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U.S. DEPARTMENT OF COMMERCE
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ABSTRACT

A cooperative bottom trawl survey of the Bering Sea was conducted by the Alaska Fisheries Science Center (AFSC) of the United States and the Pacific Research Institute of Fisheries and Oceanography of the U.S.S.R. aboard the Soviet research vessel *Novodrutsk* during May-June 1991. The primary purpose of this survey was to assess the distribution, abundance, and biological condition of groundfish resources over the continental shelf in both the eastern and western Bering Sea. An independent bottom trawl survey of the central and southeastern Bering Sea continental shelf was also conducted by the AFSC during June-September 1991 aboard U.S. research vessels.

Results summarizing geographic distribution, abundance estimates, and size composition are presented for the principal species of fish encountered. The distributions of commercially important crab species are also shown. Comparisons are made among results of this cooperative survey, the 1991 U.S. survey, and earlier surveys from the areas commonly fished in the eastern Bering Sea. The appendices include station and catch information, abundance, size, and age data.

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INTRODUCTION

The Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) and the Pacific Research Institute of Fisheries and Oceanography (TINRO) of the U.S.S.R. (now known as the Russian Federation) conducted a cooperative bottom trawl survey of the eastern and western Bering Sea shelf from 11 May through 25 June 1991. This survey was conducted aboard the Soviet research vessel Novodrutsk, in complement to the annual independent U.S. bottom trawl survey of the eastern Bering Sea shelf. While the U.S. survey sampled east of the U.S.-U.S.S.R. Convention Line, the cooperative U.S.-U.S.S.R. survey sampled both U.S. waters and areas west of the Convention Line in the Soviet Exclusive Economic Zone (EEZ). Five U.S. scientists participated in survey operations conducted aboard the Soviet vessel.

Systematic bottom trawl surveys, designed to assess the biological condition of crab and groundfish species in the eastern Bering Sea, have been conducted by the U.S. annually since the early 1970s. Initial surveys were limited to Bristol Bay and the central waters of the eastern Bering Sea shelf. The first large-scale survey, conducted in 1975, sampled continental shelf and slope waters from Unimak Pass north to approximately 62°N lat. and east of the Alaska mainland. Expansive surveys have been conducted annually by the United States since 1979, covering a large portion of the eastern Bering Sea shelf. However, information on the abundance, distribution, and

biological characteristics of crab and groundfish assemblages occurring in the western portion of the Bering Sea has been limited.

The Soviet scientists have conducted fisheries research in the eastern and western Bering Sea since 1958 under a program entitled the "Bering Sea Comprehensive Scientific-Commercial Expedition" (Moiseev 1963). Information collected during many of these surveys has not been available to U.S. scientists or has been of limited value since U.S. and Soviet methods of collecting station and catch data have differed significantly (Sample and Nichol 1994). In 1990, an attempt was made to standardize data collections by utilizing U.S. sampling methodology aboard a Soviet research vessel conducting the cooperative U.S.-U.S.S.R. bottom trawl survey (Sample and Nichol 1994). The 1990 survey provided the first complete set of standardized data from both the western and eastern Bering Sea.

This report describes the survey methodology and summarizes the results of the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf. Complete results of the 1991 U.S. survey are presented in Goddard and Zimmermann (1993).

The specific objectives of this report are to

1. Describe the geographical distribution of important demersal resources in the eastern and western Bering Sea during the survey period;
2. Describe biological characteristics and relative abundance of ecologically important species, and;
3. Compare the results of this cooperative survey with the results of the 1991 U.S. survey and earlier U.S.-U.S.S.R. cooperative bottom trawl surveys.

SURVEY METHODS

Survey Area and Sampling Design

The area surveyed by the research vessel *Novodrutsk* covered the Bering Sea continental shelf from the Alaska coast west to the 200 m isobath and north from the Alaska Peninsula to approximately St. Matthew Island (Fig. 1). The survey also extended into Russian shelf waters in the Gulf of Anadyr and west along the Siberian coast. Most of these areas were also sampled during the 1990 U.S.-U.S.S.R. cooperative survey. The 1991 survey, however, extended farther west and included the shelf waters in the Olyutorski Gulf.

For sampling and analytical purposes, the survey area was divided into 11 subareas (Fig. 2). The eastern portion of the Bering Sea shelf was further divided into three depth zones delineated by the 50 m (Subareas 1 and 2), 100 m (Subareas 3 and 4) I and 200 m (Subareas 5, 6, and 9) isobaths. Because separate oceanic domains influence fish distributions (Kinder and Schumacher 1981), stratifying data among these subareas may reduce the variance of population estimates. Detailed bathymetric data were not available for the western portion of the survey area; therefore, the data recorded on the Soviet side of the U.S.-U.S.S.R. Convention Line were grouped into less-specific depth zones. Subarea 14 includes all depths less than 100 m, Subarea 15 includes depths between 100 m and 200 m, and Subareas 16 and 17 include depths less than 200 m. These

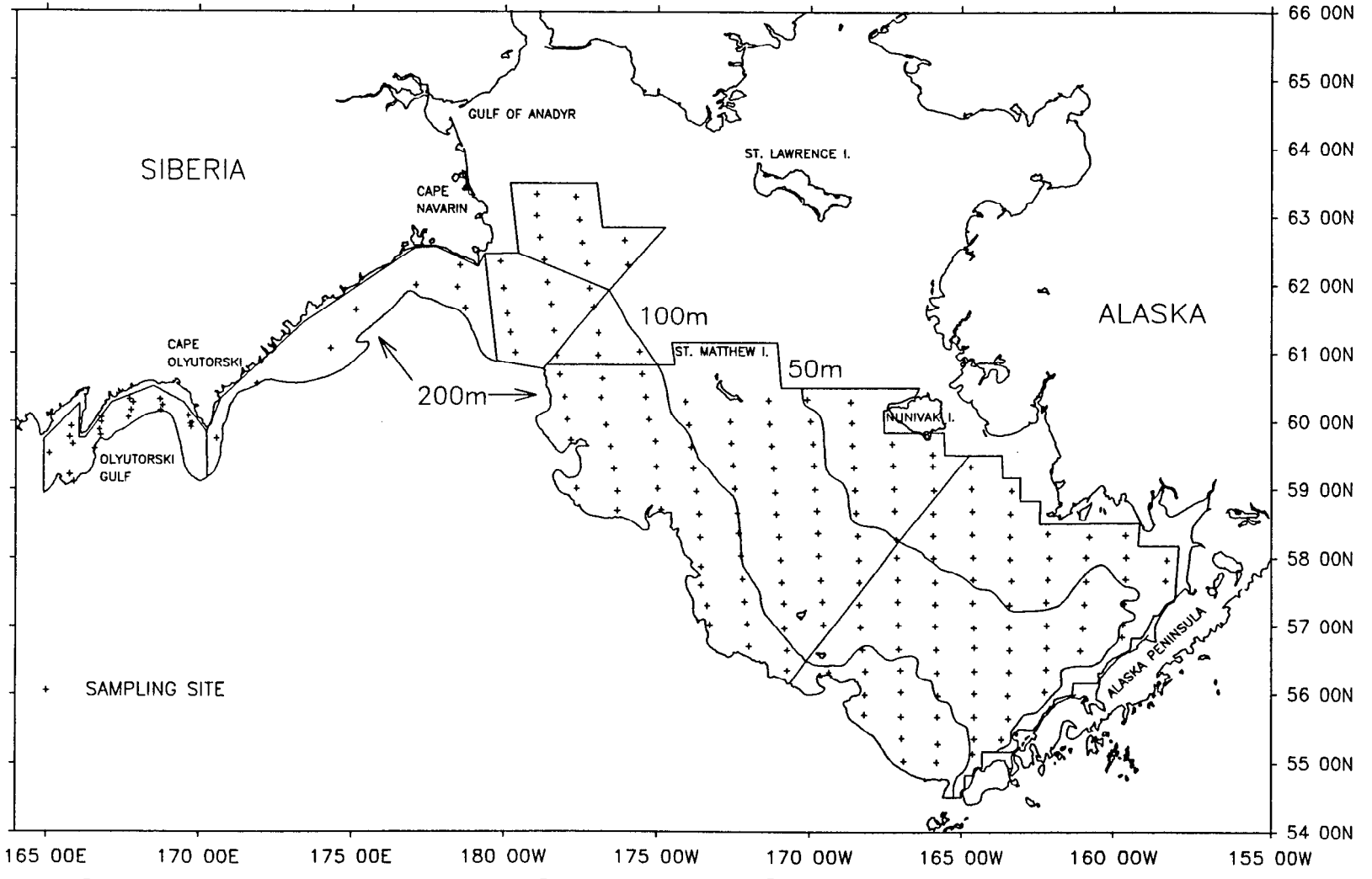

Figure l.--Survey area and station locations sampled by the RV *Novodrutsk* during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

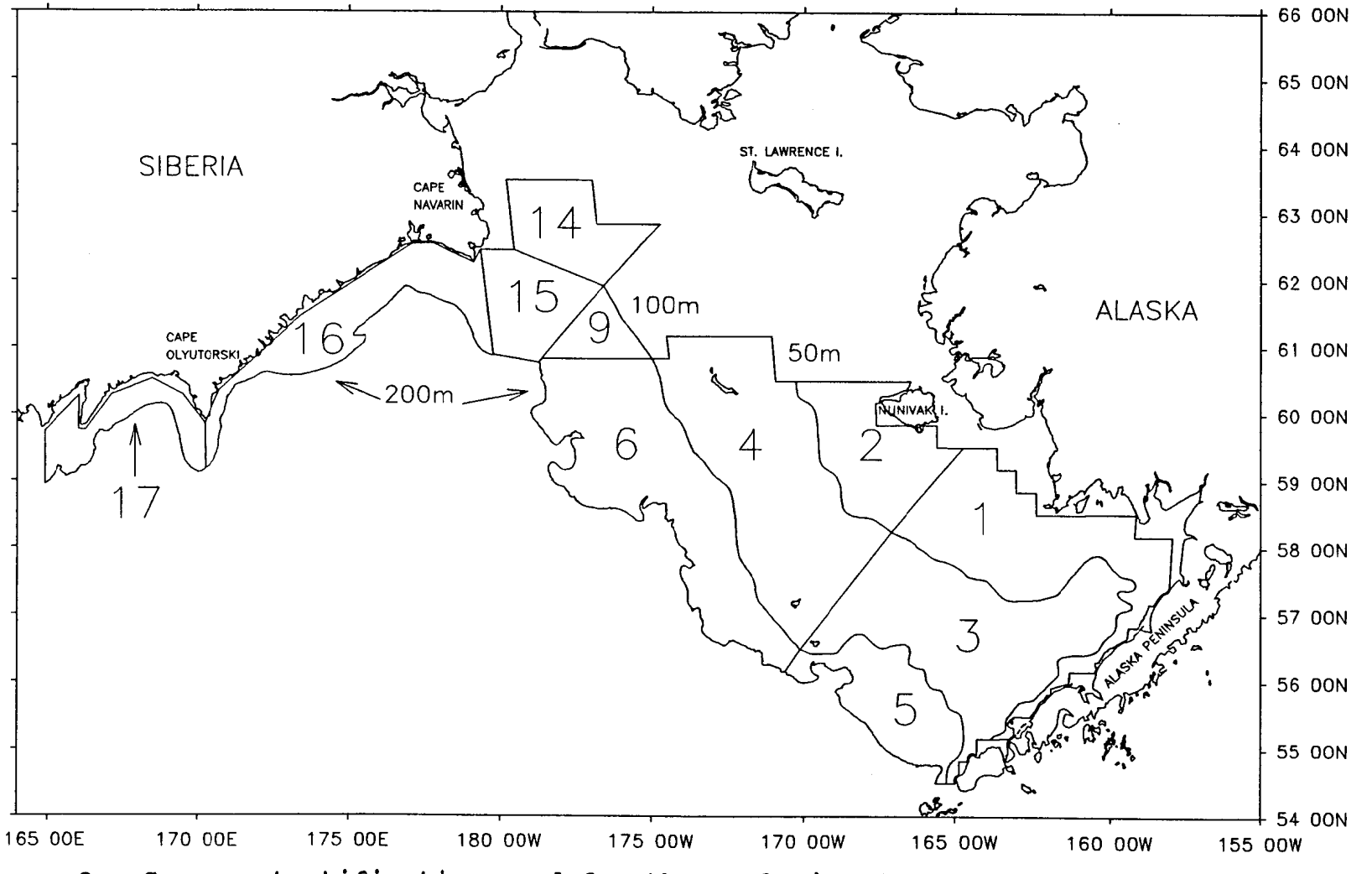

Figure 2.--Survey stratification used for the analysis of the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

subareas were grouped into three main regions for reporting and comparative purposes as follows:

1) the standard U.S. shelf area (Subareas l-6) which consisted of the combined region of the central and southeastern Bering Sea;

2) the north shelf area which extends from 61° N lat. to St. Lawrence Island and east to the U.S.-U.S.S.R. Convention Line, only part of which (Subarea 9) was covered in this survey;

3) the western shelf area (Subareas 14-17) including shelf waters from the Gulf of Anadyr west into Olyutorski Gulf. The northern portion of Subarea 14 was not sampled due to sea ice conditions (Fig. 3) and time constraints prevented the complete sampling of Subarea 16.

Sampling site locations in most subareas were based on a schematic 20 x 20 nautical mile grid system that was established by AFSC scientists during previous U.S. surveys. Due to time constraints, only alternate north-south columns spaced 40 miles apart were sampled. All stations sampled in the standard U.S. shelf were later sampled by the independent U.S. bottom trawl survey. The grid sampling scheme was not applied to Subareas 16 and 17 due to the narrowness of the shelf.

The total survey area encompassed approximately 587,878 km^2 (Table 1). The standard U.S. area accounted for approximately 79% of the total area, the west shelf 19%, and the north shelf 2%. An average of one station for every 2,259 km^2 was sampled over the entire survey area. Sampling intensity was lowest in Subarea 16 (1 sta./5,136 km^2) and highest in Subarea 17 (1 sta./907 km^2).

