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## A APPENDIX: TIME/AREA CLOSURES: ADDITIONAL ANALYSES AND RESULTS

### *Introduction*

As described in Chapter 4, NMFS evaluated the effectiveness of each of the time/area closure alternatives by determining the percent reduction in bycatch of non-target HMS and protected species for each month and cumulatively for the year based on both POP and HMS logbook data for the combined years 2001-2003. NMFS also analyzed data to determine the impact on catches of retained species such as swordfish, yellowfin, bigeye, and BAYS tunas. Based on the comparison of the POP and HMS logbook data, NMFS initially considered a number of alternatives for time/area closures. However, NMFS chose only a subset of the alternatives for further analysis because of their potential greater ecological benefit in terms of bycatch reduction potential for all species considered. Once a subset of alternatives was chosen for further analysis, social and economic impacts were analyzed along with ecological impacts. The social and economic impacts are not discussed in this Appendix.

This Appendix primarily serves as a summary of the potential benefits and impacts of all the various alternatives considered. Discussion on each of the alternatives that were fully analyzed (alternatives B2(a) – B2(e), B3(a) - B3(b), and B4 - B7) can be found in Chapter 4. A brief discussion of each alternative that was not selected for further analysis (alternatives B2(f) – B2(k) and B3(c) - B3(d)), can be found in Section 2.1.2. An overall summary of the predicted reduction in the number of hooks set (fishing effort) and discards of white marlin, blue marlin, sailfish, spearfish, leatherback sea turtles, loggerhead sea turtles, and bluefin tuna based on the various time/area closure alternatives is given in Table A.1 and Table A.2. Similarly, Table A.3, Table A.4, Table A.5, and Table A.6 summarize the predicted changes to swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, and BAYS tuna kept and discarded under the different alternatives according to 2001 – 2003 pelagic logbook data. Table A.7 and Table A.8 provide a comparison of bycatch reduction based on HMS logbook data and pelagic observer data. Table A.9 through Table A.20 give the temporal catch of bycatch and target species associated with each alternative that was not further analyzed. Similar tables for alternatives that were further analyzed can be found in Section 4.1.2. There are also summaries of bycatch and catch of target species associated with the modification of current time/area closures (*i.e.*, Table A.21 through Table A.27). In addition, Table A.28 – Table A.30 demonstrate how different scenarios of redistributed effort were calculated. Table A.31 - Table A.33 evaluate 2004 data where as Table A.34 and Table A.35 demonstrate the effectiveness of current closures as well as the effect of current closures and circle hooks. Finally, Table A.36 shows results from the fleet mobility analysis described in Chapter 4, and Table A.37 - Table A.41 show the results of the different scenarios of redistributed effort.

A number of figures highlight the different time/area closure alternatives that have been considered (but have not been further analyzed; Figure A.1) as well as swordfish catch and modifications to current time/area closures (Figure A.2, Figure A.3, and Figure A.4). Figure A.5 - Figure A.8 show different aspects of the fleet mobility analysis described in Chapter 4, and Figure A.9 demonstrates the spatial overlap in discards of bluefin tuna, white marlin, and sea turtles in the Gulf of Mexico. Monthly interactions for these different species (*i.e.*, temporal

variability) in the Gulf of Mexico were considered in the redistribution of effort analyses and can be seen in Table 4.10 and Table 4.13.

This section also describes the methodology for evaluating the ecological effects of the redistribution of fishing effort model. NMFS used this model to determine the percent change in total reported bycatch of sea turtles, non-target HMS, and retained species inside and outside of the time/area closures in the Atlantic and Gulf of Mexico. NMFS also evaluated several different scenarios based on this model that had different assumptions regarding where effort from a closed area would be redistributed. Examples (loggerhead sea turtles for alternative B2(d) and white marlin for alternative B2(c)) of how the redistribution of effort calculations were made is described in the following paragraphs and presented in Table A.28 – Table A.30. Similar tables were generated for each species under each alternative that was fully analyzed in Section 4.1.2. These individual species tables were not included in this document due to the large number of tables. Instead, summary tables of redistributed fishing effort were included in Section 4.1.2 as well as in this section.

#### *Redistribution of effort analyses*

NMFS examined monthly catches (number of each species) and effort (number of hooks) in each of the time/area closures in comparison to all open areas of the Atlantic and Gulf of Mexico, excluding the NED, based on HMS logbook data for the fishery. As explained in Chapter 4, only HMS logbook data were used in the redistribution of effort analysis. The number of each species caught in the open areas outside the considered time/area closures (column E in the example of redistribution of effort table, Table A.28), was calculated by subtracting the number caught in the potential closed area from the reported catch in the combined Atlantic and Gulf of Mexico (column B-column D in Table A.28). The catch-per-unit-effort (CPUE) for the species in the remaining open areas was calculated by dividing the number of each species caught in the open areas (column E) by the number of hooks fished in the open areas (calculated by subtracting the number of hooks in the closed area from those in the Atlantic and Gulf of Mexico; column A-column C in Table A.28). The number of hooks that were used in the closed area were multiplied by the open area CPUE to determine the number of loggerhead sea turtles, in this case, that would be caught in the open fishing areas by the displaced effort (column C\*column F). This was then added to the existing open areas' catch (column E+column G) to give a new open area total catch (column I in Table A.28). The estimated total catch (column I) was subtracted from the original total number caught in the Atlantic and Gulf (column B-column H) to estimate the change in number of turtles that would be caught as a result of the relocated effort. Column J shows the cumulative number of turtles avoided by the time/area closure by adding each month's total to the preceding month's total. Columns K and L show the percentage reduction in overall catch by month and cumulatively as a result of the closure, respectively. The total percent reduction in catch was calculated by dividing the sum of column J (cumulative catch avoided by month) by the sum of column B (number of individuals caught in the Atlantic and Gulf of Mexico, excluding the NED). A positive result from the redistribution of effort calculation would indicate a decrease in discards, and a negative result would indicate an increase in discards.

In this example, the redistribution of fishing effort associated with alternative B2(d) would result in an increase in loggerhead sea turtle interactions of 65 percent, or 117 individuals,

over three years (Table A.28). This large increase in loggerhead sea turtle interactions may be due to a number of factors. First, alternative B2(d) would be a large closure in an area that represents approximately 90 percent of the fishing effort in the Gulf of Mexico and approximately 50 percent of the total pelagic longline (PLL) fishing effort (Table 4.12 in Section 4.1.2). Therefore, closing such an area in the Gulf of Mexico could displace a large amount of fishing effort to the Atlantic Ocean. Second, and more specific to loggerhead sea turtles, there are fewer loggerhead sea turtles interactions in the Gulf of Mexico compared to the Atlantic Ocean (Table 4.36 in Section 4.1.2); therefore, as effort increases in the Atlantic as a result of a large closure in the Gulf of Mexico, and since loggerhead sea turtle numbers are higher in the Atlantic Ocean compared to the Gulf of Mexico, the number of interactions would be expected to increase. Thus, it is important to consider the ecological impacts of the redistribution of fishing effort when considering time/area closures. Often the effects may be counter-intuitive and may differ for the various species considered.

Finally, it is worth noting how the redistribution of effort was calculated for different time/area closure combinations. When NMFS considered the redistribution of fishing effort associated with the combination of time/area closures (*e.g.*, B2(a) combined with B2(b) or B2(e) combined with B2(d)), the closures were considered to be closed simultaneously. It was assumed that all fishing effort within those areas would be redistributed to open areas (*i.e.*, open areas not including the combination of B2(a) and B2(b) or B2(e) and B2(d)), and the redistribution of fishing effort was calculated according to the description outlined above. Thus, the end result, in terms of resulting bycatch when accounting for the redistribution of fishing effort, was not simply the sum of the bycatch associated with the individual closures. In cases where the time/areas closures were seasonal (*i.e.*, they were not year-round), then the time/area closures were considered to be simultaneously closed during months of overlap (*i.e.*, the month of June for alternative B2(a) and B2(b) combination). Otherwise, they were considered to be single time/area closures, and the redistribution of fishing effort was calculated as outlined above.

#### *Different redistribution of effort scenarios*

Based on comments received and OMB peer reviews, NMFS evaluated different scenarios of redistributed effort based on the redistribution of effort model explained above. Each scenario addressed different assumptions regarding where fishing effort could be redistributed into open areas (*i.e.*, instead of assuming all fishing effort from a closed area would be uniformly distributed to all open areas or just redistributed within the open areas of the Gulf of Mexico). NMFS performed a fleet mobility analysis to determine where the PLL fleet has been fishing from 2001-2004 (see Section 4.1.2). The analysis demonstrated that there was limited movement from the eastern seaboard into the Gulf of Mexico, therefore, NMFS redistributed fishing effort only to open areas along the eastern seaboard for B2(b). The mobility analysis also showed that vessels with homeports in the Gulf of Mexico tended to fish in a certain area of the Atlantic (Area 6). Therefore, for B2(a) and B2(c), NMFS redistributed fishing effort in the open areas of the Gulf of Mexico and Area 6. These different scenarios of redistributed effort were used to determine the percent reduction or increase in total reported bycatch of sea turtles, non-target HMS, and target species given particular catch rates in either only open portions of the Atlantic (alternative B2(b)) or open portions of the Gulf of Mexico and Area 6 (alternatives B2(a) and B2(c)). The methods used to calculate percent changes in catch

for each species with these different scenarios of redistribution of effort is discussed below. The steps taken for the redistribution of effort analysis for white marlin for alternative B2(c) are presented in separate tables as examples (Table A.29 and Table A.30).

NMFS examined monthly catches (number of each species) and effort (number of hooks) for the closures B2(a), B2(b), and B2(c) in comparison to specific open areas of the Atlantic and Gulf of Mexico, excluding the NED, based on logbook data for the fishery from January 2001 through June 2004. The following example is for the redistribution of white marlin from the B2(c) closure; NMFS considered redistributing effort within the open areas of the Gulf of Mexico and in Area 6 (see Figure A.5). This scenario of redistributed effort would also apply for all species in the B2(a) and B2(c) closures. In this example, the number of white marlin caught from April through June in the open areas of the Gulf of Mexico outside B2(c) (column E in Table A.29) was first calculated by subtracting the number caught in the closed area from the reported catch in the open of the Gulf of Mexico (column B-column D in Table A.29). The CPUE for white marlin in the remaining open areas of the Gulf of Mexico (column F) was calculated by dividing the number of white marlin caught in the open areas (column E) by the number of hooks fished in the open areas (calculated by subtracting the number of hooks in the closure from those in open portion of the Gulf of Mexico; column A-column C in Table A.29). The number of hooks that were used in the closed area was then multiplied by the open area CPUE (column C\*column F) to determine the number of white marlin that would be caught in the open fishing areas by the displaced effort (column G in Table A.29). This was then added to the existing open areas' catch (column E+column G) to give a new open area total catch (column I in Table A.29). Note that a positive number from the redistribution of effort calculation indicates a decrease in bycatch whereas a negative amount indicates an increase in bycatch.

Next, NMFS calculated any changes in bycatch associated with redistribution of effort in Area 6. This was done by first calculating the CPUE in Area 6 for white marlin (column F in Table A.30) by dividing the white marlin discards in Area 6 (column B in Table A.30) by the number of hooks fished in Area 6 (column A in Table A.30). The number of discards in Area 6 as a result of displaced effort from B2(c) (column G in Table A.30) was calculated by multiplying CPUE in Area 6 (column F in Table A.30) by the number of hooks displaced out of B2(c) (column C in Table A.30). Again, a positive number indicates a decrease in bycatch whereas a negative amount indicates an increase in bycatch. The total reduction or increase in catch associated with the redistributed effort of the closure (column H in Table A.30) was found by adding up the total number of discards avoided by the closure in the Gulf of Mexico (column I in Table A.29) minus the total number of discards in Area 6 as a result of displaced effort from B2(c) (column G in Table A.30). The total percent reduction in catch was calculated by dividing column H in Table A.30 by the total number of white marlin discarded in all other open areas (number of individuals caught between January 2001 through June 2004 in the Atlantic and Gulf of Mexico, excluding the NED; column I in Table A.30). The scenario of redistributed effort for B2(b) was more straightforward. It only considered redistribution of effort in the open portions of the Atlantic. Therefore, it was calculated according to the example laid out in Table A.28; however, the numbers of hooks and discards were only considered for the Atlantic and not the Atlantic and Gulf of Mexico as shown in Table A.28.

### *Analyses for the potential modifications to existing closed areas*

For the analyses of modifications to existing closed areas, NMFS analyzed PLL logbook and POP data from 1997 – 1999, the period prior to enactment of the closed areas. This time period was selected since the current closures have been in place since 1999, and observer and logbook data provide a record of the bycatch and species that were interacted with during this time. A number of potential modifications to existing closures were examined, including the East Florida Coast (Table A.22), DeSoto Canyon (Table A.23), Charleston Bump (Table 4.29), and Northeastern U.S. closure (Table 4.30). NMFS mapped data from the PLL logbook and POP using GIS and used oceanographic features such as the axis of the Gulf Stream, or natural breaks in areas between high and low bycatch within the existing closure, to establish potential new boundaries for each closed area. NMFS then calculated the total number and percent bycatch of non-target HMS and protected species, as well as catch of target HMS, for the modified closure compared to all other areas of the Atlantic and Gulf of Mexico. These calculations allowed NMFS to determine the potential impact on bycatch species in comparison to all bycatch in the PLL fishery. Only after the analyses indicated that the Charleston Bump and Northeastern U.S. closure modifications would result in minimal or no increase in bycatch of non-target HMS and protected species did NMFS decide to further analyze these two areas. The remaining areas were not further analyzed, but the data for both the East Florida Coast and DeSoto Canyon modifications that resulted in increases in bycatch are presented in this Appendix.

### *Analyses and the use of 2004 data*

Data from 2004 were not available when the analyses for the Draft HMS FMP were completed. However, during the public comment period, NMFS obtained the 2004 POP and PLL data and analyzed a subset of the PLL dataset from 2001 – 2004 (first six months of 2004 only) to determine whether there were any substantial differences from the 2001 -2003 data presented in the Draft HMS FMP. Since the circle hook requirement went into effect on June 30, 2004, in the NED (69 FR 40734), and in all remaining areas on August 6, 2004, NMFS analyzed only the first six months of 2004 data with the 2001 – 2003 data. Therefore, these analyses were all based on J-hook data. Since the second half of 2004 were based on circle hook data, NMFS analyzed these data separately; a discussion of the preliminary findings of the possible effects of circle hooks is given below.

Overall, the inclusion of the additional six months of data from 2004 did not substantially alter any of the data presented in the Draft HMS FMP, or result in any changes to the overall conclusions from the Draft HMS FMP to the Final HMS FMP (Table A.31). A few exceptions can be seen. For alternative B2(b), there could be an overall decrease in bycatch reduction for loggerhead sea turtles regardless of whether the year-round or June only closures is considered with the inclusion of the 2004 data (-20.7 percent vs. -15.5 percent for the year-round closure and -11.2 percent vs. -8.4 percent for the June only closures; Table A.31). For B2(c), in general, there was potential for higher bycatch reduction and less kept targeted catch for all species considered (except loggerhead sea turtles; Table A.31) with the inclusion of 2004 data. This reduction could be due to increased effort seen in the Gulf of Mexico during the first half of 2004 (Table A.35). However, this trend was not seen for B2(d), the larger, year-round closure proposed for the Gulf of Mexico, where less bycatch reduction could be gained for spearfish, but

fewer bluefin tuna discards may be seen with the inclusion of 2004 data (Table A.31). There was also a slight decrease in potential bycatch reduction for loggerhead sea turtles, bluefin tuna kept, and bluefin tuna discards with the inclusion of 2004 data for B2(e) (Table A.31). Given the variability in results from the inclusion of this data, NMFS did not change any of the preferred alternatives based on the additional six months of 2004 PLL data.

NMFS also preliminary examined the second half of the 2004 data to investigate the potential effects that circle hooks may be having on bycatch and retained catch. However, because only six months of circle hook data was available when these analyses were completed, no definitive conclusions can be drawn from this analysis. Additionally, because this preliminary investigation only uses six months of circle hook data, the seasonality of catch (catch in January through June versus catch in July through December) cannot be determined for circle hooks. Therefore, for this preliminary investigation, NMFS compared CPUEs as well as absolute catch between the July through December of 2001-2003 PLL data with July through December of 2004 PLL data (Table A.32 and Table A.33). The CPUEs were calculated as the number of animals caught in a particular closure area divided by the number of hooks in that particular closure area. Absolute numbers are shown for 2004, and the yearly averages for 2001-2003 are shown in parentheses in Table A.32 and Table A.33. In general, the number of hooks increased slightly in the Gulf of Mexico in 2004 compared to 2001-2003 and decreased slightly in the Northeast (Table A.35). The analysis showed that the CPUEs increased for all species considered in the Gulf of Mexico in 2004 when compared to 2001-2003 (Table A.32 and Table A.33). The number of HMS kept also increased in 2004 except for yellowfin tuna in the Gulf of Mexico (Table A.33). The number of discards in the Gulf of Mexico increased in 2004 for all species considered, except for yellowfin tuna, swordfish discards, and loggerhead sea turtle interactions in B2(a) (Table A.32 and Table A.33). Leatherback sea turtle interactions decreased in B2(c) and B2(d) in 2004 compared to 2001-2003 (Table A.32). In the Northeast, CPUEs in 2004 were variable across closures and species considered, but in general, the number of discards and the number of species kept decreased (except for blue marlin and sailfish discards in B2(b) and B2(e), LCS discards and yellowfin tuna kept and discarded in B2(e), and bigeye tuna and BAYS discards in B2(b); Table A.32 and Table A.33). Overall, however, the catch associated with circle hooks for July through December is variable across species and closure, making it difficult to draw any definitive conclusions or identify any patterns on the effects of circle hooks. This variability is most likely due to the short time series of data. NMFS will continue to monitor retained catch, discards, and bycatch with circle hooks as that data become available.

