

UNITED STATES RESEARCH SURVEYS CONDUCTED IN 1986 AND
SURVEYS PLANNED FOR 1987 IN THE EASTERN BERING SEA
AND ALEUTIAN ISLANDS

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1. Research Activities during 1986.

In 1986, the Resource Assessment and Conservation Engineering Division (RACE) of the Northwest and Alaska Fisheries Center (NAFAC) conducted its annual resource assessment survey in the eastern Bering Sea and scientists from the Fisheries Oceanography Coordinated Investigations group (FOCI) of the NAFAC conducted a special survey of spawning pollock in the Aleutian Basin and near the shelf edge during the winter of 1986. In addition, the RACE Division conducted a trawl performance study in the eastern Bering Sea and participated in a cooperative survey and field experiments with Japan in the Aleutian Islands.

(a) FOCI Winter Survey

This survey was conducted during February 1986. The primary objectives of the survey were to:

(1) Locate and sample aggregations of spawning walleye pollock over the Aleutian Basin and define the biological and physical regimes as they might influence the survival of early life stages.

(2) Collect data pertaining to the relationship of Basin and shelf stocks, reproductive biology, and the effects of currents on egg and larval distributions.

The study region covered 3 major areas. The first consisted of a grid of stations northeast of Bowers Ridge, centered near 55°30'N, 178°W. Bongo tows,

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bottle casts, and conductivity-temperature-density (CTD) measurements were made at each station. One satellite tracked drifter was released in this area.

The second region surveyed was north of the Islands of Four Mountains centered near 54°N, 171°W. Similar data were collected in this area as in the first area and spawning pollock were sampled with mid-water trawls. Three drifters were deployed.

A third area, 20 nm north of Unalaska Island, was also sampled including the deployment of two drifters. The entire survey was carried out on board the NOAA Research Vessel Miller Freeman. Data from this survey is presently being compiled and analyzed.

(b) Eastern Bering Sea Summer Crab-Groundfish Survey

The eastern Bering Sea summer survey was conducted during May-August 1986 following standard crab-groundfish sampling procedures. The 1986 survey was a standard year survey, following the larger 1985 triennial effort.

The standard survey region included continental shelf waters north from Unimak Pass, along the 200 meter depth contour to approximately 60°N and east to the Alaska mainland (Fig. 1). Sampling sites were established on a 20 x 20 nmi grid with more intensive sampling in the Pribilof and St. Matthew Island regions to collect additional data on blue king crab. Survey activities were coordinated between the chartered University of Washington Research Vessel, Alaska, and the chartered fishing vessel Morning Star. The two vessels sampled alternate rows of designated stations over part of the survey area to determine relative fishing powers between vessels through comparisons of catch rates.

The Alaska and Morning Star sampled 388 stations in the survey area. In addition to the data taken on major crab species, approximately 146,000 length measurements were recorded by sex/centimeter category from the major fish species. Age structures were collected from 5016 fish and 5063 stomachs were collected for feeding studies. A total of 1915 Pacific cod were tagged

