2. These data were factored into the analysis. The statement the commenter quotes: "Total catch biomass (including non-groundfish removals) as a percentage of total system biomass (excluding dead organic material, known as detritus) was estimated to be 1%, a small proportion of total system biomass." from Section 4.9, is none-the-less accurate and NMFS stands by it.

Comment 77: The SEIS fails to provide an integrated, adequate analysis of the direct, indirect and cumulative effects of the fisheries on Bering Sea, Aleutian Islands and Gulf of Alaska ecosystems.
Response: NMFS disagrees. The analysis is as integrated and adequate as any that has been prepared. Additional research and interpretation of information is ongoing and future effects analyses may contain improvements, however, this analysis adequately informs decision makers of the information available and interpretations of impacts that will result from the proposed action.

Comment 78: The information on historical patterns of trawling in Alaska is central to a cumulative effects analysis. But it not integrated into the description of what information is lacking or into the analysis of cumulative effects and their significance.
Response: NMFS disagrees. Information on historical patterns of trawling in Alaska were known to the preparers of this analysis and the unknown and unavailable information was factored into significance determinations.

<u>Theme 5. Socio-economic effects on the fishing industry and coastal communities.</u>

Comment 79: Although the VMS program has been successful, VMS units can fail. NMFS should make allowance for vessels to continue fishing should their VMS unit fail to operate.
Response: The details associated with VMS equipment and operational requirements will be considered at the time of rulemaking. However, when the requirements for VMS in the Atka mackerel fishery were implemented, NMFS determined that policy allowing vessels to continue to fish when their VMS units were non-functional would unnecessarily complicate the enforcement program. NMFS further noted that the cost of a VMS unit is quite low compared to the overall gross revenues in the fishery and that vessel owners could choose to provide a backup unit if they desired.

Comment 80: The small boat fleet has minimal impact on Steller sea lions. Instead, population declines are the result of disease and predation by orcas.
Response: Because the small boat fleet conducts a disproportionate share of its operation in areas of importance to Steller sea lions, NMFS is unable to say that the small boat fleet has a more minimal impact on sea lions than does the large boat fleet. The purpose of this analysis was to develop alternatives for the Pacific cod, Atka mackerel and pollock fisheries that do not jeopardize the continued existence of the Steller sea lion or adversely modify their critical habitat. However, NMFS recognizes the importance of the small boat fleet and has attempted to craft alternatives accordingly.

Comment 81: In Alternative 4, the stand down periods after the A and C pollock seasons in the GOA should be eliminated. There should only be a stand down after the B and D seasons [rationale set forth in comment letter #6].
Response: NMFS acknowledges that the choice of alternatives could have allocational ramifications. These issues will have to be addressed individually through future Council processes. The Council has indicated its intent to assess additional management measures intended to further mitigate the effects of the preferred alternative on coastal communities and small boat fleets. Consistent with ESA mandates to protect Steller sea lions these additional measures, including possible adjustments to GOA seasonal apportionment and dates, are scheduled to be initially discussed at the Council's February 2002 meeting.

Comment 82: We agree with the conclusion of the Biological Opinion and the SEIS on the need to rationalize groundfish fisheries in the GOA.
Response: Fishery rationalization offers new possibilities for the effective management of fisheries in the GOA as well as the BSAI. However any fisheries rationalization scheme needs to be accompanied by safeguards to protect the environment, prevent fraud and ensure equitable distribution of the resource.

Comment 83: The treatment of the impact of the alternatives on Akutan, King Cove and Sand Point contained in Appendix F is inadequate. The region is extremely dependent on the groundfish fishery and the alternatives will have potentially profound impacts on these communities.
Response: This comment (C-0025 Aleutians East Borough) is specifically directed toward the information contained in Appendix F, but concerned, in large part, social impact analysis results. Appendix F contains only existing conditions profiles of the communities most engaged in, and dependent upon, the Alaska groundfish fishery, not the social impact assessment itself. The treatment of social impacts by alternative and broken out by region is found in Section 4.12.2 of the main body of the SEIS. This distinction has been clarified by re-titling Appendix F and by adding a more explicit cross-reference in the introduction to the appendix.

In general, the information contained in Appendix F is intended to supplement the regional existing conditions information contained in Section 3.12.2 of the SEIS by describing the groundfish social or sociocultural context at the community level in detail sufficient to illustrate the range of types of engagement in, and dependence upon, the groundfish fishery. Quantitative description of baseline engagement or dependence on a regional basis is found in the discussion of Alternative 1 in Section 4.12.2 of the SEIS. This information includes data for 21 socioeconomic variables or indicators, encompassing harvesting and processing values, employment, and payments to labor, among others. Table 4.12.2 presents baseline information for the Alaska Peninsula/Aleutian Islands region, of which the Aleutians East Borough is a part (along with the Aleutians West Census Area). This same level of quantitative description (e.g., total catcher vessel payments to labor, total shorebased processed value, etc.) cannot be presented at community level or even the borough level, in the case of the Aleutians East Borough, due to confidentiality restrictions associated with reporting data from individual or a small group of entities. For example, there are only three major groundfish processing plants in the Aleutians East Borough, located in Akutan, King Cove, and Sand Point, and these three plants are owned by only two entities. Therefore neither state nor federal data aggregation thresholds for the release of data can be met.

