DETERMINATION OF A COMMERCIAL FISHERIES FAILURE IN THE WEST COAST SALMON FISHERY

The West Coast Salmon Fishery is suffering from decline in the salmon fishery resources. The conditions that led to declarations of a fisheries disaster under the Interjurisdictional Fisheries Act in 1994 and the continuance of the disaster in 1995 are still present--drought, flooding, minimal snowpack, and an extreme El Niño. Since then the number of species listed under the Endangered Species Act (ESA) has grown. Therefore, a growing and significant crisis for West Coast salmon and habitat exists. In both the winters of 1996 and 1997, there have been major flood events along the West Coast, with the latter event triggering Congressional action to provide assistance to impacted salmon fishermen. These floods not only impaired stock rebuilding and habitat restoration efforts, but also impeded future efforts. For many West Coast salmon stocks, salmon eggs have been washed out, in some instances potentially destroying an entire run of fish for one year class. Catastrophic landslides, which block major access for salmon in the rivers and streams, have degraded the habitat severely. The winter floods have further diminished the health of a fishery that is already in steep decline.

Consequently, the economic health of salmon fishermen, their families and their communities have also declined and will continue to decline as a result of the fishery resource disaster that the Governor Locke of Washington has asked me to declare under Section 312 (a) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Such a determination would release $3.5 million in federal funds to Pacific Northwest to help restore the fishery, help prevent a similar commercial fisheries failure, and to assist fishing communities affected by the failure. To date only Washington State has requested assistance and obtained the necessary matching funds.

Section 312(a) of the MSA allows the Secretary to determine at his own discretion or at the request of the Governor of an affected State or a fishing community whether 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, or undetermined causes has occurred. Upon the determination that there is a commercial fishery failure due to a resource distaster, Section 312(a)(2) authorizes the Secretary, to make funds available, if appropriated, to be used by the affected State, fishing community, or by the Secretary in cooperation with the affected State or fishing community.

Fishery Resource Disaster

Resource Trends

The West Coast Salmon fishery is made up many stocks of chinook, coho, chum, sockeye, and pink salmon. As reported widely in the press, several of these have been listed under the ESA Act with many others up for future consideration. Coho trends are illustrative of the decline in salmon resources. The 1998 estimates of coho production levels for the Columbia River/Oregon Coast region, the Washington coastal region and the Puget Sound region are at only 13%, 23%,

and 43% of their 1986-93 average levels. The Puget Sound region, for example, averaged 3.7 million coho during the eight year period beginning in 1986; by comparison, the 1998 estimates are only 1.6 million fish. A more dramatic illustration is the ocean chinook fishery. According to Pacific Fishery Management Council reports, the total ocean harvest of chinook by commercial and recreational fisheries averaged 2.3 million fish annually during the years 1976 to 1980. The current 1998 harvest projection is for only 26 thousand fish. Projections of future West Coast salmon harvests will probably be lowered and projected rebuilding schedules be lengthened as a result of the winter floods of 1996 and 1997.

Causes of the Disaster

The major causes of the decline in salmon are well documented. They include: habitat degradation including dams, harvest and hatchery practices, and the adverse effects of natural environmental variability brought about by drought, floods, and poor ocean conditions. Because of their low population sizes, these depressed stocks are extremely susceptible to harm from heavy flooding, and when such flooding occurs, the probability of their extinction increases along with the time associated with their rebuilding as the number of returning adults decreases. Winter floods harm salmon in various ways depending on the stage of the salmon life cycle. Adult salmon typically migrate into fresh water in the fall to spawn with spawning occurring from mid-September through January. Spawning occurs in river tributaries or in the mainstem of rivers in gravel nests (redds) where incubation and emergence are affected by stream flow, water temperature, dissolved oxygen and gravel composition. After hatching, the fry of some species migrate to saltwater immediately; the young of other species of salmon spend greater amounts of time in freshwater. Juvenile coho salmon, for example, spend at least one summer and winter in fresh water. Depending on the species, adult salmon may return one to six years after being spawned.

Winter flooding kills the eggs spawned by chinook, coho, chum, pink, and sockeye salmon, primarily by washing the eggs out of the gravel. After the eggs are deposited by adult salmon, they normally spend many weeks incubating within the gravel of the stream bed. Flooding makes dramatic changes in the stream bed and disturbs the eggs before they have a chance to hatch. Sometimes flooding kills the eggs by smothering the salmon redds. If fine sediments are deposited on top of the redd, it interferes with the flow of oxygenated water through the spaces in the gravel.

Flooding also interferes with the ability of the adult salmon to return to their native streams. During floods, the natural river channel is not obvious, and as flood water recede adult salmon are stranded in fields and forests before they can successfully spawn. Landslides resulting from the heavy run-off can block access to habitat and may result in major damage to salmon habitat. These impacts will continue over many years if they effect the quality of spawning and rearing habitat.

