DETERMINATION OF A COMMERCIAL FISHERY FAILURE AFFECTING THE ALASKA BRISTOL BAY, YUKON AND KUSKOKWIM RIVERS SALMON FISHERIES

Extremely low returns of sockeye and chum salmon occurred in Bristol Bay and the Yukon River and Kuskokwim River drainages in 1998. The Governor of the State of Alaska issued a disaster declaration for western Alaska on July 30, 1998, due in part to the inordinately poor salmon returns to the Bristol Bay, Kuskokwim and Yukon river systems. The Governor, in a letter date August 13, 1998, also requested the declaration of a fishery resource disaster for these areas pursuant to Section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and financial assistance under authority of the Magnuson-Stevens Act to respond to the apparent commercial fishery failure in Bristol Bay and the Kuskokwim and Yukon Rivers.

Section 312 (a) of the Magnuson-Stevens Act, 16 U.S.C. 1861a, authorizes the Secretary of Commerce to exercise discretion in determining whether there is a commercial fishery failure due to a fishery resource disaster as a result of:

(A) natural causes;
(B) man-made causes beyond the control of fishery managers to mitigate through conservation and management measures; or
(C) undetermined causes.

Determination of a fishery resource disaster

According to data supplied by the Alaska Department of Fish and Game (ADF&G), the total sockeye salmon run in 1998, was about 18.06 million fish of which a total of 9.97 million were harvested in commercial fisheries. The ADF&G forecast estimated a commercial catch this year of 20.6 million fish. This is an extremely low return of the principal salmon species to Bristol Bay. This return rate is about 44 percent less than forecasted for 1998, and 10 percent less than returned in 1997, which also was determined to be a disastrous year for this fishery. The extreme low sockeye salmon run and harvests in Bristol Bay in 1997 and 1998 contrast to 10- and 20-year average catches of 30.0 million and 25.1 million fish, respectively. The harvest in 1998, was 73 percent below the long-term average catch since 1893, and was 66 percent of the average catch this century.

On the Kuskokwim River and Yukon Rivers, the ADF&G makes broad generalized projections of salmon run strength in terms of average, below, or above average abundance. Based on these projections, ADF&G forecasts a predicted range of possible commercial catches for the year. The State projection for the Kuskokwim coho salmon run in 1998, was below average with a commercial catch within the range of 400,000 to 600,000 fish. The actual catch of Kuskokwim coho this year was only 210,000 fish, 52 percent of the low end of the predicted range.

On the Yukon River, the forecast for the fall chum salmon run indicated about 880,000 fish would be available for harvest in 1998, but instead only about 350,000 fish returned, barely enough to allow a subsistence fishery, the highest priority fishery. Time limitations on the subsistence fishery have been proposed and a total closure is likely. Yukon River king salmon abundance is indicated by the harvest. The ADF&G predicted a commercial catch of between 88,000 and 108,000 Yukon king salmon in 1998, but only 42,000 have been harvested, less than half of the low end of the forecasted range. Likewise, the ADF&G projected a commercial catch of Yukon River summer chums of between 500,000 and 800,000 fish in 1998, but only 28,000, or 5.6 percent of the low end of the forecasted range, have been harvested.

Therefore, I find that a fishery resource disaster occurred that significantly reduced the normal returns of sockeye and chum to Bristol Bay and the Kuskokwim and Yukon Rivers in 1998.

Determination of the cause of the fishery resource disaster

The exact cause of the apparent collapse of Bristol Bay, Yukon River, and Kuskokwim River fisheries resources is unknown. The inordinately poor returns do not appear to result from causes that could have been controlled or mitigated through conservation and management measures. Parent-year escapements for fish returning in 1997 and 1998 were all at or above desired levels. Pre-season and inseason-forecasting programs for Bristol Bay sockeye have predicted, with reasonable accuracy, the timing and size of the sockeye run from 1987 to 1996. The same methodology was used in 1997 and 1998. The Port Moller test fisheries in those years indicated larger runs of sockeye salmon than would have been expected given the actual poor run sizes.

One hypothesized cause has been increased predation by marine mammals and beluga whales in particular. Based on research conducted from the 1950s to the 1990s, sockeye salmon predation by beluga whales should account for only a small factor

in the low return of this salmon species. Beluga whales have been estimated to consume about 5 percent of the annual smolt outmigration from the Kvichak River and only 0.5 percent of the annual adult sockeye run. Another hypothesis is interception of salmon outside of the U.S. Exclusive Economic Zone (EEZ). Under multilateral agreement (including Canada, Japan, Russia, and the United States) no directed fishing is allowed outside the EEZ. Although a limited amount of fishing by other nations (not party to the agreement) has occurred, this illegal interception of Bristol Bay sockeye salmon on the high seas can not account entirely for the unexpected low returns of fish in 1997 and 1998.

Hence, direct human interactions with salmon that would lead to overfishing and excessive predation do not appear as likely causes of the sharp decline in salmon returns to western Alaska. Existing evidence indicates natural causes in the marine environment. Unusual weather patterns in 1997 and 1998 are well documented. Water temperatures in the Bering Sea during the summer of 1997. Similar observation of weather oscillations occurred on a global basis. Indications of an ecosystem regime shift of some kind appear to have given rise to environmental stress as a causal factor in reduced salmon survival in 1997 and 1998. Returning salmon in those years appeared to be smaller than usual and arrived late. Migratory pathways appear to have changed from previous years, and evidence exists of increased parasitism and predation, both indicators of stress. Anecdotal evidence suggests that some returning salmon were emaciated indicating a lack of their food supply. Fish under such stress are less vigorous and more likely to suffer higher natural mortality rates. Further, the comprehensively reduced returns per spawner and the poor returns across multiple age groups and river systems indicates poor survival conditions in the marine environment.

