DETERMINATION OF A COMMERCIAL FISHERY FAILURE
AFFECTING THE 2001 BERING SEA SNOW CRAB
(CHIONOECETES OPILIO) FISHERY

A precipitous decline in the Bering Sea snow crab abundance occurred in the eastern Bering Sea. The 2001 guideline harvest level (GHL) for snow crab was established at 27.3 million pounds. The 2002 GHL will be 30.82 million pounds. The 2000 GHL for snow crab was established at 28.5 million pounds. These levels represents a significant reduction from the 1999 GHL of 196 million pounds.

The community of Saint Paul, Alaska, as well as the Governor of the State of Alaska have petitioned the Secretary to make the determination, pursuant to Section 312 (a) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), that a commercial fishery failure has occurred in the Bering Sea snow crab fishery due to a fishery resource disaster. Such a determination would be a continuation of the previous determination of a fishery failure made in the year 2000.

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

Collapse of the Bering Sea snow crab stocks, as evidenced by severe lack of recruitment into the population, precipitated a guideline harvest level reduction of over 80% in the snow crab fishery in the years 2000-2001 from 1999. The National Marine Fisheries Service (NMFS) 1999, 2000, and 2001 summer trawl surveys of the Bering Sea indicated the biomass of both male and female snow crabs declined significantly from levels observed prior to and during the 1998 survey. Currently, the stock is above the minimum stock size threshold of 460.8 million pounds as defined in the Federal Fishery Management Plan for Bering Sea and Aleutian Inlands King and Tanner Crabs (FMP). The 2001 estimate was 571 million pounds, an increase from the 2000 estimate of 472.7 million pounds. The 1999 estimate of spawning biomass abundance was 285.5 million pounds, which was below the minimum stock size threshold.

Owing to the low biomass of mature crabs, NMFS classified the snow crab stock as "overfished" in 1999. The Council developed a rebuilding plan in June 2000. The Secretary of Commerce approved the rebuilding plan in January 2001 (66 FR 742). The stock will be considered 'rebuilt' when the spawning biomass is above 921.6 million pounds.

Therefore, I find the fishery resource disaster which occurred in the Bering Sea snow crab fishery during 2000 continued in 2001, resulting in a further reduction in the harvest.

Determination of the cause of the fishery resource disaster

Insufficient evidence exists to determine the cause of the Bering Sea snow crab decline in abundance. However, the evidence highly suggests the causes are natural. The crab fisheries only harvest the large male crabs, however, the 2001 NMFS trawl survey continued to show a decline in the entire population of snow crab. Recruitment for snow crab appears to be linked to environmental factors rather than biomass, so trends in recruitment are difficult to predict.

A period of low recruitment is thought to be the reason for the decline in snow crab. These events are quite possibly triggered by corresponding events in the physical environment, such as the regime shift and warm Bering Sea conditions in 1997 and 1998. Furthermore, it was suggested that the reproductive capacity of these populations is related to the abundance or biomass of mature females, which are not affected to any great extent by the crab and groundfish fisheries. Temperature is likely to be important to snow crab population dynamics. Warmer temperatures hasten growth, but they likely have a negative effect on reproduction as faster growing males have fewer mating opportunities prior to attaining harvestable size. On the other hand, crab larvae feed primarily on copepod nauplii, which we think are favored by warmer water in the Bering Sea. Crab megalopa settle out of the water column at very specific temperatures and depths. Therefore, survival may be favored by cooler, warmer or intermediate temperatures depending on what life stage one considers. In 1997 and 1998, water temperatures were at record high levels, triggering unusual plankton blooms and contributing to salmon run failures.

Beyond temperature, we suspect advection of larvae by ocean currents to the nursery areas and cannibalism within the limited nursery areas from older crab cohorts are contributors to recruitment success or failures.

NMFS conducts annual stock assessments with a multi-species trawl survey, and the State of Alaska Department of Fish and Game administers onboard observer and dockside sampling programs. Little additional biological information is available to predict the population abundance. The full geographic distribution of these species is uncertain. Most basic biological productivity parameters have never been studied.

Gear selectivity, crab handling mortality, and other potential effects are virtually unknown. These uncertainties are urgently needed to be addressed so that crab stock productivity can be better understood. Better understanding will allow harvest strategies to be adjusted accordingly to promote stock rehabilitation and to diminish risks of future fishery collapses.

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

Determination of a commercial fishery failure

The impacts of the snow crab decline coupled with environmental factors such as early sea ice advance, high wind condition and rough seas are dramatic. During the 2001 Bering Sea snow crab fishery, participants in the faced extreme weather that damaged vessels and forced the fleet to seek safe harbor rather than complete their fishing season.

Based on an ex-vessel prices of $1.55 per pound, the estimated 2001 snow crab fishery value is $35.9 million. (The ex-vessel price has declined from 2000 due to increased competition from Canadian snow crab.) This compares to an overall fishery value in excess of $55 million in 2000.

Saint Paul's economy is almost entirely dependent on the snow crab resource. Crab landings and processing accounted for 85% of the cash entering the community in 1999.

Saint Paul receives a 3% sales tax on crab delivered to and processed by floating processors within three nautical miles of the Island and a 3% sales tax on crab delivered inside the harbor for processing. Saint Paul receives sales tax on fuel and supplies sold in the harbor, and derives revenue and jobs from other support services for crab vessels calling Saint Paul. Saint Paul has suffered a loss of 86% to 90% revenues in 2000 and 2001, respectively, due to the significant reduction of snow crab harvest opportunity. Reduced revenues have resulted in reduced plane service, reduced municipal and health care services,

increased food costs, and the inability to continue capital projects.

Therefore, I find that the collapse of the Bering Sea snow crab in 2000, and the subsequent determination that a fishery resource failure had occurred, has persisted and resulted in a commercial fishery failure due to a fishery resource disaster as provided under Section 312 (a) of the Magnuson-Stevens Act in 2001.

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