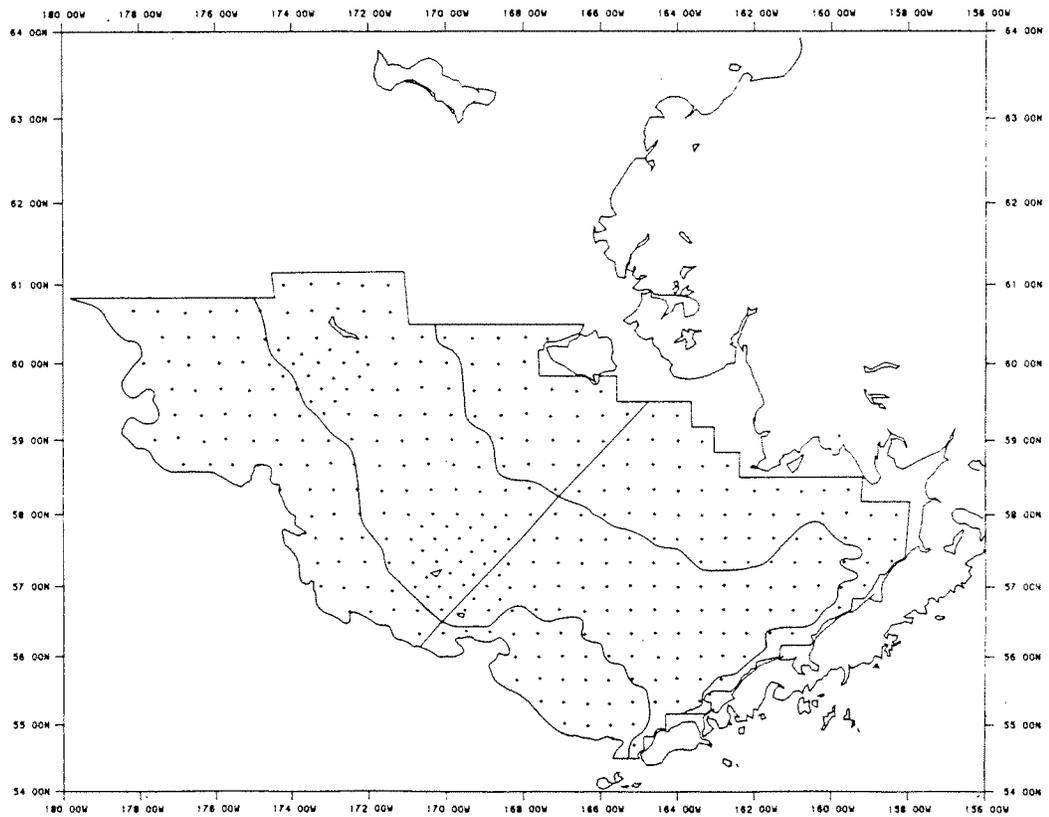


Figure 1.--Distribution of sampling effort during the 1986 eastern Bering Sea summer crab-groundfish survey.

and released in continuing studies of stock movement and growth. Biological data gathered during this survey is summarized in Table 1. Seawater temperature profiles were collected at each station using expendable bathythermograph (XBT) probes.

Catch data from alternate row station transects (294 hauls) were compared to determine significant differences in fishing efficiencies between vessels. Results indicated that the Alaska was more effective for catching gadids other than pollock or Pacific cod, and opilio and hybrid Tanner crab. The Morning Star was more effective at catching flatfish other than the commercial species, and smelts. No significant differences were observed for other species.

Following the completion of the regular survey stations, the Morning Star returned to Bristol Bay to resample the red king crab distribution and tag Pacific cod at 23 higher density trawl locations.

(c) Trawl Performance Study in the Eastern Bering Sea.

During May 1986, just prior to the beginning of the 1986 eastern Bering Sea crab-groundfish survey, the chartered F/V Morning Star was engaged in a special assessment of the impact of bottom trawling on crab, other non-target species, and the bottom habitat. A TV-equipped remote-controlled underwater vehicle was deployed from the Morning Star to provide visual records of trawl performance and the reaction of fish and invertebrates to the gear. Approximately 15 dives and 16 tows were completed during this study. Equipment breakdowns, inclement weather, and excessive water turbidity prevented the successful achievement of the cruise objectives.

(d) Cooperative Aleutian Region Survey

During May-September 1986, a U.S.-Japan cooperative groundfish survey was conducted aboard the Japanese chartered F/V Ginryu Maru No. 5 and the

Table 1.--Collections of biological data and samples during the 1986 eastern Bering Sea summer crab-groundfish survey.

Species	Length measurements	Stomach scans	Age ^{1/} structures	Stomach samples
Walleye pollock	35,800	456	1,367	
Pacific cod	15,342		1,098	1,454
Sablefish	233	8		
Yellowfin sole	30,506		754	1,495
Rock sole	26,078	54	412	
Flathead sole/ Bering flounder	15,407	35	420	1,233
Pacific halibut	1,058			
Alaska plaice	12,349	8	290	
Arrowtooth flounder/ Kamchatka flounder	5,812		413	790
Greenland turbot	195		116	91
Rex sole	437			
Pacific herring	1,207		146	
Pacific ocean perch	9			
Butter sole	347			
Longhead dab	1,017	20		
Misc. species	643	174		
Total	146,440	755	5,016	5,063

^{1/} Dorsal spines were collected from Pacific cod, scales from Pacific herring. Otoliths were collected from all other species.

U.S. chartered F/V Let's Go in the Aleutian region of the Bering Sea.

This is the third triennial assessment of fish and crab resources on the continental shelf and upper slope of the Aleutian Islands. Survey activities were to define distribution and abundance of principal fish and commercial invertebrate species, collect selected biological data, conduct fishing comparisons between the two nations vessels, tag Atka mackerel and Pacific cod, and to examine Atka mackerel maturity patterns.

2. Research Activities Planned in the Bering Sea During 1987

(a) A standard eastern Bering Sea summer crab-groundfish survey will be conducted around May-August 1987. This survey will be a continuation of a series of eastern Bering Sea resource assessment surveys.

The primary objectives of this survey are to:

(1) Study annual and long-term changes in the demersal fish and invertebrate community of the eastern Bering Sea shelf by relating the results of the 1987 survey to the results of previous years; and

(2) Measure selected oceanographic parameters that may effect the abundance and distribution of these populations.

The survey area will extend from Unimak Pass and the Alaska Peninsula north to the latitude of St. Matthew Island and from nearshore waters of the Alaska mainland to depths of 200 m at the continental shelf break. Approximately 355 stations will be sampled based on a 20 x 20 nmi grid. The United States plans to have two bottom trawl research vessels available for this survey.