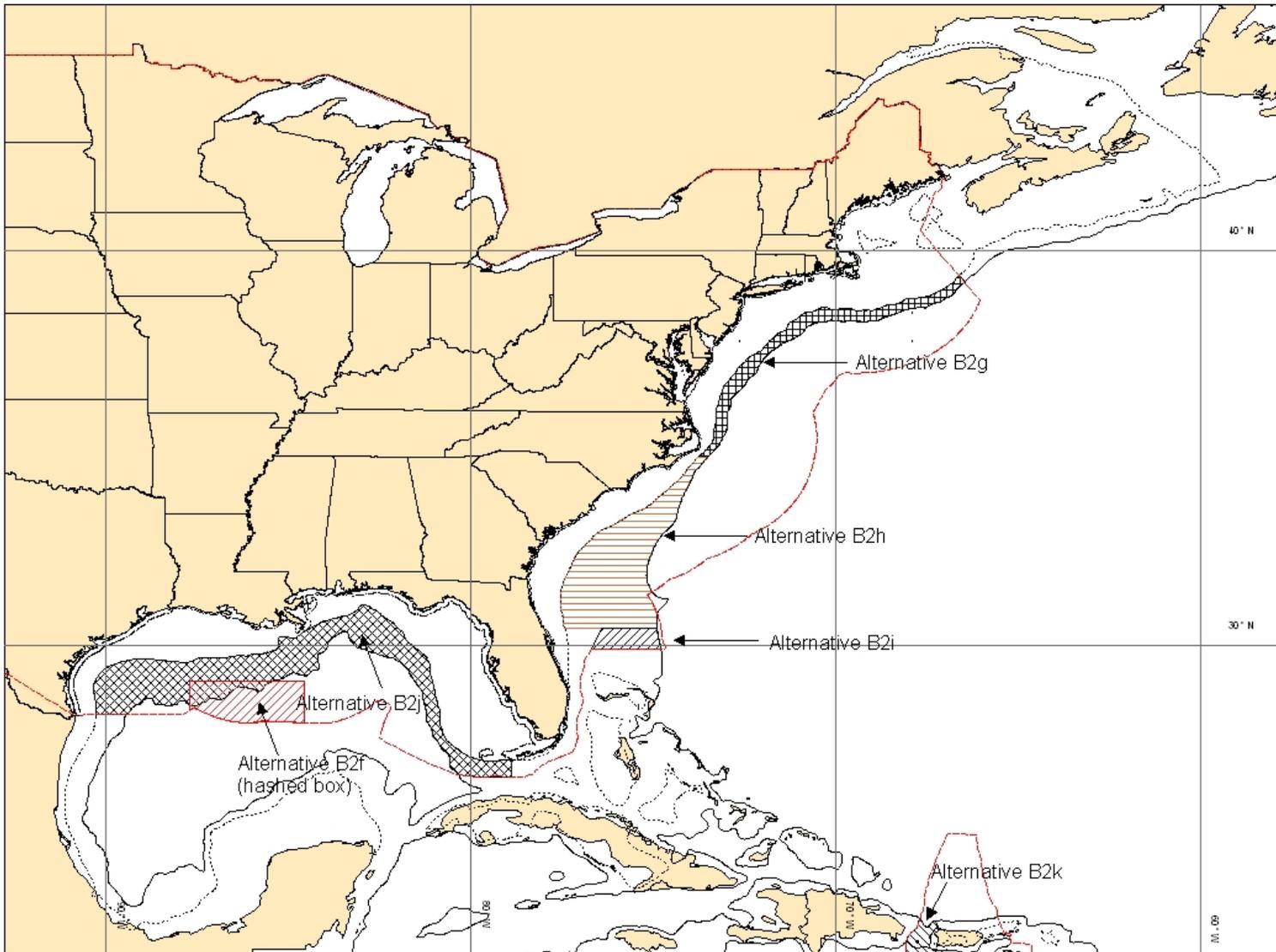


Figure A.1 Map showing time/area closure alternatives considered but not further analyzed at this time (see Section 2.1.2) to reduce white marlin and other protected species interactions.

**Table A.1** The decrease (-) or increase (+) in the number of discards of white marlin, blue marlin, sailfish, spearfish, leatherback and loggerhead sea turtles and bluefin tuna based on the various time/area closures. \* excluding NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS logbook data 2001-2003.

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Bluefin Tuna discards
<b>WITHOUT REDISTRIBUTION OF EFFORT</b>								
<b>B2(a)</b>								
Year-round	3,810,282	-503	-487	-163	-63	-171	-9	-198
May-Nov	2,347,180	-463	-432	-146	-48	-76	-6	-75
<b>B2(b)</b>								
Year-round	991,205	-124	-22	-1	-2	-28	-37	-461
June only	184,435	-12	-4	0	0	-10	-20	-365
<b>B2(c)</b> (April-June)	2,844,335	-325	-244	-124	-35	-55	-7	-348
<b>B2(d)</b> (Year-round)	10,020,757	-1,487	-1,397	-642	-354	-285	-18	-439
<b>B2(e)</b> (Year-round)	2,127,510	-274	-40	-3	-8	-49	-65	0
<b>B2(f)</b> (May-Nov)	2,998,571	-633	-559	-197	-62	-91	-7	-92
<b>B2(g)</b> (June-October)	2,985,688	-481	-49	-11	-7	-40	-40	-60
<b>B2(h)</b> (March-Nov)	1,179,865	-139	-138	-134	-27	-10	-3	-2
<b>B2(i)</b> (Year-round)	1,175,504	-232	-316	-59	-20	-10	-20	-11
<b>B2(j)</b> (Year-round)	5,182,880	-519	-528	-444	-108	-90	-12	-181
<b>B2(k)</b> (Jan-April)	22,321	-7	-14	0	0	0	0	0
Total From All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	1,617
<b>WITH REDISTRIBUTION OF EFFORT</b>								
<b>B2(a)</b>								
Year-round		27	-98	11	17	-99	27	128

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Bluefin Tuna discards
(May-Nov)		-84	-178	-8	-9	-39	14	166
<b>B2(b)</b>								
Year-round		110	164	85	20	-8	-33	-437
June only		33	22	18	3	-7	-19	-354
<b>B2(c)</b> (April-June)		221	50	45	56	-13	42	158
<b>B2(d)</b> (Year-round)		10	-497	-276	-311	-105	117	614
<b>B2(e)</b> (Year-round)		189	360	182	38	-3	-60	-658
<b>B2(f)</b> (May-Nov)		-150	-240	-19	-12	-45	20	219
<b>B2(g)</b> (June-October)		71	494	239	62	29	-26	-360
<b>B2(h)</b> (March-Nov)		52	-7	-73	-6	12	9	154
<b>B2(i)</b> (Year-round)		-118	-224	-27	7	21	-10	104
<b>B2(j)</b> (Year-round)		394	126	-241	-5	38	40	274
<b>B2(k)</b> (Jan-April)		-5	-12	0	0	1	0	2

**Table A.2** Percent reduction (-) or increase (+) in discards of white marlin, blue marlin, sailfish, spearfish, leatherback and loggerhead sea turtles and bluefin tuna based on the various time/area closure alternatives with and without redistribution of effort. (\* = was not analyzed).  
Source: HMS Logbook data (2001-2003)

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Bluefin Tuna discards
<b>WITHOUT REDISTRIBUTION OF EFFORT</b>								
<b>B2(a)</b>								
Year-round	-18.0%	-16.0%	-19.9%	-15.8%	-14.9%	-34.6%	-5.0%	-12.2%
May-Nov	-11.1%	-14.7%	-17.6%	-14.2%	-11.3%	-15.4%	-3.4%	-4.6%
<b>B2(b)</b>								
Year-round	-4.7%	-3.9%	-0.9%	-0.1%	-0.5%	-5.7%	-20.7%	-28.5%
June only	-0.9%	-0.4%	-0.2%	0.0%	0.0%	-2.0%	-11.2%	-22.6%
<b>B2(c)</b> (April-June)	-13.4%	-10.3%	-10.0%	-12.1%	-8.3%	-11.1%	-3.9%	-21.5%
<b>B2(d)</b> (Year-round)	-47.4%	-47.3%	-57.0%	-62.4%	-83.5%	-57.5%	-10.1%	-27.1%
<b>B2(e)</b> (Year-round)	-10.1%	-8.7%	-1.6%	-0.3%	-1.9%	-9.9%	-36.3%	-43.3%
<b>B2(f)</b> (May-Nov)	-14.2%	-20.1%	-22.8%	-19.1%	-14.6%	-18.4%	-3.9%	-5.7%
<b>B2(g)</b> (June-October)	-14.1%	-15.3%	-2.0%	-1.1%	-1.7%	-8.1%	-22.3%	-37.7%
<b>B2(h)</b> (March-Nov)	-5.6%	-4.4%	-5.6%	-13.0%	-6.4%	-2.0%	-1.7%	-0.12%
<b>B2(i)</b> (Year-round)	-5.6%	-7.4%	-12.9%	-5.7%	-4.7%	-2.0%	-11.2%	-0.7%
<b>B2(j)</b> (Year-round)	-24.5%	-16.5%	-21.6%	-43.1%	-25.5%	-18.2%	-6.7%	-11.1%
<b>B2(k)</b> (Jan-April)	-0.1%	-0.2%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>WITH REDISTRIBUTION OF EFFORT</b>								
<b>B2(a)</b>								
Year-round		0.9%	-4.0%	1.1%	4.0%	-20.0%	15.0%	7.9%
(May-Nov)		-2.7%	-7.3%	-0.8%	-2.1%	-8.0%	7.9%	10.3%

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Bluefin Tuna discards
<b>B2(b)</b>								
Year-round		3.5%	6.7%	8.3%	4.8%	-1.7%	-18.5%	-27.0%
June only		1.0%	0.9%	1.7%	0.8%	-1.3%	-10.3%	-21.9%
<b>B2(c)</b> (April-June)		7.0%	2.0%	4.4%	13.2%	-2.6%	23.5%	9.8%
<b>B2(d)</b> (Year-round)		0.3%	-20.3%	-26.8%	-73.3%	-21.3%	65.5%	38%
<b>B2(e)</b> (Year-round)		6.0%	14.7%	17.7%	9.1%	-0.6%	-33.3%	-40.7%
<b>B2(f)</b> (May-Nov)		-4.7%	-9.8%	-1.8%	-2.8%	-9.1%	11.2%	13.5%
<b>B2(g)</b> (June-October)		2.3%	20.2%	23.2%	14.5%	5.9%	-14.5%	-22.3%
<b>B2(h)</b> (March-Nov)		1.7%	-0.29%	-7.1%	-1.4%	2.4%	5.0%	9.5%
<b>B2(i)</b> (Year-round)		-3.8%	-9.2%	-2.6%	1.6%	4.2%	-5.6%	6.4%
<b>B2(j)</b> (Year-round)		12.6%	5.1%	-23.4%	-1.2%	7.7%	22.3%	17%
<b>B2(k)</b> (Jan-April)		-0.2%	-0.5%	0%	0%	0.2%	0%	0.1%

**Table A.3** The decrease (-) or increase (+) in the number of each retained species caught or discarded based on the various time/area closure alternatives without redistribution of effort. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Alternative	Number of Hooks Set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>WITHOUT REDISTRIBUTION OF EFFORT</b>											
<b>B2(a)</b>											
Year-round	3,899,124	-8,369	-5,445	-133	-198	-36,897	-1,310	-684	-5	-37,938	-1,586
May-Nov	2,403,012	-3,959	-2,988	-40	-75	-23,846	-952	-400	-2	-24,420	-1,152
<b>B2(b)</b>											
Year-round	991,921	-10,974	-1,997	-34	-461	-7,662	-81	-1,627	-5	-10,713	-97
June only	183851	-1,867	-256	-11	-365	-505	-11	-557	0	-1,337	-15
<b>B2(c) (April-June)</b>	2,844,335	-3,594	-3,621	-174	-348	-33,053	-1,480	-90	-2	-33,176	-1,677
	10,020,757	-19,215				-					
<b>B2(d) (Year-round)</b>			-11,579	-321	-439	106,941	-3,641	-1,299	-19	-108,923	-4,661
<b>B2(e) (Year-round)</b>	2,127,510	-17,422	-4,054	-74	-700	-12,692	-200	-7,303	-139	-27,141	-748
<b>B2(f) (May-Nov)</b>	2,997,124	-4,792	-3,553	-49	-92	-30,165	-1,141	-480	-3	-30,865	-1,436
<b>B2(g) (June-October)</b>	2,986,428	-21,799	-7,378	-84	-609	-27,023	-544	-10,729	-243	-48,317	-1,623
<b>B2(h) (March-Nov)</b>	1,118,725	-24,297	-4794	-5	-2	-3,508	-124	-427	-18	-4,148	-152
<b>B2(i) (Year-round)</b>	1,175,504	-8,104	-1,704	-35	-11	-3,690	-297	-8,412	-417	-14,631	-725
<b>B2(j) (Year-round)</b>	5,186,190	-13,469	-6,433	-181	-179	-53,854	-1,622	-400	-11	-54,579	-1,913
<b>B2(k) (Jan-April)</b>	22,321	-321	-120	0	0	-4	0	-2	0	-8	0
<b>Total From All Areas*</b>	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990

**Table A.4** Percent reduction (-) or increase (+) in the retained catch and discards based on the various time/area closure alternatives without redistribution of effort. Source: HMS Logbook data (2001-2003).

Alternative	Number of Hooks Set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>WITHOUT REDISTRIBUTION OF EFFORT</b>											
<b>B2(a)</b>											
Year-round	-18.4%	-6.6%	-14.8%	-22.2%	-12.2%	-22.1%	-23.9%	-1.8%	-0.5%	-16.8%	-17.6%
(May-Nov)	-11.4%	-3.1%	-8.1%	-6.7%	-4.6%	-14.3%	-17.4%	-1.1%	-0.2%	-10.8%	-12.8%
<b>B2(b)</b>											
Year-round	-4.7%	-8.6%	-5.4%	-5.7%	-28.5%	-4.6%	-1.5%	-4.4%	-0.5%	-4.7%	-1.1%
June only	-0.9%	-1.5%	-0.7%	-1.8%	-22.6%	-0.3%	-0.2%	-1.5%	0.0%	-0.6%	-0.2%
<b>B2(c) (April-June)</b>	-13.4%	-2.8%	-9.9%	-29.0%	-21.5%	-19.8%	-27.0%	-0.2%	-0.2%	-14.7%	-18.7%
<b>B2(d) (Year-round)</b>	-47.4%	-15.1%	-31.5%	-53.6%	-27.1%	-64.0%	-66.4%	-3.5%	-1.9%	-48.2%	-51.8%
<b>B2(e) (Year-round)</b>	-10.1%	-13.7%	-11.0%	-12.4%	-43.3%	-7.6%	-3.6%	-19.7%	-13.8%	-12.0%	-8.3%
<b>B2(f) (May-Nov)</b>	-13.4%	-3.8%	-9.7%	-8.1%	-5.7%	-18.0%	-20.8%	-1.3%	-0.3%	-13.6%	-16.0%
<b>B2(g) (June-October)</b>	-14.1%	-17.1%	-20.1%	-14.0%	-37.7%	-16.2%	-9.9%	-28.9%	-24.2%	-21.4%	-18.1%
<b>B2(h) (March-Nov)</b>	-5.3%	-19.1%	-13.0%	-0.8%	-0.1%	-2.1%	-2.3%	-1.1%	-1.8%	-1.8%	-1.7%
<b>B2(i) (Year-round)</b>	-5.6%	-6.4%	-4.6%	-5.8%	-0.7%	-2.2%	-5.4%	-22.7%	-41.5%	-6.5%	-8.1%
<b>B2(j) (Year-round)</b>	-24.5%	-10.6%	-17.5%	-30.2%	-11.1%	-32.2%	-29.6%	-1.1%	-1.1%	-24.1%	-21.3%
<b>B2(k) (Jan-April)</b>	-0.1%	-0.3%	-0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Table A.5 The decrease (-) or increase (+) in the number of each retained species caught or discarded based on the various time/area closure alternatives with redistribution of effort. (\* = was not calculated). <sup>1</sup> excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003)**

Alternative	Number of Hooks Set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>WITH REDISTRIBUTION OF EFFORT</b>											
<b>B2(a)</b>											
Year-round		19,485	2,001	-24	128	-7,615	-381	7,880	210	5,187	126
May-Nov		11,590	1,635	20	166	-1,881	166	4,393	117	5,897	-4
<b>B2(b)</b>											
Year-round		-6,993	-697	-21	-437	2,247	222	-170	57	1,480	407
June only		-1,033	-21	-7	-354	1,516	61	-449	3	859	77
<b>B2(c)</b> (April-June)		26,931	2,218	-110	158	-18,314	-1,001	4,240	18	-12,260	-1,064
<b>B2(d)</b> (Year-round)		79,633	11,718	-72	614	-49,789	-1,955	29,930	853	-1,259	-616
<b>B2(e)</b> (Year-round)		-8,623	-1,061	-45	-658	9,264	455	-4,417	-25	-723	369
<b>B2(f)</b> (May-Nov)		15,552	2,081	25	219	-3,126	-408	5,465	150	6,507	-29
<b>B2(g)</b> (June-October)		*	*	*	-360	*	*	*	*	*	*
<b>B2(h)</b> (March-Nov)		*	*	*	154	*	*	*	*	*	*
<b>B2(i)</b> (Year-round)		*	*	*	104	*	*	*	*	*	*
<b>B2(j)</b> (Year-round)		*	*	*	274	*	*	*	*	*	*
<b>B2(k)</b> (Jan-April)		*	*	*	2	*	*	*	*	*	*
Total From All Areas <sup>1</sup>	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990

**Table A.6** Percent reduction (-) or increase (+) in the retained catch and discards based on the various time/area closure alternatives with redistribution of effort. (\* = was not calculated). Source: HMS Logbook data (2001-2003).