This being stated, however, the information contained in Section 3.12.2, Section 4.12.2, and Appendix F taken together provides a comprehensive treatment of the likely differential distribution of social impacts resulting from the proposed alternatives. The analysis contained in Section 4.12.2.2.1 does conclude that Alternative 2, given the relative dependency upon the groundfish fishery in general, and the pollock and Pacific cod components of the fishery in particular, would result in significant impacts to those communities in the Alaska Peninsula/Aleutian Islands region engaged in the fishery. The conclusion is specifically reached that this:

> "would have profound effects upon local communities with large groundfish processing plants - Unalaska, Akutan, King Cove, and Sand Point. Each of these communities would be expected to experience impacts in the fisheries related sector of the economy in particular, but impacts would be felt in other sectors of the local economy as well. The degree to which other sectors would decline depends upon the relative level of integration of the processing and harvesting sectors with the rest of the community economy and the diversity within the fisheries specific portion of the economy. Fisheries related local government revenues would also decline significantly, with the specific amount depending on the local tax structure."

Quantitative description of impacts for the Alaska Peninsula/Aleutian Islands region may be found in Tables 4.12-11 through 4.12-13 for Alternative 2 and Tables 4.12-32 through 4.12-34 for Alternative 4. These tables provide output values for all 21 socioeconomic indicators, along with the amount and percent change from baseline conditions for all indicators. The percent change information (Tables 4.12-13 and 4.12-34) is intended to be useful as an indicator of the direction and magnitude of change, and should be useful in seeing at a glance the types and level of impacts the borough as well as the region as a whole would experience under these alternatives. The impacts to the borough are not 'lost' in a much larger regional analysis because of (1) the methodology employed, which focuses on groundfish entities (harvesters, processors, and catcher-processors) first and then their ties to the regions to establish the engagement/dependency context rather than the other way around, and (2) the prominent role the Aleutians East Borough component of the fishery plays in the overall region.

In response to the data issues raised in this comment letter, additional information on the Aleutians East Borough fishery related tax revenues and the importance of the fishery to the Aleutians East Borough has been added to Section 1.0 of Appendix F(1). Additionally, language noting the fiscal links between borough communities has been added to Section 3.12.2.3 and language noting the resulting distribution of impacts has been added to Section 4.12.2.2.1. Cumulative fishery impacts being experienced in borough communities, while noted in Appendix F and discussed in detail in the cumulative impacts discussion (Section 4.13.13) have now been noted in Section 4.12.2.2.1 as well. The additional material the comment letter requested to be included in the analysis is now referenced in Appendix F(1), and is included in whole in the public comments section of this SEIS.

Comment 84: The small boat fleet in the Aleutians (under 60 ft, no processing) is small, the cleanest of all the fisheries, and has minimal impact on Steller sea lions.
Response: NMFS agrees that the small boat fleet in the Aleutians is responsible for a comparatively small percentage of the catch.

Comment 85: Many of the Tables and Figures for the social impact assessment (Appendix F1) represent outdated information. The Kodiak Chamber of Commerce is providing revised information reflecting information current through 2000 or 2001. [see comment letter 762 for actual suggested changes]
Response: Thank you. Changes to the analysis similar to those suggested have been made. The suggested change to Table 2.1-8 in Appendix F(1) has been modified from the figures provided in the comment due to apparent carry over of 1999 value data into the year 2000 row. Based on a follow-up telephone conversation with Debora King, Economic Development Specialist with the Kodiak Chamber of Commerce, suggested replacement Table 2.1-9 of Appendix F(1) was modified to clarify and account for rounding errors and the suppression of confidential data, and to allow column totals to sum properly.

Comment 86: The zonal approach for Pacific cod as described under Alternative 2 makes no distinction between the fisheries in the BSAI and the GOA. However, the BSAI Pacific cod TAC is allocated between gear types and the GOA cod TAC is not. Further, most cod fishing trips in the BSAI are longer, which precludes fishing by non-freezer boats.
Response: NMFS acknowledges that the choice of alternatives could have allocation ramifications. These issues would have to be addressed individually through future Council processes.

Comment 87: The small boat fleet is a valuable part of the lifeline in rural Aleutian communities and they should receive priority over the large boat fleet.
Response: The purpose of this analysis was to develop alternatives for the Pacific cod, Atka mackerel and pollock fisheries that do not jeopardize the continued existence of the Steller sea lion or adversely modify their critical habitat. If more than one alternative accomplishes this goal, a secondary purpose was to minimize impacts on the various sectors of the fishing industry and the associated coastal communities. The importance of the small boat fleet has been recognized and alternatives have been crafted accordingly. The Council also has indicated its intent to assess in the near future potential adjustments to Steller sea lion protection measures to provide further relief to the small boat fleet and coastal communities.

Comment 88: Alternative 2 would cause a greater portion of the Pacific cod TAC to be taken during the summer when flesh quality is lower. This could cause a loss of ex-vessel value and a potential loss of market.
Response: NMFS agrees. Section 1.3.3.2 of the RIR states, "Cod fishermen report equivalent reductions in flesh quality, post-spawning, and accompanying dramatically diminished value. Both species [pollock and Pacific cod] reportedly 'improve' in quality (and value), the latter into the second half of the year they are taken. Therefore, any action which displaced catch from periods of relatively high fish quality (e.g., January through perhaps March), to periods where the average quality is lower (e.g., June and July), would impose costs."

Comment 89: The zonal approach to cod in Alternative 2 differentiates between processor and non-processor longliners. No rationale is provided as to what benefit this distinction provides to Steller sea lions.
Response: NMFS has attempted to develop alternatives that provide maximum benefit to the human environment. Though issues surrounding Steller sea lions were a primary focus of the analysis, the alternatives seek to mitigate other social and environmental impacts. Thus, though it is possible that processing mode has no impact on Steller sea lions, it is clear that it has an impact on the wider socio-economic structure of the fishery.

