UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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MAY 0 1 2006 150413SWR2006SF00263

**MEMORANDUM FOR:** William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries

**FROM:** for Rodney R. McInnis
Regional Administrator

**SUBJECT:** Request for a Determination of a Fishery Failure due to a Fishery Resource Disaster Under Section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act for the 2006 Commercial Ocean Salmon Fishery from Point Falcon, Oregon to Point Sur, California **--ISSUES ADVISORY**

This memorandum is intended to advise you of issues regarding the subject action.

The Department of Commerce has received multiple letters requesting that the Secretary determine a commercial fishery failure due to a fishery resource disaster under Section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The affected fishery is the commercial ocean salmon fishery between Cape Falcon, Oregon and Point Sur, California, a stretch of coastline extending approximately 700 miles. The fishery resource is Klamath River fall Chinook (KRFC) salmon. Governors Kulongoski of Oregon and Schwarzenegger of California both sent letters dated April 5, 2006, to Secretary Gutierrez requesting a commercial fishery failure for salmon fisheries in 2006 due to a fishery resource disaster in accordance with Section 312(a) provisions. Additional letters requesting disaster relief and signed by Senators Wyden (D-OR) and Smith (R-OR), numerous representatives from California and Oregon, including Mike Thompson (D-CA), David Wu (D-OR) and Greg Walden (R-OR), were also submitted. The Klamath Water Users Association, representing Klamath Irrigation Project farmers and ranchers, also put forward a letter requesting that a fishery resource disaster be determined and assistance be provided for affected coastal communities, Tribes and commercial fishermen.

Two factors make the request unusual and complicate NMFS' response:

Timeliness of the Request The Secretary is not being asked to determine whether a commercial fishery failure has occurred based on post-season estimates of the catch and associated economic impacts. Rather, the determination is whether a failure is likely to occur during the 2006 fishing

season, which NMFS will implement for the period May 1, 2006 through April 30, 2007. The determination, if made now, would be based on the projected low abundance of Klamath River fall Chinook, which necessitated a severely restricted fishing season off California and Oregon, and the projections of the economic impacts expected from the season. A determination of the economic impacts to a specific region, and therefore a fishery failure, prior to the conclusion of a fishing season when some fishing opportunity is allowed is speculative. However, the management measures established for the 2006 season leave little fishing opportunity and are expected to result in severe economic losses to the ocean salmon fleet and the infrastructure that supports the fishery. The letters from the representatives and governors also demonstrate bi-partisan support for initiating disaster relief as soon as possible. As a result, NMFS is considering whether a commercial fishery failure determination due to a fishery resource disaster can be supported at this time.

Nature of the Resource Disaster The Secretary is being asked to determine a resource disaster on the basis of the predicted low abundance of a single stock: KRFC. While the abundance forecast for KRFC is indeed low, the predicted abundance of another key stock, Central Valley fall Chinook, is predicted to be at a healthy level. The result is a request for a determination of a resource disaster in a year in which the ocean abundance of Chinook salmon off California, and perhaps Oregon, may be at relatively high levels. KRFC and Central Valley Chinook are caught with other stocks in a mixed-stock fishery off California and Oregon. The "fishery failure" would be the economic hardship endured as a result of the fishery resource disaster. In addition to evaluating the severity of a reduction in revenue in 2006 as compared to previous years, the economic impact to these fishing communities from the lost opportunity to harvest abundant Chinook salmon should also be considered.

The severely restricted fishing season and expected low harvest resulting from the poor recruitment of KRFC, in conjunction with the lost opportunity to harvest the anticipated abundance of Central Valley fall Chinook, is predicted to result in substantial economic losses compared to recent years. Determining the magnitude of these losses with only the imprecise abundance and economic forecasts currently available is difficult. This is especially true since it is unclear what impact the additional restrictions being employed this year (i.e. landing and possession limits) will have on harvest levels. In response to these restrictive management measures, there has been a marked increase in attendance at public meetings hosted by the Pacific Fishery Management Council (Council) and written correspondence from constituents referencing the anticipated hardships this year. The action, whether taken or not, may be controversial. While economic aid to fishing communities is not normally controversial, this action is associated with resource management in the Klamath Basin, which is historically a contentious issue.