Alternative	Number of Hooks Set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>WITH REDISTRIBUTION OF EFFORT</b>											
<b>B2(a)</b>											
Year-round		15.3%	5.4%	-3.9%	7.9%	-4.6%	-6.9%	21.2%	20.8%	2.3%	1.4%
May-Nov		9.1%	4.4%	3.4%	10.3%	-1.1%	3.0%	2.6%	11.6%	2.6%	-0.04%
<b>B2(b)</b>											
Year-round		-5.5%	-1.9%	-3.5%	-27.0%	1.3%	4.1%	-0.5%	5.6%	0.7%	4.5%
June only		-0.8%	-0.1%	-1.2%	-21.9%	0.9%	1.1%	-1.2%	0.3%	0.4%	0.9%
<b>B2(c)</b> (April-June)		21.1%	6.0%	-18.3%	9.8%	-11.0%	-18.3%	11.4%	1.7%	-5.4%	-11.8%
<b>B2(d)</b> (Year-round)		62.5%	31.9%	-12.1%	38.0%	-29.8%	-35.6%	80.6%	84.8%	-0.6%	-6.9%
<b>B2(e)</b> (Year-round)		-6.8%	-2.9%	-7.6%	-40.7%	5.5%	8.3%	-11.9%	-2.5%	-0.3%	4.1%
<b>B2(f)</b> (May-Nov)		12.2%	5.7%	4.2%	13.6%	-1.9%	-7.4%	14.7%	14.9%	2.9%	-0.3%
<b>B2(g)</b> (June-October)		*	*	*	-22.3%	*	*	*	*	*	*
<b>B2(h)</b> (March-Nov)		*	*	*	9.5%	*	*	*	*	*	*
<b>B2(i)</b> (Year-round)		*	*	*	6.4%	*	*	*	*	*	*
<b>B2(j)</b> (Year-round)		*	*	*	17%	*	*	*	*	*	*
<b>B2(k)</b> (Jan-April)		*	*	*	0.1%	*	*	*	*	*	*

**Table A.7** Percent reduction (-) or increase (+) in the number of hooks set; discards of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtles based on various time/area closure alternatives without redistribution of effort. Source: HMS Logbook data (2001-2003).

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Bluefin Tuna discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
Alternative B2(a)	-18.0%	-16.0%	-19.9%	-15.8%	-14.9%	-12.2%	-34.6%	-5.0%	-45.5%
Alternative B2(a) (May-Nov)	-11.4%	-14.7%	-17.6%	-14.2%	-11.3%	-4.6%	-15.4%	-3.4%	0.0%
Alternative B2(b)	-4.7%	-3.9%	-0.9%	-0.1%	-0.5%	-28.5%	-5.7%	-20.7%	0.0%
Alternative B2(b) (June only)	-0.9%	-0.4%	-0.2%	0.0%	0.0%	-22.6%	-2.0%	-11.2%	0.0%
Alternative B2(c)	-13.4%	-10.3%	-10.0%	-12.1%	-8.3%	-21.5%	-11.1%	-3.9%	-18.2%
Alternative B2(d)	-47.4%	-47.3%	-57.0%	-62.4%	-83.5%	-27.1%	-57.5%	-10.1%	-45.5%
Alternative B2(e)	-10.1%	-8.7%	-1.6%	-0.3%	-1.9%	-43.3%	-9.9%	-36.3%	0.0%
Alternative B2(f)	-22.8%	-21.7%	-25.3%	-21.5%	-20.3%	-38.3%	-5.6%	-45.5%	-21.7%
Alternative B2(g)	-14.1%	-15.3%	-2.0%	-1.1%	-1.7%	-37.7%	-8.1%	-22.3%	0.0%
Alternative B2(h)	-5.6%	-4.4%	-5.6%	-13.0%	-6.4%	-2.0%	-1.7%	-5.6%	0.0%
Alternative B2(i)	-5.6%	-7.4%	-12.9%	-5.7%	-4.7%	-0.7%	-2.0%	-11.2%	0.0%
Alternative B2(j)	-24.5%	-16.5%	-21.6%	-43.1%	-25.5%	-11.1%	-18.2%	-6.7%	-9.1%
Alternative B2(k)	-0.1%	-0.2%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Table A.8 Percent reduction (-) or increase (+) in discards of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtles, and bluefin tuna kept and discards combined, based on various time/area closure alternatives without redistribution of effort.**  
 Source: Pelagic Observer Program data (2001-2003).

<b>Alternative</b>	<b>White Marlin discards</b>	<b>Blue Marlin discards</b>	<b>Sailfish discards</b>	<b>Spearfish discards</b>	<b>Bluefin Tuna</b>	<b>Leatherback Sea Turtles</b>	<b>Loggerhead Sea Turtles</b>	<b>Other Sea Turtles</b>
Alternative B2(a) (year-round)	-14.6%	-11.1%	-20.9%	-4.5%	-12.2%	-18.9%	-7.0%	-25.0%
Alternative B2(a) (May-Nov)	-13.2%	-9.3%	-19.6%	-4.5%	-7.0%	-11.3%	-4.0%	0.0%
Alternative B2(b) (year-round)	-1.4%	-0.7%	0.0%	0.0%	-16.2%	-0.6%	-9.0%	0.0%
Alternative B2(b) (June only)	0.0%	0.0%	0.0%	0.0%	-15.4%	0.0%	-6.0%	0.0%
Alternative B2(c) (April-June)	-8.4%	-11.1%	-14.2%	-2.3%	-18.4%	-15.1%	-7.0%	-25.0%
Alternative B2(d) (year-round)	-38.8%	-26.8%	-52.0%	-15.9%	-24.3%	-52.8%	-14.0%	-75.0%
Alternative B2(e) (year-round)	-3.3%	-1.1%	0.0%	-2.3%	-44.3%	-6.9%	-16.0%	0.0%
Alternative B2(f)	-19.6%	-17.1%	-25.7%	-4.5%	-17.6%	-25.8%	-8.0%	-25.0%
Alternative B2(g)	-12.7%	-1.8%	-0.0%	-2.3%	-49.5%	-10.1%	-20.0%	-25.0%
Alternative B2(h)	-3.3%	-9.3%	-24.3%	-2.3%	-0.3%	-10.7%	-4.0%	0.0%
Alternative B2(i)	-16.0%	-34.3%	-8.8%	-45.5%	-1.1%	-6.9%	-17.0%	0.0%
Alternative B2(j)	-20.3%	-8.2%	-33.1%	-2.3%	-10.8%	-29.6%	-9.0%	-50.0%
Alternative B2(k)	-0.7%	-3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Table A.9 Alternative B2(f). Temporal variation in effectiveness of Gulf of Mexico time/area closure in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and bluefin tuna discards.** A negative sign indicates an increase in bycatch. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Bluefin tuna discards
1	464,535	14	17	9	9	10	1	2
2	248,436	3	4	2	0	11	0	3
3	310,044	6	8	3	4	17	1	60
4	391,152	8	16	6	5	17	0	97
5	579,566	50	36	22	7	10	5	84
6	459,183	151	104	29	14	12	0	5
7	393,868	216	202	57	15	15	1	0
8	452,158	86	77	30	7	13	0	0
9	319,796	55	59	29	4	8	1	1
10	400,189	43	55	15	11	19	0	1
11	393,811	32	26	15	4	14	0	1
12	414,240	18	16	4	6	43	1	1
Total	4,826,978	682	620	221	86	189	10	255
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	1,617
% Decrease without redistribution of effort	-22.8%	-21.7%	-25.3%	-21.5%	-20.3%	-38.3%	-5.6%	-15.8%
No. discards with redistribution of effort		-3	-122	4	14	-96	39	153
% Decrease with redistribution of effort		-0.1%	-5.0%	0.4%	3.3%	-19.4%	21.8%	9.4%

**Table A.10 Alternative B2(g). Temporal variation in effectiveness of the Northeast time/area closure from June through October in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtle discards.**

\*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
1	94,685	0	1	0	0	0	1	0
2	63,028	0	0	0	0	0	3	0
3	70,714	0	1	1	0	0	1	0
4	83,255	2	2	0	0	0	0	0
5	143,876	9	2	0	1	0	0	0
6	295,480	23	4	4	0	9	14	0
7	524,941	101	5	1	3	7	9	0
8	594,372	215	22	2	0	11	6	0
9	595,391	119	16	2	1	3	3	0
10	554,844	17	1	2	1	5	5	0
11	420,660	6	1	0	2	5	3	0
12	197,429	1	0	0	0	1	1	0
Total	3,638,675	493	55	12	8	41	46	0
June-Oct	2,985,688	481	49	11	7	40	40	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% Decrease without redistribution of effort	-14.1%	-15.3%	-2.0%	-1.1%	-1.7%	-8.1%	-22.3%	-0.0%
No. discards with redistribution of effort		71	494	239	62	29	-26	1
% Decrease with redistribution of effort		2.3%	20.2%	23.2%	14.5%	5.9%	-14.8%	12.5%

**Table A.11**      **Alternative B2(h). Temporal variation in effectiveness of the Southeast time/area closure closure in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtle discards.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
1	125,740	2	9	7	0	4	0	0
2	110,101	10	3	3	0	3	2	0
3	72,215	10	6	0	3	0	0	0
4	66,124	12	11	0	1	2	0	0
5	418,879	66	44	29	12	5	2	0
6	263,124	48	19	31	6	1	0	0
7	98,264	2	26	20	1	1	0	0
8	82,603	0	20	41	3	0	0	0
9	55,952	0	7	5	0	0	0	0
10	58,866	1	2	4	0	0	1	0
11	63,838	0	3	4	1	1	0	0
12	68,986	6	3	1	2	1	1	0
Total	1,484,692	157	153	145	29	18	6	0
March-Nov	1,179,865	139	138	134	27	10	3	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% Decrease <b>without</b> redistribution of effort	-5.6%	-4.4%	-5.6%	-13.0%	-6.4%	-2.0%	-1.7%	-0.0%
No. discards with redistribution of effort		54	-6	-73	-5	12	7	1
% Decrease <b>with</b> redistribution of effort		1.7%	-0.24%	-7.1%	-1.2%	2.4%	4.0%	5.4%

**Table A.12**      **Alternative B2(i). Temporal variation in effectiveness of the closure on the east coast of Florida in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtle discards.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
1	112,722	35	21	4	2	2	3	0
2	156,047	12	24	4	5	0	2	0
3	330,536	74	104	10	4	4	12	0
4	296,975	92	69	10	6	2	2	0
5	16,112	7	6	1	0	0	0	0
6	33,315	8	17	6	0	0	0	0
7	40,765	0	16	7	1	0	0	0
8	52,825	3	34	14	1	1	0	0
9	43,461	1	19	3	1	0	0	0
10	38,108	0	4	0	0	0	0	0
11	26,115	0	1	0	0	0	0	0
12	28,523	0	1	0	0	1	1	0
Total	1,175,504	232	316	59	20	10	20	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% Decrease <b>without</b> redistribution of effort	-5.6%	-7.4%	-12.9%	-5.7%	-4.7%	-2.0%	-11.2%	0.0%
No. discards with redistribution of effort		-118	-224	-27	7	21	-10	1
% Decrease <b>with</b> redistribution of effort		-3.8%	-9.2%	-2.6%	1.6%	4.2%	-5.4%	9.5%

**Table A.13**      **Alternative B2(j). Temporal variation in effectiveness of the Gulf of Mexico time/area closure in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtle discards.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
1	345,996	11	13	6	2	2	1	0
2	264,179	5	2	4	0	1	0	0
3	270,055	1	2	0	2	3	0	0
4	480,977	13	13	9	2	2	0	1
5	585,789	31	19	29	6	6	3	0
6	514,852	64	50	92	10	7	1	0
7	653,844	191	192	145	38	17	2	0
8	642,913	121	108	75	15	8	1	0
9	437,233	42	75	55	17	7	0	0
10	343,804	17	26	13	8	1	0	0
11	317,848	10	12	13	4	4	1	0
12	325,390	13	16	3	4	32	3	0
Total	5,182,880	519	528	444	108	90	12	1
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% Decrease <b>without</b> redistribution of effort	-24.5%	-16.5%	-21.6%	-43.1%	-25.5%	-18.2%	-6.7%	-9.1%
No. discards with redistribution of effort		394	126	-241	-5	38	40	2
% Decrease <b>with</b> redistribution of effort		12.6%	5.1%	-23.4%	-1.2%	7.7%	22.1%	17.0%

**Table A.14**      **Alternative B2(k). Temporal variation in effectiveness of the Caribbean time/area closure in terms of percent reduction (-) or increase (+) of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead, and other sea turtle discards.** Landings were only reported for the four months listed. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
1	6,160	3	11	0	0	0	0	0
2	826	0	0	0	0	0	0	0
3	13,735	3	2	0	0	0	0	0
4	1,600	1	1	0	0	0	0	0
<b>Total</b>	<b>22,321</b>	<b>7</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% Reduction <b>without</b> redistribution of effort	-0.1%	-0.2%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction <b>with</b> redistribution of effort		-0.7%	-1.8%	0.3%	0.3%	0.3%	0.3%	0.3%

**Table A.15 Alternative B2(f). Temporal variation in effectiveness of the Gulf of Mexico time/area closure in terms of percent reduction (-) in discards and retained catch.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kepts	BAYS discards
1	464,535	1,495	678	15	2	4,613	121	153	3	4,820	128
2	247,536	1,062	433	16	3	1,174	48	54	2	1,244	50
3	310,044	852	588	38	60	2,097	49	17	0	2,119	61
4	392,186	590	665	37	97	4,022	127	11	0	4,035	136
5	577,866	677	1,077	37	84	5,831	386	9	0	5,856	403
6	456,786	721	616	10	5	5,499	272	40	0	5,539	307
7	394,518	573	413	0	0	5,042	118	45	0	5,094	156
8	454,358	786	360	0	0	4,277	105	53	0	4,350	147
9	319,796	530	325	0	1	2,855	47	47	0	2,907	97
10	399,389	704	421	0	1	3,532	149	134	2	3,724	183
11	394,411	801	341	2	1	3,129	64	152	1	3,395	143
12	415,190	1,269	584	11	1	3,873	130	144	1	4,182	195
Total	4,826,615	10,060	6,501	166	255	45,944	1,616	859	9	47,265	2,006
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction without redistribution of effort	-22.8%	-7.9%	-17.7%	-27.7%	-15.8%	-27.5%	-29.5%	-2.3%	-0.9%	-20.9%	-22.3%

**Table A.16** Alternative B2(g). Temporal variation in effectiveness of the Northeast time/area closure from June through October closure in terms of percent reduction (-) in discards and retained catch. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
1	94,685	1,156	790	0	2	126	25	14	0	164	31
2	63,028	734	369	1	0	31	0	6	0	40	0
3	70,714	561	212	0	79	148	4	11	0	164	13
4	83,255	576	219	0	40	912	52	61	1	977	55
5	143,876	615	134	1	18	2,084	41	185	3	2,270	44
6	294,380	1,617	284	12	233	2,814	20	486	3	3,461	29
7	525,481	3,711	654	16	66	3,089	63	549	5	4,033	80
8	596,472	3,613	963	5	8	4,252	79	1,270	60	6,543	165
9	596,671	4,788	1,360	2	46	6,364	190	2,651	76	10,530	308
10	551,664	4,489	2,244	16	61	6,388	110	2,894	71	13,721	415
11	421,760	3,581	1,873	33	195	4,116	82	2,879	28	10,029	626
12	197,429	1,773	847	3	14	1,029	20	1,368	6	3,532	227
Total	3,639,415	27,214	9,949	89	762	31,353	686	12,374	253	55,464	1,993
June-Oct	2,986,428	21,799	7,378	84	609	27,023	544	10,729	243	48,317	1,623
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction without redistribution of Effort: June-Oct.	-14.1%	-17.1%	-20.1%	-14.0%	-37.7%	-16.2%	-9.9%	-28.9%	-24.2%	-21.4%	-18.1%

**Table A.17**      **Alternative B2(h). Temporal variation in effectiveness of the time/area closure from March through November closure in terms of percent reduction (-) in discards and retained catch.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
1	125,740	1,762	480	0	0	502	30	12	1	516	31
2	110,101	1,115	329	0	1	619	29	96	3	823	32
3	72,215	471	65	1	0	278	18	214	0	638	18
4	65,324	547	78	1	0	161	11	59	3	268	16
5	418,879	9,016	2,073	1	1	561	24	8	0	574	25
6	263,124	4,128	778	2	1	401	11	8	1	413	14
7	97,924	1,941	321	0	0	434	24	37	8	471	33
8	82,603	1,977	475	0	0	367	9	36	0	405	10
9	55,952	1,833	314	0	0	283	6	28	3	313	9
10	58,866	2,165	296	0	0	613	9	16	0	632	9
11	63,838	2,219	394	0	0	410	12	21	3	434	18
12	68,986	1,355	283	0	0	283	7	19	1	305	8
Total	1,483,552	28,529	5,886	5	3	4,912	190	554	23	5,792	223
March-Nov	1,118,725	24,297	4794	5	2	3,508	124	427	18	4,148	152
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction <b>without</b> redistribution of effort	-7.0%	-22.4%	-16.0%	-0.8%	-0.2%	-2.9%	-3.5%	-1.5%	-2.3%	-2.6%	-2.5%
% Reduction <b>without</b> Effort: March-Nov	-5.3%	-19.1%	-13.0%	-0.8%	-0.1%	-2.1%	-2.3%	-1.1%	-1.8%	-1.8%	-1.7%

**Table A.18 Alternative B2(i). Temporal variation in effectiveness of the closure of the east Florida in terms of percent reduction (-) in discards and retained catch.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
1	112,722	726	213	1	1	345	11	930	35	1,606	46
2	156,047	1,132	263	1	0	235	9	1,165	33	1,924	44
3	330,536	1,862	329	6	2	515	26	2,610	62	4,188	89
4	296,975	1,592	174	26	4	986	28	1,457	17	2,825	45
5	16,112	106	19	0	1	32	0	40	0	87	0
6	33,315	232	20	1	3	149	1	113	0	280	1
7	40,765	379	120	0	0	300	74	205	111	516	185
8	52,825	636	234	0	0	278	125	476	114	778	241
9	43,461	383	152	0	0	152	0	413	20	606	20
10	38,108	486	101	0	0	288	7	393	7	712	16
11	26,115	316	54	0	0	162	3	382	3	582	7
12	28,523	254	25	0	0	248	13	228	15	527	31
Total	1,175,504	8,104	1,704	35	11	3,690	297	8,412	417	14,631	725
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction without redistribution of effort	-5.6%	-6.4%	-4.6%	-5.8%	-0.7%	-2.2%	-5.4%	-22.7%	-41.5%	-6.5%	-8.1%