Table 1.--Size of subareas and sampling effort during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Subarea	Area (km^2)	Proportion of total area	Number of stations	Sampling effort (1 sta./km^2)
Standard U.S. shelf				
1	77,871	0.132	29	2,685
2	41,027	0.070	14	2,931
3	103,300	0.176	35	2,951
4	107,822	0.183	31	3,478
5	38,792	0.066	13	2,984
6	94,562	0.161	37	2,556
Subtotal	463,375	0.788	159	2,914
North shelf				
9	11,568	0.020	4	2,892
Subtotal	11,568	0.020	4	2,892
Western shelf				
14	26,238	0.045	10	2,624
15	25,647	0.044	10	2,565
16	41,086	0.070	8	5,136
17	19,964	0.034	22	907
Subtotal	112,935	0.193	50	2,259
Total	587,878	1.000	213	2,259

The survey began in Bristol Bay on 11 May 1991 and continued west and north to the U.S.-U.S.S.R. Convention Line. Fishing in U.S. waters (Subareas l-6 and 9) was completed on 8 June. Due to extensive ice coverage in late May and early June, the vessel was unable to proceed north to Subareas 14 and 15 as planned (Fig. 3). All fishing operations ceased while the vessel travelled to the Olyutorski Gulf, where sampling operations resumed in the ice-free waters on 14 June, and proceeded east

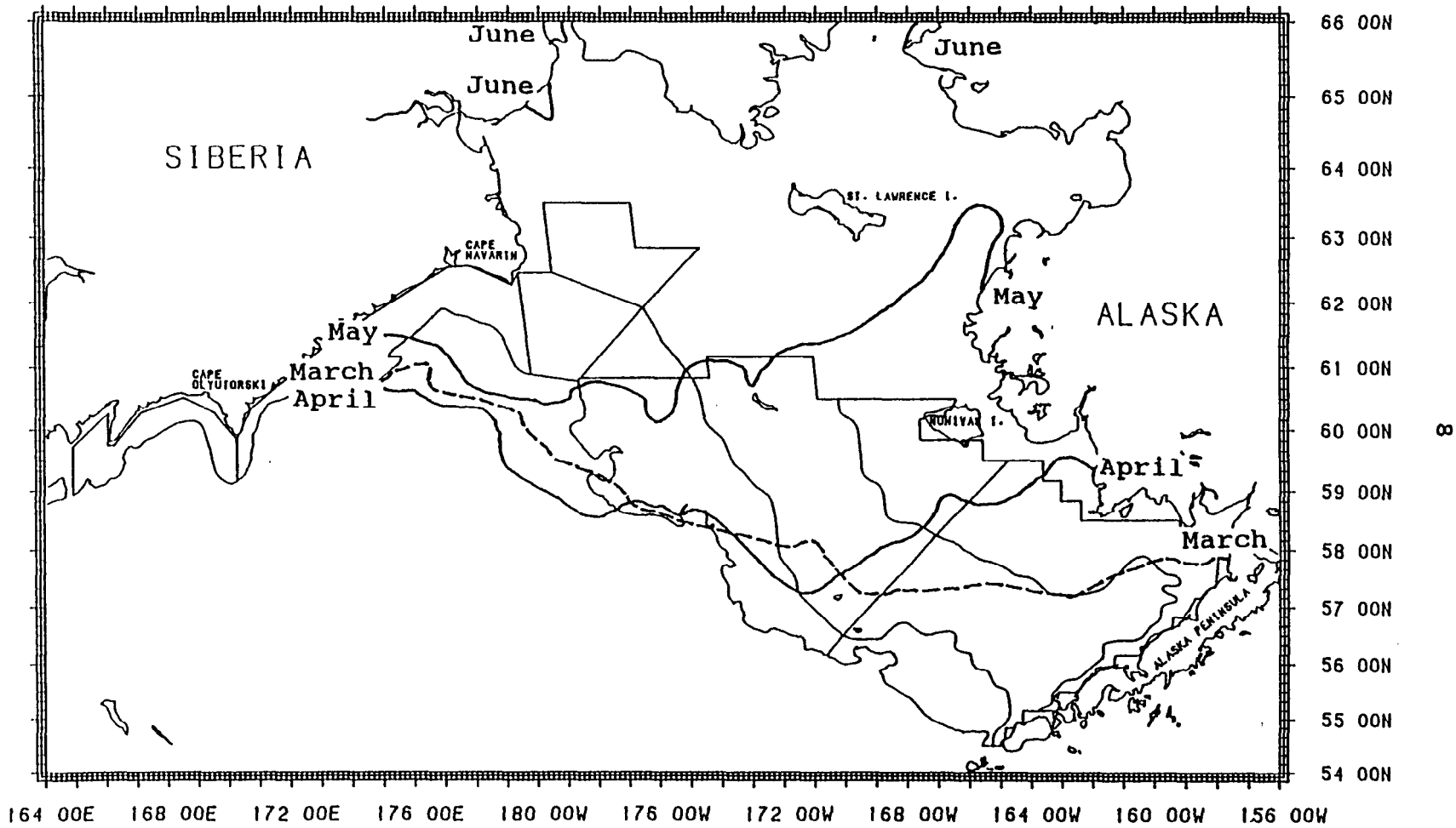

Figure 3.--Southern extension of sea-ice at the end of March, April, May, and June 1991 (adapted from Oceanographic Monthly Summary).

following the receding ice edge. The survey was completed off Cape Navarin on 25 June.

Vessel and Fishing Gear

Survey operations were conducted aboard the Soviet research vessel *Novodrutsk,* a 101.6 m stern-trawling factory processor. A pelagic commercial Soviet net was used as a bottom trawl on all stations (Table 2). A SCANMAR[1] net mensuration system was used to record net height and width during the survey. Although the SCANMAR system malfunctioned early in the survey, some information was recorded on the trawl's configuration which indicated that the net had an average wing spread of 27 m and height of 8 m while fishing.

Table 2.--Attributes of the net used during the 1991 U.S.-U.S.S.R. cooperative bottom trawl survey of the Bering Sea shelf.

Trawl type	Headrope length (m)	Footrope length (m)	Opening vert. (m)	Opening horiz. (m)	Mesh sizes Wing (mm)	Body (mm)	Belly (mm)	Codend (mm)	Accessory gear Doors (m)	Dandyline (m)
Soviet	69.0	94.0	8	27	200	100	40	30	6 X 6	75

Collection and Processing of Samples

Station positions and distances fished were determined by a Global Positioning System (GPS) provided by the AFSC.

[1]Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

Information collected for each haul included time of day, date, start and end positions, depth, distance fished, surface and bottom temperatures, and scope (trawl cable length out). Trawling operations were limited to daylight hours to avoid potential sampling bias due to diel movement patterns of some fish. In U.S. waters, the survey was conducted from east to west to avoid the possibility of sampling migrating fish populations more than once.

The bottom trawl was towed for approximately 30 minutes at each of the sampling sites, covering a linear distance averaging 4.2 km and an area of 0.1 km^2. Catches weighing less than the holding capacity of the sampling table (approximately 1,000 kg) were processed in their entirety. If the catch exceeded the capacity of the sampling table, the entire catch was weighed using an electronic scale and then a random subsample of 1,000 kg was transferred to the sorting table. Subsample weights and numbers were later expanded by applying the ratio of the weight of the processed portion of the catch to the total catch weight.

The catch was sorted into plastic baskets by species or species groups and each tared basket was weighed to the nearest tenth of a pound. If numerous baskets were filled with the same species, then counts were made of a few baskets to provide estimates of total numbers caught and the average animal weight. The following target fish species were further processed for size composition data:

1. Walleye pollock (Theragra chalcogramma).
2. Yellowfin sole (Pleuronectes asper).
3. Rock sole (Pleuronectes bilineatus).
4. Pacific cod (Gadus macrocephalus).
5. Flathead sole (Hippoglossoides elassodon).
6. Bering flounder (Hippoglossoides robustus).
7. Arrowtooth flounder (Atheresthes stomias).
8. Kamchatka flounder (Atheresthes evermanni).
9. Alaska plaice (Pleuronectes quadrituberculatus).
10. Pacific halibut (Hippoglossus stenolepis).

Other less frequently encountered species including Arctic cod (Boreogadus saida), Pacific herring (Clupea pallasi), Sakhalin sole (Pleuronectes sakhalinensis), and starry flounder (Platichthys stellatus) were also measured as time permitted.

Lengths of commercially important fish species were measured from a random subsample consisting of 150-200 specimens. The sex of each specimen was determined, if possible, and the total length (tip of snout to end of middle ray of caudal fin) was recorded.

The AFSC and TINRO methods for collecting fish lengths are different. For analytical purposes, fish lengths, which were measured to the nearest higher centimeter (i.e., fish between 10 cm and 11 cm were recorded as 11 cm) on board the vessel, were adjusted by an average of -0.5 cm. Lengths were randomly assigned either the originally recorded length or were assigned the original length subtracted by 1 cm. This adjustment was performed so that measurements conformed to methods traditionally used during AFSC surveys, where lengths are measured and rounded off to the nearest whole centimeter (i.e., fish between 9.5 and 10.5 cm are recorded as 10 cm).

Age structures were collected from Pacific cod (otoliths and scales) and walleye pollock (otoliths). Pacific cod collections included the recording of individual fish weights. An attempt was made to collect three otolith pairs (and scales) per sex/centimeter length category for Pacific cod and five otolith pairs per sex/centimeter for pollock.

A special collection of Pacific cod stomachs was made from stations in Bristol Bay for food habits studies. Stomachs were preserved in a 10% formalin solution and later transported to the AFSC's Trophic Interactions Unit for analysis.

Pacific halibut were removed from the catch as early as possible, measured alive, and returned to the sea. No sex determination was performed. Weights of halibut were calculated from a length-weight relationship provided by the International Pacific Halibut Commission (IPHC) as follows:

$$Weight_{(lbs)} = (9.204 * 10^{6}) * L^{3.24}_{(cm)}.$$

Data Analysis

A summary of the methods and procedures used in the data analysis is provided here. A more complete description of the analytical methods is provided in Wakabayashi et al. (1985).

Analysis of catch and distribution data was completed for the major fish species encountered. Other less abundant or non-commercial species were grouped into broader taxonomic categories for analysis.

Some species were grouped with a morphologically similar congener for the analysis, even though an attempt was made to separate them while at sea. Arrowtooth flounder and the closely related Kamchatka flounder were grouped together and referred to as Atheresthes spp. Flathead sole and Bering flounder are also similar in appearance and they were grouped together as Hippoglossoides spp. The groupings not only eliminated the problems associated with misidentification of these similar species, but it also facilitated comparison with past AFSC bottom trawl surveys, which used the same groupings.

The area swept at each station was estimated as the product distance fished, calculated from GPS start and end positions and an assumed constant net width of 27 m. Catch weights in kilograms were divided by hectares (1 ha equals 10,000 m^2) of area covered by the trawl to produce a standardized value of catch per unit of effort (CPUE).

The mean CPUE value of a subarea was calculated by averaging all CPUE values of the individual hauls in that subarea. The mean CPUE value of each subarea was then weighted by its own area for calculating the mean CPUE for combined subareas. Biomass and population numbers were calculated for each subarea as the product of the mean subarea CPUE and the area contained in that

subarea. Total biomass and population numbers were calculated by summing the component subarea values.

The number of individuals by size and sex category was estimated by expanding the length-frequency subsample to the total number of fish at each sampling site. These expanded numbers were consequently combined to represent the size composition in each subarea and then applied to the population number to produce a population at-size estimate.

Age composition in terms of biomass was estimated by first calculating biomass at length using the equation:

$$B_L = P_L * \{A * (L^B)\},$$

where B_L = biomass at length L in grams,
P_L = population number at length L,
L = fork length in millimeters, and
A and B = constants based on regressions of previous species-specific, length-weight data obtained from the PACE eastern Bering Sea database.

Values used for the constants A and B are as follows:

	A	B
1) Walleye pollock		
Male	0.000011688	2.915008
Female	0.000019090	2.833516
All sexes	0.000012847	2.898081

	A	B
2) Pacific cod		
Male	0.0000044268	3.162674
Female	0.0000043510	3.165096
All sexes	0.0000043973	3.163560

After converting weight in grams to metric tons (t), B_L was then apportioned to biomass at age using the age-length keys for each area. Growth characteristics of walleye pollock and Pacific cod were described with von Bertalanffy (1938) growth curves fitted to age-length data.

RESULTS OF THE SURVEY

Hauls and Data Collected

The research vessel *Novodrutsk* attempted 218 bottom trawls, of which 213 were successfully completed (Fig. 1). A total of 83,662 length measurements were taken from 14 fish species (Table 3). A total of 764 otolith pairs were collected from walleye pollock and 509 otolith pairs and scale samples were taken from Pacific cod. In Bristol Bay, 265 stomachs were removed from Pacific cod and preserved for later analysis.

Table 3.--Collections of data from individual fish during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Species	Length measurements	Age structures	Stomach samples
Walleye pollock	33,602	764	--
Pacific cod	8,975	509	265
Arctic cod	191	--	--
Pacific herring	163	--	--
Yellowfin sole	13,114	--	--
Rock sole	12,583	--	--
Flathead sole	5,938	--	--
Alaska plaice	4,541	--	--
Bering flounder	1,052	--	--
Sakhalin sole	155	--	--
Starry flounder	41	--	--
Arrowtooth flounder	1,793	--	--
Pacific halibut	1,221	--	--
Kamchatka flounder	293	--	--
Total	83,662	1,273	265

Environmental Conditions

Seawater surface temperatures ranged from -0.6°C to 9.2°C (Fig. 4). The average surface water temperature in the standard U.S. shelf was 2.3°C. Surface waters were coldest over Subareas 1, 2, and 4 and warmest near the Alaska Peninsula and shelf edge. Surface temperatures were also warm along the Siberian coastline, although this may be an artifact of the later sampling dates.

Bottom water temperatures ranged from -1.7°C to 3.7°C in the overall survey area (Fig. 5). The average bottom temperature for the standard U.S. shelf area was 1.3°C. A cold "tongue" of bottom water extended far into the standard U.S. shelf area from the north. Water below 0°C surrounded St. Matthew Island and extended south, encompassing most of Subarea 4. Water less than l°C surrounded this cold mass and extended eastward, following the 50 m isobath into Bristol Bay. The warmest bottom water temperatures were near the Alaska coast along the Alaska Peninsula and also in the deep water along the western edge of Subareas 5 and 6.

Relative Importance of Major Taxonomic Groups

A total of 80 fish species (Table 4), 13 shrimp species, 13 crab species, and 63 other invertebrate species or species groups were identified during the survey. The total estimated biomass of fish and invertebrates combined in the survey area was 8.5 million t. Approximately 82% of the total biomass was in the standard U.S. area, 17% over the western shelf, and 1% over the north shelf.