Comment 90: Alternative 2 is the most complex for management and enforcement, particularly for fixed gear vessels engaged in the Pacific cod fishery.
Response: NMFS acknowledges that some of the alternatives will create additional challenges for management and enforcement. Interventions to provide sufficient quality data to effectively manage the fisheries would clearly be needed. Some, such as VMS, have been discussed in this analysis. Others, such as increased use of observers, and enhanced catch monitoring and measuring will be considered as the need arises.

Theme 6. Impacts of the alternatives on State managed fisheries.

Comment 91: ADF&G scientists contest the statement that state-managed pollock and cod fisheries have the ability to reduce the abundance of prey and disrupt prey fields for foraging Steller sea lions. This is an opinion with no supporting evidence.
Response: The NMFS 2001 Biological Opinion (Appendix A of this SEIS) discusses possible direct and indirect cumulative effects of state managed fisheries on Steller sea lions in section 6.2. Earlier studies by the Alaska Steller Sea Lion Restoration Team (ADF&G, August 2001), NMFS (November 2000a), and ADF&G (Kruse et al October, 2000) have also discussed possible effects of state managed fisheries on Steller sea lions.

Comment 92: The SEIS reports that effects "have been identified for state-managed fisheries such as herring and salmon, through removal of important prey species of the Steller sea lion. (page 4-376). We dispute the validity of that statement.
Response: This subject is, to a great extent, outside the scope of this analysis. The section was simply pointing the reader to a discussion of the subject in the Draft Programmatic SEIS.

Comment 93: The SEIS fails to include sufficient information about predominant fishing gears and practices occurring in the fisheries.
Response: CEQ regulations implementing NEPA do not require that an EIS contain encyclopedic level descriptions of all that the reader may need to know about fishing gears used off Alaska. The following references would be helpful for many readers: 50 CFR 679.2 for definitions of fishing terms beyond those normally found in textbooks; the NMFS Alaska Region Website (http://www.fakr.noaa.gov/), the NPFMC website http://www.fakr.noaa.gov/npfmc/) and the numerous publications in the NOAA Technical Memorandum series.

Comment 94: (page 4-550 - 4-551). This section needs to be beefed up to address measures taken at the October, 2001 Council meeting to address the Dutch Harbor exclusion adopted by the Council, and a consideration of the Chignik exemption if the Board considers adjusting the state water portion of Option 1 during the state water Pacific cod fishery. Both of these exclusions were listed in the biological opinion as not greatly changing the jeopardy bar.
Response: Thank you. Additional material has been added to section 4.14.

Comment 95: In section 4.10, NMFS makes the statement that: "if it becomes known that a state fishery is reasonably likely to have a significant negative effect on Steller sea lion foraging, ADF&G intends to pursue action to appropriately modify the fishery". We believe that this is a presumptive statement with no supportive evidence since we do not believe that state fisheries are likely to have a negative effect on Steller sea lion foraging.
Response: The intent of the statement was not to implicate state-managed fisheries, only to point the reader towards possible remedies in the event that such impacts did occur.

Comment 96: Numerous technical comments were made by the State of Alaska on section 3.10 and 4.10.
Response: Thank you, for the close reading and careful editing. The sections have been changed to reflect the comments.

Comment 97: The SEIS should not use the term "state managed fishery" to describe the non-parallel cod fishery that occurs in state waters. State regulations use the term "state waters season".
Response: NMFS agrees, and has changed the phrase accordingly.

Theme 7. Comments concerning the analytical structure of this analysis.

Comment 98: The telemetry data should be used to track the activity of individual animals over time within the context of the bathymetry of their home range and the fisheries that might occur in those areas. [Comment letter 0217 presents several examples of the tracks of individual Steller sea lions and how they related to fishing activity].
Response: NMFS agrees. This type of analysis is part of an ongoing research project within NMFS and ADF&G. We note that examples are on the NMFS/NMML webpages. These provide an example of the type of analysis using bathymetry and location/dive data suggested by the commenter.

Comment 99: NMFS should re-analyze the telemetry data. In addition to partitioning the hits inside/outside 10 nm, the hits should also be partitioned inside/outside the continental shelf break (>1000 fathoms). There is almost no fishing for cod or pollock beyond the shelf, but a large percentage of the Steller sea lion telemetry hits beyond 10 nm were also off the shelf, especially during the summer [comment letter 217 presents a brief re-analysis of the telemetry data to demonstrate this].
Response: NMFS agrees that additional analysis of the telemetry data are warranted. NMFS has been analyzing all the telemetry data regardless of where the hits are in relation to proposed management schemes. The recent analysis pertaining to the 10/20 nm bins was at the specific request of the RPA committee but includes only a small portion of the overall effort of NMFS and ADF&G in their analysis of the telemetry data. Efforts are underway to try and match Steller sea lion telemetry data in time and space with oceanographic characteristics, with commercial catch data, and fish assessment data. Such analyses are complex and extremely time consuming. Results will be presented to the scientific community when appropriate.

Comment 100: The SEIS Alternative 4 "Global Control Rule" fails to avoid jeopardy and adverse modification at the global scale of competitive interaction, resulting from the cumulative effect of the F40% MSA based harvest policy.
Response: NMFS has determined, based on the available scientific information, including the most recent telemetry analysis and food habits data, that Alternative 4 will successfully eliminate competition between the subject fisheries and Steller sea lions in such a way as to avoid jeopardy and adverse modification of critical habitat. This determination is documented in the Biological Opinion dated October 19, 2001.

Comment 101: The analysis adopts the mean daily average removals of the five alternatives added together as the reference point against which all of the alternatives are compared, yet no justification for why this reference point is appropriate is provided.
Response: The analysis (section 4.1) has been revised.