**Table A.19**      **Alternative B2(j). Temporal variation in effectiveness of the time/area closure in the Gulf of Mexico in terms of percent reduction (-) in discards and retained catch.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
1	346,896	1,302	571	14	0	3,765	79	76	3	3,914	97
2	264,179	2,226	765	15	1	1,072	29	23	1	1,104	34
3	270,055	1,989	749	18	7	1,454	73	3	0	1,464	74
4	482,677	1,615	689	52	92	4,114	236	15	0	4,131	237
5	587,439	1,305	892	47	69	5,807	187	9	0	5,819	220
6	512,512	885	588	7	4	7,171	170	12	1	7,183	207
7	653,044	754	436	3	0	9,096	261	26	0	9,129	294
8	643,863	793	462	0	5	7,948	191	23	1	7,991	213
9	437,233	536	316	19	1	4,550	101	28	0	4,600	118
10	344,604	747	340	0	0	3,295	108	49	5	3,375	134
11	318,248	608	283	1	0	2,441	78	86	0	2,588	122
12	325,440	709	342	5	0	3,141	109	50	0	3,281	163
Total	5,186,190	13,469	6,433	181	179	53,854	1,622	400	11	54,579	1,913
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction without redistribution of effort	-24.5%	-10.6%	-17.5%	-30.2%	-11.1%	-32.2%	-29.6%	-1.1%	-1.1%	-24.1%	-21.3%

**Table A.20**      **Alternative B2(k). Temporal variation in effectiveness of the time/area closure in the Caribbean in terms of percent reduction (-) in discards and retained catch.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (2001-2003).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
1	6,160	76	47	0	0	0	0	0	0	0	0
2	826	16	0	0	0	0	0	0	0	0	0
3	13,735	211	69	0	0	4	0	2	0	8	0
4	1,600	18	4	0	0	0	0	0	0	0	0
Total	22,321	321	120	0	0	4	0	2	0	8	0
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction without redistribution of effort	-0.1%	-0.3%	-0.3%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%

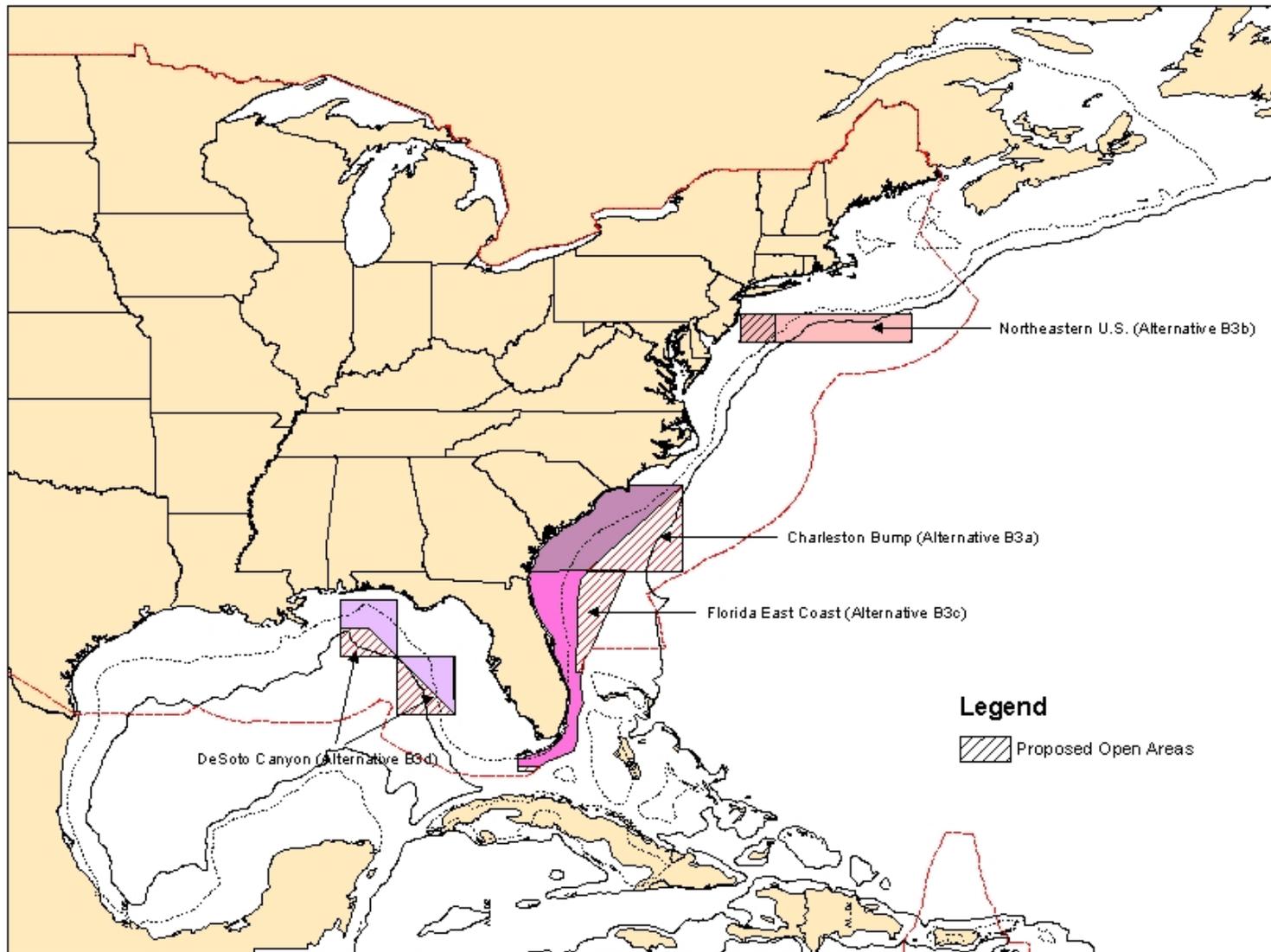
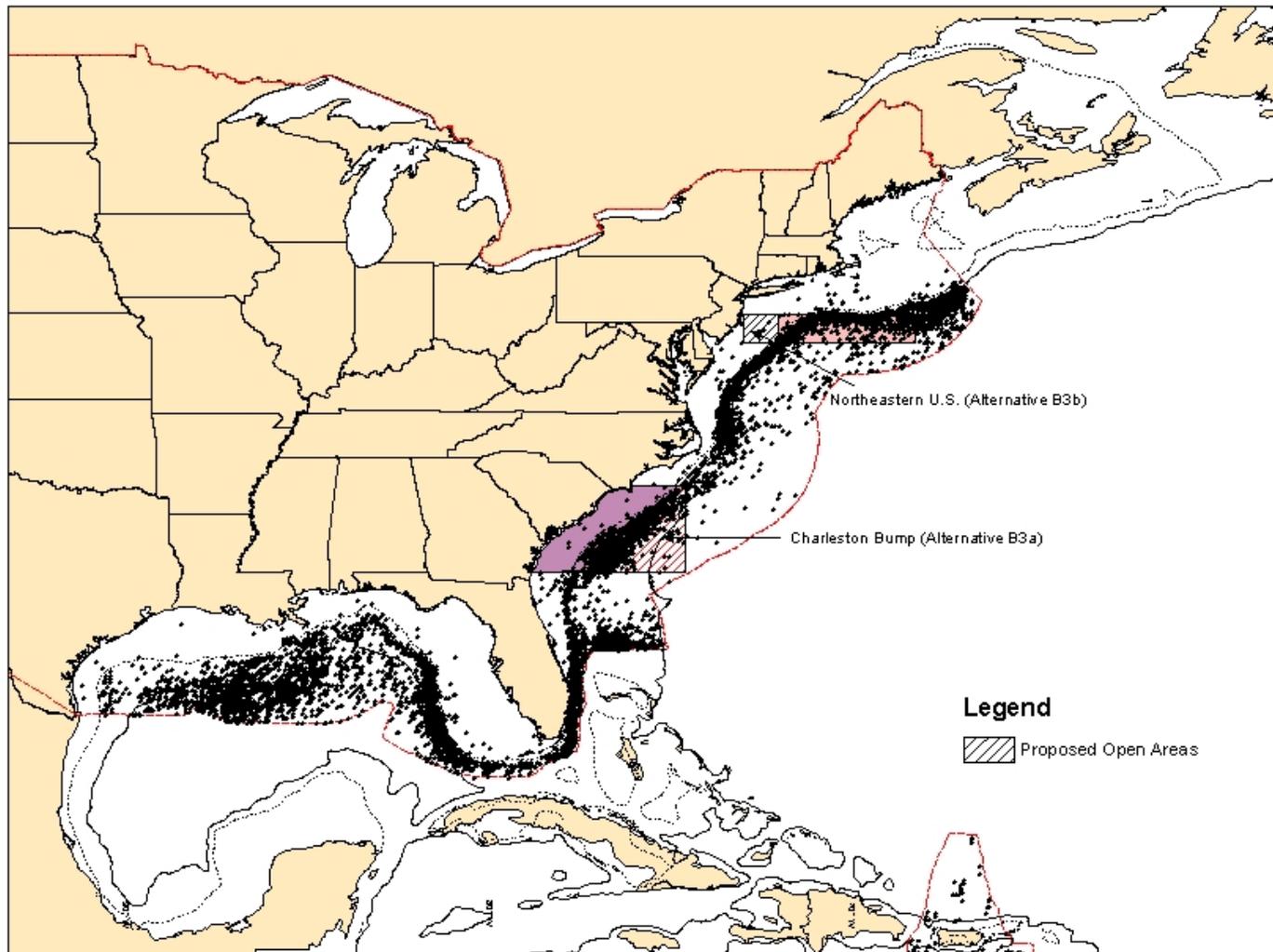
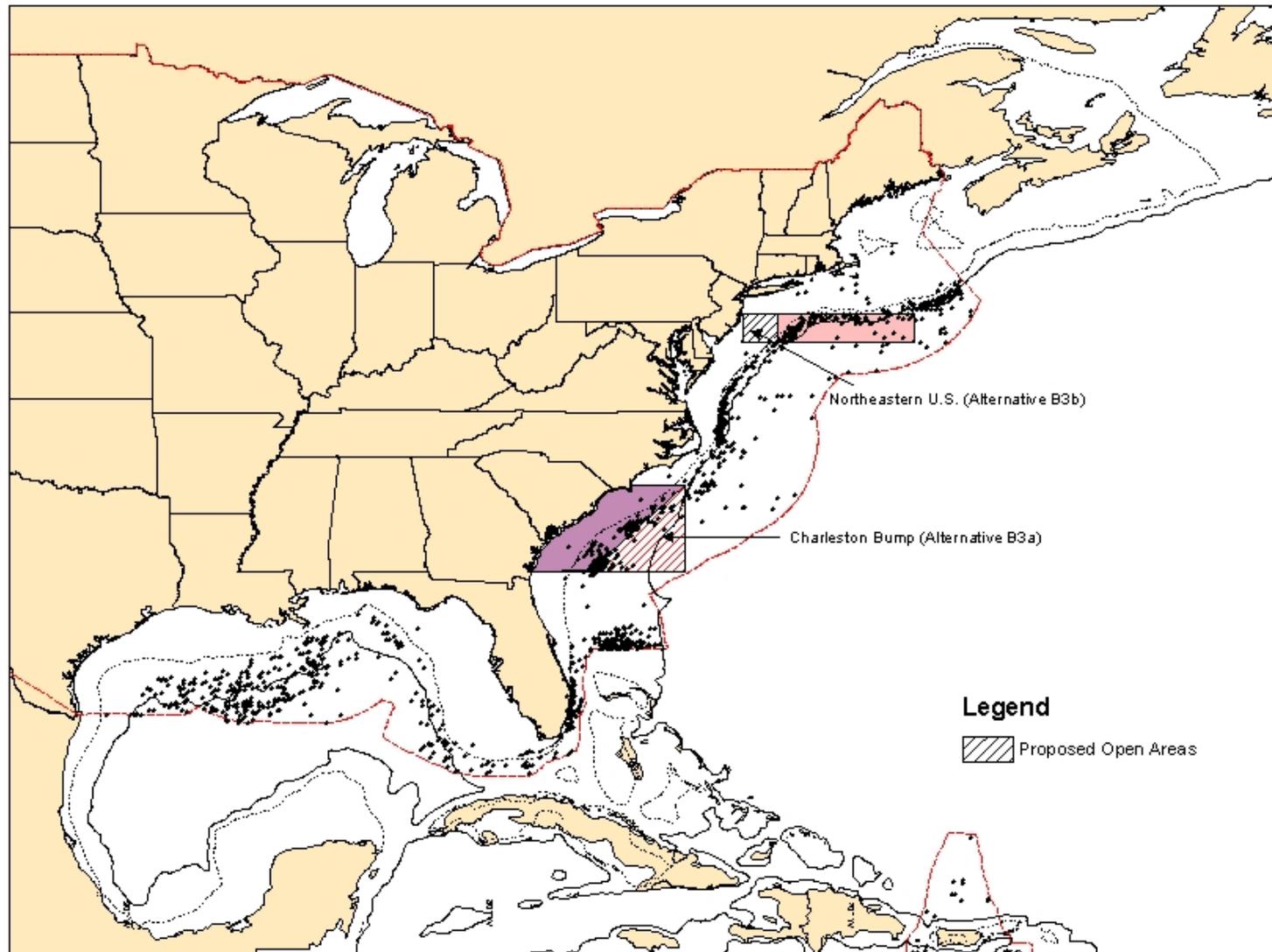


Figure A.2 Map showing areas considered for modifications to existing closures. Note: only alternatives B3(a) and (b) were further analyzed.



**Figure A.3** Map showing areas considered for modifications to existing closures and juvenile swordfish data (<180 cm LJFL). The minimum size limit for swordfish is 119 cm LJFL. Note: only alternatives B3(a) and (b) were further analyzed. Source Pelagic Observer Program 1997-1999.



**Figure A.4** Map showing areas considered for modifications to existing closures and adult swordfish data from the Pelagic Observer Program.  
 Note: only alternatives B2(a) and (b) were further analyzed. Source Pelagic Observer Program 1997-1999.

**Table A.21** **Swordfish lengths (cm lower jaw fork length; LJFL) in the portion of the areas to remain closed and the portion of the areas considered for reopening.** The minimum size limit for swordfish is 119 cm LJFL. The mature size is > 180 cm LJFL. Significant differences are shaded. Source: Pelagic Observer Program 1992-1999.

Closed Area	Portion Considered for Reopening	Sample Size	Portion to Remain Closed	Sample Size	<i>t</i> -test
<i>1992-1999</i>					
B3(a) Charleston Bump	124	3,374	125	1,664	<i>P</i> = 0.37
B3(b) Northeastern U.S.	96	1695	71	2	<i>P</i> = 0.34
B3(c) East Florida Coast	119	2,744	124	679	<i>P</i> < 0.0001
B3(d) DeSoto Canyon	106	634	101	314	<i>P</i> = 0.50
<i>1997-1999</i>					
B3(a) Charleston Bump	125	2,067	126	455	<i>P</i> = 0.10
B3(b) Northeastern U.S.	112	409	71	2	<i>P</i> = 0.05
B3(c) East Florida Coast	120	1,094	125	527	<i>P</i> < 0.0001
B3(d) DeSoto Canyon	116	152	108	55	<i>P</i> = 0.03

**Table A.22**

**Alternative B3(c) Florida East Coast modification. Discards of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead and other sea turtles in the portion of the area to remain closed and the portion of the area considered for reopening. \*excluding the NED.**

Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook 1997-1999.

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
<b>PORTION OF AREA TO REMAIN CLOSED</b>								
1	81,708	4	20	16	1	1	1	0
2	68,328	4	12	11	4	0	0	0
3	107,962	5	14	41	0	1	0	0
4	134,487	16	12	24	0	0	1	0
5	161,558	34	41	129	2	1	0	0
6	100,117	4	13	61	2	0	0	0
7	100,942	9	16	62	1	1	1	0
8	74,005	7	16	41	3	0	0	0
9	43,040	4	7	15	3	1	0	0
10	62,900	3	4	8	1	0	0	0
11	79,128	5	8	16	2	0	0	0
12	101,843	21	23	33	1	0	0	0
Total	1,116,018	116	186	457	20	5	3	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% of All Areas	5.3%	3.7%	7.6%	44.4%	4.7%	1.0%	1.7%	0.0%
<b>PORTION OF AREA CONSIDERED FOR REOPENING</b>								
1	16,421	1	11	1	2	0	0	0
2	14,664	4	4	1	0	0	0	0
3	15,385	0	4	0	0	0	0	0
4	23,746	7	3	1	1	0	0	0
5	30,905	8	5	9	0	0	0	0
6	48,306	8	10	21	1	0	0	0
7	38,439	1	8	14	0	0	0	0
8	24,495	1	13	23	3	0	0	0
9	38,590	2	16	14	1	0	0	0
10	34,168	0	7	4	0	0	2	0
11	22,008	9	8	7	1	0	0	0
12	22,560	7	9	4	0	0	0	0
Total	329,687	48	98	99	9	0	2	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% of All Areas	1.6%	1.5%	4.0%	9.6%	2.1%	0.0%	1.1%	0.0%

**Table A.23 Alternative B3(d) Desoto Canyon modification. Discards of white marlin, blue marlin, sailfish, spearfish, leatherback, loggerhead and other sea turtles in the portion of the area to remain closed and in the portion of the area considered for reopening.** Source HMS Logbook 1997-1999. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three.