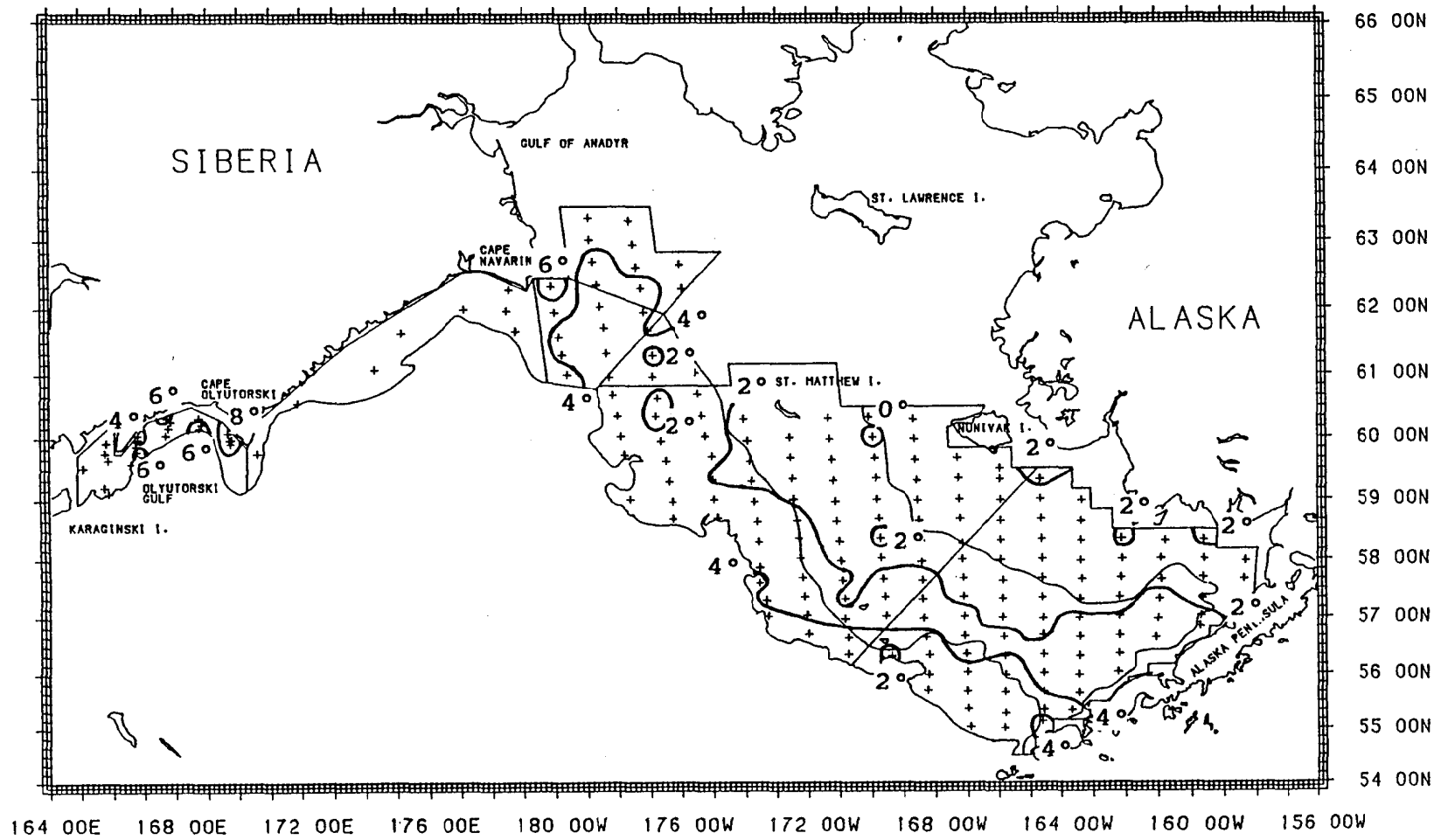

Figure 4.--Distribution of surface water temperatures (°C) observed during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

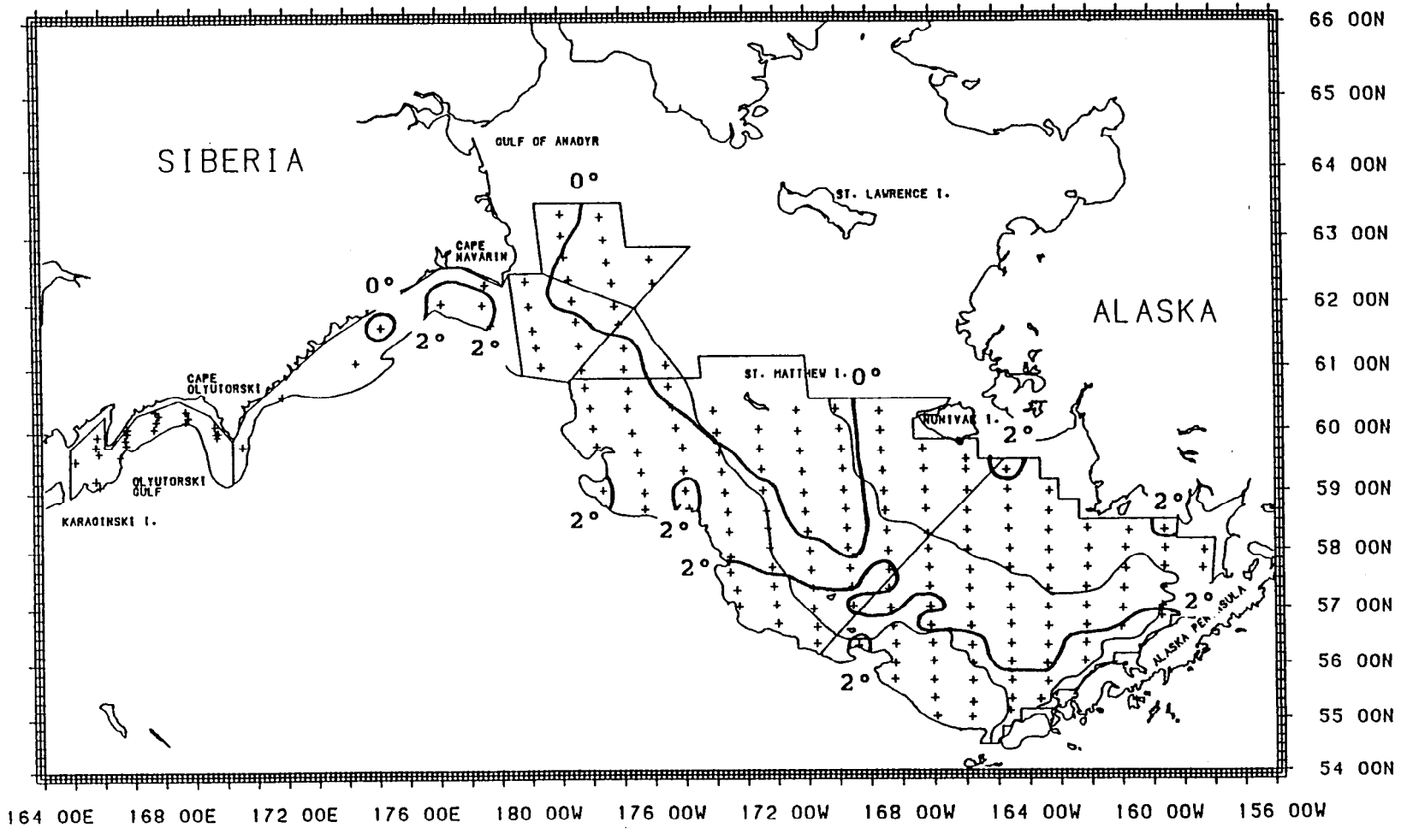

Figure 5. --Distribution of bottom water temperatures (°C) observed during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 4.--Mean CPUE (kg/ha) of fish species encountered during the 1991 U.S.-U.S.S.R. cooperative Bering Sea groundfish trawl survey.

Common name	Scientific name	U.S. standard area	North shelf	Soviet area	All strata
Family Rajidae					
Alaska skate	Bathyraja parmifera	4.216	7.716	1.459	3.755
Aleutian skate	Bathyraja aleutica	0.001	-	-	0.001
Bering skate	Bathyraja interrupta	0.009	-	0.024	0.012
Big skate	Raja binoculata	0.136	-	-	0.107
Family Clupeidae					
Pacific herring	Clupea pallasii	1.578	0.669	9.153	3.015
Family Osmeridae					
Capelin	Mallotus villosus	0.109	0.008	0.047	0.095
Eulachon	Thaleichthys pacificus	0.007	-	-	0.005
Rainbow smelt	Osmerus mordax	<0.001	-	<0.001	<0.001
Family Gadidae					
Walleye pollock	Theragra chalcogramma	66.260	9.013	69.411	65.739
Pacific cod	Gadus macrocephalus	15.466	23.103	21.010	16.682
Arctic cod	Boreogadus saida	0.016	0.465	2.620	0.525
Saffron cod	Eleginus gracilis	-	-	0.003	0.001
Family Scorpaenidae					
Northern rockfish	Sebastes polyspinis	0.003	-	-	0.003
Dusky rockfish	Sebastes ciliatus	0.005	-	-	0.004
Pacific ocean perch	Sebastes alutus	0.002	-	<0.001	0.001
Rougheye rockfish	Sebastes aleutianus	0.002	-	-	0.001
Family Hexagrammidae					
Whitespotted greenling	Hexagrammos stelleri	0.014	-	-	0.011
Atka mackerel	Pleurogrammus monopterygius	0.001	-	0.005	0.001
Family Cottidae					
Great sculpin	Myoxocephalus polyacanthocephalus	0.565	0.504	1.820	0.805
Plain sculpin	Myoxocephalus jaok	1.006	0.015	0.009	0.795
Warty sculpin	Myoxocephalus verrucosus	0.307	1.615	1.341	0.531
Myoxocephalus unident.	Myoxocephalus sp.	-	-	<0.001	<0.001
Yellow Irish Lord	Hemitripidotus jordani	0.589	0.004	0.948	0.646
Butterfly sculpin	Hemilepidotus papilio	0.044	0.170	0.014	0.041
Banded Irish lord	Hemilepidotus gilberti	-	-	0.002	<0.001
Armorhead sculpin	Gymnocanthus galeatus	0.128	-	0.006	0.102
Threaded sculpin	Gymnocanthus pistilliger	0.016	-	-	0.012
	Gymnocanthus detrisus	-	-	0.347	0.067
Bigmouth sculpin	Hemitripterus bolini	0.200	0.019	0.076	0.172
Thorny sculpin	Icelus spiniger	0.009	0.009	0.005	0.008
Spinyhead sculpin	Dasycottus setiger	0.012	0.036	0.029	0.016
Sissortail sculpin	Triglops forficatus	<0.001	-	0.013	0.003
Spectacled sculpin	Triglops scepticus	0.003	-	0.023	0.007
Ribbed sculpin	Triglops pingeli	0.004	0.001	0.009	0.005
Brightbelly sculpin	Microcottus sellaris	<0.001	-	-	<0.001
Eyeshade sculpin	Nautichthys pribilovius	<0.001	-	-	<0.001
Darkfin sculpin	Malacocottus zonurus	0.001	-	0.006	0.002
Spatulate sculpin	Icelus spatula	<0.001	0.001	<0.001	<0.001
Northern hookear	Artediellus miacanthus	-	-	0.001	<0.001
Family Agonidae					
Sturgeon poacher	Podothecus acipenserinus	0.107	-	0.001	0.085
Sawback poacher	Sarritor frenatus	0.004	0.016	0.006	0.005
Longnose poacher	Sarritor leptorhynchus	-	-	<0.001	<0.001
Aleutian alligatorfish	Aspidophoroides bartoni	0.001	-	0.001	0.001
Arctic alligatorfish	Aspidophoroides olriki	-	-	<0.001	<0.001
Dragon poacher	Percis japonicus	-	-	0.001	<0.001

Table 4.--Continued.

Common name	Scientific name	U.S. standard area	North shelf	Soviet area	All strata
Bering poacher	Occella dodecaedron	0.003	-	-	0.003
Fourhorn poacher	Hypsagonus quadricornis	-	-	<0.001	<0.001
Tubenose poacher	Pallasina barbata	<0.001	-	-	<0.001
Family Cyclopteridae					
Dusky snailfish	Liparis gibbus	0.058	0.270	0.095	0.069
Liparis unident	Liparis sp.	0.003	0.006	0.004	0.003
Salmon snailfish	Careproctus rastrinus	0.007	1.059	0.024	0.031
Peachskin snailfish	Careproctus scottae	0.005	-	-	0.004
Blackfin snailfish	Careproctus cypselurus	-	-	0.013	0.002
Round lumpsucker	Eumicrotremus birulai	-	-	0.002	<0.001
Pacific spiny lumpsucker	Eumicrotremus orbis	-	-	<0.001	<0.001
Smooth lumpsucker	Aptocyclus ventricosus	0.003	-	0.001	0.002
Family Trichodontidae					
Pacific sandfish	Trichodon trichodon	0.034	-	-	0.027
Family Bathymasteridae					
Searcher	Bathymaster signatus	0.021	-	0.002	0.017
Family Zoarcidae					
Marbled eelpout	Lycodes raridens	0.164	1.359	0.100	0.164
Wattled eelpout	Lycodes palearis	0.089	0.194	0.062	0.086
Shortfin eelpout	Lycodes brevipes	0.035	0.108	0.009	0.032
Polar eelpout	Lycodes turneri	0.007	-	0.002	0.006
Family Stichaeidae					
Daubed shanny	Lumpenus maculatus	0.001	0.002	0.003	0.001
Slender eelblenny	Lumpenus fabricii	<0.001	-	-	<0.001
Stout eelblenny	Lumpenus medius	-	-	<0.001	<0.001
Family Zaproridae					
Prowfish	Zaprora silenus	0.006	-	-	0.0063
Family Ammodytidae					
Pacific sand lance	Ammodytes hexapterus	0.004	-	0.014	0.006
Family Pleuronectidae					
Yellowfin sole	Pleuronectes asper	17.389	0.029	0.121	13.730
Rock sole	Pleuronectes bilineatus	17.095	0.123	0.671	13.606
Alaska plaice	Pleuronectes quadrituberculatus	5.147	1.040	1.423	4.350
Sakhalin sole	Pleuronectes sakhalinensis	0.002	0.017	0.308	0.061
Butter sole	Pleuronectes isolepis	0.001	-	-	0.001
Longhead dab	Pleuronectes proboscideus	0.065	-	-	0.051
Flathead sole	Hippoglossoides elassodon	5.677	0.277	0.123	4.503
Bering flounder	Hippoglossoides robustus	0.198	5.567	1.721	0.597
Arrowtooth flounder	Atheresthes stomias	2.880	0.052	0.045	2.280
Kamchatka flounder	Atheresthes evermanni	0.474	-	0.045	0.382
Pacific halibut	Hippoglossus stenolepis	2.066	0.130	2.033	2.022
Starry flounder	Platichthys stellatus	0.162	-	-	0.128
Greenland turbot	Reinhardtius hippoglossoides	0.216	0.345	0.197	0.215
Rex Sole	Errex zachirus	0.095	0.009	-	0.075

Fish--The total biomass of all fish species combined was 8.0 million t which accounted for 93% of the total biomass of fish and invertebrates (Table 5). Approximately 6.6 million t of the fish biomass was in the standard U.S. shelf area, 1.3 million t in the western shelf area, and 0.06 million t in the north shelf area. The combined families of Gadidae and Pleuronectidae accounted for the majority of the total fish biomass. The families of Rajidae, Cottidae, Clupeidae, and Zoarcidae contributed most of the remaining fish biomass. Figure 6 illustrates the distribution and relative abundance of total fish.