## BACKGROUND

Fisheries disaster relief is covered by Section 312(a) of the Magnuson-Stevens Act, which specifies that the Secretary, at the discretion of the Secretary or at the request of the Governor of an affected State or a fishing community, shall determine whether there is a commercial fishery failure due to a fishery resource disaster as a result of natural causes, man-made causes beyond the control of fishery managers to mitigate through conservation and management measures, or

undetermined causes. If a fishery failure is declared in accordance with these specifications, the Secretary is authorized to make funds available provided the proposed activity appropriately addresses and does not expand the commercial fishery failure.

## ELEMENTS OF THE PROPOSED ACTION

Did a fishery resource disaster occur?

The event under consideration as a resource disaster is the predicted low ocean abundance of KRFC and its effect on the ocean salmon fishery off California and Oregon. The prediction of the ocean abundance of age-3 and age-4 Klamath Chinook is made on the basis of the return of age-2 and age-3 fish to the river during the previous year. A post-season analysis of harvest and spawning run data will provide a more accurate estimate (the post-season estimate) of the 2006 season's beginning abundance estimate. The pre- and post-season estimates can vary from one another substantially. However, the post-season estimate of the 2006 abundance will not be available until February of 2007. Regardless of whether the post-season estimate of abundance confirms the pre-season abundance estimate, the seasons are set by NMFS based on the pre-season forecast.

KRFC are one of several key stocks used by NMFS to manage the mixed stock ocean fishery off the Pacific coast, in which salmon from different rivers of origin co-mingle in ocean waters and are harvested together. KRFC originate in the Klamath-Trinity Basin of northern California and distribute themselves widely off the Pacific coast, but primarily off Oregon and California as far south as Point Sur (near Monterey). The conservation objective for KRFC established under the Pacific Coast Salmon Fishery Management Plan (Salmon FMP) requires a return of 33-34 percent of potential adult natural spawners, but no fewer than 35,000 naturally spawning adults, in any one year. The preseason forecast for KRFC for 2006 is close to the record low, although actual run sizes have been lower in several prior years. Preseason estimates indicate that if the ocean fishery was closed from January through August, 2006 in the Klamath impact area (Cape Falcon, Oregon to Point Sur, California) and assuming the tribes catch their allocation of fish in the river, the expected number of natural area adult spawners would be 25,400. Under the Salmon FMP, a "conservation alert" is triggered when a stock is projected to fall below its conservation objective. Under such circumstances the Council is required to close salmon fisheries within Council jurisdiction that impact the stock. Over 99 percent of KRFC are caught with other salmon stocks, including more abundant Central Valley fall-run Chinook, in commercial and recreational fisheries in the Klamath impact area. Because annual management measures must meet the conservation goals of all the key stocks, fishing seasons are usually limited by the necessity of meeting the requirements for the least abundant stock. In the fishery between Cape Falcon and Point Sur, the abundance of KRFC is frequently the limiting factor in determining the areas of fishing opportunity and duration of the seasons.

The Council's final recommendation for the ocean salmon fishery seasons that commence May 1 deviates from the Salmon FMP with regard to meeting the conservation objective, or escapement floor, of 35,000 adult natural KRFC spawners. Therefore, to prosecute any fisheries in the Klamath impact area, NMFS was required to issue a Temporary Rule for Emergency Action to implement the 2006 annual management measures for the west coast ocean salmon fisheries. The Temporary Rule for Emergency Action applies to the area from Cape Falcon to Point Sur.