Comment 102: The SEIS fails to analyze the operative assumptions of the FMP harvest policy, including the theory of surplus production, or explain how these assumptions are consistent with needs of Steller sea lions and other consumers in the ecosystem.
Response: Using CEQ NEPA regulations the analysis undertaken was intended to disclose the environmental impacts of the alternatives. The analysis includes discussion of direct effects and their significance, indirect effects and their significance, as well as other requirements of §1502.16. An analysis of the operative assumptions of FMP fish harvest policies are quite beyond the scope of this action. For readers interested in stock assessment and fishery evaluations we recommend the annual groundfish SAFE reports prepared by NMFS Alaska Fishery Science Center, and the textbook *Quantitative Fish Dynamics* by Dr. Terry Quinn.

Comment 103: The analysis repeatedly states that the deviations from mean daily removals are not additive, yet they are arrived at by adding daily catches across areas. Adding the catches is, in effect, adding the deviations. Thus, why it is that the deviations are not additive should be clearly explained.
Response: This analysis (section 4.1) has been revised and the calculation process clarified.

Comment 104: The Biological Opinion, Table 5.3 provides very crude percentages of critical habitat that would be closed under alternative 4. This information is inadequate to characterize the actual area that would be protected under this alternative. The SEIS provides an analysis of areas closed and partially closed to fishing under the alternatives (Table 4.8-2, page 4-240) but fails to analyze seasonal differences. NMFS should combine the format of the Biological Opinion Table 5.3 and the SEIS Table 4.8-2. This same information should be provided for previous pollock RPAs and pre-1999 protective regulations dating back to 1991.
Response: Work is ongoing with these types of area manipulations and presentations. NMFS, the Council, and many of the industry constituents, are investing considerable amounts of their management and research budgets into geographic information system staff and equipment. Among the anticipated products will be descriptions of habitat, how much there is and where it is located. NMFS expects to be able to provide refined area estimates, with defined confidence limits, in the next few years. However, whether these data are know to the nearest 100 square kilometers, or only to the nearest 1000 square kilometers, is not thought to be a factor in our present impact determinations.

Comment 105: The basis for determining significance in the effects analysis is marginal change from the 1998 baseline. Thus, the analysis states that Alternative 4 will have only "marginally less temporal and spatial concentration and similar levels of disturbance as that which occurred in 1998". This then allows the analyst to determine that Alternative 4 will have insignificant effects. However, given that NMFS concluded that fishing under the 1998 regime jeopardized Steller sea lions and adversely modified their critical habitat, it appears that Alternative 4 is only "insignificant" from the viewpoint of an arbitrarily selected 1998 baseline.
Response: NMFS disagrees. Given the scope of the analysis, NMFS took care to choose appropriate baselines and reference points and to apply them consistently.

Comment 106: The SEIS fails to provide any analysis or new information that justifies the 2001 Biological Opinion's approach to critical habitat, which is based on an arbitrary and capricious interpretation of the telemetry data. The final SEIS must discuss and relate the findings of the Council-commissioned review panel to the Draft Biological Opinion's interpretation of the telemetry tracking data, approach to critical habitat and assumption about avoiding jeopardy and adverse modification of critical habitat.
Response: The 2001 Biological Opinion was based on the best available information.

Comment 107: Figure 4.1-6 has no units on the Y axis. The large deviations shown for some months for Alternatives 2 and 4 do not seem possible in a relative sense, given that the areas under the curve show the calculated deviations of the combined BSAI pollock and cod fisheries.
Response: The figure has been revised to indicate Y axis units.

Comment 108: The SEIS fails to analyze the telemetry tracking data or evaluate its interpretation in the Biological Opinion.
Response: NMFS disagrees that there was no analysis of the telemetry data. However, the analysis of these data is ongoing.

Comment 109: NMFS should delete "core question" number 2 from the analysis ("Does the alternative management regime result in fisheries harvest on prey species of particular importance specific to marine mammals, at levels that could compromise foraging success").
Response: The analysis of core question #2 has been extensively revised. See section 4.1.

Comment 110: By comparing the alternatives only to fishing practices occurring in 1999, NMFS fails to provide an adequate baseline. A more appropriate baseline would be a "no fishing alternative".
Response: NMFS disagrees. Given the scope of the analysis, NMFS took care to choose appropriate baselines and reference points and to apply them consistently.

Comment 111: The analysis of impacts is laid out improperly because impacts of the alternatives are discussed resource by resource, rather than alternative by alternative. If a reader wishes to adequately distinguish between the overall effects of alternatives, they must jump back and forth from section to section.
Response: Any organizational scheme involves tradeoffs. NMFS agrees that, for some readers, a layout such as this comment recommends would have been preferable. However, other readers, especially those primarily interested in a single resource, would have found an alternative by alternative-based layout distracting.

Each resource in this analysis is evaluated against a reference point. Questions are crafted to address impacts against the established reference points. The criteria to evaluate the resource against the established reference point are laid out for the particular resources. For the biological and ecological resources, several pages of explanation are provided before determining impacts associated with a particular alternative. If impacts were displayed alternative by alternative, those analytical set up descriptions would either have to be repeated five times so the impact findings are with the explanation of the analysis, or they would have to be set off somewhere separate from the findings. Neither of those arrangements has beneficial organizational qualities. The first would result in five repetitions of the same material, the second would require a lot of flipping back and forth on the reader's part.

Comment 112: The SEIS fails to assess cumulative reductions of prey biomass resulting from the FMP exploitation strategy (F40% proxy for FMSY) at the global scale of competitive interaction as required in Biological Opinion 3.
Response: Stock assessments and surveys are ongoing by the Alaska Fisheries Science Center. Refinements and expansions of the program are occurring all the time. New interpretations of these data are published in annual stock assessment and fisheries evaluation reports and peer reviewed journals. The agency is in compliance with monitoring requirements to the best of our knowledge and fiscal restrictions.