Invertebrates--The total invertebrate biomass accounted for less than 7% (0.6 million t) of the total biomass estimate for the survey (Table 6). Approximately 0.44 million t of the combined invertebrate biomass was located in the standard U.S. shelf area, while 0.12 million t was on the western shelf area, and 0.01 million t was over the north shelf area. The phylum Echinodermata (206,272 t) had the greatest biomass of all invertebrate groups, followed by the phylums Coelenterata (188,731 t) and Arthropoda (106,910 t).

Table 5.--Biomass estimates in metric tons (t) for major fish species and fish groups taken during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Taxon	Estimated total biomass (t)[a] and 95% confidence interval	Proportion of total animal biomass[b]	Estimated biomass (t) by subarea										
			Standard U.S. shelf						North shelf	Western shelf			
			1	2	3	4	5	6	9	14	15	16	17
Gadidae (cods)													
Walleye pollock	3,864,638 ± 34%	0.4520	191,777	25,888	695,722	467,626	53,221	1,636,079	10,426	2,264	124,384	533,370	123,881
Pacific cod	980,681 ± 23%	0.1147	29,268	8,456	152,563	157,419	36,964	332,009	26,726	26,520	116,329	50,671	43,757
Other cods	30,915 ± 82%	0.0036	0	39	0	587	0	133	537	27,303	2,141	148	27
Total cods	4,876,233 ± 29%	0.5704	221,045	34,384	848,284	625,632	90,185	1,968,220	37,689	56,086	242,855	584,188	167,664
Anoplopomatidae													
Sablefish	0 ± 00%	0.0000	0	0	0	0	0	0	0	0	0	0	0
Scorpaenidae													
Pacific ocean perch	81 ± 165%	<0.0001	0	0	0	0	61	16	0	0	0	5	0
Other rockfish	450 ± 109%	0.0001	0	0	10	215	139	86	0	0	0	0	0
Total rockfish	531 ± 103%	0.0001	0	10	215	200	101	0	0	0	5	0	531
Pleuronectidae													
Yellowfin sole	807,162 ± 27%	0.0944	214,902	172,762	174,038	243,972	24	69	34	81	9	0	1,272
Rock sole	799,855 ± 34%	0.0936	268,966	35,207	168,792	270,828	482	47,859	142	89	2,077	5,236	177
Hippoglossoides spp.	299,816 ± 24%	0.0351	1,128	342	133,111	22,880	19,065	95,709	6,761	9,529	8,609	460	2,221
Alaska plaice	255,750 ± 30%	0.0299	72,823	50,178	45,274	66,663	0	3,540	1,203	2,165	10,251	202	3,451
Atheresthes spp.	156,508 ± 40%	0.0183	0	0	25,380	4,731	50,411	74,902	60	0	469	280	275
Greenland turbot	12,621 ± 45%	0.0015	0	0	0	633	0	9,366	399	109	1,471	0	644
Pacific halibut	118,853 ± 22%	0.0139	6,400	2,307	25,648	18,240	15,868	27,283	151	0	2,095	14,072	6,790
Other flatfish	18,620 ± 39%	0.0022	8,284	1,551	1,985	158	1,775	1,359	30	19	11	0	3,448
Total flatfish	2,469,185 ± 18%	0.2888	572,503	262,347	574,227	628,104	87,625	260,087	8,779	11,992	24,992	20,250	18,279
Clupeidae													
Pacific herring	177,241 ± 137%	0.0207	14,709	10,825	4,857	42,442	0	268	774	4	8	103,283	71
Cottidae (sculpins)	188,852 ± 30%	0.0221	22,928	11,751	11,642	53,553	3,164	30,562	2,746	1,832	25,098	19,220	6,357
Zoarcidae (eelpouts)	17,550 ± 29%	0.0021	0	346	1,121	6,530	178	5,506	1,921	636	1,088	61	163
Osmeridae (smelts)	5,922 ± 42%	0.0007	2,004	1,618	1,182	288	292	0	9	60	47	356	66
Agonidae (poachers)	5,468 ± 32%	0.0006	2,492	889	678	1,139	78	69	18	18	38	26	22
Cyclopteridae	6,620 ± 53%	0.0008	0	0	751	1,910	48	806	1,545	347	739	2	473
Rajidae (skates)	227,828 ± 25%	0.0266	377	0	34,848	30,731	42,800	93,397	8,926	596	13,866	646	1,642
Other fish	3,266 ± 74%	0.0004	1,682	35	88	87	597	556	2	11	19	154	36
Total fish	7,979,419 ± 21%	0.9333	838,319	322,226	1,477,717	1,390,658	225,166	2,359,571	62,410	71,582	308,748	728,203	194,819

[a]Rounding accounts for minor discrepancies between sums of subareas and total survey area, and between sums of taxonomic subgroups and major groups.
[b]Proportion of total estimated biomass, fish and Invertebrates combined, for the total survey area. Total estimated biomass = 8.549.418 t.

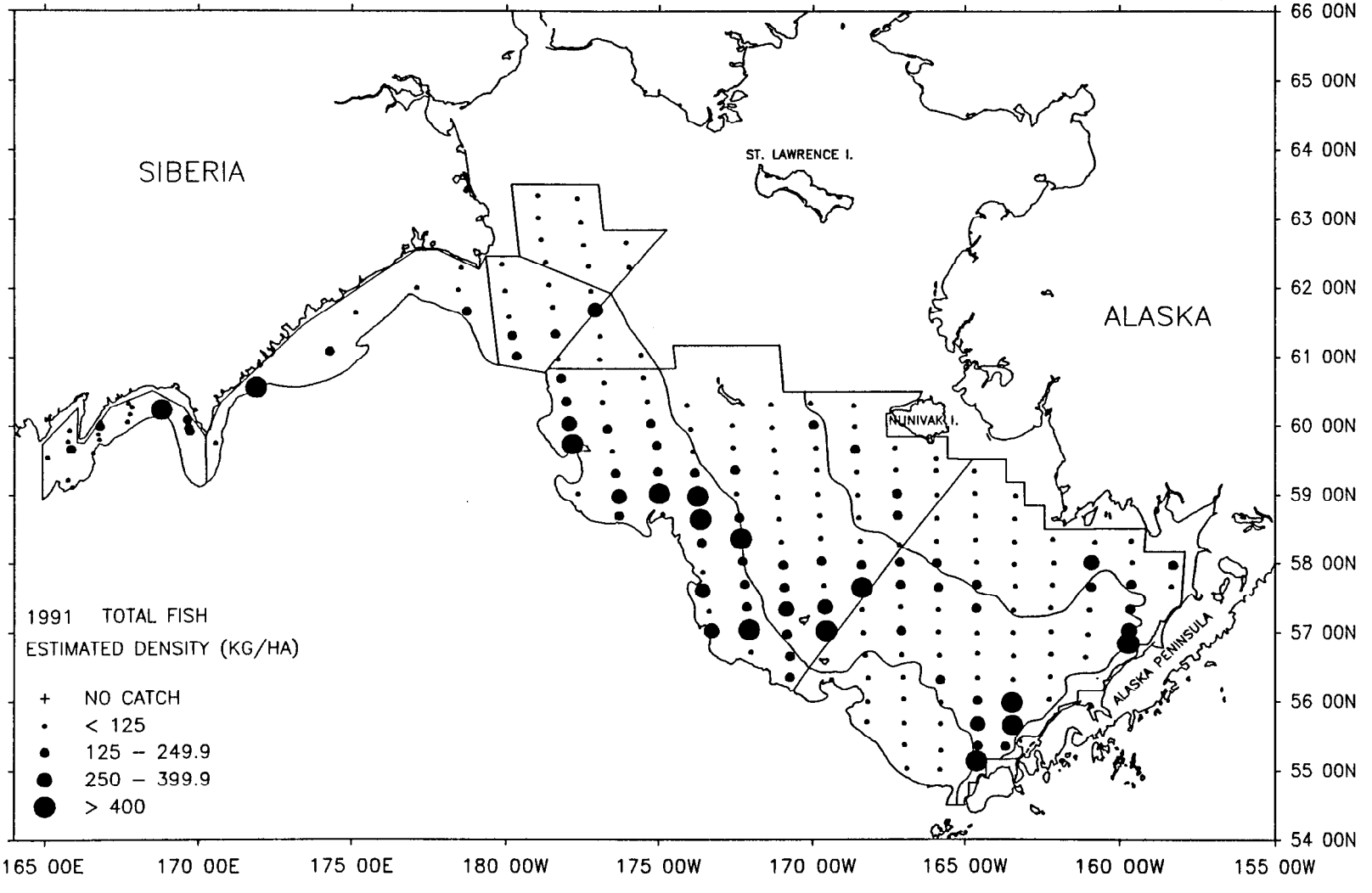

Figure 6. --Distribution and relative abundance in kg/ha of total fish sampled during the 1991 cooperative U.S. -U.S.S.R bottom trawl survey of the Bering Sea shelf.

Table 6.--Biomass estimates in metric tons (t) for major invertebrate groups taken during the 1991 cooperative U.S.-U.S.S.R bottom trawl survey of the Bering Sea shelf.

Taxon	Estimated total biomass (t)[a] and 95% confidence interval	Proportion of total animal biomass[b]	Estimated biomass (t) by subarea										
			Standard U.S. shelf						North shelf	Western shelf			
			1	2	3	4	5	6	9	14	15	16	17
Crustacea													
Crabs	106,910 ± 34%	0.0125	3,072	1,166	18,302	19,869	4,812	31,463	1,344	6,321	14,114	441	6,006
Shrimps	10,636 ± 31%	0.0012	85	196	69	232	322	5,421	887	541	1,462	1,068	354
Total crustaceans	117,628 ± 32%	0.0138	3,238	1,362	18,371	20,101	5,134	36,884	2,231	6,862	15,576	1,508	6,361
Mollusca	5,002 ± 45%	0.0006	65	63	2,382	743	1,100	142	6	19	28	0	456
Echinodermata	206,272 ± 46%	0.0241	104,120	8,136	4,498	6,376	8,162	21,136	834	1,034	2,167	164	49,644
Ascidiacea	6,246 ± 67%	0.0007	1,034	470	1,143	3,534	0	0	0	0	0	0	65
Coelenterata	188,731 ± 31%	0.0221	14,473	612	117,530	31,110	3,688	17,634	2,273	450	931	0	32
Porifera	4,597 ± 189%	0.0005	282	13	177	124	0	156	0	0	0	3,801	44
Other invertebrates	41,522 ± 73%	0.0049	150	218	958	8,543	179	1,802	248	2,712	8,636	2,379	15,699
Total invertebrates	569,999 ± 21%	0.0667	123,362	10,872	145,059	70,531	18,262	77,754	5,591	11,076	27,338	7,851	72,301

[a]Rounding accounts for minor discrepancies between sums of subareas and total survey area, and between sums of taxonomic subgroups and major groups.
[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. Total estimated biomass = 8,549,418 t.

Abundance of Major Fish Groups

Gadidae (codfishes)

Gadids were represented by four species with a combined biomass of 4.9 million t, or 61% of the overall fish biomass, making them the most abundant species group in the survey region (Table 5). Walleye pollock (3.8 million t or 79%) accounted for the majority of the gadid biomass, followed by Pacific cod (0.9 million t or 20%). Saffron and Arctic cod accounted for only 1% of the gadid biomass.

Pleuronectidae (flatfishes)

Fourteen species of pleuronectids were identified during the survey (Table 4). They accounted for 2.5 million t or 31% of the total fish biomass (Table 5). Yellowfin sole (33%) and rock sole (32%) were the most abundant flatfish species. Most of the remainder of the flatfish biomass consisted of Hippoglossoides spp. (12%), Alaska plaice (l0%), Atheresthes spp. (6%), and Pacific halibut (5%).