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
<b>PORTION OF AREA TO REMAIN CLOSED</b>								
1	20,270	3	2	0	0	0	0	0
2	18,321	0	2	0	0	0	0	0
3	41,625	3	4	1	0	0	0	0
4	7,592	3	3	2	0	0	0	0
5	15,324	0	0	0	0	0	1	1
6	25,752	3	7	6	0	0	0	0
7	22,582	8	6	3	0	0	0	0
8	10,235	3	0	3	0	0	0	0
9	8,860	2	0	0	0	0	0	0
10	18,185	12	2	3	0	0	0	0
11	8,040	1	0	1	0	0	0	0
12	10,290	2	0	0	0	0	0	0
Total	207,076	40	26	19	0	0	1	1
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% of All Areas	1.0%	1.3%	1.1%	1.8%	0.0%	0.0%	0.6%	9.1%
<b>PORTION OF AREA CONSIDERED FOR REOPENING</b>								
1	30,678	1	0	0	0	1	0	0
2	17,681	1	1	1	0	0	0	0
3	4,703	0	0	0	0	0	0	0
4	23,053	1	1	2	0	1	0	0
5	81,097	10	3	1	1	0	0	0
6	92,064	7	14	20	2	0	0	0
7	86,779	12	21	107	1	0	0	0
8	61,128	6	14	5	0	0	0	0
9	50,612	3	3	1	0	0	0	0
10	45,009	6	8	8	0	0	0	0
11	11,768	1	0	0	0	0	0	0
12	4,496	0	0	0	0	0	0	0
Total	509,068	48	65	145	4	2	0	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% of All Areas	2.4%	1.5%	2.7%	14.1%	0.9%	0.4%	0.0%	0.0%

**Table A.24 Comparison of discards of white marlin, blue marlin, sailfish, spearfish, leatherback and loggerhead sea turtles in the portion of the areas considered for reopening.** - = decrease + = increase. \*excluding the NED. Four year totals are shown; one year averages can be obtained by dividing the four year total by four. Source: HMS Logbook 1997-2000.

Area	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles
<b>PORTION OF AREAS CONSIDERED FOR REOPENING</b>								
B3(a) Charleston Bump (Feb-Apr)	108,403	19	17	10	4	0	1	0
B3(b) Northeastern U.S. (June)	2,400	0	0	0	0	0	0	0
B3(c) East Florida Coast	329,687	48	98	99	9	0	2	0
B3(d) Desoto Canyon	509,068	48	65	145	4	2	0	0
All Areas*	21,148,706	3,143	2,449	1,029	424	494	179	11
% of All Areas								
B3(a) Charleston Bump (Feb-Apr)	0.3%	0.6%	0.7%	1.0%	0.9%	0.0%	0.6%	0.0%
B3(b) Northeastern U.S.	0.01%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
B3(c) East Florida Coast	1.6%	1.5%	4.0%	9.6%	2.1%	0.0%	1.1%	0.0%
B3(d) Desoto Canyon	2.4%	1.5%	2.7%	14.1%	0.9%	0.4%	0.0%	0.0%

**Table A.25 Comparison of catch of swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, and BAYS in the portion of the areas considered for reopening.** \*excluding the NED. Four year totals are shown; one year averages can be obtained by dividing the four year total by four.  
Source: HMS Logbook 1997-2000.

Area	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kepts	BAYS discards
<b>PORTION OF AREAS CONSIDERED FOR REOPENING</b>											
B3(a) Charleston Bump (Feb-Apr)	108,403	1,371	548	0	0	275	19	8	1	297	21
B3(b) Northeastern U.S. (June)	2,400	3	0	0	1	1	0	0	0	1	0
B3(c) East Florida Coast	329,687	5,313	2,150	0	3	1,247	60	405	25	1,676	89
B3(d) DeSoto Canyon	509,068	985	647	12	22	8,091	206	45	1	8,170	287
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% of All Areas											
B3(a) Charleston Bump (Feb-Apr)	0.51%	1.1%	1.5%	0.0%	0.0%	0.16%	0.35%	0.02%	0.1%	0.13%	0.23%
B3(b) Northeastern U.S. (June)	0.01%	0.002%	0.0%	0.0%	0.06%	0.001%	0.0%	0.0%	0.0%	0.0004%	0.0%
B3(c) East Florida Coast	1.6%	4.2%	5.9%	0.0%	0.19%	0.75%	1.1%	1.1%	2.5%	0.75%	0.01%
B3(d) Desoto Canyon	2.4%	0.8%	1.8%	2.0%	0.06%	4.8%	3.8%	0.12%	0.1%	3.6%	3.2%

**Table A.26 Alternative B3(c) modification of East Florida Coast time/area closure. Catch and discards of various species in the portion of the area to remain closed and in the portion of the area considered for reopening.** \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (1997-1999).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>PORTION OF AREA TO REMAIN CLOSED</b>											
1	81,708	1,535	922	1	0	14	0	1	0	15	1
2	68,328	1,222	801	0	0	7	0	3	1	10	1
3	107,962	1,870	1,188	0	0	37	1	10	5	55	8
4	134,487	1,802	979	1	0	32	4	46	0	91	6
5	161,558	2,485	976	5	18	157	6	60	0	229	6
6	100,117	2,096	740	4	1	150	1	19	1	172	3
7	100,942	1,833	823	0	0	106	1	23	0	129	1
8	74,005	1,561	777	0	0	68	0	24	0	92	0
9	43,040	1,305	666	0	0	33	0	19	0	52	0
10	62,900	1,776	936	0	0	54	2	6	0	60	2
11	79,128	2,245	819	0	0	52	2	11	0	63	3
12	101,843	2,340	1,052	0	0	38	1	9	2	47	3
Total	1,116,018	22,070	10,679	11	19	748	18	231	9	1,015	34
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction	5.3%	17.3%	29.1%	1.8%	1.2%	0.4%	0.3%	0.6%	0.9%	0.4%	0.4%
<b>PORTION OF AREA CONSIDERED FOR REOPENING</b>											
1	16,421	184	190	0	0	35	5	9	2	44	7
2	14,664	72	37	0	0	29	2	9	3	38	5
3	15,385	187	87	0	0	8	0	10	0	18	0
4	23,746	237	98	0	0	36	2	19	3	56	5
5	30,905	213	52	0	0	43	4	15	0	60	4
6	48,306	632	163	0	3	94	0	43	0	142	4
7	38,439	603	177	0	0	107	3	83	1	195	4
8	24,495	442	158	0	0	102	7	105	0	212	7
9	38,590	798	301	0	0	391	23	51	3	445	26
10	34,168	1,094	400	0	0	201	2	9	0	213	2
11	22,008	527	284	0	0	135	11	34	9	169	20
12	22,560	324	203	0	0	66	1	18	4	84	5
Total	329,687	5,313	2,150	0	3	1,247	60	405	25	1,676	89
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction	1.6%	4.2%	5.9%	0.0%	0.2%	0.7%	1.1%	1.1%	2.5%	0.7%	1.0%

**Table A.27 Alternative B3(d) modification of the DeSoto Canyon time/area closure. Catch and discards of various species in the portion of the area to remain closed and in the portion of the area considered for reopening. \*excluding the NED. Three year totals are shown; one year averages can be obtained by dividing the three year total by three. Source: HMS Logbook data (1997-1999).**

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kept	BAYS discards
<b>PORTION OF AREA TO REMAIN CLOSED</b>											
1	20270	278	63	0	0	2	0	0	0	4	2
2	16515	348	254	0	0	0	0	0	0	0	0
3	38760	497	216	0	0	10	0	0	0	10	0
4	6611	77	42	0	3	17	0	0	0	17	0
5	15324	165	123	1	0	372	16	1	0	373	16
6	25752	368	169	0	1	343	6	0	0	343	10
7	19832	189	107	0	0	75	5	1	0	76	5
8	10235	222	83	0	0	54	4	0	0	54	4
9	8860	40	35	0	0	118	0	0	0	118	4
10	18185	309	133	0	0	115	0	0	0	119	2
11	7415	101	36	0	0	28	0	0	0	28	0
12	10290	259	149	0	0	2	0	0	0	2	0
Total	198,049	2,853	1,410	1	4	1,136	31	2	0	1,144	43
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction	0.9%	2.2%	3.8%	0.2%	0.2%	0.7%	0.6%	0.005%	0.0%	0.5%	0.5%
<b>PORTION OF AREA CONSIDERED FOR REOPENING</b>											
1	30,678	122	57	1	0	351	0	13	0	364	0
2	17,681	183	37	1	0	191	0	9	0	200	1
3	4,703	25	59	2	0	74	0	0	0	74	0
4	23,053	94	77	1	7	317	4	0	0	317	13
5	81,097	56	13	5	11	1,529	47	7	0	1,542	61
6	92,064	195	175	2	4	1,766	67	2	1	1,768	87
7	86,779	149	99	0	0	1,285	21	4	0	1,294	22
8	61,128	99	91	0	0	601	2	2	0	608	8
9	50,612	17	9	0	0	1,179	38	3	0	1,199	45
10	45,009	22	18	0	0	649	27	3	0	652	47
11	11,768	4	5	0	0	59	0	2	0	61	3
12	4,496	19	7	0	0	90	0	0	0	91	0
Total	509,068	985	647	12	22	8,091	206	45	1	8,170	287
All Areas*	21,148,706	127,500	36,748	599	1,617	167,203	5,486	37,133	1,006	226,156	8,990
% Reduction	2.4%	0.8%	1.8%	2.0%	1.4%	4.8%	3.8%	0.1%	0.01%	3.6%	3.2%

**Table A.28 . An example of the calculations for the redistribution of fishing effort model.** This example calculates the number of discards of loggerhead sea turtles considering the redistribution of fishing effort for alternative B2(d). A negative sign indicates an increase in discards.

Month	A	B	C	D	E	F	G	H	I	J	K	L
	Number of hooks in the Atlantic & Gulf of Mexico	Number of discards in Atl.& Gulf of Mexico	Number of hooks in the time/area closure	Number of discards in the potential time/area closure	Number of discards in open Atl. & GOM (B-D)	CPUE in the open Atl. & Gulf of Mexico (E/(A-C))	Number of additional discards in open Atl. & GOM by displaced effort (C*F)	Discards from open Atl. & GOM with displaced fishing effort (E+G)	Number of discards avoided by area closure (B-H)	Cumulative discards avoided by month (Cumulative sum of I)	Percent of total discards by month (I/Sum of Column B)	Cumulative percent of total discards avoided by closure (J/Sum of Column B)
1	1,647,194	9	739,191	1	8	8.81E-06	6.5	15	-6	-6	-3.1%	-3.1%
2	1,265,512	30	488,238	0	30	3.86E-05	18.8	49	-19	-24	-10.5%	-13.6%
3	1,632,848	21	546,944	1	20	1.84E-05	10.1	30	-9	-33	-5.1%	-18.7%
4	1,865,601	11	825,627	0	11	1.06E-05	8.7	20	-9	-42	-4.9%	-23.6%
5	2,000,083	15	1,085,255	6	9	9.84E-06	10.7	20	-5	-47	-2.6%	-26.2%
6	2,035,950	35	978,848	1	34	3.22E-05	31.5	65	-30	-77	-17.0%	-43.2%
7	2,253,513	13	1,136,250	3	10	8.95E-06	10.2	20	-7	-84	-4.0%	-47.2%
8	2,256,917	9	1,125,483	1	8	7.07E-06	8.0	16	-7	-91	-3.9%	-51.1%
9	1,707,630	7	820,167	1	6	6.76E-06	5.5	12	-5	-96	-2.5%	-53.6%
10	1,670,686	10	828,954	0	10	1.19E-05	9.8	20	-10	-106	-5.5%	-59.1%
11	1,528,728	11	725,772	1	10	1.25E-05	9.0	19	-8	-114	-4.5%	-63.6%
12	1,284,044	8	720,028	3	5	8.86E-06	6.4	11	-3	-117	-1.9%	-65.5%
Total	21,148,706	179	10,020,757	18	161	1.74E-04	135	296	-117			

**Table A.29**

**An example of how the modified redistribution of fishing effort was calculated.** This example calculates the number of discards of white marlin considering the redistribution of fishing effort in the Gulf of Mexico and area 6 only for alternative B2(c) from April through June. A negative sign indicates an increase in discards, and a positive value indicates a decrease in discards.

	A	B	C	D	E	F	G	H	I
Month	Number of hooks in the Gulf of Mexico	Number of discards in Gulf of Mexico	Number of hooks in the time/area closure	Number of discards in the time/area closure	Number of discards in open GOM (B-D)	CPUE in the open Gulf of Mexico (E/(A-C))	Number of additional discards in open GOM by displaced effort (C*F)	Discards from open GOM with displaced fishing effort (E+G)	Number of discards avoided by area closure (B-H)
4	1,285,615	111	1,139,144	102	9	6.14E-05	70.0	79	32
5	1,644,111	223	1,454,636	201	22	1.16E-04	168.9	191	32
6	1,499,224	329	1,308,060	293	36	1.88E-04	246.3	282	47
Total	4,428,950	663	3,901,840	596	67	3.66E-04	485	552	111

**Table A.30** An example of how the modified redistribution of fishing effort was calculated. This example calculates the number of discards of white marlin considering the redistribution of fishing effort in the Gulf of Mexico and area 6 only for alternative B2(c) from April through June. A negative sign indicates an increase in discards, and a positive value indicates a decrease in discards.

	A	B	C	F	G	H	I
Month	Number of hooks in Areas 6	Number of discards in Areas 6	Number of hooks displaced out of Gulf	CPUE in the Area 6	Number of discards in Area 6 as a result of displaced effort (C*F)	Total number of discards avoided by the area closure	Cumulative percent of total discards avoided by closure
4	311,464	56	28,198	1.80E-04	5.1	111-13=98	98/3747=2.6%
5	109,736	49	14,615	4.47E-04	6.5		
6	77,284	35	2,600	4.53E-04	1.2		
Total	498,484	140	45,413	1.08E-03	13		

**Table A.31 Comparison between the percent change of bycatch for different closures for 2001-2003 data (used in the draft Consolidated FMP) and 2001-2004 (first six months of 2004 included) without redistribution of effort. A negative (-) sign indicates a reduction in bycatch. Source: HMS Logbook data 2001-2004 (first six months of 2004).**

Alternative	Number of Hooks Set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leather back	Logger head	Bluefin Tuna Kept	Bluefin Tuna discards	Pelagic Shark discards	LCS discards
<b>WITHOUT REDISTRIBUTION OF EFFORT</b>											
<b>2001-2003</b>											
<b>B2(a)</b>											
2001-2003: Year-round	-18.0%	-16.0%	-19.9%	-15.8%	-14.9%	-34.6%	-5.0%	-22.2%	-12.2%	-0.6%	-2.5%
2001-2004: Year-round	<b>-20.4%</b>	<b>-17.1%</b>	<b>-20.1%</b>	<b>-16.5%</b>	<b>-15.1%</b>	<b>-32.8%</b>	<b>-3.8%</b>	<b>-22.0%</b>	<b>-11.9%</b>	<b>-2.0%</b>	<b>-3.8%</b>
2001-2003: May-Nov	-11.1%	-14.7%	-17.6%	-14.2%	-11.3%	-15.4%	-3.4%	-6.7%	-4.6%	-0.3%	-1.3%
2001-2004: May-Nov	<b>-12.4%</b>	<b>-14.8%</b>	<b>-16.5%</b>	<b>-12.9%</b>	<b>-10.5%</b>	<b>-14.0%</b>	<b>-2.5%</b>	<b>-5.8%</b>	<b>-4.8%</b>	<b>-0.6%</b>	<b>-2.0%</b>
<b>B2(b)</b>											
2001-2003: Year-round	-4.7%	-3.9%	-0.9%	-0.1%	-0.5%	-5.7%	-20.7%	-5.7%	-28.5%	-14.9%	-2.5%
2001-2004: Year-round	<b>-4.2%</b>	<b>-3.4%</b>	<b>-0.8%</b>	<b>-0.7%</b>	<b>-0.8%</b>	<b>-4.8%</b>	<b>-15.5%</b>	<b>-4.1%</b>	<b>-21.0%</b>	<b>-13.7%</b>	<b>-2.1%</b>
2001-2003: June only	-0.9%	-0.4%	-0.2%	0.0%	0.0%	-2.0%	-11.2%	-1.8%	-22.6%	-3.8%	-0.0%
2001-2004: June only	<b>-0.8%</b>	<b>-0.3%</b>	<b>-0.2%</b>	<b>-0.2%</b>	<b>-0.6%</b>	<b>-1.7%</b>	<b>-8.4%</b>	<b>-1.2%</b>	<b>-16.6%</b>	<b>-13.7%</b>	<b>-2.1%</b>
<b>B2(c) (April-June)</b>											
2001-2003	-13.4%	-10.3%	-10.0%	-12.1%	-8.3%	-11.1%	-3.9%	-29.0%	-21.5%	-0.8%	-3.7%
2001-2004	<b>-15.7%</b>	<b>-15.9%</b>	<b>-14.6%</b>	<b>-19.2%</b>	<b>-12.0%</b>	<b>-14.7%</b>	<b>-2.9%</b>	<b>-51.4%</b>	<b>-35.8%</b>	<b>-3.8%</b>	<b>-8.4%</b>
<b>B2(d) (Year-round)</b>											
2001-2003	-47.4%	-47.3%	-57.0%	-62.4%	-83.5%	-57.5%	-10.1%	-53.6%	-27.1%	-2.2%	-12.9%
2001-2004	<b>-47.7%</b>	<b>-49.2%</b>	<b>-58.1%</b>	<b>-62.3%</b>	<b>-48.0%</b>	<b>-57.2%</b>	<b>-7.6%</b>	<b>-51.7%</b>	<b>-35.8%</b>	<b>-6.5%</b>	<b>-18.3%</b>
<b>B2(e) (Year-round)</b>											
2001-2003	-10.1%	-8.7%	-1.6%	-0.3%	-1.9%	-9.9%	-36.3%	-12.4%	-43.3%	-31.6%	-2.5%
2001-2004	<b>-9.1%</b>	<b>-7.8%</b>	<b>-1.6%</b>	<b>-1.1%</b>	<b>-1.9%</b>	<b>-9.9%</b>	<b>-28.2%</b>	<b>-8.8%</b>	<b>-33.8%</b>	<b>-29.1%</b>	<b>-4.2%</b>

**Table A.32 Comparison in the number of hooks, discards, and CPUEs (# discards/# hooks in a particular area) between July through December of 2001-2003 and 2004 data. The yearly averages for the 6 months in 2001-2003 for CPUEs, hooks, and discards are shown in parentheses. Data source: HMS Logbook data July through December 2001-2003 and 2004.**