Comment 113: The analysis includes the statement: "average daily fisheries removal rates may be higher or lower than this value" (page 4-6) and then goes on to present results which the above statement renders completely meaningless.
Response: NMFS disagrees that this caveat has a significant effect on the results.

Comment 114: The analysis [in section 4.1] should state clearly that there is no evidence of any localized depletions of pollock or cod in the BSAI and GOA management areas.
Response: NMFS acknowledges that there is insufficient evidence to determine conclusively whether or not localized depletions of these species occur. All relevant research was referenced in the analysis. Further, the Alaska Fisheries Science Center experiment into efficacy of no-trawl zones, as discussed on page 4-20 is designed to increase our knowledge of this. Interpretation of results from that experiment are several years away.

Comment 115: We have conducted an expanded analysis of the telemetry data that is extensively discussed in Appendix A to the SEIS. We believe that this analyses substantiates the NMFS conclusions regarding the relative importance of areas within 0-10 miles of rookeries and haulouts. [A 34 page analysis is included as part of the comment, see letter 793].
Response: NMFS acknowledges the additional analysis of the telemetry data.

Comment 116: The term "conditionally significant" should not be used. NMFS should limit its categories to significant, insignificant and unknown.
Response: NMFS is considering this point for future analyses, but will not be changing the terminology for describing significance for this analysis. The use of the qualifier "conditional" is important to readers interested in knowing for which issues incomplete or unavailable information was a factor in the findings. When the qualifier of conditional is attached to a significance rating it does indicate incomplete or unavailable information. If the conditional qualifier is abandoned another system will need to be devised to indicate where incomplete or unavailable information exists.

Comment 117: The discussion of cumulative effects is confusing because it includes "past external influences" or historical effects. This allows assessment of past events in the cumulative effects section but the analysis would be clearer if these were included in the description of the baseline.
Response: NMFS disagrees. The cumulative effects section was based on the guidelines developed in the CEQ's cumulative effects handbook (CEQ 1997) and federal agency guidelines based on that handbook.

Comment 118: The SEIS fails to demonstrate that fishing mortality rates and corresponding TAC limits under any alternative are adequate to address jeopardy and adverse modification at the global scale of competitive interaction.
Response: Steller sea lion prey and foraging behavior are discussed at length in section 3.1.1.7. Following that in section 3.1.1.8 on physiology and nutrition, is a quantitative presentation of food intake requirements. Question 2 in the effects on marine mammals analysis is: Does the alternative management regime result in fisheries harvest on prey species of particular importance to marine mammals at levels that could compromise foraging success? Findings were insignificant for all five alternatives. Question 3 in the effects analysis is: Does the alternative management regime result in temporal or spatial concentration of fishing effort in areas used for foraging by marine mammals? Findings were insignificant for Alternatives 4 and 5 and conditionally significant beneficial for Alternatives 2 and 3. The question of jeopardy was addressed in the Biological Opinion. The determination is that Alternative 4 will not pose jeopardy to the endangered Steller sea lion.

Theme 8. Comments on the NEPA process or other associated issues.

Comment 119: Table 5.2 of the Biological Opinion seems to be the framework for the RPA, but there are significant differences between the measures in the Table and the actual RPA. [note: we don't have an RPA, we have Steller sea lion protection measures. We believe this comment refers to Table 5.4 of the 2001 Biological Opinion.]
Response: The preparers made a crosswalk of fishery management measures that would be present under each of the five alternatives to help readers understand the differences between alternatives (see Table ES-1 or Section 2.3 containing a Table 2.3-2). These comparisons are organized by type of fishery management measure using broad categories of management tools.

Comment 120: The comment period should remain open for an additional 60 days.
Response: Timing considerations relating to the orderly conduct of the 2002 groundfish fisheries preclude extending the comment period. Constituents will have many future opportunities to comment on other analyses and related fisheries management actions at all North Pacific Fishery Management Council meetings.

Comment 121: The draft EIS is difficult to read, poorly organized and is not arranged in a logical manner.
Response: Though the subjects are complex and the issues numerous, NMFS disagrees that the analysis is poorly organized. The organization follows a logical and predictable pattern throughout the document. Because impacts of these fisheries on Steller sea lions are key issues, they are always treated first and in the most depth. Following Steller sea lion discussions are the other marine mammal species and groups, principal target groundfish fish species, non-specified fish species, forage fish, prohibited species, endangered species act listed pacific salmon, seabirds, habitat, ecosystem, state managed fisheries, management and enforcement issues, and social and economic parameters. The organization of topics in the Affected Environment and Environmental Consequences chapters are mirror images; to read the background of any section in chapter 4 turn to the same subsection number in chapter 3. The cumulative impact analysis follows the same order and section numbering scheme. Each section has a summary table for comparison of impacts across all five alternatives, plus Table ES-2 provides one complete summary of impacts across the five alternatives for all resources and issue analyzed.

Comment 122: The SEIS fails to review and relate previous ESA Section 7 consultation findings and independent scientific panel findings regarding the importance and treatment of critical habitat to Biological Opinion 4's radical new approach to critical habitat.
Response: NMFS disagrees. The history of prior consultations is summarized in the biological opinion. Findings by the Academy of Sciences' panel are not available yet. The Council retained independent scientific panel had not released their findings prior to preparation of the 2001 biological opinion.

Comment 123: We have rated the draft SEIS EC-2 (Environmental Concerns-Insufficient Information). [The rationale for this rating is set forth in comment number 790]
Response: Rating has been noted. EPA's specific comments about this analysis are paraphrased into the rest of these comments and responded to accordingly.