Rajidae (skates)

Skates were the third most abundant fish group with an estimated biomass of 227,828 t (2.9% of total fish biomass, Table 5). Skates were most abundant at depths greater than 100 m (Fig. 7). Approximately 89% of the total skate biomass was in the standard U.S. area, with highest concentrations in Subareas 5 and 6. Four skate species were identified in the survey

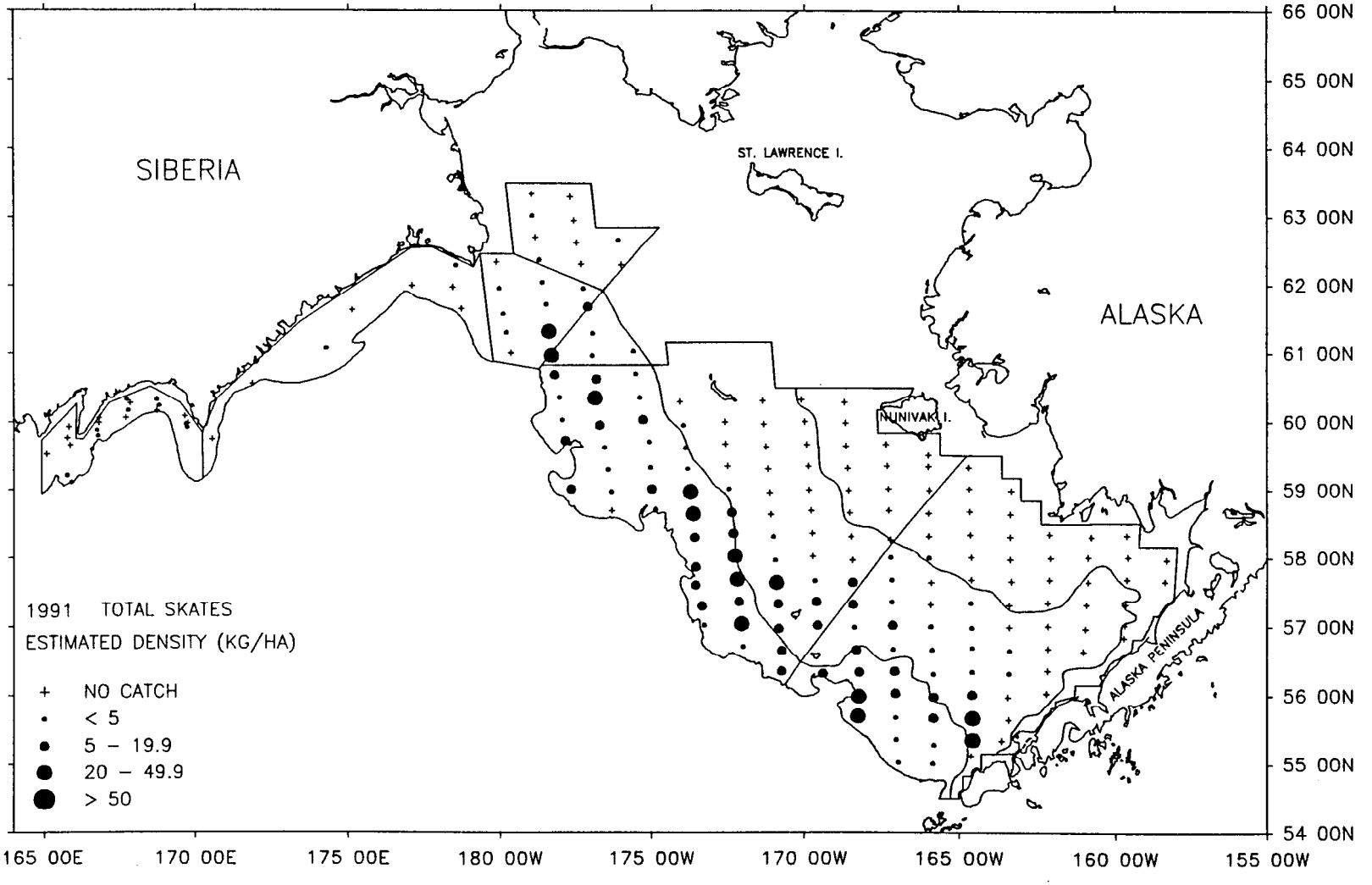

Figure 7.--Distribution and relative abundance in kg/ha of total skates sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

(Table 4). The Alaska skate (Bathyaja parmifera) was the most frequently encountered member of this group with an overall CPUE of 3.7 kg/ha. The Aleutian skate (B. aleutica) and big skate (Raja binoculata) were only found in the standard U.S. area, while the Bering skate (B. interrupta) was caught in both the standard U.S. area and the western area.

Cottidae (sculpins)

Sculpins were broadly distributed throughout the survey area (Fig. 8). This was the most diverse group with 20 species of sculpins identified (Table 4), but it accounted for only 2.4% of the total fish biomass (Table 5). Although catch rates of sculpins were highest in Subarea 15, 71% of the biomass occurred in the standard U.S. shelf area. Members of the genus Myoxocephalus were the major component of this group, accounting for 49% of the overall sculpin biomass.

Other Species

Thirty-seven other species from 12 additional families were also identified during the survey (Table 4). The combined biomass of these species was approximately 200,000 t or 2.7% of the total fish biomass (Table 5). The dominant families were Clupeidae (Pacific herring was the only species identified; 189,000 t or 2.2%), Zoarcidae (total eelpouts; 17,550 t or 0.2%), Cyclopteridae (total snailfishes; 6,600 t or 0.08%), Osmeridae (total smelts; 5,900 t or 0.07%); and Agonidae (total poachers;

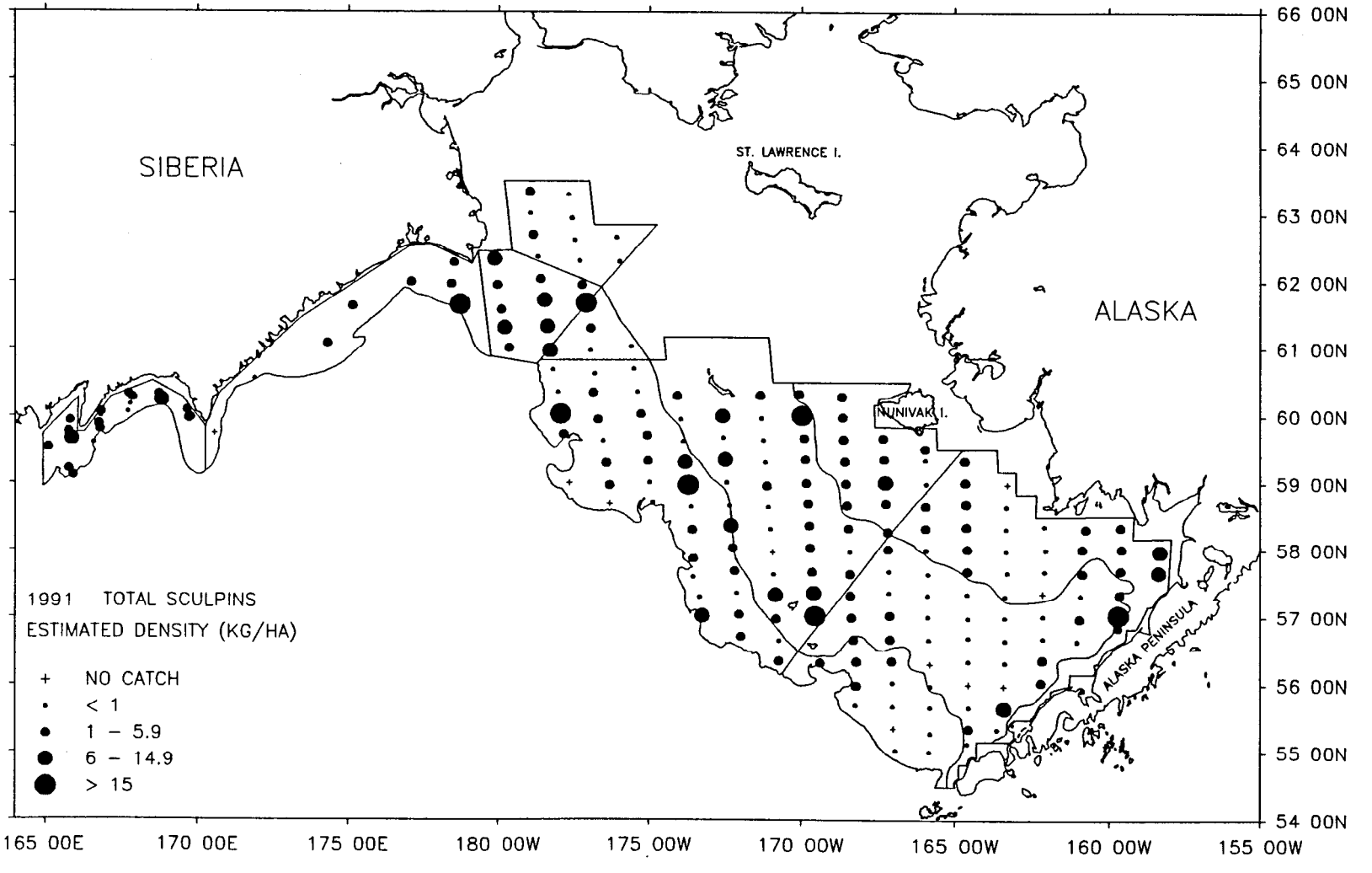

Figure 8.--Distribution and relative abundance in kg/ha of total sculpins sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

5,500 t or 0.07%). The distribution and relative abundance of Pacific herring, total eelpouts, total snailfishes, total smelts, and total poachers are presented in Figures 9-13.

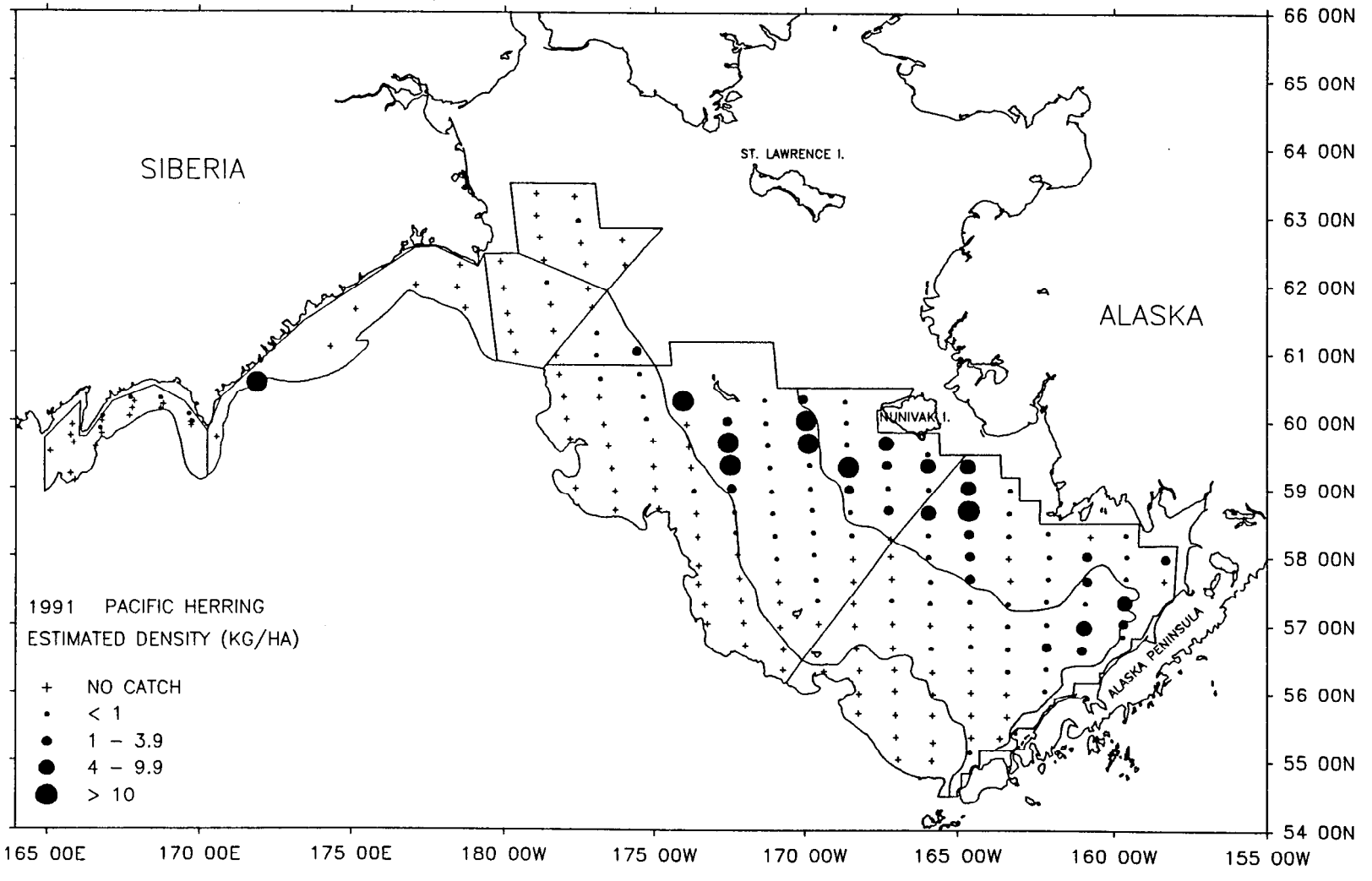

Figure 9.--Distribution and relative abundance in kg/ha of Pacific herring sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

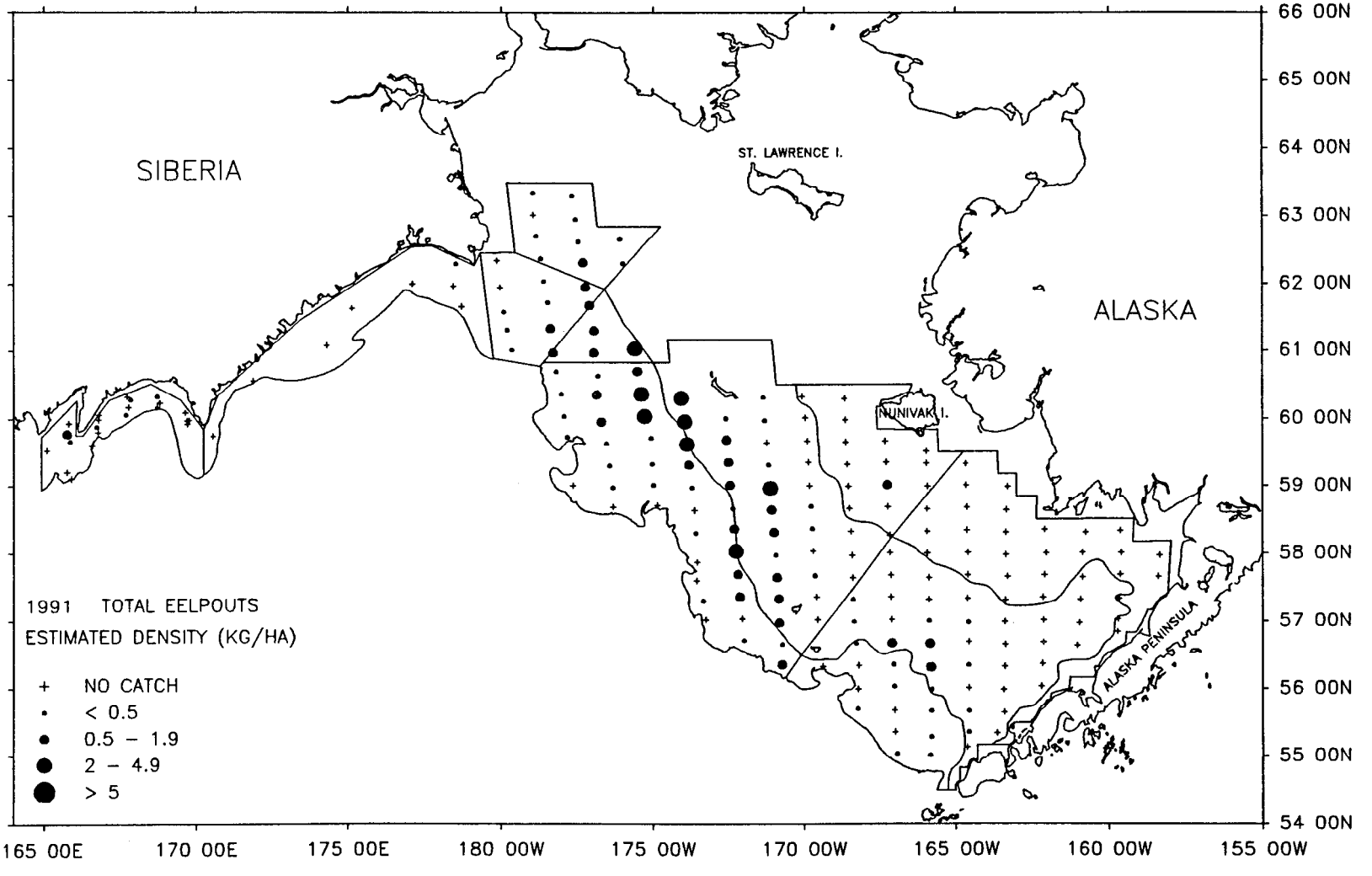

Figure 10. --Distribution and relative abundance in kg/ha of total eelpouts sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