Alternative	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Pelagic Shark discards	Large Coastal Shark discards
<b>B2(a) (Gulf of Mexico)</b>								
2001-2003: Mean CPUE	(0.00034)	(0.00037)	(0.00012)	(0.000041)	(0.00010)	(0.000002)	(0.000081)	(0.00017)
2004: CPUE	0.00075	0.00045	0.00023	0.00012	0.000061	0.0	0.00012	0.0004
2001-2003: Mean # discards	(105.3)	(113.3)	(36.8)	(13)	(31.7)	(0.67)	(26.3)	(54)
2004: # discards	72	48	27	12	9	0.0	14	43
<b>Number of hooks</b>								
2001-2003: (646,380)								
2004: 627,527								
<b>B2(b) (Northeast)</b>								
2001-2003: Mean CPUE	(0.00017)	(0.000031)	(0.000001)	(0.000003)	(0.00037)	(0.00025)	(0.019)	(0.00056)
2004: CPUE	0.00079	0.00069	0.000089	0.0	0.0	0.0	0.0083	0.0016
2001-2003: Mean # discards	(37.3)	(6)	(0.33)	(0.67)	(6)	(5.67)	(1,249.3)	(112.3)
2004: # discards	28	23	3	0.0	0.0	0.0	125	55
<b>Number of hooks</b>								
2001-2003: (268,707)								
2004: 160,461								
<b>B2(c) (Gulf of Mexico)</b>								
2001-2003: Mean CPUE	(0.00038)	(0.00036)	(0.00013)	(0.000048)	(0.000090)	(0.000003)	(0.00011)	(0.00030)
2004: CPUE	0.00061	0.00044	0.00019	0.000091	0.000033	0.000008	0.00037	0.00074
2001-2003: Mean # discards	(370.3)	(350)	(123)	(45)	(77.7)	(3)	(95.7)	(248.3)
2004: # discards	189	123	59	33	12	3	75	231
<b>Number of hooks</b>								
2001-2003: (1,753,421)								
2004: 1,773,489								

Alternative	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Pelagic Shark discards	Large Coastal Shark discards
<b>B2(d) (Gulf of Mexico)</b>								
2001-2003: Mean CPUE	(0.0003)	(0.00036)	(0.00015)	(0.000088)	(0.000076)	(0.000003)	(0.00011)	(0.00038)
2004: CPUE	0.00061	0.00044	0.00091	0.000090	0.000033	0.000008	0.00034	0.00079
2001-2003: Mean # discards	(376.7)	(365.7)	(153.3)	(86.7)	(64.7)	(3)	(97)	(342.3)
2004: # discards	189	123	60	33	12	3	79	248
<b>Number of hooks</b>								
2001-2003: (1,786,085)								
2004: 1,779,789								
<b>B2(e) (Northeast)</b>								
2001-2003: Mean CPUE	(0.00020)	(0.000029)	(0.000002)	(0.000005)	(0.000064)	(0.000045)	(0.012)	(0.00057)
2004: CPUE	0.00053	0.00035	0.000074	0.000012	0.000016	0.000089	0.020	0.0049
2001-2003: Mean # discards	(86)	(11.7)	(1)	(2.3)	(12.3)	(11.3)	(2,863.3)	(228.3)
2004: # discards	51	36	6	1	1	7	851	391
<b>Number of hooks</b>								
2001-2003: (616,743)								
2004: 370,990								

**Table A.33 Comparison of the number of hooks, discards, species kept, and CPUEs (#discards/#hooks or #kept/#hooks in a particular area) between July through Dec. of 2001-2003 and 2004 data. The yearly averages for the 6 months in 2001-2003 for CPUEs, hooks, discards, and species kept are shown in parentheses. . Data source: HMS Logbook data July through December 2001-2003 and 2004.**

Alternative	Swordfish Kept	Swordfish Discards	Bluefin Tuna Kept	Bluefin Tuna Discards	YFT Kept	YFT Discards	BET Kept	BET Discards	BAYS Kept	BAYS Discards
<b>B2(a) (Gulf of Mexico)</b>										
2001-2003: Mean CPUE	(0.0040)	(0.0020)	(0.000011)	(0.0000021)	(0.020)	(0.00053)	(0.00051)	(0.0000030)	(0.021)	(0.00077)
2004: CPUE	0.031	0.0049	0.00016	0.00019	0.056	0.00070	0.0071	0.00012	0.068	0.0015
2001-2003: Mean # discards/kept	(1,311.3)	(646)	(3.6)	(0.67)	(6,319.7)	(172.7)	(170.3)	(1)	(6,588)	(249.7)
2004: # discards/kept	3,161	529	16	27	6,174	75	916	13	7,706	180
<b>Number of hooks</b>										
2001-2003: (646,380)										
2004: 513,188										
<b>B2(b) (Northeast)</b>										
2001-2003: Mean CPUE	(0.024)	(0.0087)	(0.00013)	(0.00030)	(0.015)	(0.00011)	(0.0080)	(0.0000070)	(0.028)	(0.00016)
2004: CPUE	0.029	0.0053	0.00023	0.000030	0.056	0.00060	0.0079	0.000056	0.068	0.00094
2001-2003: Mean # discards/kept	(3,033.3)	(580.3)	(7.7)	(32)	(2,385.7)	(23.3)	(356.7)	(1.67)	(3,125.3)	(27.3)
2004: # discards/kept	1,022	202	8	1	1,958	24	244	3	2,344	180
<b>Number of hooks</b>										
2001-2003: (268,707)										
2004: 160,462										

Alternative	Swordfish Kept	Swordfish Discards	Bluefin Tuna Kept	Bluefin Tuna Discards	YFT Kept	YFT Discards	BET Kept	BET Discards	BAYS Kept	BAYS Discards
<b>B2(c) (Gulf of Mexico)</b>										
2001-2003: Mean CPUE	(0.0030)	(0.0018)	(0.000016)	(0.000005)	(0.021)	(0.00059)	(0.00038)	(0.000003)	(0.022)	(0.00088)
2004: CPUE	0.034	0.0084	0.00019	0.00049	0.058	0.0013	0.011	0.0012	0.076	0.0039
2001-2003: Mean # discards/kept	(2,591)	(1,543)	(12.7)	(4)	(19,304)	(535.7)	(299.3)	(2.67)	(19,776)	(789.7)
2004: # discards/kept	9,042	2,081	63	165	16,764	380	2,991	346	21,548	1,184
<b>Number of hooks</b>										
2001-2003: (1,753,421)										
2004: 1,773,489										
<b>B2(d) (Gulf of Mexico)</b>										
2001-2003: Mean CPUE	(0.0031)	(0.0018)	(0.000016)	(0.000005)	(0.021)	(0.00059)	(0.00037)	(0.000003)	(0.022)	(0.00088)
2004: CPUE	0.035	0.0085	0.00019	0.00048	0.059	0.0013	0.011	0.0012	0.076	0.0039
2001-2003: Mean # discards/kept	(2,633.3)	(1,552)	(13)	(4)	(19,641)	(542.3)	(300.3)	(2.67)	(20,114)	(799.3)
2004: # discards/kept	9,157	2,105	63	165	16,830	380	3,002	348	21,625	1,184
<b>Number of hooks</b>										
2001-2003: (1,786,085)										
2004: 1,779,789										
<b>B2(e) (Northeast)</b>										
2001-2003: Mean CPUE	(0.015)	(0.0041)	(0.000088)	(0.00037)	(0.012)	(0.00019)	(0.011)	(0.00016)	(0.034)	(0.0017)
2004: CPUE	0.024	0.0062	0.00013	0.00026	0.048	0.0011	0.0086	0.000063	0.063	0.0014
2001-2003: Mean # discards/kept	(4,987.7)	(1,219.7)	(20.3)	(85.3)	(3,975.7)	(61)	(2,165)	(46)	(8,354.7)	(241.7)
2004: # discards/kept	2,035	511	16	17	4,060	97	539	6	4,948	122
<b>Number of hooks</b>										
2001-2003: (616,743)										
2004: 370,990										

**Table A.34** Percent change in reported landings by area from July through December where: a) 2001-03 vs. 1997-99; b) 2004 vs. 2001-03; and c) 2004 vs. 1997-99 (1997-99 and 2001-03 are mean reported landings). Source: HMS Logbook data.

Area	Year	Pelagic Sharks Kept	Pelagic Sharks Discarded	Large Coastal Sharks Kept	Large Coastal Sharks Discarded	Dolphin Kept	Dolphin Discarded	Wahoo Kept	Wahoo Discarded	Blue Marlin Discarded	White Marlin Discarded	Sailfish Discarded	Spearfish Discarded	Sea Turtle Interactions
<b>CAR</b>	1997-99	14.3	132.3	1.3	18.3	130.7	3.7	45	1.7	29.3	11.3	49	1.7	1
	2001-03	1.3	39	0.3	11.3	158.7	0	15.3	0.3	19	14.7	9	0.3	1.7
	2004	3	12	0	6	12	0	0	0	2	0	0	3	0
% Change	a	-90.7	-70.5	-75.0	-38.2	21.4	-100.0	-65.9	-80.0	-35.2	29.4	-81.6	-80.0	66.7
	b	125.0	-69.2	-100.0	-47.1	-92.4	---	-100.0	-100.0	-89.5	-100.0	-100.0	800.0	-100.0
	c	-79.1	-90.9	-100.0	-67.3	-90.8	-100.0	-100.0	-100.0	-93.2	-100.0	-100.0	80.0	-100.0
<b>GOM</b>	1997-99	108.7	163.3	173.7	597.3	3545.3	74	2514	67.7	297.7	279.3	347.7	26.3	1
	2001-03	51	111.3	37	299	2920.7	64.7	2276.7	20.7	387.3	399.7	162	44	68.3
	2004	134	59	76	757	3054	56	3050	21	242	267	118	56	23
% Change	a	-53.1	-31.8	-78.7	-49.9	-17.6	-12.6	-9.4	-69.5	30.1	43.1	-53.4	67.1	6733.3
	b	162.7	-47.0	105.4	153.2	4.6	-13.4	34.0	1.6	-37.5	-33.2	-27.2	27.3	-66.3
	c	23.3	-63.9	-56.2	26.7	-13.9	-24.3	21.3	-69.0	-18.7	-4.4	-66.1	112.7	2200.0
<b>FEC</b>	1997-99	60.7	209.7	137	469.3	383	14.3	69.3	1	76	36.3	86	9	1.7
	2001-03	23	30.7	37.7	84.3	216	1.3	17	1	27.3	1.7	8.7	1	1
	2004	4	11	4	144	51	0	10	0	11	0	8	5	0
% Change	a	-62.1	-85.4	-72.5	-82.0	-43.6	-90.7	-75.5	0.0	-64.0	-95.4	-89.9	-88.9	-40.0
	b	-82.6	-64.1	-89.4	70.8	-76.4	-100.0	-41.2	-100.0	-59.8	-100.0	-7.7	400.0	-100.0
	c	-93.4	-94.8	-97.1	-69.3	-86.7	-100.0	-85.6	-100.0	-85.5	-100.0	-90.7	-44.4	-100.0
<b>SAB</b>	1997-99	58.3	213.3	287	898.7	398.3	9.3	95.7	1	69.7	19.7	79.3	5.3	3
	2001-03	23	80.7	148.7	422	297	40	22.7	0.3	20	2.3	24.3	2.3	2
	2004	17	86	180	274	244	32	44	2	39	28	21	1	2
% Change	a	-60.6	-62.2	-48.2	-53.0	-25.4	328.6	-76.3	-66.7	-71.3	-88.1	-69.3	-56.3	-33.3
	b	-26.1	6.6	21.1	-35.1	-17.8	-20.0	94.1	500.0	95.0	1100.0	-13.7	-57.1	0.0
	c	-70.9	-59.7	-37.3	-69.5	-38.7	242.9	-54.0	100.0	-44.0	42.4	-73.5	-81.3	-33.3
<b>MAB</b>	1997-99	773.3	11114.3	1560.3	504.7	2348.3	29.3	51.3	1	31.7	246.7	4.3	2.7	20.7
	2001-03	823.3	2957.3	2693.3	625.3	1370	6.3	37.3	12.3	13.7	115	2	2	8
	2004	1050	3803	654	710	1588	14	90	0	19	124	0	0	25
% Change	a	6.5	-73.4	72.6	23.9	-41.7	-78.4	-27.3	1133.3	-56.8	-53.4	-53.8	-25.0	-61.3
	b	27.5	28.6	-75.7	13.5	15.9	121.1	141.1	-100.0	39.0	7.8	-100.0	-100.0	212.5
	c	35.8	-65.8	-58.1	40.7	-32.4	-52.3	75.3	-100.0	-40.0	-49.7	-100.0	-100.0	21.0

Area	Year	Pelagic Sharks Kept	Pelagic Sharks Discarded	Large Coastal Sharks Kept	Large Coastal Sharks Discarded	Dolphin Kept	Dolphin Discarded	Wahoo Kept	Wahoo Discarded	Blue Marlin Discarded	White Marlin Discarded	Sailfish Discarded	Spearfish Discarded	Sea Turtle Interactions
NEC	1997-99	334.3	11597.3	42.3	67.3	2621.7	42.3	22	0.3	48	287.3	2.3	3.7	57.7
	2001-03	371.3	2317	43.7	192.7	1458	37.3	18	0.3	9.7	63.7	1	1	19.7
	2004	411	1497	24	388	304	2	21	0	11	26	0	1	10
% Change	a	11.1	-80.0	3.1	186.1	-44.4	-11.8	-18.2	0.0	-79.9	-77.8	-57.1	-72.7	-65.9
	b	10.7	-35.4	-45.0	101.4	-79.1	-94.6	16.7	-100.0	13.8	-59.2	-100.0	0.0	-49.2
	c	22.9	-87.1	-43.3	476.2	-88.4	-95.3	-4.5	-100.0	-77.1	-91.0	-100.0	-72.7	-82.7
NED	1997-99	462.7	12300.7	0	0.7	85	2.3	0.3	0.7	2	7.7	0.3	0.3	417
	2001-03	230.3	10497	0	0.7	57.3	11.3	0	0	1.3	4	0	1	200.7
	2004	596	16454	0	0	2	3	2	0	1	2	0	1	137
% Change	a	-50.2	-14.7	---	0.0	-32.5	385.7	-100.0	-100.0	-33.3	-47.8	-100.0	200.0	-51.9
	b	158.8	56.7	---	-100.0	-96.5	-73.5	---	---	-25.0	-50.0	---	0.0	-31.7
	c	28.8	33.8	---	-100.0	-97.6	28.6	500.0	-100.0	-50.0	-73.9	-100.0	200.0	-67.1
SAR	1997-99	0	10.7	0	0.7	12.3	0.7	1.7	0	0	3.7	0	0.3	0.3
	2001-03	4.3	17.7	0.3	6.3	69	0	0.7	0	0.7	0	0	2	0
	2004	3	40	0	6	6	0	1	0	0	0	0	11	1
% Change	a	---	65.6	---	850.0	459.5	-100.0	-60.0	---	---	-100.0	---	500.0	-100.0
	b	-30.8	126.4	-100.0	-5.3	-91.3	---	50.0	---	-100.0	---	---	450.0	---
	c	---	275.0	---	800.0	-51.4	-100.0	-40.0	---	---	-100.0	---	3200.0	200.0
NCA	1997-99	16.7	118.3	0.7	0	45	3.7	3.7	0.7	6.3	11.7	0.7	2.7	2.7
	2001-03	15.3	1144.7	0	40.3	13.7	2	1.7	0	1.7	0	0.3	3	1.7
	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
% Change	a	-8.0	867.3	-100.0	---	-69.6	-45.5	-54.5	-100.0	-73.7	-100.0	-50.0	12.5	-37.5
	b	-100.0	-100.0	---	-100.0	-100.0	-100.0	-100.0	---	-100.0	---	-100.0	-100.0	-100.0
	c	-100.0	-100.0	-100.0	---	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0
SAT	1997-99	81.3	364	12.7	8.7	142.7	3.7	42	2	28	15.7	7	5	4.7
	2001-03	28.7	7.7	0	0	1.3	0	0	0	0	0	0	0	6.3
	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
% Change	a	-64.8	-97.9	-100.0	-100.0	-99.1	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	35.7
	b	-100.0	-100.0	---	---	-100.0	---	---	---	---	---	---	---	-100.0
	c	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0

**Table A.35** Percent change in reported landings by area from July through December where: a) 2001-03 vs. 1997-99; b) 2004 vs. 2001-03; and c) 2004 vs. 1997-99 (1997-99 and 2001-03 are mean reported landings). Source: HMS Logbook data.