These regulations close a majority of the commercial fisheries in this area off Oregon and California from May 1 to August 31, 2006. Late season fisheries (September – November) in the Klamath impact area are also more constrained in comparison to recent years to reduce impacts to KRFC that will spawn next year. Recreational seasons have also been affected, although not nearly to the same degree as in the commercial sector. As a result, the scope of the fishery resource disaster is limited to those areas off Oregon and California.

The ocean abundance of KRFC forecast to be available for the 2006 fishing season is substantially lower than the abundance forecasts of recent years (Figure 1). For example, the predicted 2006 abundance of age-3 Klamath River fall Chinook (44,100) is the lowest projection on record and less than one fourth the 2005 pre-season projection (185,700), which resulted in reduced fishing seasons. The predicted age-4 abundance (63,700) is considerably lower than projected values for 2001-2004, but greater than the predicted abundances of ten other years since 1986 (Figure 1). The total projected abundance (110,000) is the second lowest on record. The only lower projection occurred in 1992, the last time an emergency rule was required to allow ocean salmon fishing. (Pacific Fishery Management Council (Council), Preseason Report I Stock Abundance Analysis for 2006 Ocean Salmon Fisheries)

What caused the fishery resource disaster?

The cause of the anticipated resource disaster is poor recruitment of the Klamath Basin fall Chinook salmon 2002 and 2003 brood-years as age-4 and age-3 fish to the 2006 fishery. The poor recruitment may have been the result of a number of factors, including recent poor ocean and in-river conditions. From 2001 through 2005 drought conditions in the upper Klamath Basin resulted in flow conditions in the mainstem Klamath River and tributaries representative of dry water years. As a result of the protracted drought, in-river conditions allowed for the proliferation of endemic diseases, and both juvenile and adult Chinook salmon populations have experienced substantial mortality as a result of these epizootic events.

To date, information on fish disease indicate pathogens associated with diseased fish in the Klamath River include bacteria (*Flavobacterium columnare* and motile aeromonid bacteria), digenetic trematodes (*e.g.*, *Nanophyetus salmincola*) and myxozoan parasites (*Parvicapsula minibicornis* and *Ceratomyxa shasta*). Ceratomyxosis has been identified as the most significant disease for juvenile salmon in the Klamath Basin (Foott et al. 1999, Foott et al. 2004[1]). Of the three species of anadromous salmonids in the Klamath River Basin, juvenile Chinook salmon are most susceptible to *C. shasta*.

The prevalence of sick and dead salmonids in the mainstem Klamath River has increased since the 1990's. In late June of 2002, large numbers of visibly sick and dead juvenile Chinook salmon were observed in downstream migrant traps on the mainstem Klamath River, prompting a USFWS analysis of the prevalence of fish disease from populations of juvenile Chinook salmon captured in locations throughout the Klamath River. The results of the analysis indicated

[1] Foott, J.S., J.D. Williamson, and K.C. True. 1999. Health, physiology, and migration characteristics of Iron Gate Hatchery Chinook, 1995 releases. U.S. Fish and Wildlife Service, CA-NV Fish Health Center, Anderson, CA.

Foott, J.S., R. Harmon, and R. Stone. 2004. FY2003 Investigational report: Abundance of */Ceratomyxa Shasta/* in Iron Gate and Copco Reservoirs. U.S. Fish and Wildlife Service, CA-NV Fish Health Center, Anderson, CA.

a 40% prevalence of infection for *C. shasta*, and 95% for *Parvicapsula*. The high incidence of dual myxozoan infection (98% of *C. shasta* infected fish), and associated pathology suggests that the majority of the *C. shasta* infected juvenile Chinook would not survive.

The period of drought and lack of flushing flows since 2001 have caused researchers to speculate that there is a causal relationship between the low flow conditions experienced in the mainstem Klamath River and an increase in the abundance of habitat preferred by the polychaete worm that serves as intermediate host of *C. shasta.* Research suggests infection potential is enhanced when water temperatures are high, water flows are low, and/or *C. shasta* pathogen concentrations are relatively high.