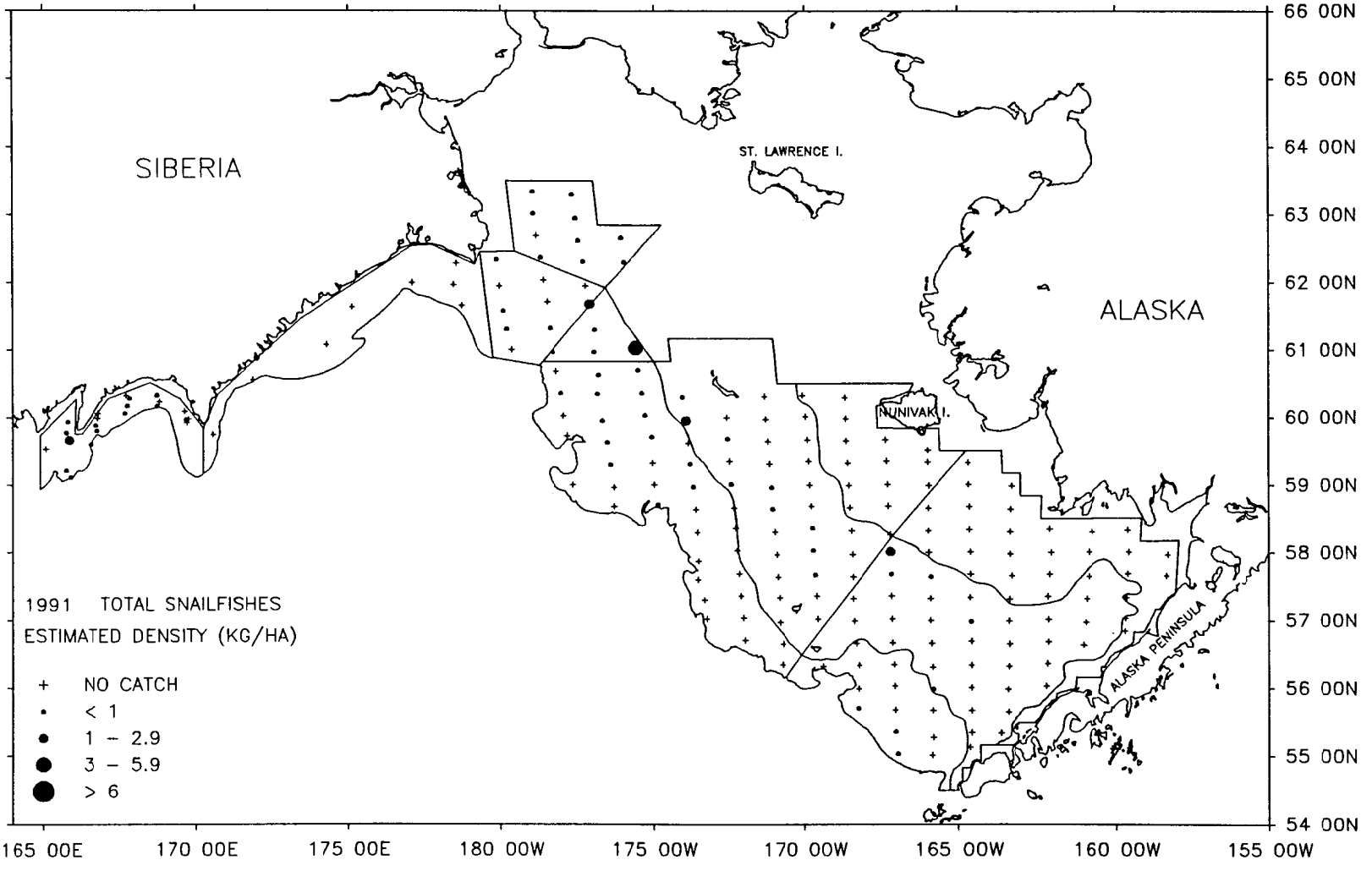

Figure 11.--Distribution and relative abundance in kg/ha of total snailfishes sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

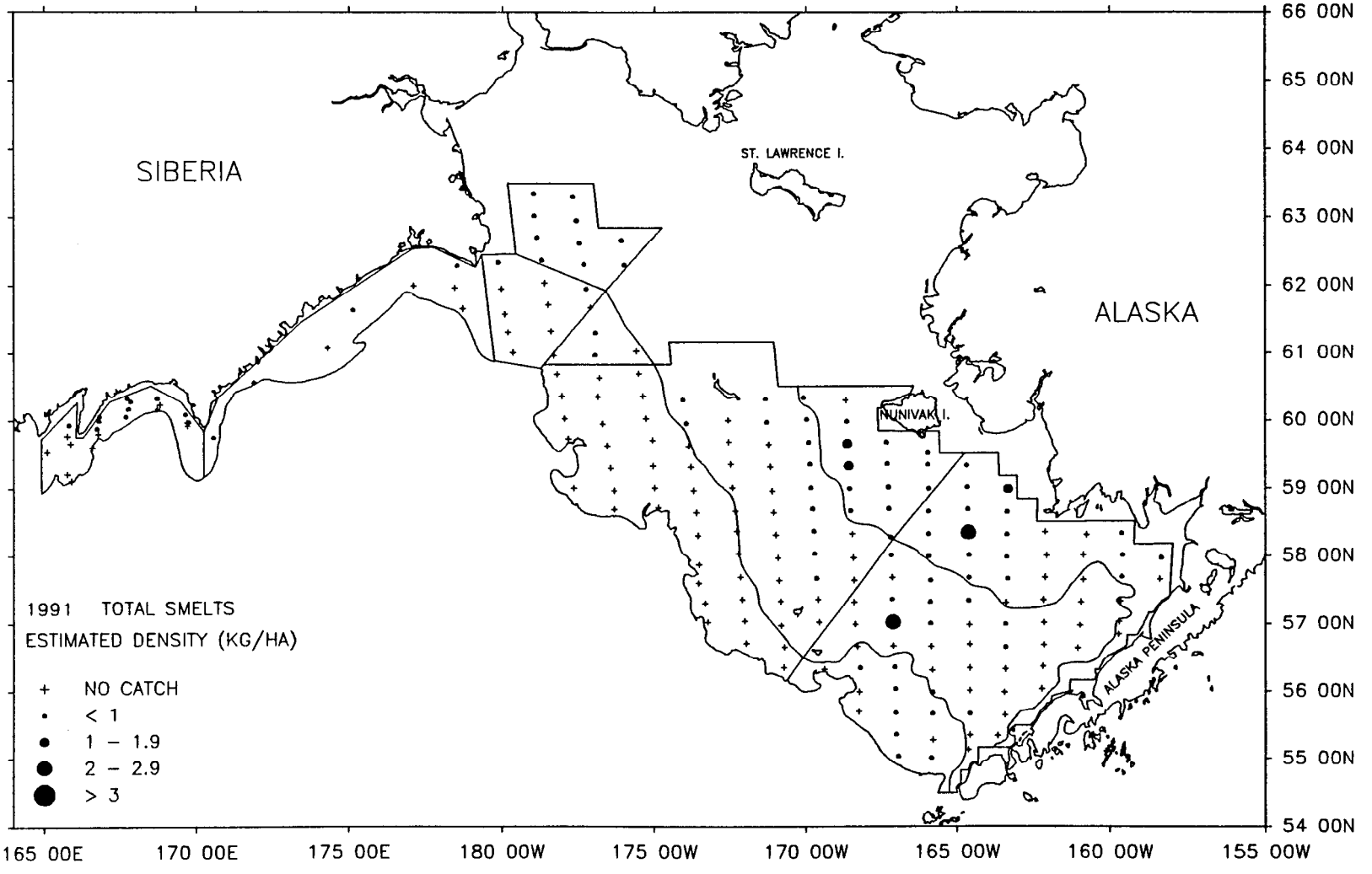

Figure 12. --Distribution and relative abundance in kg/ha of total smelts sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

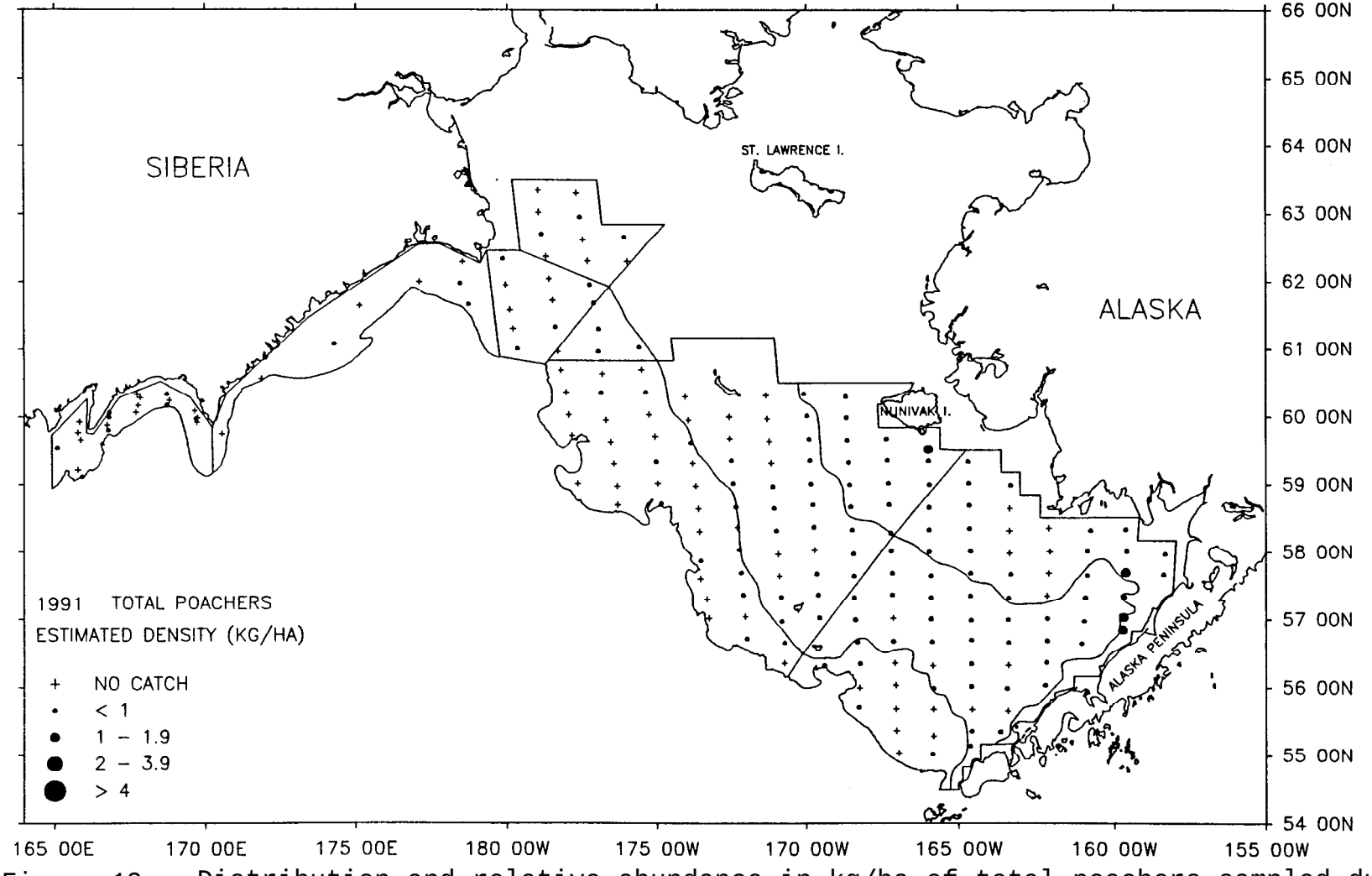

Figure 13. --Distribution and relative abundance in kg/ha of total poachers sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Abundance, Distribution, and Size Composition of Principal Fish Species

Walleye pollock

Distribution and abundance--Walleye pollock was the most frequently encountered fish species in the survey and it occurred in nearly all of the hauls (Fig. 14). Pollock also had the highest overall mean catch rate of any fish species at 65.7 kg/ha (Table 7). The mean catch rate was slightly higher in the western shelf area (69.4 kg/ha) than in the standard U.S. shelf area (66.3 kg/ha). Pollock were found at low levels of abundance in the north shelf area, averaging 9.0 kg/ha. Catch rates were highest in Subarea 6 (173.0 kg/ha), followed by Subarea 16 (129.8 kg/ha), Subarea 3 (67.4 kg/ha), and Subarea 17 (62.1 kg/ha). Catch rates were lowest in Subarea 14 (0.9 kg/ha) and Subarea 2 (6.3 kg/ha).

The total biomass of pollock was estimated at approximately 3.9 million t and accounted for nearly 49% of the estimated biomass of all fish combined. Approximately 3.0 million t or 79% of the pollock biomass was in the standard U.S. shelf area. The western shelf accounted for 780,000 t (20%) while the north shelf contributed 0.3% of the total biomass. Nearly 42% of the total biomass was in Subarea 6.

The total number of pollock was estimated at over 9.1 billion fish, with 84% in the standard U.S. shelf area. Approximately 50% of the entire population was in Subarea 6.