Area	Year	Hooks Set	Swordfish Kept	Swordfish Discarded	Bluefin Tuna Kept	Bluefin Tuna Discarded	Yellowfin Tuna Kept	Yellowfin Tuna Discarded	Bigeye Tuna Kept	Bigeye Tuna Discarded	BAYS Kept	BAYS Discarded
CAR	1997-99	70440	929	219	0.7	0.3	400.3	22.7	109.3	15.3	523.3	40
	2001-03	43263	872.3	137.7	0	0	51.7	1	70	3	127	5
	2004	11061	141	17	0	0	16	0	4	0	24	0
% Change	a	-38.6	-6.1	-37.1	-100.0	-100.0	-87.1	-95.6	-36.0	-80.4	-75.7	-87.5
	b	-74.4	-83.8	-87.7	---	---	-69.0	-100.0	-94.3	-100.0	-81.1	-100
	c	-84.3	-84.8	-92.2	-100.0	-100.0	-96.0	-100.0	-96.3	-100.0	-95.4	-100.0
GOM	1997-99	1616703	3889	1315.3	15.3	2	22656.7	605.3	214.3	3	22980.7	762.7
	2001-03	1866738	3283.3	1655.3	12	4	20562.7	578.7	313	2.7	21039.7	893.7
	2004	1870880	2964	1561	10	13	16841	335	273	3	17347	829
% Change	a	15.5	-15.6	25.8	-21.7	100	-9.2	-4.4	46.0	-11.1	-8.4	17.2
	b	0.2	-9.7	-5.7	-16.7	225	-18.1	-42.1	-12.8	12.5	-17.6	-7.2
	c	15.7	-23.8	18.7	-34.8	550.0	-25.7	-44.7	27.4	0.0	-24.5	8.7
FEC	1997-99	259498.7	4943.7	2236.7	1.3	0.3	686	38.3	1033.3	53.7	1807.7	94
	2001-03	90403.3	929.3	263	0	0	523.7	78.3	793	94	1389.7	176
	2004	58013	577	143	0	0	523	3	546	1	1117	4
% Change	a	-65.2	-81.2	-88.2	-100.0	-100.0	-23.7	104.3	-23.3	75.2	-23.1	87.2
	b	-35.8	-37.9	-45.6	---	---	-0.1	-96.2	-31.1	-98.9	-19.6	-97.7
	c	-77.6	-88.3	-93.6	-100.0	-100.0	-23.8	-92.2	-47.2	-98.1	-38.2	-95.7
SAB	1997-99	214421	6015.7	2162.7	1	0.7	1108.3	66.7	48.7	5	1172	73
	2001-03	140263.7	3782.3	704.3	0.3	0	822.3	19	31.3	3	866.3	22.7
	2004	128637	3179	532	2	0	716	1	34	0	765	2
% Change	a	-34.6	-37.1	-67.4	-66.7	-100.0	-25.8	-71.5	-35.6	-40.0	-26.1	-68.9
	b	-8.3	-16.0	-24.5	500.0	---	-12.9	-94.7	8.5	-100.0	-11.7	-91.2
	c	-40.0	-47.2	-75.4	100.0	-100.0	-35.4	-98.5	-30.1	-100.0	-34.7	-97.3
MAB	1997-99	1028022	3429	2244.7	33.7	92	8820.7	317.3	7013.3	357	19335.3	792
	2001-03	680704.3	3839	1970.3	23.7	76.7	5985	138	3653.7	82.3	12802.3	547.3
	2004	669797	3665	1728	58	241	11930	465	5000	381	20601	1096
% Change	a	-33.8	12.0	-12.2	-29.7	-16.7	-32.1	-56.5	-47.9	-76.9	-33.8	-30.9
	b	-1.6	-4.5	-12.3	145.1	214.3	99.3	237.0	36.8	362.8	60.9	100.2
	c	-34.8	6.9	-23.0	72.3	162.0	35.3	46.5	-28.7	6.7	6.5	38.4

Area	Year	Hooks Set	Swordfish Kept	Swordfish Discarded	Bluefin Tuna Kept	Bluefin Tuna Discarded	Yellowfin Tuna Kept	Yellowfin Tuna Discarded	Bigeye Tuna Kept	Bigeye Tuna Discarded	BAYS Kept	BAYS Discarded
NEC	1997-99	791638.3	3301	1445.7	17.3	86.3	7140.3	257.3	4888	135.3	13774.3	417.7
	2001-03	504159	4363.3	927	11.7	68	3539.3	43	1363.7	15	6132.7	69.7
	2004	363358	3162	339	29	113	8093	30	451	2	8832	33
% Change	a	-36.3	32.2	-35.9	-32.7	-21.2	-50.4	-83.3	-72.1	-88.9	-55.5	-83.3
	b	-27.9	-27.5	-63.4	148.6	66.2	128.7	-30.2	-66.9	-86.7	44.0	-52.6
	c	-54.1	-4.2	-76.6	67.3	30.9	13.3	-88.3	-90.8	-98.5	-35.9	-92.1
NED	1997-99	435483	11651.3	1762.7	13.7	3.7	28.3	3.3	1468.3	254	1763.3	372.3
	2001-03	405723.3	7948.7	923.3	28	69.7	60	1.7	852	46.3	1142.7	107.3
	2004	455862	8015	719	51	26	2	0	133	4	157	29
% Change	a	-6.8	-31.8	-47.6	104.9	1800.0	111.8	-50.0	-42.0	-81.8	-35.2	-71.2
	b	12.4	0.8	-22.1	82.1	-62.7	-96.7	-100.0	-84.4	-91.4	-86.3	-73.0
	c	4.7	-31.2	-59.2	273.2	609.1	-92.9	-100.0	-90.9	-98.4	-91.1	-92.2
SAR	1997-99	7330	119.3	9.3	0.3	0	61	0	17	2.3	90.7	2.3
	2001-03	18061.3	206.7	12.3	1.3	0.3	11	0	43	0	88.7	0
	2004	28464	327	22	6	1	42	10	83	11	198	22
% Change	a	146.4	73.2	32.1	300.0	---	-82.0	---	152.9	-100.0	-2.2	-100.0
	b	57.6	58.2	78.4	350.0	200.0	281.8	---	93.0	---	123.3	---
	c	288.3	174.0	135.7	1700.0	---	-31.1	---	388.2	371.4	118.4	842.9
NCA	1997-99	56764.3	1010.7	74.3	1.7	0	77.7	2	75	7.3	209.3	9.7
	2001-03	36240	433	18.7	0	0	66.3	0	136.3	0	353.3	0
	2004	0	0	0	0	0	0	0	0	0	0	0
% Change	a	-36.2	-57.2	-74.9	-100.0	---	-14.6	-100.0	81.8	-100.0	68.8	-100.0
	b	-100.0	-100.0	-100.0	---	---	-100.0	---	-100.0	---	-100.0	---
	c	-100.0	-100.0	-100.0	-100.0	---	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0
SAT	1997-99	78901.7	731.3	144	0.3	0.3	623.7	19.7	254.3	12.7	945	34.3
	2001-03	22783.3	119.3	23.7	0	0	50	0	277.7	0	361	0
	2004	1200	0	0	0	0	35	0	0	0	35	0
% Change	a	-71.1	-83.7	-83.6	-100.0	-100.0	-92.0	-100.0	9.2	-100.0	-61.8	-100.0
	b	-94.7	-100.0	-100.0	---	---	-30.0	---	-100.0	---	-90.3	---
	c	-98.5	-100.0	-100.0	-100.0	-100.0	-94.4	-100.0	-100.0	-100.0	-96.3	-100.0

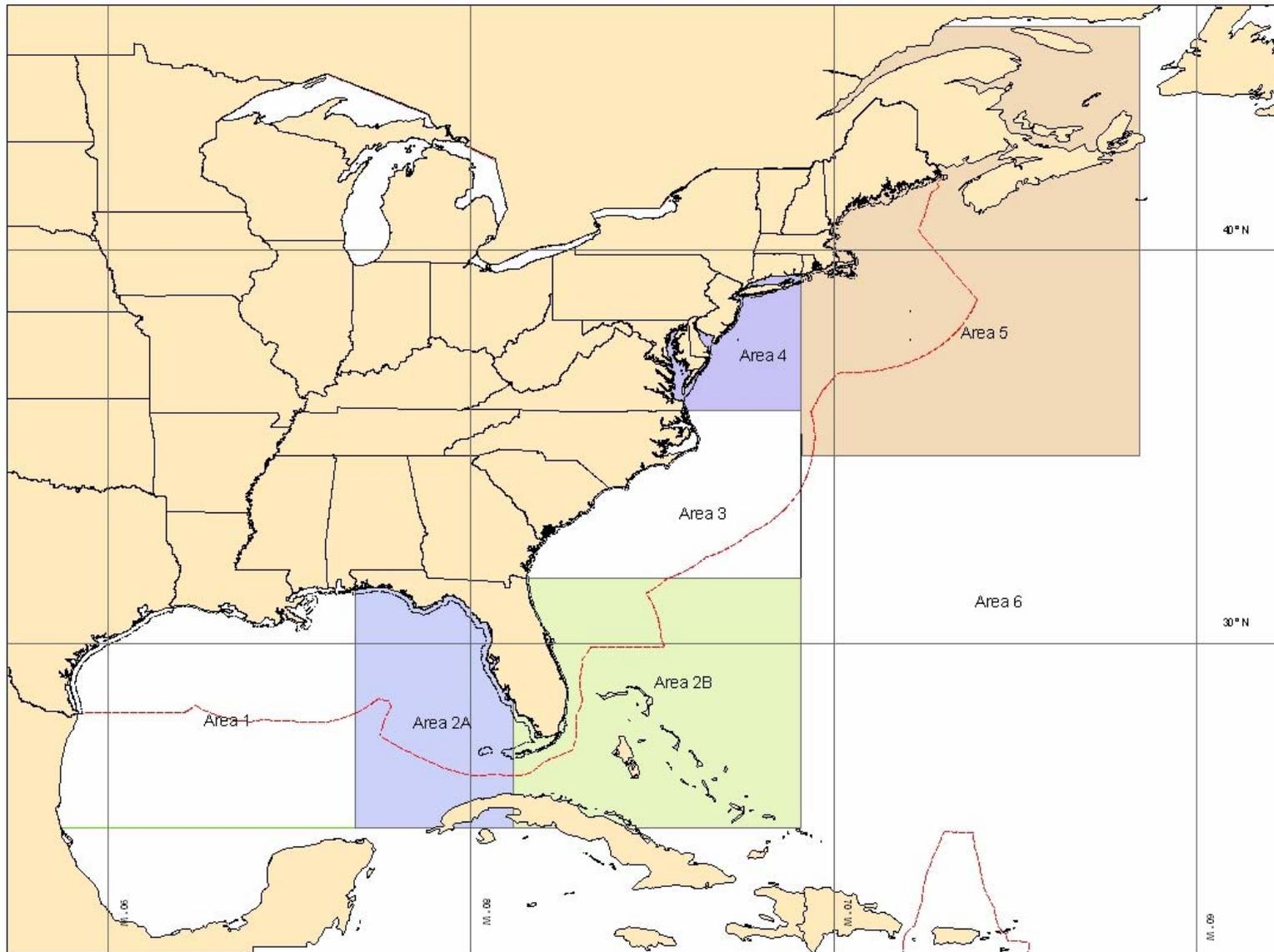
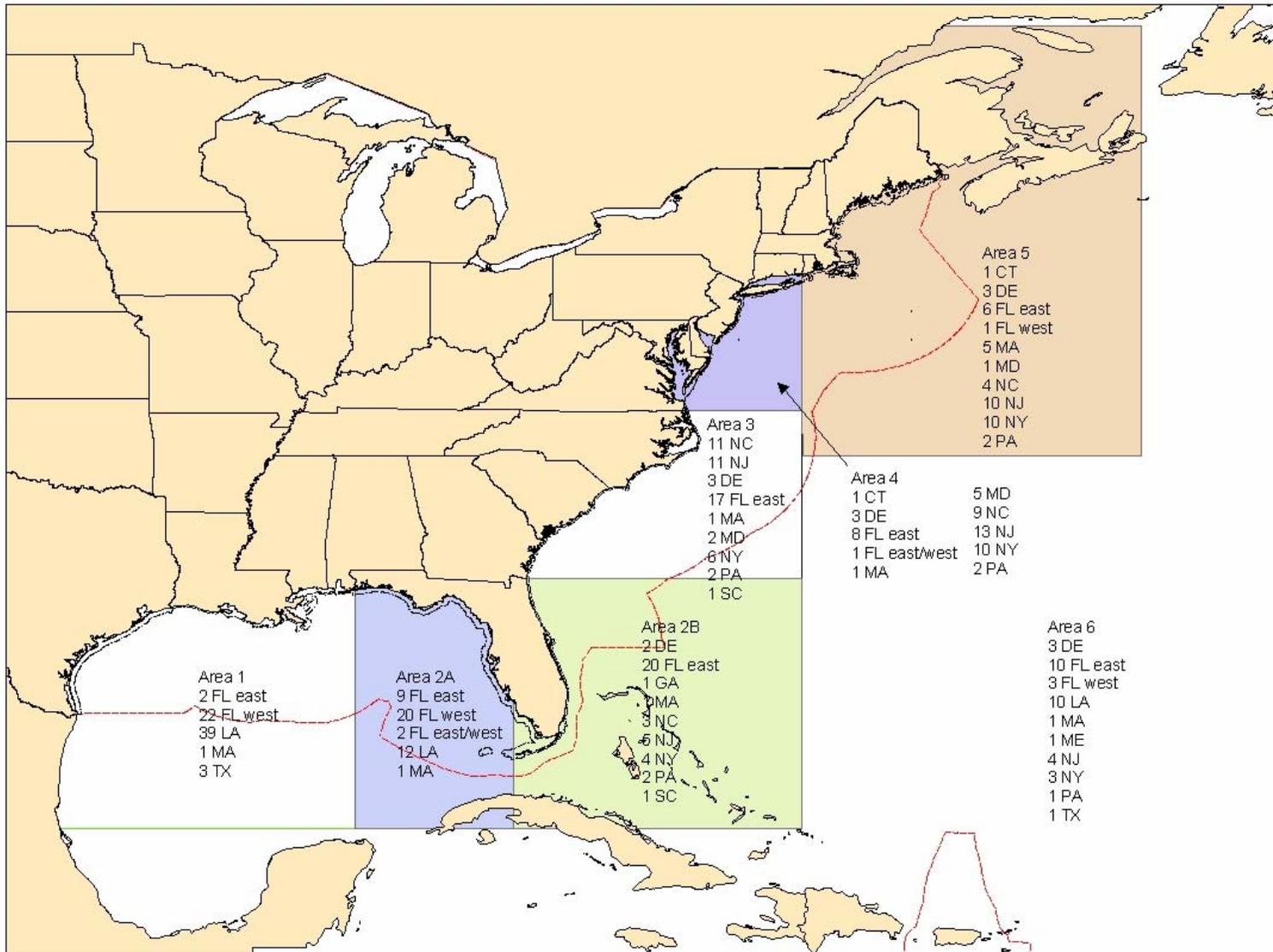
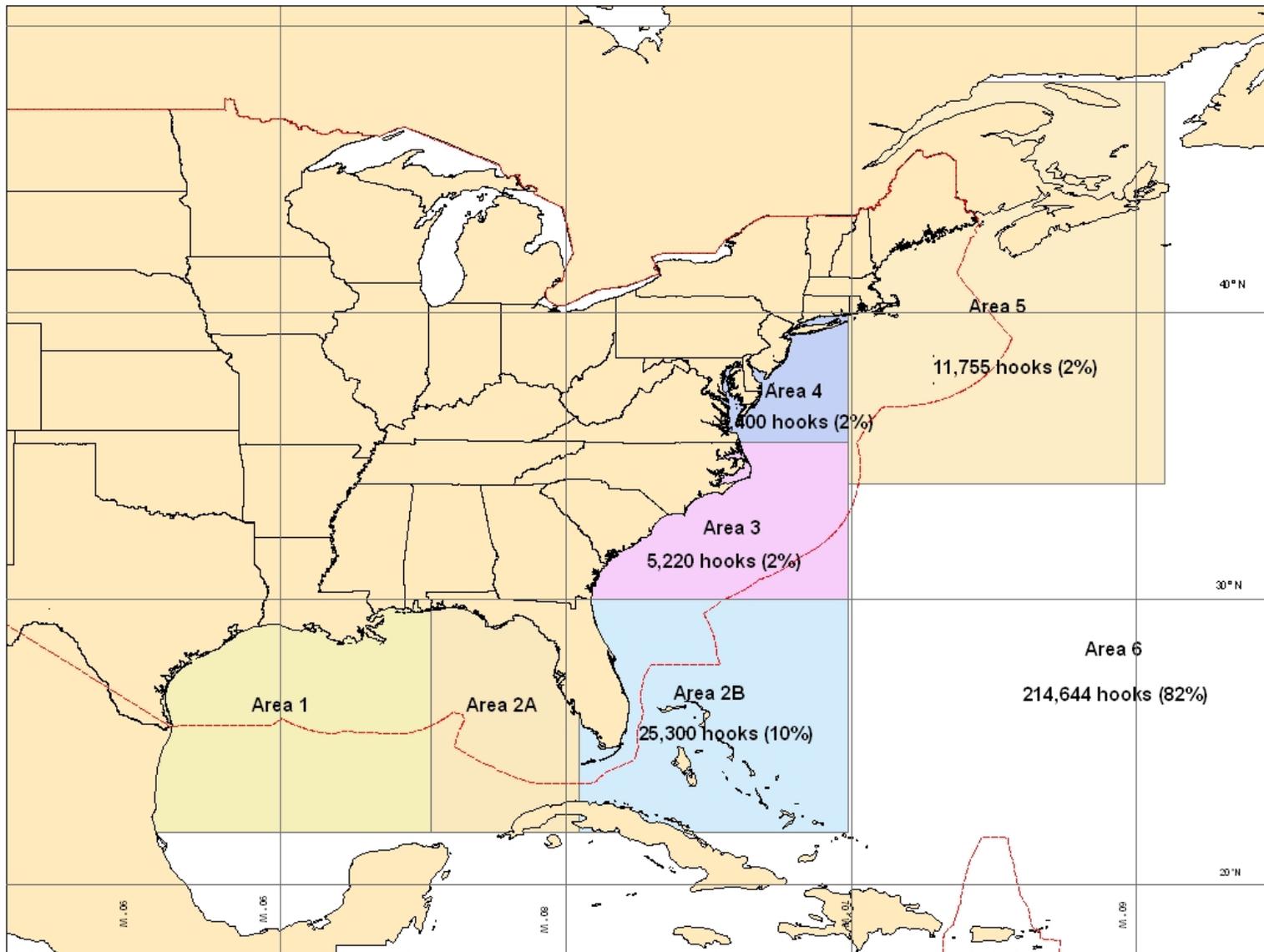


Figure A.5 Map showing the different areas that were used in the fleet mobility analysis.