In September 2002, a substantial fish die-off occurred on the lower Klamath River, extending from the river's mouth upstream to Coon Creek Falls. On September 19, 2002, federal, state and tribal fisheries offices began to receive reports of dead and dying fish in the lower Klamath River, and fisheries crews were immediately dispatched to investigate the incident. An estimated 34,056 fish died during the event (USFWS 2003a). Of the 34,056 fish lost during the incident, the vast majority (95.5 percent) were adult fall-run Chinook salmon. The 2002 die-off of adult salmon in the lower Klamath River likely resulted from the simultaneous convergence of several stress-inducing conditions, any one of which, when occurring alone, would be unlikely to trigger extensive adult fish mortality. A large, early run of fall-run Chinook salmon encountered low mainstem and tributary inflows in the lower Klamath River. The combination of low flow volume and negligible precipitation preceding the die-off event were likely insufficient to stimulate upstream migration, creating overcrowded conditions within the few holding areas of the lower river. High water temperatures likely accelerated the proliferation of disease pathogens *Ichthyophthirius multifiliis* and columnaris, which spread rapidly through the overcrowded and stressed adult population resulting in the largest adult fish kill recorded on the Klamath River.

Progeny from the 2002 and 2003 cohorts would have recruited to the 2006 fishery as age-4 and age-3 fish, respectively. Yet, estimating the impact of disease on outmigrating Chinook salmon populations is difficult since infection rates vary during the outmigration period, Thus, the overall effect of infection on the 2006 abundance of age-4 and age-3 fish is not discernible. Nevertheless, the preseason ocean abundance forecast of age-3 fish (44,100) is the lowest on record. If this projection proves accurate, similar circumstances may be faced next year when these fish recruit to the 2007 fishery as age-4 fish. The ocean population of age-4 fish projected for this year (63,700) is low but not unprecedented. Fluctuation in salmon populations is a prevalent characteristic and determining a direct cause and effect relationship for a low abundance forecast can be exceedingly difficult. (Council, Review of the 2005 Ocean Salmon Fisheries, and Preseason Report I Stock Abundance Analysis for 2006 Ocean Salmon Fisheries)

Therefore, although some unknown causes were likely involved, the fishery resource disaster is likely due to natural causes in accordance with Section 312(a) of the Magnuson-Stevens Act.

<u>Did a commercial fishery failure occur due to a fishery resource disaster?</u>
The economic impacts due to the low abundance of KRFC and resulting abbreviated 2006 fishing season obviously can not be reported until the season is over and the landings data and

exvessel revenues are recorded and analyzed. Any determination made now regarding a fishery failure must be made on the basis of predicted economic activity. However, due to the extent of the season restrictions, which include total closures of much of the California and Oregon coasts, it is anticipated that the commercial salmon fishery and the shore-based support sector will endure severe economic hardship this year. The economic projections made by Council staff estimate a decrease in exvessel value for the area extending from Cape Falcon to Point Arena of 83 percent compared to 2005, which was one of the most restrictive seasons experienced. These figures include a 100 percent and a 91 percent reduction from 2005 values for the Klamath Management Zone and Fort Bragg regions, respectively. A decrease of 52 percent is forecast for the area south of Point Arena. When compared with 2004 values, in which the seasons were much less constrained, the projected impacts are even more drastic. For example, the area from Cape Falcon to Point Arena is projected to experience an 88 percent reduction in exvessel value. The entire region south of Cape Falcon will experience a reduction in exvessel value of 72 percent from the 2004 season. The exvessel value for the entire West Coast is projected to be down 59 percent from the 2001-2005 average. Additionally, coastal community total income (based on effects on personal income) associated with the commercial troll fishery is predicted to drop from $15.6 million in 2005 to $2.6 million in 2006 for the Cape Falcon to Point Arena region. This decline represents an 83 percent reduction in coastal community income for 2006 (87 percent decline when compared to the 2000-2005 average). For the area south of Point Arena, community income is expected to decrease from $20 million to $9.3 million in 2006 (a decline of 54 percent). (Council, Preseason Report III Analysis of Council Adopted Management Measures for 2006 Ocean Salmon Fisheries)