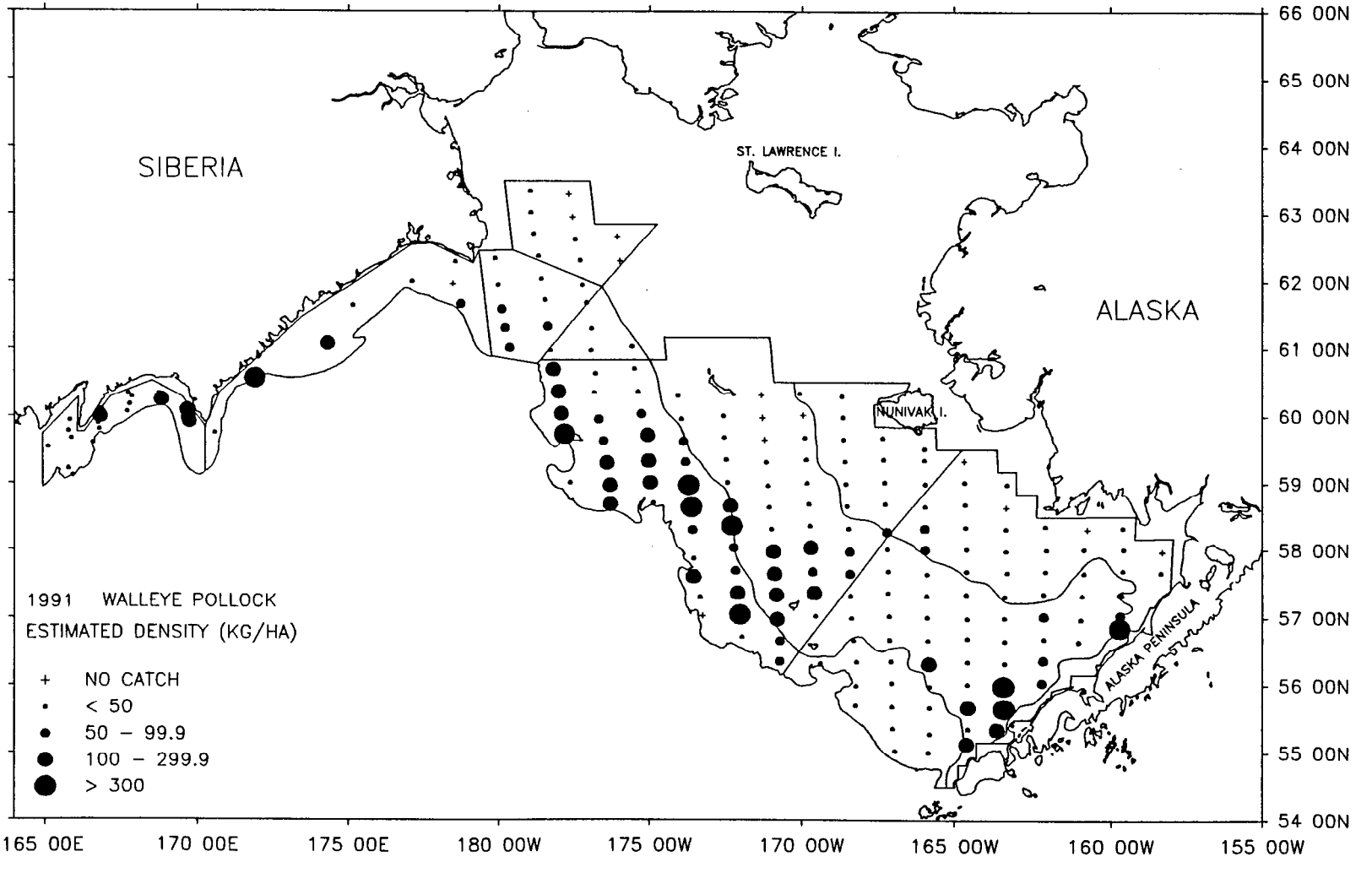

Figure 14.--Distribution and relative abundance in kg/ha of walleye pollock sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 7. --Abundance estimates and mean size of walleye pollock by subarea from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	24.63	191,777	0.050	159,358,240	0.017	1.203	53.0
2	< 50	6.31	25,888	0.007	22,847,699	0.003	1.133	39.4
3	50 - 100	67.35	695,722	0.180	1,782,044,730	0.195	0.390	28.1
4	50 - 100	43.37	467,626	0.121	961,819,507	0.105	0.486	31.9
5	100 - 200	13.72	53,221	0.014	131,832,628	0.014	0.404	33.9
6	100 - 200	173.02	1,636,079	0.423	4,579,419,227	0.501	0.357	31.6
Subareas combined		66.26	3,070,313	0.794	7,637,322,031	0.836	0.402	31.3
North shelf								
9	100 - 200	9.01	10,426	0.003	24,501,391	0.003	0.426	42.1
Western shelf								
14	< 100	0.86	2,264	0.001	26,164,001	0.003	0.087	-
15	100 - 200	48.50	124,384	0.032	258,302,383	0.028	0.482	32.9
16	< 200	129.82	533,370	0.138	801,892,515	0.088	0.665	44.6
17	< 200	62.05	123,881	0.032	389,478,822	0.043	0.318	32.1
Subareas combined		69.41	783,898	0.203	1,475,837,721	0.162	0.531	39.0
All areas combined		65.74	3,864,638	1.000	9,137,661,143	1.000	0.423	32.6

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Size composition--Pollock measured during the survey ranged in size from 8 to 87 cm in fork length (Fig. 15). The length frequency distribution of nearly all subareas clearly showed two or more modes (Fig. 16). All subareas of the standard U.S. shelf showed distinct modes for large and small pollock. The smallest pollock (<18 cm) were abundant on the standard U.S. shelf area, especially in Subareas 2, 3, and 4. Mid-sized pollock (18 cm-30 cm) were abundant at depths greater than 100 m, less abundant at 50-100 m, and were virtually nonexistent in waters less than 50 m. Large pollock (mostly 45 cm-75 cm) were present in all subareas of the standard U.S. shelf area. The length frequency distributions of Subareas 9, 14, and 15 showed similar patterns; they all included a wide mode of small fish and a mode of large fish. The population of Subarea 16 was composed almost entirely of large fish, with a single mode of lengths centered around 45 cm. Subarea 17 had a large mode of small fish and a wide distribution of large fish.

Age composition--Fish 4 and 5 years old comprised approximately 37% of the fish population, with age-5 fish accounting for 20% of the total population (Fig. 17). All the other age groups each accounted for less than 12% of the total population. The majority of the biomass was distributed over several age groups (Fig. 18). Fish aged at 4 to 6 years old comprised approximately 43% of the biomass.

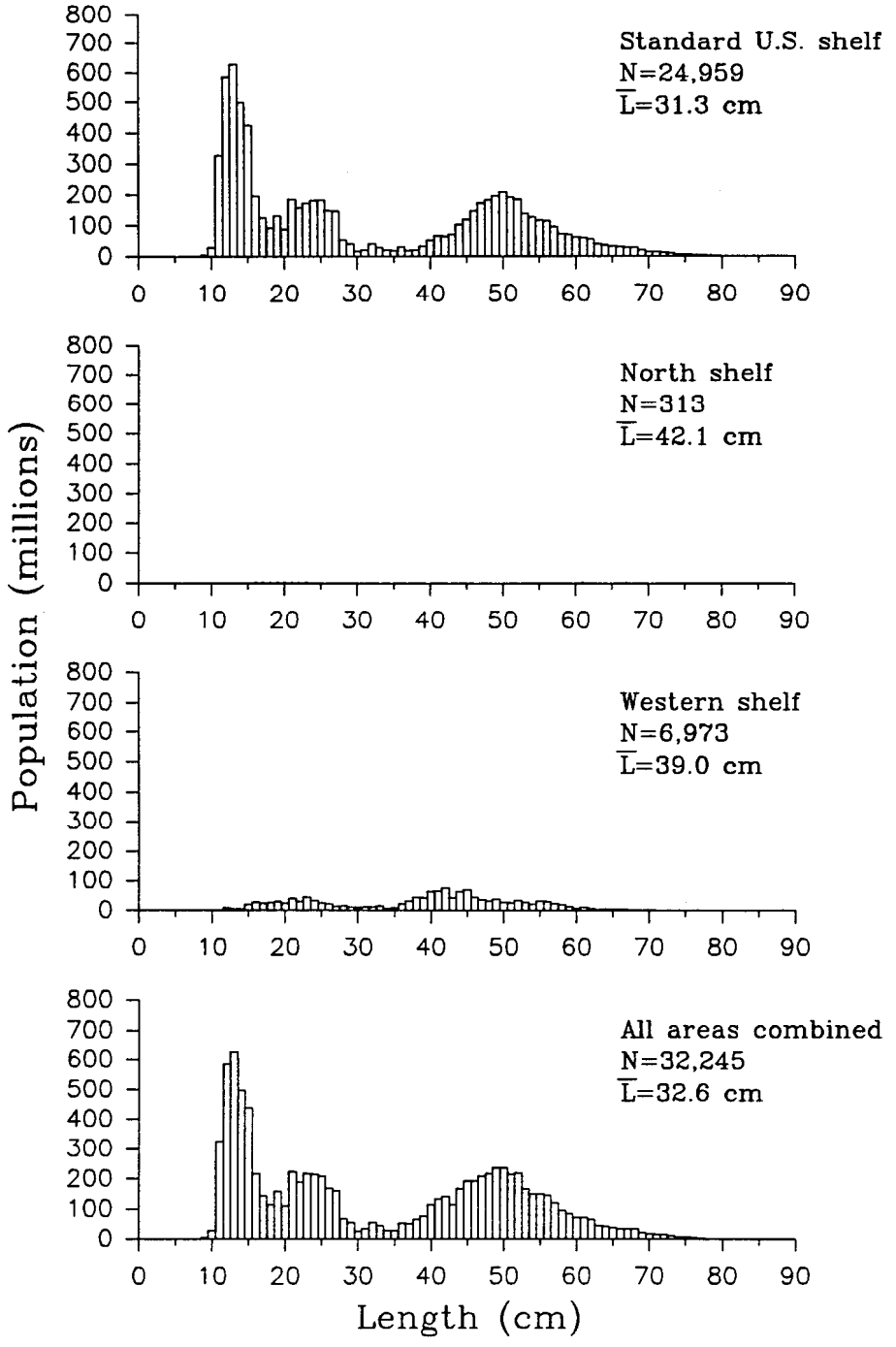

Figure 15. --Estimated size composition of walleye pollock by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

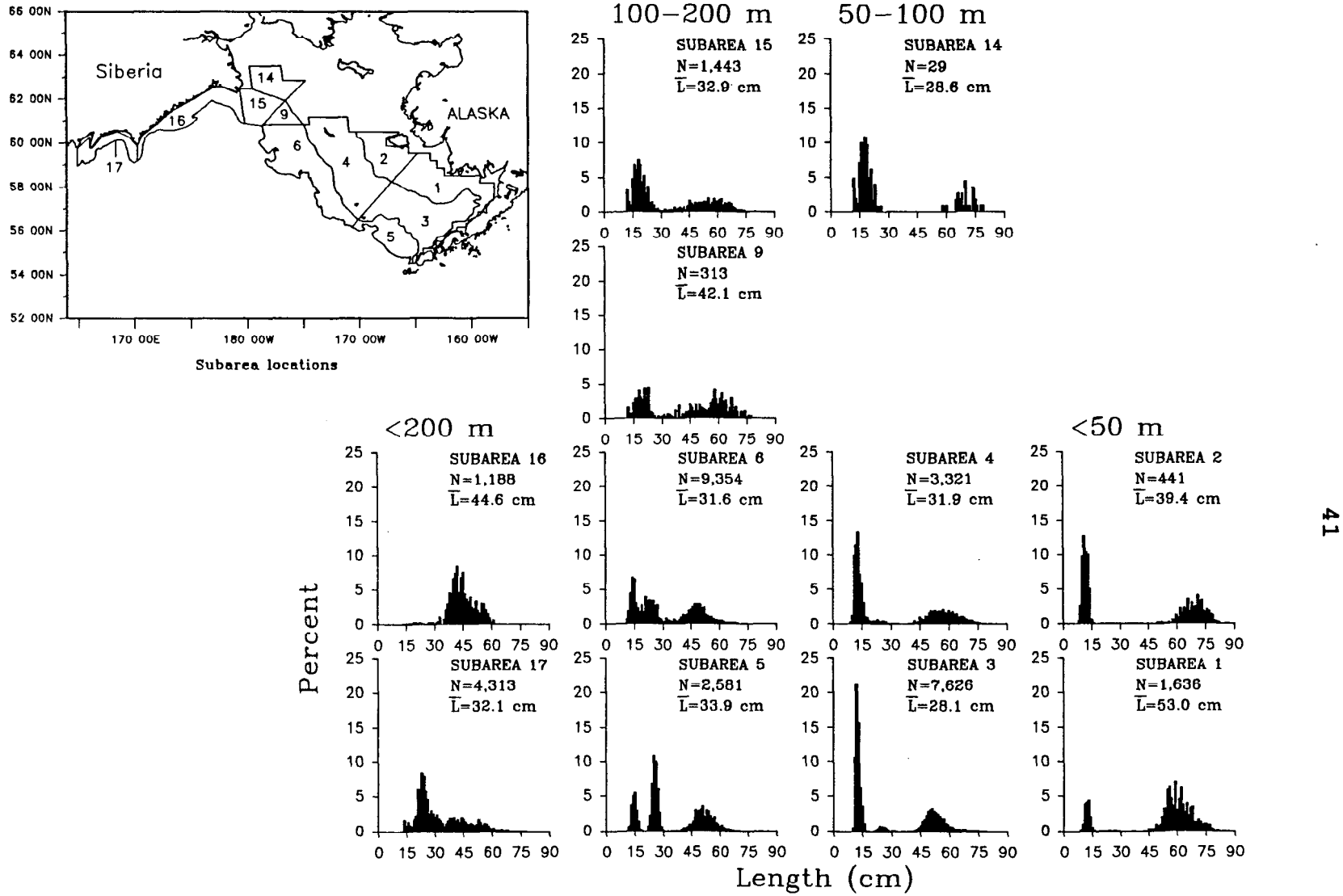

Figure 16.--Estimated relative size composition of walleye pollock (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