Therefore, I find that the cause of the fishery resource disaster is undetermined but probably due to natural conditions.

Determination of a commercial fishery failure

Sockeye salmon are the mainstay of the Bristol Bay commercial salmon fishery. In a normal year, the sockeye salmon catch accounts for 98 percent or more of the total economic value paid to area commercial fishers. Over the past 20 years, an average of 1,762 drift gillnet and 980 set gillnet salmon permit holders have participated in the fishery. Approximately, 1,800 drift gillnet and 1,000 set gillnet salmon permit holders participated in the 1998 season. In addition to commercial salmon permit holders, thousands of other individuals participate annually in the fishery as crew members, workers in processing

plants, tender operators, and in associated fishery support activities. The most recent 20-year average for ex-vessel (money paid to commercial fishermen for the sale of fish) for Bristol Bay sockeye salmon is approximately $127.5 million. The ex-vessel value for the 1998 Bristol Bay fishery is estimated to be approximately $50.5 million, the lowest since 1978.

The projected total return of sockeye to Bristol Bay in 1998, was 32.1 million fish. Of this total, 20.6 million fish was expected to be available for the commercial harvest. The actual 1998 commercial harvest of 9.9 million fish was less than half the forecasted catch and lower than the harvest of 12.4 million sockeye in 1997, which also was determined to be a disaster under Section 312 of the Magnuson-Stevens Act.

The Yukon River summer salmon commercial fishery targets king and summer chum salmon. The major commercial fishery occurs in Lower Yukon River Fishing Districts and somewhat smaller, but locally important commercial fishing occurs in the Upper Yukon Districts. About 940 permit holders are eligible to operate in the Yukon River commercial fisheries. In addition to commercial fishing activities, Yukon River salmon support important subsistence fisheries throughout the entire drainage. The revenue realized from commercial fishing is, in many instances, the only income earned by local residents. Commercial earnings often support the pursuit of subsistence fishing and hunting activities.

The preseason forecast for the commercial catch in 1998, was expressed as a range of 80,000 to 108,000 king salmon and 500,000 to 800,000 summer chum salmon. The actual commercial harvest is about 43,000 king and 28,000 summer chum salmon, both below forecast. The lower river commercial fishery is now finished. Although minor upper river commercial salmon fisheries are yet to occur, the total harvest is expected to be very small. The commercial catch of king salmon has averaged 105,000 fish annually since statehood. In 1998, the commercial king salmon harvest will be the lowest since Alaska statehood (1959). The previous low occurred in 1975, when the run totaled 60,000 king salmon. The return of summer chum salmon is poorer than the summer chum return that occurred during the 1993 Arctic-Yukon-Kuskokwim chum salmon disaster year. The ex-vessel value of the commercial king harvest stands at about $1.9 million. This represents a decline of 66 percent compared to the recent 10-year (1988-1998) average ex-vessel value of nearly $5.6 million. The ex-vessel value of the summer chum salmon fishery is about $28,000, down from the recent 10-year (1988-1998) average ex-vessel harvest of nearly $980,000.

The Kuskokwim area commercial salmon fisheries occur in the Kuskokwim River, and at Quinhagak and Goodnews Bay in Kuskokwim Bay. Approximately 832 gillnet permit holders are eligible to

commercially fish for salmon in the Kuskokwim Area and between 700-800 have actively fished in recent years. Income from commercial fishing is very important to the region's economy. In addition, Kuskokwim Area salmon runs support important subsistence salmon fisheries. As in the Yukon River, money realized from commercial fishing is, in many instances, the only cash income earned by local residents; commercial earnings provide essential support for subsistence fishing and hunting activities.

The projected commercial harvest of chum salmon in the Kuskokwim River in 1998, was approximately 300,000 fish. The actual catch of 180,000 fish exceeds last year's low catch level of only 17,000 fish, but it is well below the recent average harvest of about 400,000 million chum salmon. The ex-vessel value of the 1998 commercial summer season's salmon harvest stands at about $600,000. This equates to approximately $1,300.00 for each of the 450 permit holders that participated in the 1998 Kuskokwim River summer fishing season. Over the last 10 years, the average annual ex-vessel value of the summer season commercial fishery has been approximately $1.8 million.

The economic base of coastal communities in Bristol Bay, and in the Yukon and Kuskokwim River drainages is largely dependent on the proceeds of salmon harvests. Some 97 communities (cities and/or tribal governments) and two borough governments exist within these three regions. The people in western Alaska are suffering significant economic losses resulting from the 1998 fishing disaster. Unable to pay for food, essential utilities and winter heating fuel, the possibility of significant health problems from the lack of clean water or electricity could occur. Some villages have failed to secure necessary subsistence foods and the stress associated with the fishing disaster could translate into additional social problems including domestic violence, alcoholism, delinquency, and suicide.

Therefore, I find that the unexpected low returns of salmon to Bristol Bay and the Kuskokwim and Yukon Rivers in 1998, has resulted in a commercial fishery failure due to a fishery resource disaster as provided under Section 312(a) of the Magnuson-Stevens Act.

for Gary C. Matlock
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Date