Comment 124: The United Nations Highly Migratory and Straddling Fish Stocks Agreement directs signatory nations to incorporate the precautionary approach in the way the manage their own fish stocks. The U.S. is a signatory nation and should begin living up to this commitment.
Response: Fisheries management of North Pacific groundfish species is underlaid by principles of the precautionary approach. Stocks of pollock, Pacific cod, and Atka mackerel are not presently, and have not in the past, been overfished.

Comment 125: NMFS rationale for rejecting full consideration of the "no fishing" alternative--that it would be inconsistent with the FMP and the Magnuson-Stevens Act-is insufficient. NEPA requires an EIS to examine all reasonable alternatives, including those that may conflict with certain statutory requirements.
Response: The no fishing alternative has been considered previously (i.e., NPFMC 1981, NMFS 1998a, NMFS 2001a), and it is an alternative that has been analyzed repeatedly in the annual TAC setting NEPA analysis. It was not considered in this analysis because it would be inconsistent with the objectives for these FMPs and the Magnuson-Stevens Act.

Comment 126: The SEIS fails to consider a reasonable range of alternatives. A range of alternatives between a no fishing and the "no action" alternative should have been considered. Specifically, NMFS should have presented an alternative that set TAC levels at 50% of their current level. The DSEIS should thus be revised as provided in 40 C.F.R. Section 1502.9(a).
Response: Alternative 2 falls between a no fishing scenario and the no action alternative (1). We recognize that Alternative 2 does not go so far as setting TAC levels at 50% of their current level, however, the scope of this analysis was never envisioned to be an exploration of the impacts associated with setting TACs at various percentages of their current level.

Comment 127: We fully endorse the comments submitted by Greenpeace, American Oceans Campaigning and the Sierra Club [comment letter [comments 8-10].
Response: Statement of constituent's position noted.

Comment 128: Alternative 4 fails to satisfy outstanding requirements of previous Biological Opinions RPAs or explain why such measures are no longer necessary.
Response: NMFS disagrees that Alternative 4 fails to satisfy the RPAs or that Alternative 4 is not in full compliance with the ESA. The response to the next comment gives an overview of the relationship between this environmental impact statement, the latest Biological Opinion (October 19, 2001), and prior Biological Opinions.

Comment 129: The RPAs associated with Biological Opinion 3 (the FMP Biological Opinion) stated that competitive interaction must be addressed on three scales to eliminate jeopardy: global, regional and local. Biological Opinion 3 was not superceded by Biological Opinion 4 and continues to be the governing document for this management decision. We fail to see any justification for ignoring the principles of Biological Opinion 3's RPAs in the draft EIS. Further, we fail to see how Biological Opinion 4 can reach dramatically different conclusions than Biological Opinion 3 while at the same time acknowledging that the RPAs as recommended by Biological Opinion 3 are still valid.
Response: The November 30, 2000 biological opinion was developed in response to the Court, which had determined that NMFS had not successfully prepared a comprehensive, FMP level opinion. For that opinion NMFS determined that the action (authorization of the BSAI and GOA FMPs) was likely to jeopardize Steller sea lions and adversely modify their critical habitat. NMFS developed an RPA as required by regulation that involved both FMP level and project level elements. For example, the implementation of a

global control rule was an FMP level element of the RPA, while fishery closures for pollock in certain areas was a project level element. In 2001, NMFS received substantial new information on the location of Steller sea lions and their relative location to fisheries. This prompted the Council to develop a new fishery management regime for pollock, Pacific cod, and Atka mackerel based on the new information and the need to avoid jeopardy and adverse modification of critical habitat. Consultation was requested by the Sustainable Fisheries Division on the new proposed action. This new proposed action was not an RPA. Additionally, the consultation was requested at the project level, and did not require a new biological opinion at the FMP level as the only element at the FMP level was the global control rule which was not being substantially changed from the previous consultation. Therefore, the Nov. 2000 biological opinion still stands as NMFS requirement to consult on the FMPs. The October 2001 opinion meets NMFS' requirements to consult at the project level on all federal actions.

The October 2001 biological opinion incorporates much of the Nov. 2000 opinion as an overarching guiding document for the fisheries. However, at the project level, the October 2001 opinion utilized new information not available in Nov. 2000 to determine whether the proposed action is likely to jeopardize Steller sea lions or adversely modify their critical habitat. The October 2001 biological opinion relies more heavily on protection of nearshore areas than on the temporal and spatial distribution of the fishery, in large part due to the limited interaction between fisheries and sea lions as determined from the new telemetry information. It should be noted that as new information becomes available, NMFS is required to re-initiate consultation if that information would change the way in which NMFS manages fisheries in order to avoid jeopardy and adverse modification of critical habitat.

Comment 130: The national standards and other applicable law dictate the selection of Alternative #4 as the preferred alternative [commenter presents 7 pages of commentary on this issue, see letter 793].
Response: Statement of constituent's position noted.

Comment 131: The SEIS fails to evaluate, explain or justify the basis of the arbitrary Biological Opinion conclusion that food limitation and nutritional stress are less important factors in the current decline. These conclusions are counter to the conclusions of earlier Biological Opinions and appear to be based on very limited research and small sample size experiments.
Response: Both the SEIS and Biological Opinion discuss the equivocal nature of the available data for determining the role that food limitation and nutritional stress may have on the Steller sea lion decline. The available data neither support nor negate the hypothesis that nutritional stress is the cause for the decline in numbers of the western stock of Steller sea lions. NMFS does, however, utilize the best available data which suggests that the decline is likely caused by both nutritional stress from an unknown source and the synergistic effects of environmental variability. In the absence of compelling data, NMFS feels that it has reached the appropriate conclusions with the best available data.

