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UNITED STATES RESEARCH SURVEYS CONDUCTED IN 1987 AND
SURVEYS PLANNED FOR 1988 IN THE EASTERN BERING SEA

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1. Research Activities in the Eastern Bering Sea During 1987.

The Resource Assessment and Conservation Engineering Division (RACE) of the Northwest and Alaska Fisheries Center (NAFAC) conducted the annual crab-groundfish survey in the eastern Bering Sea during 1987 and also participated in a cooperative study to evaluate crab bycatch.

(a) Eastern Bering Sea Crab-groundfish survey

The eastern Bering Sea crab-groundfish survey was conducted during May-August 1987 utilizing standard crab-groundfish survey methods. The primary objectives of this survey were to:

1. collect catch and biological data on principal species of crab and groundfish to provide information for management purposes, the fishing industry, and for scientific studies and;
2. collect hydrographic and environmental data in the study area.

This was a continuation of the annual series of eastern Bering Sea crab-groundfish assessment surveys. Secondary objectives of the survey were to:

1. sample station transects on the continental slope to evaluate slope index sites;
2. examine crab by-catch in inshore trawling areas and;
3. investigate reported scallop mortality near Unimak Island.

The primary study region included continental shelf waters north from Unimak Pass, along the 200 meter depth contour to approximately 62° N and east

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to the Alaska mainland. Standard sampling sites were established on the basis of a 20 x 20 nmi grid although more intensive sampling was carried out in the Pribilof Islands and St. Matthew regions to collect additional data on crab populations.

Survey activities were conducted aboard two chartered vessels, the University of Washington research vessel, Alaska, and the fishing vessel Pat San Marie.

A total of 386 trawl hauls were conducted on the continental shelf including 12 tows to examine crab by-catch in the shallow waters near Port Moller and 3 tows to examine reported scallop mortality near Unimak Island (Figure 1). An additional seven trawls were completed in continental slope waters to examine potential index sites. Equipment malfunctions and poor weather conditions prevented the completion of the slope portion of the survey. The two vessels sampled alternate rows of designated stations throughout most of the survey area to determine between-vessel relative fishing powers through comparisons of catch rates.

The catch at each sampling site was sorted, weighed, and enumerated by species. Length/width measurements, shell condition, clutch size, and various tissues and organs for pathological and parasite studies were collected from major crab species. Tissue samples were also collected from selected fish species. Approximately 144,000 length measurements were recorded by sex/centimeter category from the major fish species and nearly 5,200 age structures were collected. Biological data collected from fish species are summarized in Table 1. About 4,400 stomachs were preserved from various taxa for feeding habit analysis. About 450 Pacific halibut, 700 Pacific cod and 5 Greenland turbot were tagged and released to provide information on stock movements.