Although the commercial industry will endure the most severe economic impacts, the recreational fishing industry, including commercial passenger fishing vessels, will also be affected by this year's management measures. In particular, projected coastal community personal income associated with recreational fishing in the Klamath Management Zone is expected to drop by over 30 percent from last year and almost 50 percent when compared with the 2001-2005 average. The area extending from Cape Falcon to Point Arena, which includes Coos Bay, the Klamath Management Zone and Fort Bragg, is expected to experience community economic declines of approximately 38 percent from the 2001-2005 average. (Council, Preseason Report III Analysis of Council Adopted Management Measures for 2006 Ocean Salmon Fisheries)

The economic impacts projected by the Council, although severe, do not factor in additional restrictions being implemented during the 2006 season. Specifically, landing and possession limits of 75 Chinook (or less depending on the region) per vessel per week will be enforced in all areas between Cape Falcon and Point Sur, with the exception of a limited fishery outside San Francisco Bay in October and September fisheries in the Fort Bragg, San Francisco[2] and Monterey port areas. Since landing and possession limits have not been used extensively in the Klamath impact area before, there is no proven method for estimating the effect they will have on harvest levels and exvessel value. At the March Council meeting, the Salmon Technical Team (STT), which serves as an advisory body to the Council, was asked to evaluate the effectiveness of weekly landing limits as a management measure to reduce impacts in fisheries

[2] The September fisheries in Fort Bragg and San Francisco are limited to quotas of 4,000 and 20,000 Chinook, respectively.

south of Cape Falcon on KRFC. In response to this request, the STT considered several methods for modeling weekly landing limits. The methods reviewed included separate but similar analyses proposed by the Oregon Department of Fish and Wildlife (ODFW) and the California Department of Fish and Game (CDFG) using fish landings data from 2003-2005 to approximate the anticipated reduction in catch associated with these trip limits. The STT was concerned with calculating reductions in this manner since a number of assumptions are necessary. One fundamental concern is that the amount of catch reduction depends on the catch rates observed during that time period, which are influenced by Chinook abundance and distribution. In other words, if the ocean abundance of key stocks, such as Central Valley fall Chinook, is substantially less than that observed in 2005 (the 2006 projection is 25 percent lower than the 2005 post-season estimate), the expected savings in 2006 could be considerably lower. Alternatively, the ODFW report also stated that the implementation of landing limits would likely discourage some boats from participating in the fishery and the expected savings could be greater than calculated. The STT also expressed concerns regarding the inability to predict effort response to landing limit restrictions, changes in fleet structure, latent effort and monitoring and enforcement. Due to the STT's concerns with these and other methods proposed, the Council did not attempt to quantify anticipated reductions in catch and economic impacts associated with these vessel limits. The Council does note in the Preseason III Report that "these limits will have a downward influence on personal income".

Although the concerns expressed by the STT are valid, the vessel limits are expected to have a discernible impact on the 2006 season. Therefore, NMFS determined that the ODFW and CDFG analyses were reasonable methods for projecting catch reductions, and used their results to provide a rough approximation of the economic impacts[3]. Data for 2005 was used from the analyses provided by CDFG and ODFW since the season structure was most similar to the 2006 season, although the abundance projections vary as mentioned previously. Appendix A provides a detailed economic analysis of the approximated catch reductions associated with these trip limits as well as a description of the methods used in the analysis. The projected reductions in catch and exvessel value from those values reported by the Council, which do not account for the trip limits, for the area from Cape Falcon to Point Arena are 16,303 fish and $600,000, respectively. This reduction in exvessel value represents a decrease of 35 percent from the values reported by the Council and 89 percent from the 2001-2005 average. South of Point Arena, the projected reduction in exvessel value attributed to trip limits is less evident, approximately 12 percent. However, when compared with the 2001-2005 average, the exvessel value for the area south of Point Arena is anticipated to depreciate by as much as 45 percent. (Council, Preseason Report III Analysis of Council Adopted Management Measures for 2006 Ocean Salmon Fisheries)