Comment 132: In the discussion of ecosystem based management, there should be a statement that the NPFMC has been a leader in ecosystem based approaches to management and give examples.
Response: We agree that management measures implemented for Alaska groundfish generally follow measures recommended by the National Research Council for an ecosystem-based approach. A discussion of the current fisheries management policies relative to an ecosystem based approach is contained in the Draft Programmatic SEIS (NMFS 2001a).

Comment 133: The SEIS fails to provide any analysis or supporting evidence showing that Alternative 4 trawl exclusion zones will eliminate competition between foraging Steller sea lions and large trawl fisheries around rookeries and haulouts as required in the December 1998 Biological Opinion, the October 1999 pollock RFPRA and the November 2000 FMP Biological Opinion.
Response: Based on the section 7 consultation concluded on October 19, 2001, it is NMFS position that the preferred alternative complies fully with the requirements of the ESA.

Comment 134: The conclusions of the 2001 Biological Opinion [i.e. the zonal approach] are the basis for the alternatives presented in the SEIS. Based solely on the telemetry data NMFS has determined that spatial and temporal dispersion are low priority beyond 10 nm, and that catch limits beyond 10 nm are unnecessary. NMFS has failed to disclose and analyze available information, including its own consultation record.
Response: NMFS finds that all relevant information, including the past history of consultations, has been analyzed and disclosed.

Comment 135: NMFS has selected a preferred alternative that does not comply with either the EFH requirements of the Magnuson-Stevens Act or the Endangered Species Act.
Response: Based on the ESA section 7 consultation concluded on October 19, 2001, and the Essential Fish Habitat consultation concluded on October 24, 2001, and this NEPA environmental impact statement document, it is NMFS position that the preferred alternative (Alternative 4 of the Steller Sea Lion Protection Measures SEIS) complies fully with the requirements of the ESA, the Magnuson-Stevens Act, and other applicable law.

Comment 136: The SEIS does not comply with the CEQ regulations regarding incomplete or unavailable information. The agency must summarize the "existing credible scientific evidence" relevant to analyzing those impacts and set forth the agency's analysis of the impacts based upon theoretical approaches or research methods generally accepted in the scientific community.
Response: The commenter is pointing out direction given in Section 1502.22 of the Council on Environmental Quality regulations for implementing NEPA. The preparers of this analysis respectfully disagree with the comment. Actually a great amount of attention was given to summarizing the "existing credible scientific evidence" in the analysis. The affected environment chapter of this analysis was custom written for this proposed action. The topics included are all the resource topics and issues identified during scoping as important to predicting the direct, indirect, and cumulative impacts that will result from implementing changes to fishery management measures for these fisheries. Care was taken throughout these descriptions to reference all (or at least most) pertinent scientific literature that exists and informs agency understanding of these topics. The reference list (chapter 7) contains no less than 921 references.

Further, in preparing the environmental consequences analysis section of the document, incomplete and unknown information relevant to predicting reasonably foreseeable significant adverse impacts is systematically displayed by incorporating the concepts of "conditional" and "unknown" into significance determinations. See the introductory text of Chapter 4 where these concepts are explained.

Comment 137: The SEIS is too complicated and confusing to be understood by the general public. The document should contain a glossary of all scientific terms and an explanation of key scientific concepts.
Response: NMFS sympathizes. The subject is a complex one and the document is necessarily difficult. NMFS is conscious of the fact that in order to make sense of much of the information the reader would already have to understand much about the fisheries and marine life of the North Pacific. However, NEPA does not require that an EIS contain encyclopedic level descriptions of all that the reader may need to know in order understand fisheries management. The following references would be helpful for many readers: 50 CFR 679.2 for definitions of terms beyond those normally found in textbooks; the NMFS Alaska Region Website (http://www.fakr.noaa.gov/), the NPFMC website (http://www.fakr.noaa.gov/npfmc/) and the numerous publications in the NOAA Technical Memorandum series.

Comment 138: The SEIS overemphasizes socio-economic issues at the expense of analysis of effects on Steller sea lions. As recognized by the EPA in its review of the Draft Programmatic SEIS, filling an EIS with socioeconomic information is a poor substitute for ecological information and may, in fact, distort the analysis [commenter cites a letter from EPA to NMFS]. The emphasis of this SEIS must be on effects on Steller sea lions with the effect on socio-economics being a secondary consideration.
Response: The balance between presentation of ecological information and socio-economic information in this analysis is appropriate. The purpose and need of the federal action is clearly stated in section 1.2. The primary purpose is to modify the fisheries such that the reconfigured fisheries do not jeopardize the continued existence of SSL or adversely modify their critical habitat. A secondary objective is to modify the fisheries such that the reconfiguration minimizes the economic and social costs that will be imposed on the commercial fishing industry and associated coastal communities.

Socio-economic issues were paramount in the minds of constituents from the groundfish fishing industry, coastal communities, State of Alaska, and North Pacific Fishery Management Council when the agency first set out to implement Alternative 3, the Reasonable and Prudent Alternative from the NMFS 2000 Biological Opinion. The cost in first wholesale gross revenues alone was estimated to be hundreds of millions of dollars a year (between \$224 and \$401 million). The controversy that erupted over that proposal was tremendous and seriously unsettling to the industry. The document contains a comprehensive evaluation of ecological impacts (including all affected species of marine mammals, marine fish and invertebrates, benthic habitat and benthic organisms, seabirds, and the ecosystem in total); it also contains complete social and economic impacts analyses for all socio-economic issues associated with this proposed federal action. Ecological issues are presented first organizationally, and the conclusions are supported with science. Although NEPA alone wouldn't have required it, a complete Regulatory Impact Review was included with the analysis (Appendix C). It was required because actions taken to amend fishery management plans or implement other regulations governing the fisheries must be in compliance with the requirements of other federal laws and regulations. One of those is Executive Order (E.O.) 12866 which requires, "In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives..Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity)."