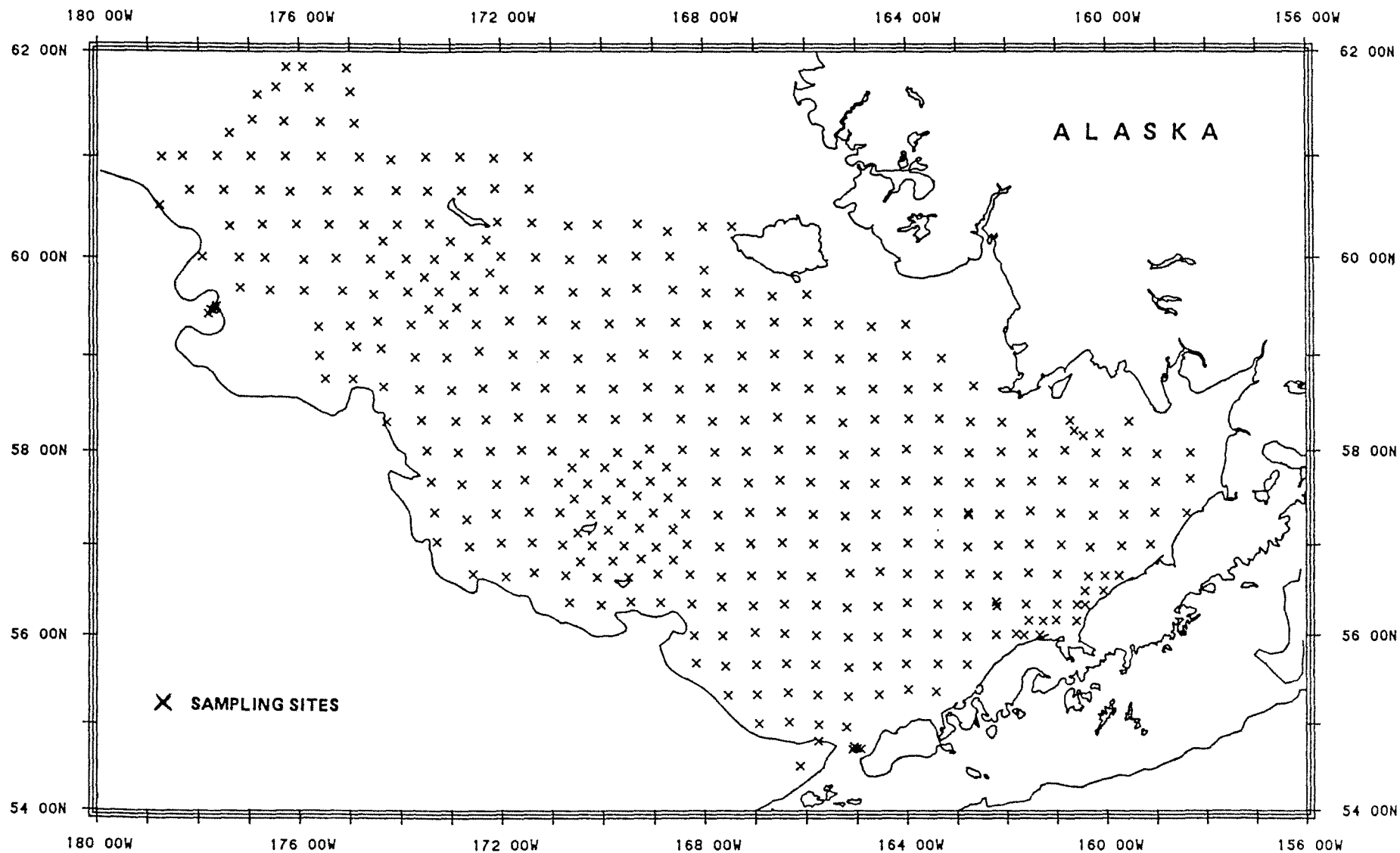


Figure 1.--Distribution of sampling effort during the 1987 eastern Bering Sea crab-groundfish survey.

Table 1.--Collections of biological data and samples during the summer 1987 eastern Bering Sea crab-groundfish survey.

Species	Length measurements	Stomach scans	Age ^{1/} structures	Stomach samples	Number tagged
Walleye pollock	40,144	30	1,356	1,323	--
Pacific cod	10,497	--	1,005	820	700
Sablefish	83	--	--	--	--
Yellowfin sole	31,249	--	859 ^{2/}	918	--
Rock sole	26,202	--	429	227	--
Flathead sole/ Bering Flounder	16,599	13	520	540	--
Pacific halibut	988	--	--	--	458
Alaska plaice	8,542	--	287	168	--
Arrowtooth flounder/ Kamchatka flounder	8,119	--	616	332	--
Greenland turbot	377	--	164	77	5
Rex sole	525	2	--	--	--
Pacific herring	210	--	--	--	--
Pacific ocean perch	15	--	--	--	--
Butter sole	97	--	--	--	--
Longhead dab	501	--	--	--	--
Misc. species	179	71	--	--	--
Total	<u>144,327</u>	<u>116</u>	<u>5,236</u>	<u>4,405</u>	<u>1,163</u>

^{1/}

Dorsal spines and scale samples were collected from Pacific cod. Otoliths were collected from all other species.

^{2/}

Individual length-weight data were also recorded for yellowfin sole.

Seawater temperature profiles were collected at each station using expendable bathythermograph (XBT) probes. Additional meteorological data were collected aboard the Alaska and transmitted to shore-based users via the Geostationary Operational Environmental Satellite (GOES) network.

Net mensuration systems aboard the Pat San Marie provided gear configuration and performance data to be used in area swept calculations.

(b) Cooperative Crab Bycatch Study

The cooperative crab by-catch study was conducted during August-September 1987 in outer Bristol Bay. This was an industry-sponsored investigation with NMFS biologists participating in the collection of biological and gear configuration data. The primary purpose of this experiment was to evaluate fishing net modifications to reduce the incidental catch of crabs relative to the catch of flatfishes.

Six vessels participated in the experiment, including five U.S. trawlers and the Soviet factory trawler, Sulak. Although catches were subsampled for species composition, all crab were processed.

2. Research Activities Planned in the Eastern Bering Sea During 1988.

Two resource assessment surveys are tentatively scheduled for 1988. However, at this time, survey plans and vessel schedules have not been finalized.

(a) Hydroacoustic Survey of Spawning Pollock in the Aleutian Basin

A hydroacoustic survey to examine spawning pollock concentrations in the Aleutian Basin region will be conducted by the NOAA research vessel Miller Freeman in February 1988. The primary purpose of this survey is to obtain abundance estimates of pollock at selected locations and collect biological data on the spawning concentrations.

(b) Summer Triennial Eastern Bering Sea Crab-Groundfish Survey

An extensive triennial eastern Bering Sea crab-groundfish survey will be conducted during May-August 1988. The primary objectives of this survey are:

1. to provide a continuing annual assessment of crab and groundfish resources of the eastern Bering Sea;
2. to study long-term changes in the demersal fish and invertebrate community of the eastern Bering Sea by relating the results of the 1988 survey to the results of the large-scale 1975 and 1979-87 surveys;
3. to hydroacoustically assess the abundance and distribution of pelagic pollock concentrations;
4. to measure water temperature and other selected oceanographic parameters which may affect the abundance and distribution of fish and crab and;
5. to sample continental slope waters.

The survey area will extend from Unimak Pass and the Alaska Peninsula north to the latitude of St. Lawrence Island and from nearshore waters of the Alaskan coast to depths of 600 fm on the continental slope. The study area may be extended northward to encompass the region of Norton Sound. The United States initially plans to have three research vessels available for this survey, two vessels fishing bottom trawls and the third vessel using hydroacoustic and midwater trawling techniques to assess off bottom concentrations of pollock.