Central Valley fall Chinook are projected to have an ocean abundance of 632,500 fish in 2006 producing an escapement of 359,200, well above the upper end of the escapement goal range of 180,000. However, the abbreviated seasons will provide very little opportunity to harvest them. For example, 2006 management measures will result in season reductions in commercial fisheries relative to 2005, which as mentioned previously was a substantially reduced season, of approximately 68 percent in the area south of Horse Mountain and 80 percent in the area north of

[3] The effects of highgrading, where only the largest fish will be retained in order to maximize the poundage for the allowed number of fish under the vessel limit, are not considered in SWR's economic analysis.

Humbug Mountain. The commercial fishery in the area between Florence South Jetty and Humbug Mountain will be closed entirely. Reductions in recreational fisheries are less dramatic, but still substantial. (See Appendix B for commercial and recreational salmon seasons for 2006 and 2005 from: Council, Preseason Report III Analysis of Council Adopted Management Measures for 2005 Ocean Salmon Fisheries and Council, Preseason Report III Analysis of Council Adopted Management Measures for 2006 Ocean Salmon Fisheries) Also, the letters requesting disaster relief have estimated potential economic impacts to fishermen and affected coastal communities as high as $150 million dollars to both California and Oregon.

KRFC are an important tribal trust resource to the Yurok, Hoopa Valley, and Karuk tribes. Of these tribes, the Yurok Tribe and Hoopa Valley Tribe have federally reserved fishing rights, which include subsistence, ceremonial and commercial purposes. When KRFC abundance has allowed for a commercial tribal fishery, commercial fisheries have been primarily conducted by the Yurok Tribe. However, due to the relatively low abundance of KRFC in recent years, commercial tribal fishing opportunities have been limited. In addition to foregone commercial fishing opportunities, there are other economic impacts that should be considered, including the loss of tax revenue and a reduction in fishing-related business. Because these varied effects are exceedingly difficult to evaluate with the information available, no economic impact projections have been computed by the Southwest Region. Although the Yurok Tribe feels that "the incalculable cultural dependence of the Yurok Tribe on fish and the difficulty assessing subsistence economies make any traditional economic valuation impossible", they understand the importance of economic impact analyses for relief efforts. Therefore, they have produced a position paper outlining their dependence on the Klamath River and its fisheries and identifying socioeconomic impacts (See Attachment C).

There is also concern this year's constraints and the projected reduction in catch will affect the established market value of wild salmon compared to farm-raised salmon, a product distinction that the industry has invested much time and effort to promote in recent years. Furthermore, in addition to the projected economic losses, the restricted seasons may also increase the negative effects of foul weather, potentially encouraging riskier behavior by the fishermen in order to maximize the limited fishing opportunity.

Need for action

The predicted low abundance of KRFC has resulted in a drastically reduced commercial salmon season off California and Oregon compared to previous years. The area extending from Florence South Jetty to Point Arena, which includes Coos Bay, the Klamath Management Zone and Fort Bragg, is closed for the entire summer. Fort Bragg is the only port in that region that will have any fishing opportunity in 2006 - a 4,000 Chinook quota fishery in September. Those ports in the Klamath impact area (Cape Falcon to Point Sur) that are open in 2006 have severely restricted seasons. For instance, the region extending from Point Arena to Point Sur, which includes the major port areas of San Francisco and Monterey, is only scheduled to open the last six days during the prime month of July. Additional landing and possession limits of 75 Chinook (50 or 30 in some areas) per vessel per calendar week apply to most open areas. These measures will further constrain the commercial seasons and are expected to reduce economic gains substantially. Furthermore, although a fishery failure was not determined for the 2005 season, some areas did experience depressed earnings due to the restricted seasons last year.