The CEQ regulations discuss incorporation of a cost-benefit analysis by appending or reference if one is available, at 1502.23. The section says that, "...when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities." The RIR does that with sections on (a) the existence value of Steller sea lion preservation, (b) non-consumptive values from preservation, and (possibly) (c) subsistence use of Steller sea lions.

Comment 139: NMFS released "revised" sections of the Draft SEIS at the October Council meeting. If these revised sections are part of the draft SEIS, they should be released to the general public and the comment period should be extended so that the public can comment on their contents.
Response: The commenter is referring to some trial revisions (draft rewrites) to sections of the draft analysis that received criticism during the first few weeks of public review (and prior to the close of the public comment period). The analysts preparing the document saw that the criticisms were valid concerns about interpretation of results and that those sections should be revised (or expanded) prior to finalization of the analysis. These trial rewrites were non-continuous sequences of pages from sections 3.12.2.10, 4.1, 4.12.2.7, section 1.4.3 of Appendix C, and Appendix F3. Copies were distributed freely to the general public as well as Council and Committee members at the meeting. Council meetings are attended by the majority of constituents that are interested in this action. It was also an opportunity for analysts involved in preparing the document to get feedback on the analytical approach from other peers, agency representatives, and individuals most informed on these topics.

The subject revisions themselves are not substantial in the sense of making major changes in conclusions of the analysis, nor were they associated with structural changes to the alternatives or the addition of a new alternative, therefore, NMFS did not extend the comment period or undertake a second public review of a revised analysis.

Comment 140: The RPA NEPA process is a sham justifying a decision already made. An EIS is a vehicle to analyze the effect of federal actions and to allow the consideration of reasonable alternatives. The timing of the SEIS and the Biological Opinion make it clear that the SEIS is being used to justify a decision that has already been made. Comments on the SEIS were due by October 15 and NMFS intended to release a final Biological Opinion, that only examines the effect of Alternative 4, on October 19. If NMFS were to choose an alternative other than Alternative 4 in the ROD, NMFS would be unable to have a revised Biological Opinion in place prior to the opening of the fisheries in January of 2002. Since NMFS has clearly stated that they intend to open the fisheries in January of 2002, they have no alternative other than to choose Alternative 4.
Response: NMFS maintains the NEPA process used to inform decision makers of the impacts associated with reconfiguration of the pollock, Atka mackerel, and Pacific cod fisheries was as thorough and timely as any that has ever occurred. The agency recognized that an EIS was the appropriate NEPA analysis to inform decisions about this action at the very beginning of the process. The Regional Administrator informed the Council via a letter dated February 1, 2001. That letter was distributed to the public during the Council's February meeting, and the facts of the matter were a fundamental part of the RPA Committee, staff tasking, and all the other public processes that occurred after the Council voted on December 9, 2000, to not adopt the conclusions of the NMFS 2000 Biological Opinion or the RPA contained therein.

The preparers took scoping of this analysis very seriously; attended all the public meetings where Steller sea lions or groundfish fishery management were discussed, and followed exemplary NEPA practices throughout. No issue was dismissed or shortchanged in the analysis. On numerous occasions status reports of the analysis were circulated.

The array of alternatives that were analyzed developed from a series of meetings and decisions designed to fully bracket all the reasonably foreseeable actions that might be taken. The decision to manage the ESA and NEPA processes in parallel was made by the lead agency early in the process (letters dated March 7, 2001). Likewise the decision to prepare a draft biological opinion on only the preferred alternative was appropriately an agency decision. The draft analysis was before the North Pacific Fishery Management Council before any final recommendations were made.

Last, Alternative 3 is the action that was recommended as the reasonable and prudent alternative in the NMFS 2000 Biological Opinion. It could be implemented without triggering re-initiation of consultation, although preparing the rule and implementing it by January 2002 would be difficult. Staff resources are limited, therefore, the agency has not had the luxury of staff to prepare rule language for other than the preferred alternative.

Comment 141: The SEIS must explicitly consider recovery in framing alternatives and in analyzing the effect of those alternatives. In NMFS' regulations implementing the ESA, NMFS has determined that the jeopardy inquiry requires consideration of whether an action would be expected to reduce the likelihood of both the survival and recovery of a listed species. In this SEIS, NMFS fails to tie the analysis to a recovery goal thereby failing in its statutory mission to ensure the recovery of the Steller sea lion.
Response: NMFS addressed the recovery standard in the October 2001 biological opinion under the ESA, and determined that Alternative 4 would not jeopardize either the survival or recovery of Steller sea lions. See responses to comments 1, 10, 20, and 22 as the thrust of comments are similar.

Comment 142: The SEIS fails to consider substantial information relevant to the Biological Opinion's interpretation of the telemetry data, indicating that Steller sea lions forage extensively beyond 10 nm. [commenter presents a multi-page analysis of this argument, reproduced in full on page 23-26 of comment # 786].
Response: NMFS disagrees. While some disagreements among researchers may exist on specific aspects of specific research, NMFS has attempted to use the best available information to draw reasoned conclusions. Complete agreement on interpretation of data as complex as these is unlikely in the near term

Comment 143: It is not possible for the agency to comply with all the reasonable and prudent measures and terms and conditions set forth for monitoring in the incidental take statement of the Draft Biological Opinion. In particular the condition requiring monitoring of vessels fishing for groundfish inside specified closed areas to determine if they are directed fishing for pollock, Atka mackerel, or Pacific cod.
Response: These reasonable and prudent measures were reviewed among regulatory, enforcement, and the consulting staff, and revised to respond to the concerns expressed by the commenter. Increased use of vessel monitoring systems is part of implementing the new management measures.