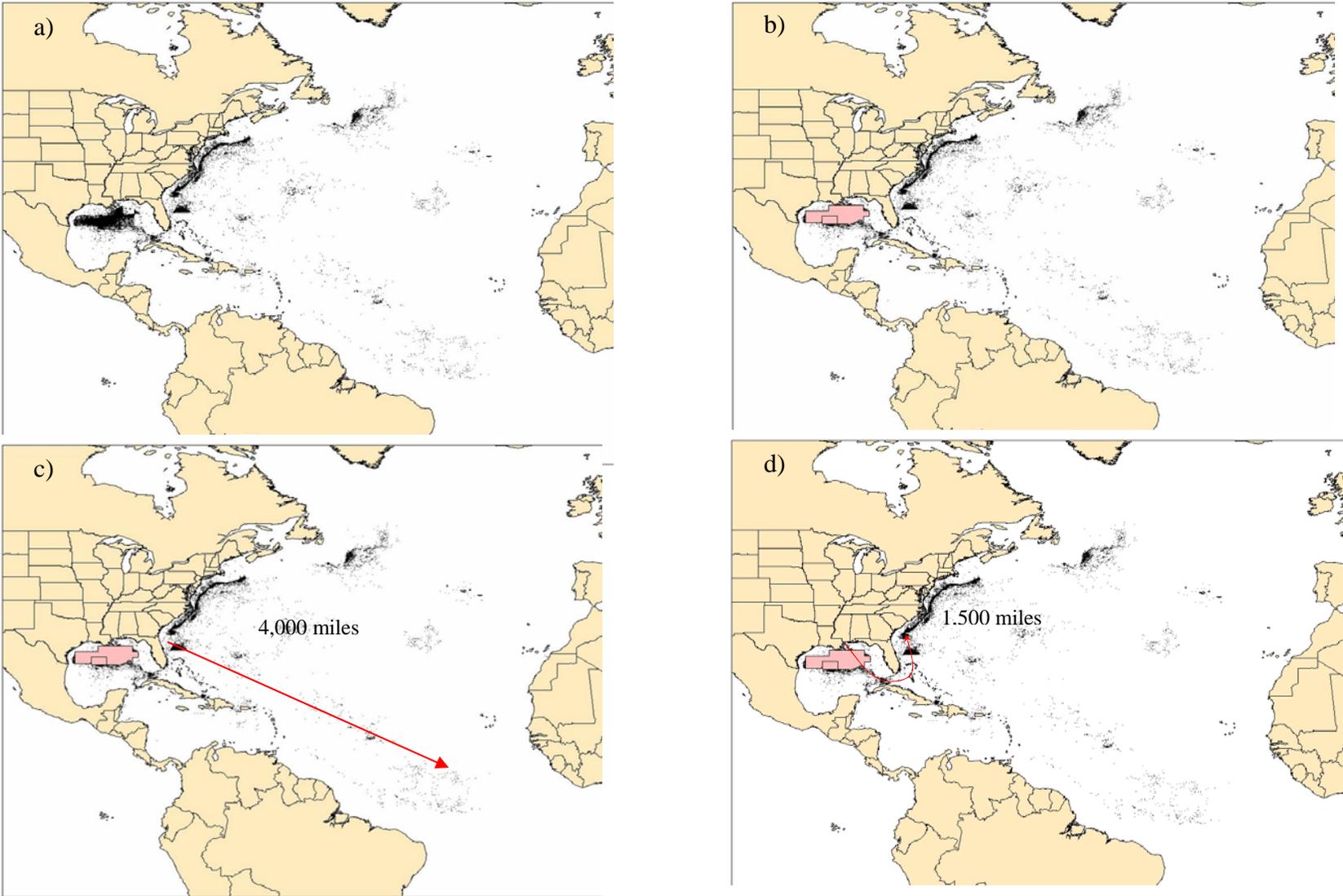
**Figure A.6** Map showing the number of vessels fishing in different areas with their respective homeports listed. “FL east” signifies that a vessel’s homeport was in the east coast of Florida. “FL west” signifies that a vessel’s homeport was in the west coast of FL, and “FL east/west” signifies that the vessel’s homeport was in the Florida Keys.



**Figure A.7** Map showing vessels originating from the Gulf of Mexico and fishing in Atlantic Areas 2B through 6. The percentage of hooks represents the percentage of hooks that moved out of the Gulf of Mexico and into Areas 2B, 3, 4, 5, and 6.

**Table A.36** Characteristics of vessels fishing in the Gulf of Mexico and vessels moving out of Gulf of Mexico.

<b>a) Horsepower</b>					
	Mean	Standard error	Range	<i>n</i>	<i>P</i>
Boats fishing in Gulf of Mexico	372.2	20.3	0-1200	92	0.66
Boats moving out of Gulf of Mexico	395.7	41.1	170-800	14	
<b>b) Vessel Length</b>					
	Mean (ft)	Standard error	Range (ft)	<i>n</i>	<i>P</i>
Boats fishing in Gulf of Mexico	61.65	1.26	32-88	92	
Boats moving out of Gulf of Mexico	64.79	2.38	45-78	14	0.35



**Figure A.8** Map of pelagic longline sets within and outside of the U. S. EEZ. a) extent of pelagic longline sets inside and outside U.S. EEZ, b) inset shows the size of B2(a) and B2(c) relative to the scope of pelagic longline sets inside and outside of U. S. EEZ, c) the distance pelagic longline vessels have made relative to the U. S. coastline, d) the distance it would take a vessel to travel from the Gulf of Mexico to the Mid-Atlantic Bight area. Source: HMS logbook data from January 2001 to June 2004.

**Table A.37 Alternative B2(a) May through November. Cumulative number kept and discarded (over 3 1/2 years) with and without redistribution of effort in the Gulf of Mexico and Area 6 combined.** Minus sign indicates a decrease. \*excluding the NED. Three and one half year totals are shown; one year averages can be obtained by dividing the totals by 3.5. Data source: HMS Logbook data 2001-2004 (first six months of 2004).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kepts	BAYS discards
1	485,204	2,187	794	14	3	4,109	112	178	1	4,376	124
2	323,489	1,936	542	31	7	1,486	31	205	16	1,852	50
3	365,398	1,606	692	37	57	2,528	88	104	0	2,683	99
4	453,515	1,004	752	58	88	4,607	149	34	0	4,657	168
5	510,446	1,189	1,214	38	76	4,385	350	22	0	4,437	365
6	425,506	842	617	13	29	5,245	207	34	1	5,318	243
7	304,242	414	241	0	0	3,978	103	33	0	4,017	120
8	351,376	602	239	0	0	3,184	85	46	0	3,249	96
9	281,104	452	262	0	1	2,515	45	34	0	2,553	80
10	337,578	635	396	0	0	3,053	139	121	2	3,226	166
11	351,773	733	316	2	0	2,860	69	147	0	3,097	147
12	356,739	1,098	484	9	1	3,369	77	130	1	3,622	140
Total	4,546,370	12,698	6,549	202	262	41,319	1,455	1,088	21	43,087	1,798
Total May-Nov	2,562,025	4,867	3,285	53	106	25,220	998	437	3	25,897	1,217
All Areas*	24,811,867	151,756	42,325	917	2,210	192,252	6,351	38,589	1,069	253,842	10,379
May-Nov decrease <b>without</b> redistribution of effort	-10.3%	-3.2%	-7.8%	-5.8%	-4.8%	-13.1%	-15.7%	-1.1%	-0.3%	-10.2%	-11.7%
May-Nov decrease <b>with</b> redistribution of effort		0.1%	-1.8%	-0.3%	1.6%	1.7%	-1.9%	-1.7%	0.0%	0.9%	0.7%
No. reduced <b>with</b> redist. of effort		105	-767	-2	35	3,297	-123	-664	0	2,284	70

**Table A.38** Alternative B2(b) June only. Cumulative number of discards (over 3 1/2 years) with and without redistribution of effort in the Atlantic only. Minus signs indicate a decrease. \*excluding the NED. Three and one half year totals are shown; one year averages can be obtained by dividing the totals by 3.5. Data source: HMS Logbook data 2001-2004 (first six months of 2004).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles	Pelagic Shark discards	Large Coastal Shark discards
5	485,204	4	0	5	0	0	0	0	36	54
6	323,489	12	5	3	3	10	20	0	1,315	7
7	365,398	31	3	0	0	7	9	0	1,720	196
8	453,515	49	6	0	0	5	3	0	645	85
9	510,446	26	7	1	1	1	3	0	603	41
10	425,506	6	2	0	0	0	1	0	457	13
11	304,242	0	0	0	0	4	0	0	310	2
12	351,376	0	0	0	0	1	1	0	13	0
Total	3,219,176	128	23	9	4	28	37	0	5,099	398
June	323,489	12	5	3	3	10	20	0	1,315	7
All Areas*	24,811,867	3,747	2,831	1,303	516	586	238	13	37,244	19,116
June % Decrease <b>without</b> redistribution of effort	-1.3%	-0.3%	-0.2%	-0.2%	-0.6%	-1.7%	-8.4%	0.0%	-3.5%	0.0%
June % Decrease <b>with</b> redistribution of effort		2.0%	0.9%	1.6%	0.5%	-0.8%	-5.9%	0.0%	-1.1%	3.3%
No. reduced <b>with</b> redistrib. of effort		73	26	21	3	-4	-14	0	-419	634

**Table A.39 Alternative B2(b) June only. Cumulative number kept and discarded (over 3 1/2 years) with and without redistribution of effort in the Atlantic only. Minus signs indicate a decrease. \*excluding the NED. Three and one half year totals are shown; one year averages can be obtained by dividing the totals by 3.5. Data source: HMS Logbook data 2001-2004 (first six months of 2004).**

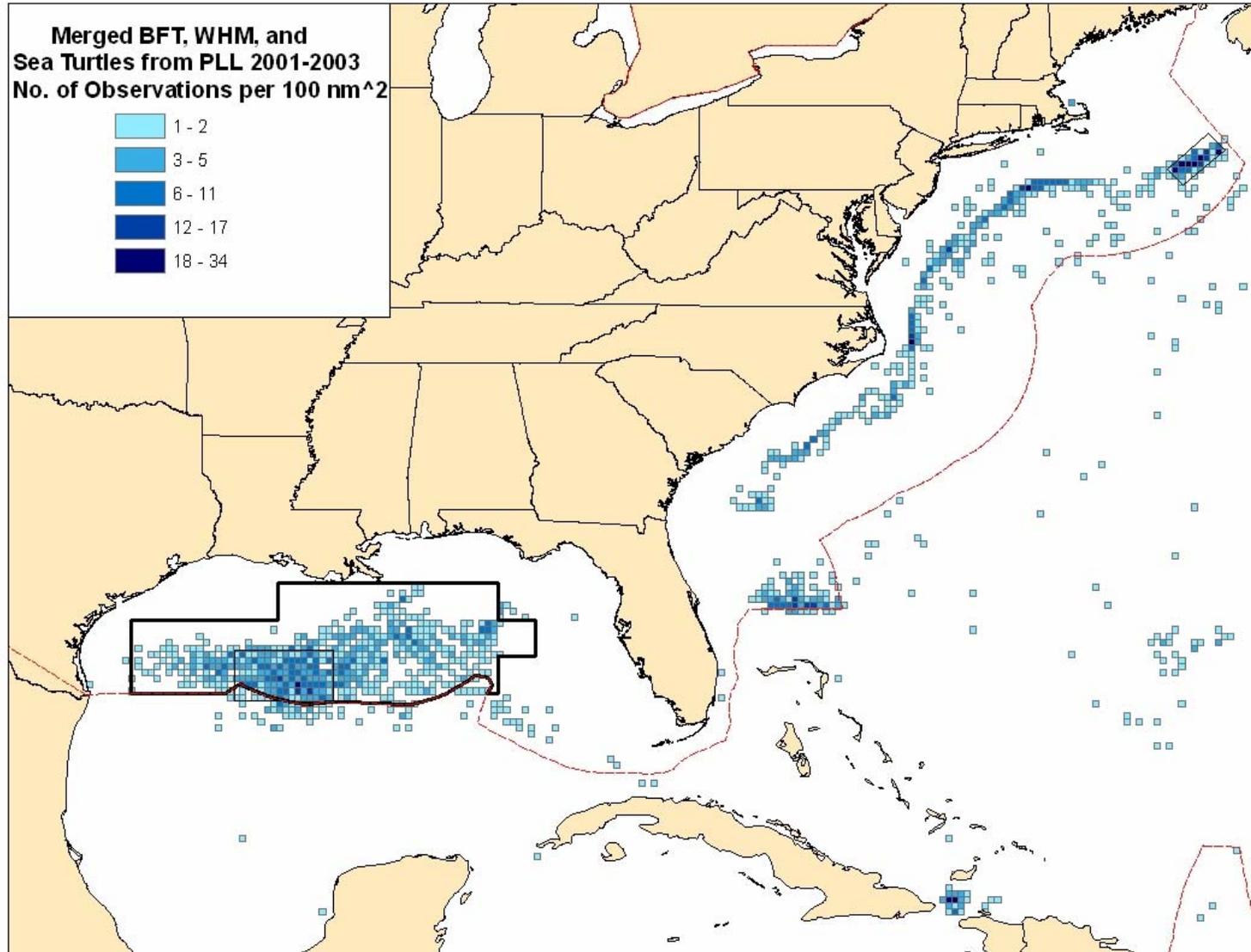
Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kepts	BAYS discards
5	29,318	228	36	4	2	148	30	3	0	151	30
6	196,341	1,888	275	11	367	641	12	559	0	1,476	16
7	256,598	2,712	394	14	43	552	5	197	0	929	8
8	235,512	2,327	499	3	2	2,625	12	157	2	3,019	16
9	225,096	2,875	509	2	48	3,407	51	373	3	4,167	54
10	78,630	1,076	207	1	0	524	2	180	0	980	3
11	10,086	85	124	3	3	39	0	159	0	266	1
12	1,500	25	8	0	0	10	0	4	0	15	0
Total	1,033,081	11,216	2,052	38	465	7,946	112	1,632	5	11,003	128
June	196,341	1,888	275	11	367	641	12	559	0	1,476	16
All Areas*	24,811,867	151,756	42,325	917	2,210	192,252	6,351	38,589	1,069	253,842	10,379
% Reduction <b>without</b> redistribution of effort	0.8%	1.2%	0.6%	1.2%	16.6%	0.3%	0.2%	1.4%	0.0%	0.6%	0.2%
% Reduction <b>with</b> redistribution of effort		-0.3%	-0.03%	-0.2%	-15.1%	0.3%	0.2%	-1.0%	0.5%	-0.1%	0.2%
No. reduced <b>with</b> redistrib. of effort		-474	-11	-2	-333	662	14	-367	5	-147	25

**Table A.40** Alternative B2(c) BFT Petition April through June. Cumulative number of discards (over 3 1/2 years) with and without redistribution of effort in the Gulf of Mexico and Area 6 combined. Minus signs indicate a decrease. \*excluding the NED. Three and one half year totals are shown; one year averages can be obtained by dividing the totals by 3.5. Data source: HMS Logbook data 2001 - 2004 (first six months of 2004).

Month	Number of hooks set	White Marlin discards	Blue Marlin discards	Sailfish discards	Spearfish discards	Leatherback Sea Turtles	Loggerhead Sea Turtles	Other Sea Turtles	Pelagic Shark discards	Large Coastal Shark discards
1	963,895	43	53	32	28	15	1	0	273	244
2	717,192	41	30	13	7	15	0	0	166	206
3	810,044	31	39	22	13	25	1	0	255	317
4	1,139,144	102	76	57	9	33	0	2	193	275
5	1,454,636	201	118	77	24	29	6	0	563	817
6	1,308,060	293	218	116	29	24	1	0	665	506
7	1,102,300	545	548	178	59	47	3	0	58	123
8	1,101,773	248	187	110	23	21	1	0	52	102
9	807,867	111	146	71	26	14	1	0	41	96
10	818,964	120	92	42	13	26	0	0	60	132
11	715,282	54	45	20	7	19	1	0	30	228
12	714,878	37	35	5	9	67	3	3	46	64
Total	11,654,035	1,826	1,587	743	247	335	18	5	2,402	3,110
Total April-June	3,901,840	596	412	250	62	86	7	2	1,421	1,598
All Areas*	24,811,867	3,747	2,831	1,303	516	586	238	13	37,244	19,116
April-June % Decrease <b>without</b> redistribution of effort	-15.7%	-15.9%	-14.4%	-19.2%	-12.0%	-14.7%	-2.9%	-15.4%	-3.8%	-8.4%
April-June % Decrease <b>with</b> redistribution of effort		-2.6%	0.7%	21.7%	2.0%	-1.3%	0.0%	-15.4%	-1.4%	12.8%
No. reduced <b>with</b> redist. of effort		-98	20	283	10	-8	0	-2	-535	2,454

**Table A.41 Alternative B2(c) BFT Petition April through June. Cumulative number of kept and discarded (over 3 1/2 years) species with and without redistribution of effort in the Gulf of Mexico and Area 6 combined.** Minus sign indicates a decrease. \*excluding the NED. Three and one half year totals are shown; one year averages can be obtained by dividing the totals by 3.5. Data source: HMS Logbook data 2001-2004 (first six months of 2004).

Month	Number of hooks set	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	BAYS kepts	BAYS discards
1	963,895	4,519	1,600	35	6	9,367	308	392	20	9,950	355
2	717,192	4,366	1,226	59	14	3,635	137	310	21	4,316	184
3	810,044	3,596	1,508	68	106	5,574	206	188	5	5,854	232
4	1,139,144	3,133	1,702	141	239	10,156	417	107	2	10,301	449
5	1,454,636	3,993	2,317	91	193	14,429	697	52	0	14,552	794
6	1,308,060	2,583	1,294	39	222	16,743	704	110	4	16,902	891
7	1,102,300	1,294	994	3	0	15,432	528	84	0	15,545	714
8	1,101,773	1,412	752	0	5	13,612	300	76	1	13,716	436
9	807,867	1,002	663	20	1	8,615	147	77	0	8,715	254
10	818,964	1,132	726	0	1	7,728	234	198	5	7,992	340
11	715,282	1,186	600	2	4	5,745	163	264	1	6,166	281
12	714,878	1,747	894	13	1	6,780	235	199	1	7,194	344
Total	11,654,035	29,963	14,276	471	792	117,816	4,076	2,057	60	121,203	5,274
Total Apr-Jun	3,901,840	9,709	5,313	271	654	41,328	1,818	269	6	41,755	2,134
All Areas*	24,811,867	151,756	42,325	917	2,210	192,252	6,351	38,589	1,069	253,842	10,379
April-June % Decrease <b>without</b> redistribution of effort	-15.7%	-6.4%	-12.6%	-29.6%	-29.6%	-21.5%	-28.6%	-0.7%	-0.6%	-16.4%	-20.6%
April-June % Decrease <b>with</b> redistribution of effort		12.5%	5.0%	-8.9%	-19.3%	-4.7%	-9.1%	0.3%	0.6%	-3.6%	-5.2%
No. reduced <b>with</b> redist. of effort		18,940	2,109	-81	-426	-9,105	-578	112	7	-9,160	-540



**Figure A.9** Map showing the overlap of bluefin tuna discards, white marlin discards, and sea turtle interactions for pelagic longline sets from 2001 to 2003. Source: HMS Logbook data 2001-2003.