These restrictive conditions removed any economic elasticity that may have helped fishermen endure the seasons established for 2006. NMFS also understand the desire to establish a fishery failure determination due to a fishery resource disaster in time for Congress to appropriate funds aimed at alleviating potential economic hardships to fishing communities this season in accordance with the Magnuson-Stevens Act. Therefore, although the determination of a fishery failure prior to the conclusion of the fishery is unusual, circumstances indicate a fishery failure will occur this season. As such, I suggest that NMFS send a letter to those requesting a determination of a fishery failure due to a fishery resource disaster approving their request and explaining the basis of our decision as soon as possible.
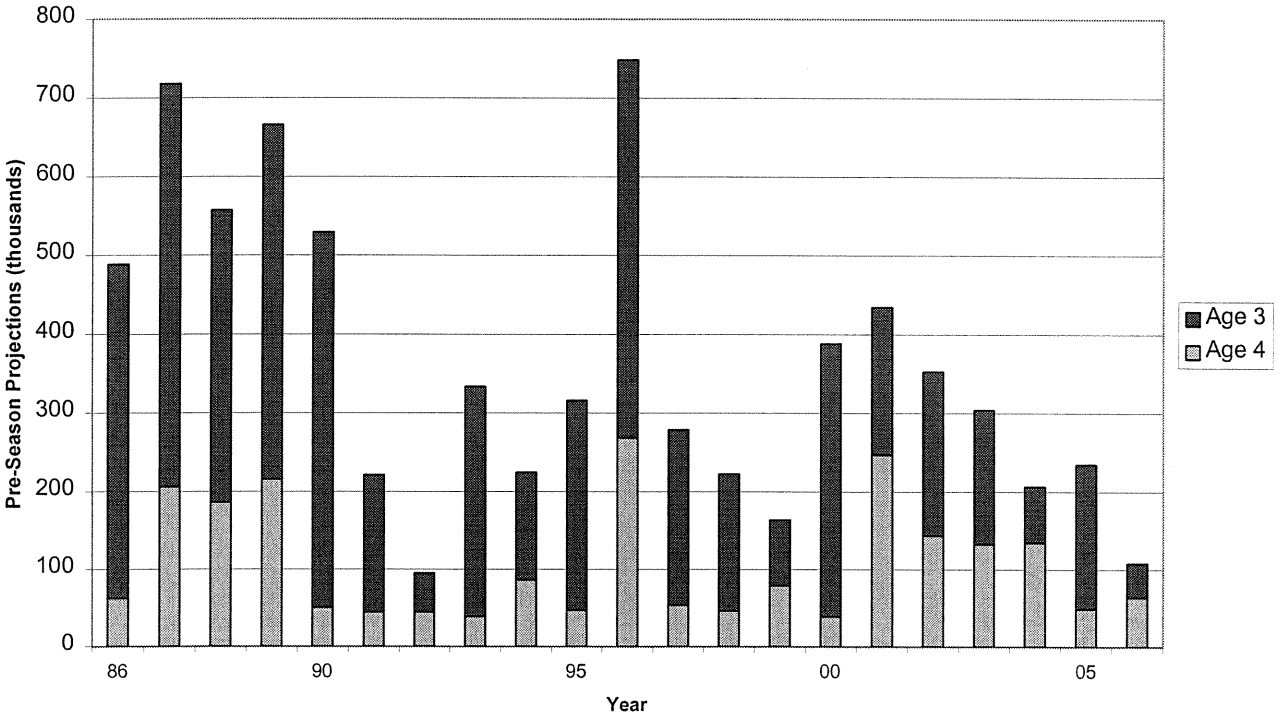
**Figure 1. Klamath River Fall Chinook**
**Pre-Season Sep. 1 Abundance Projections (thousands)**
Source: PFMC, Preseason report I stock abundance analysis for 2006 ocean salmon fisheries