Perhaps of greater concern is the impacts floods may have on stocks that are already in poor health such as those listed under the ESA. With declining stocks there may be some threshold

below which, the threat of extinction increases sharply because of large losses of habitat. At these thresholds, random events such as floods increase the chances of population failure, and without rebuilding, weaken the stock's resiliency to respond to further random events. Because of their low population sizes, these depressed stocks are extremely susceptible to harm from heavy flooding, and when such flooding occurs, the probability of their extinction increases along with the time associated with their rebuilding as the number of returning adults decreases.

The Pacific Northwest has been subject to record flooding during the winters of 1995-96 and 1996-97. However, there is insufficient data from the freshwater phase of their life cycle to directly quantify the total damage to salmonids. The effects of the 1996-97 floods may not be fully measured until the salmon return over the next several years.

There has been little scientific work on the affects of floods on salmonid species except for the studies carried out by the Washington Department of Fish and Wildlife (WDFW). These studies show that flooding can have a dramatic decline in the egg to smolt survival of salmon and that there is a significant inverse relationship between smolt production and the severity of winter high flows. Based on their studies and a review of available information on the 1996-97 winter floods, WDFW scientists have concluded that the flooding negatively affected many of the approximately 435 salmonid stocks found in Washington. In southwestern Washington, naturally spawning stocks of chum, chinook, and coho salmon were most impacted--the chinook and chum stocks in this region have ben proposed for ESA listing. In Puget Sound, the impacts were heaviest on chum and coho stocks, as well as the sockeye populations of north Lake Washington. Hood canal summer chum, proposed for ESA listing, may also been negatively impacted.

The impacts of flooding were not limited to Washington stocks. According to geographic information concerning the floods, major flooding occurred in Central and Northern California, Washington, and Oregon. Many of the coastal counties and counties neighboring Puget Sound, the Columbia River, and San Francisco Bay declared federal disaster areas. (Between the winter floods of 1995-96 and those of 1996-1997, almost every coastal county of Washington, Oregon, and California that contains anadromous fish habitat had been declared a disaster area for federal and state relief.) As a result, a high percentage of salmonid egg and fry associated with these areas were probably destroyed by the flood; and therefore, future coastwide returns of natural adult salmonids are expected be lower from their already forecasted low levels.

I find that many of the conditions underlying the declarations associated with prior salmon disaster declarations are still present and are likely to continue. These conditions include habitat loss and degradation; inadequate riverine passage and flows due to hydropower, agriculture, logging, and other developments; overfishing; negative interactions with other species and hatchery fish; and environmental fluctuations and declines in fresh water (drought) and marine (El Niño) productivity. I note that over the past decade, harvest practices did not lead to intentional overfishing. If overfishing did occur, it was based on optimistic scientific stock projections that did not correctly incorporate changes in the marine environment. The 1996-97 flooding events most likely exacerbated many of these conditions which were already degraded by the 1995-96 flooding events.

Commercial Fishery Failure

Economic Trends

Over the years, as a result of the factors discussed above, the total West Coast (California, Oregon, and Washington) commercial landings of all species of salmon including Puget Sound landings have varied significantly around an overall downward trend, especially since 1989 where the total ex-vessel value peaked at nearly $200 million and then rapidly fell to all time low in 1996 of $17 million in terms of 1997 inflation adjusted dollars. The average annual ex-vessel revenue for the entire West Coast commercial salmon fishery during the 1987-91 period was $126 million. For the period 1992-1997, West Coast salmon commercial fishing revenues averaged $28 million per year suggesting that the fishery resource failure is costing the industry approximately $100 million per year in lost ex-vessel revenues. Based on this loss, NMFS projects that the annual loss to the Region in terms of wages and salaries via a regional impact multiplier process to be about $200 million annually. Alternatively, overcoming the fishery resource disaster and returning the stocks to normal levels could lead to an additional 10,000 full time equivalent jobs at $20,000 in annual income per job. About 3,000 of these jobs would be associated with fishing crew, skippers, and vessel owners. The remaining jobs would be within the seafood processing industry, vessel support industries, and the other occupations that comprise the economic activity of fishing communities, the states and the Region.

Determinations

Existence of a Fishery Resource Disaster

Based on the reported declines and projections for further declines in West Coast salmon stocks, I find that a fishery resource disaster occurred which significantly reduced the normal returns or their chances of rebuilding to normal returns for the stocks of salmon that make up the West Coast commercial salmon fishery.

Causes of the Fishery Resource Disaster

I find that a fishery resource disaster exists and that the causes of the fishery resource disaster are largely the result of natural causes (environmental fluctuations including flooding) and man-made causes (hydropower, agriculture and logging practices, and urban development),

Existence of a Commercial Fishery Failure

Based on the trends in harvests and ex-vessel revenues, I find that there exists a ongoing commercial failure in West Coast salmon fisheries.

Causes of the Commercial Fishery Failure

The declining abundance in salmon stocks and the projected negative impacts of the floods upon the future abundance of these stocks have and will continue to result in reduced commercial harvest opportunities. Therefore, given the current and future reductions of harvests and the associated declines in ex-vessel revenues, I conclude that a commercial fishery failure exists in West Coast salmon fishery due to a fishery resource disaster as provided under Section 312(a) of the MSA.

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Date

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