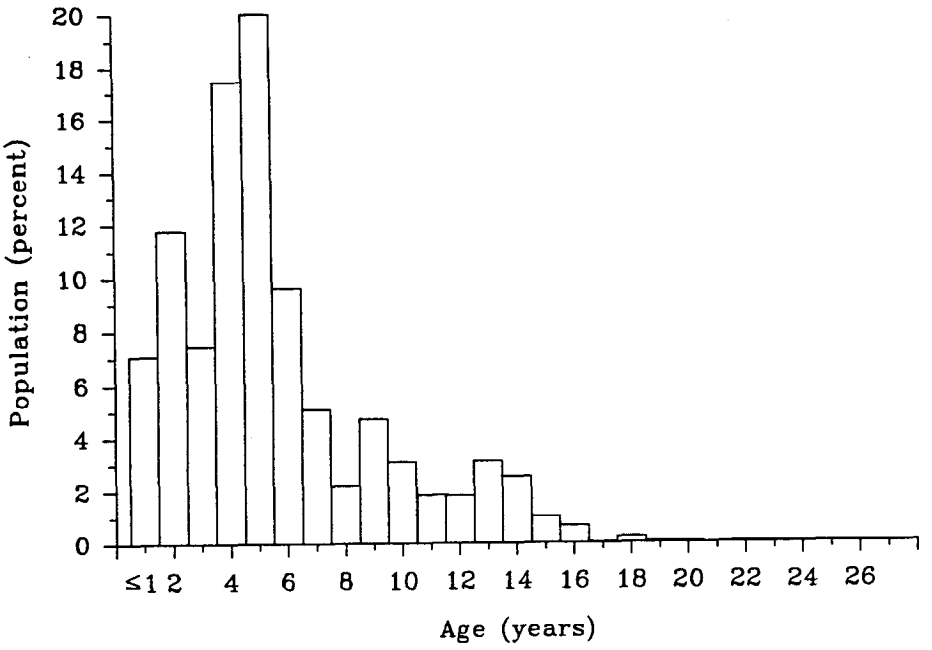

Figure 17.--Relative age composition of walleye pollock as shown by age data collected aboard the RV *Novodrutsk.*

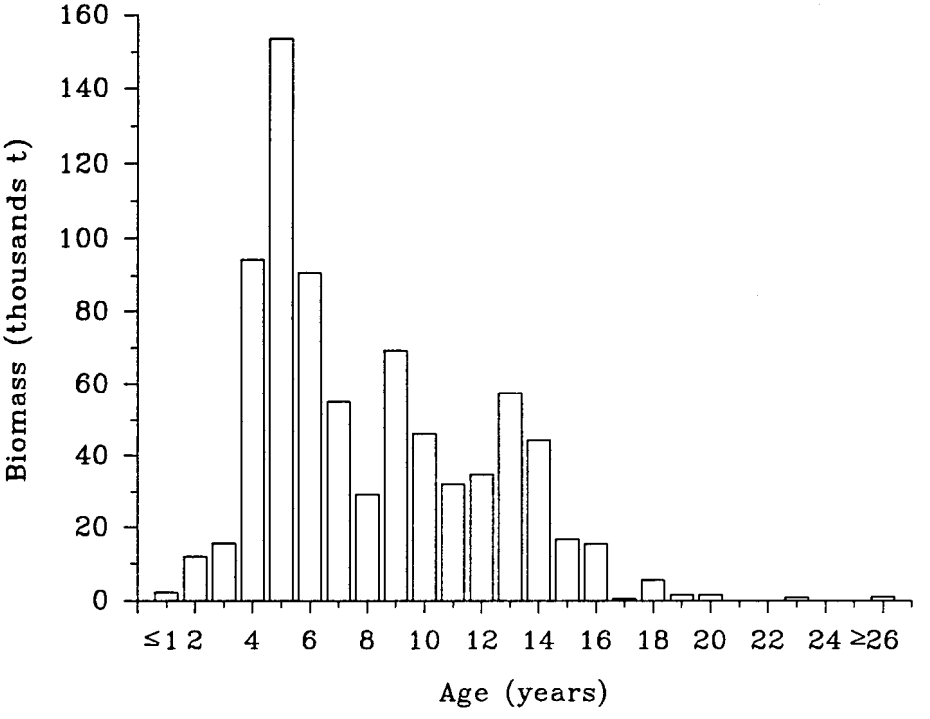

Figure 18. --Biomass estimated in metric tons (t) by age for walleye pollock as shown by age data collected aboard the RV *Novodrutsk.*

Growth--Von Bertalanffy growth curves fitted to age data for walleye pollock showed similar growth patterns between the sexes until age 11, where females were generally larger at age than males (Fig. 19). The asymptotic length was nearly 10 cm higher for females than males and the growth completion rates (K) were also different (Table 8).

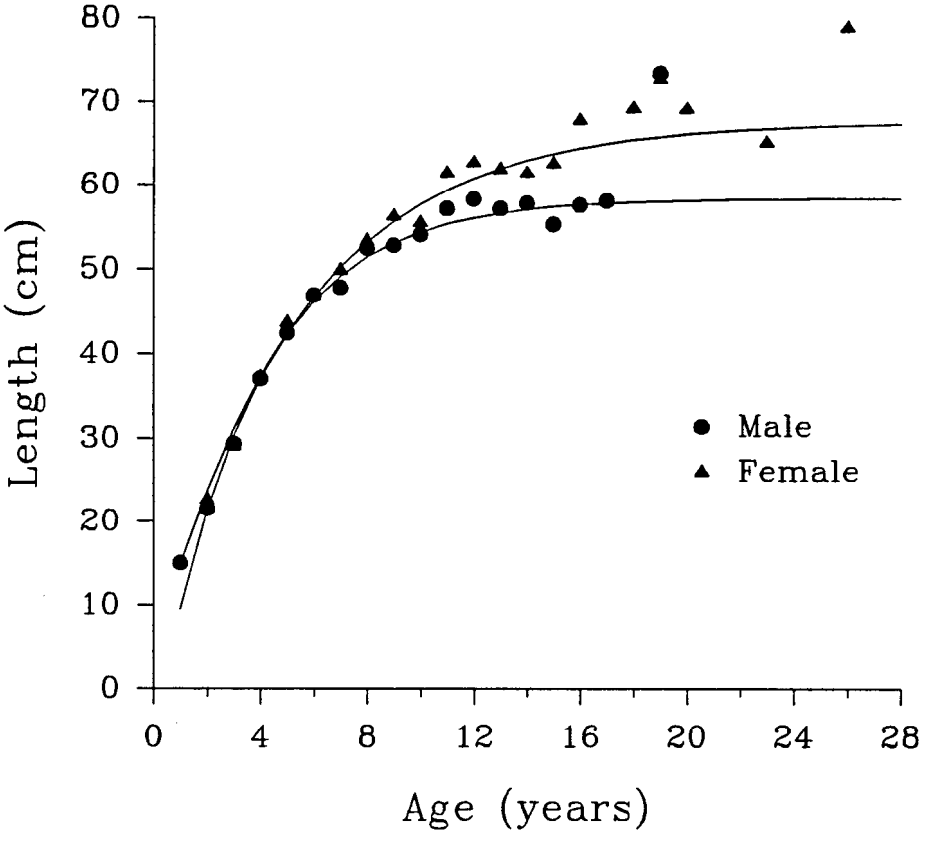

Figure 19.--Von Bertalanffy growth curves and mean lengths at age for male and female walleye pollock as shown by age data collected aboard the RV *Novodrutsk* during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 8.--Parameters of the von Bertalanffy growth curves for walleye pollock by sex based on age readings from otoliths and length data from the 1991 U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Sex	Number of age readings*	Age range	Length range (cm)	Parameters L_{inf}	K	t_0
Male	341	1-19	13-74	58.289	0.2792	0.3573
Female	427	1-26	13-81	67.527	0.1859	-0.3771

[a]Number for males and females includes 10 unsexed fish below 20 cm.

Pacific Cod

Distribution and abundance--Pacific cod were broadly distributed throughout the survey area (Fig. 20). They were identified in 92% of the hauls and were the second most frequently encountered fish species (Table 9). The overall mean catch rate was 16.7 kg/ha. Catch rates were highest in the north shelf area with a mean of 23.1 kg/ha and lowest in the standard U.S. shelf area at 15.5 kg/ha. The highest catch rates were in Subarea 15 (45.4 kg/ha), Subarea 6 (35.1 kg/ha), Subarea 9 (23.1 kg/ha), and Subarea 17 (21.9 kg/ha). Pacific cod were least abundant at depths less than 50 m in Subareas 1 and 2 with catch rates of 3.8 kg/ha and 2.1 kg/ha, respectively.

The total Pacific cod biomass was estimated at 980,681 t, of which 73% was in the standard U.S. shelf area. Subarea 6 accounted for 34% of the total Pacific cod biomass. The total estimated population of Pacific cod was 616 million fish, with 61% located in the standard U.S. shelf area.

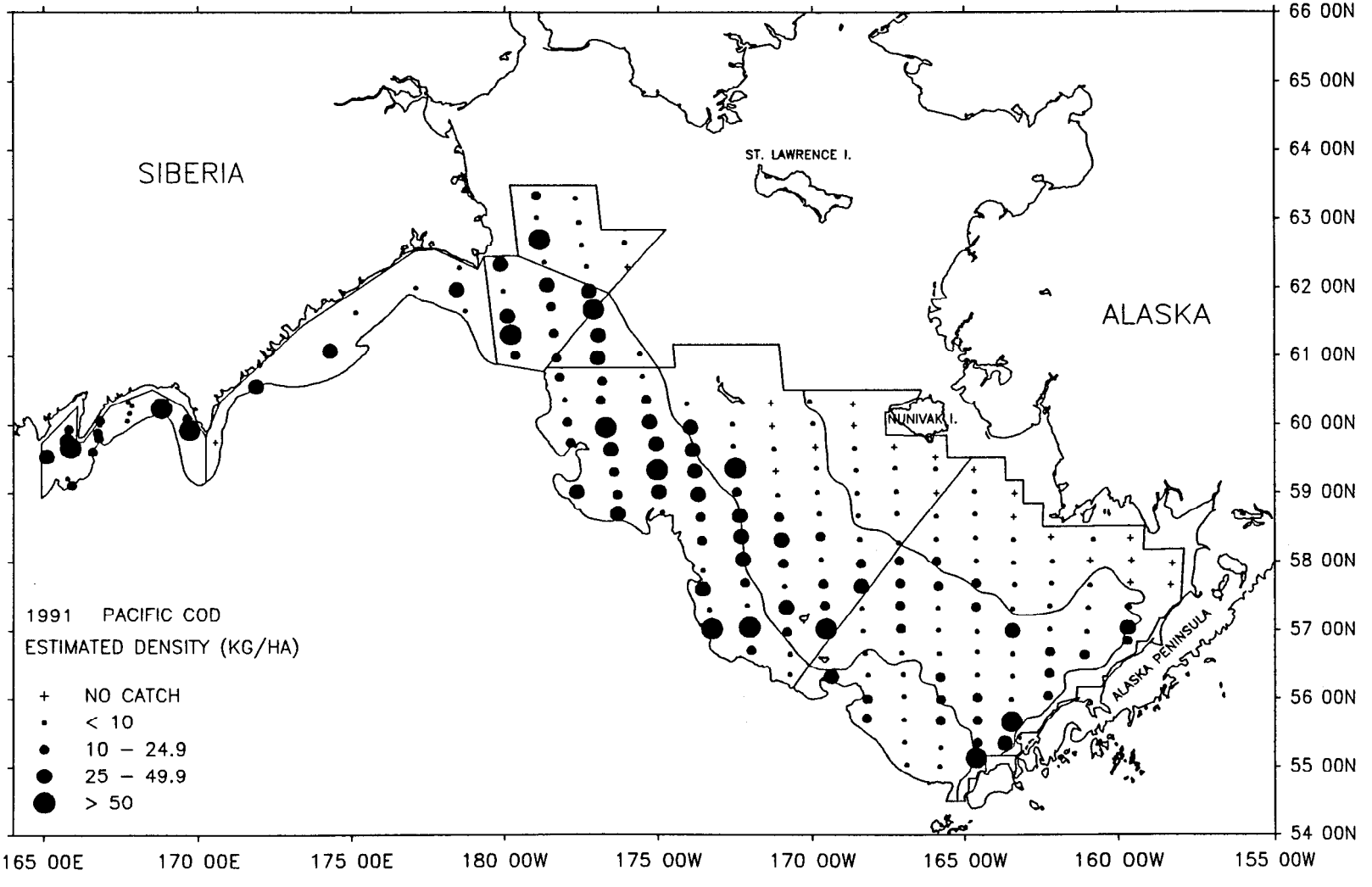

Figure 20. --Distribution and relative abundance in kg/ha of Pacific cod sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 9.--Abundance estimates and mean size of Pacific cod by subarea from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population number	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	3.76	29,268	0.030	61,915,475	0.100	0.473	28.1
2	< 50	2.06	8,456	0.009	2,159,396	0.004	-	-
3	50 - 100	14.77	152,563	0.156	80,320,546	0.130	1.899	45.5
4	50 - 100	14.60	157,419	0.161	112,740,655	0.183	1.396	41.2
5	100 - 200	9.53	36,964	0.038	13,332,477	0.022	2.772	59.0
6	100 - 200	35.11	332,009	0.339	106,308,828	0.172	3.123	58.2
Subareas combined		15.47	716,678	0.731	376,777,376	0.611	2.263	45.6
North shelf								
9	100 - 200	23.10	26,726	0.027	12,442,728	0.020	2.148	47.6
Western shelf								
14	< 100	10.11	26,520	0.027	11,054,137	0.018	2.399	53.4
15	100 - 200	45.36	116,329	0.119	152,825,954	0.248	0.761	35.6
16	< 200	12.33	50,671	0.052	26,027,362	0.042	1.947	53.9
17	< 200	21.92	43,757	0.045	37,593,880	0.061	1.164	44.2
Subareas combined		21.01	237,277	0.242	227,501,333	0.369	1.568	39.9
All areas combined		16.68	980,681	1.000	616,721,437	1.000	1.590	43.5

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Only 2% of the population was located in the north shelf area. Subarea 15 contained the highest portion of the population with an estimated 153 million individuals, approximately 25% of the Pacific cod population, but only 12% of the biomass. This was due to the high concentration of juveniles encountered in that subarea.

Size composition--Pacific cod lengths ranged from 11 to 110 cm (Fig. 21). A prominent mode around 30 cm was evident in the size composition of most subareas except 5, 6, 16, and 17 (Fig. 22). Size composition varied greatly between the subareas and mean length generally increased with depth (Fig. 22). In the standard U.S. shelf area, the modes of small fish were more abundant in the shallower subareas while larger fish were predominate in deeper waters. In Subarea 1 (<50 m in depth), modes centered around 14 cm and 29 cm comprised 89% of the population. The size compositions of Subareas 3 and 4 were similar to the size composition of Subarea 1, although there were fewer fish in the smallest size mode. Small fish in Subareas 3 and 4 represented 55% and 64% of the population, respectively. In Subareas 5 and 6 (100-200 m in depth), only 4% and 23% of the Pacific cod population, respectively, was composed of small fish.

Small Pacific cod accounted for a high percentage of the total populations in Subareas 9, 14, and 15. Eighty percent of the population in Subarea 15 was in the mode of smallest fish, while 48% of the population in Subarea 9 and 32% of the population in Subarea 14 were in the mode of smallest fish.

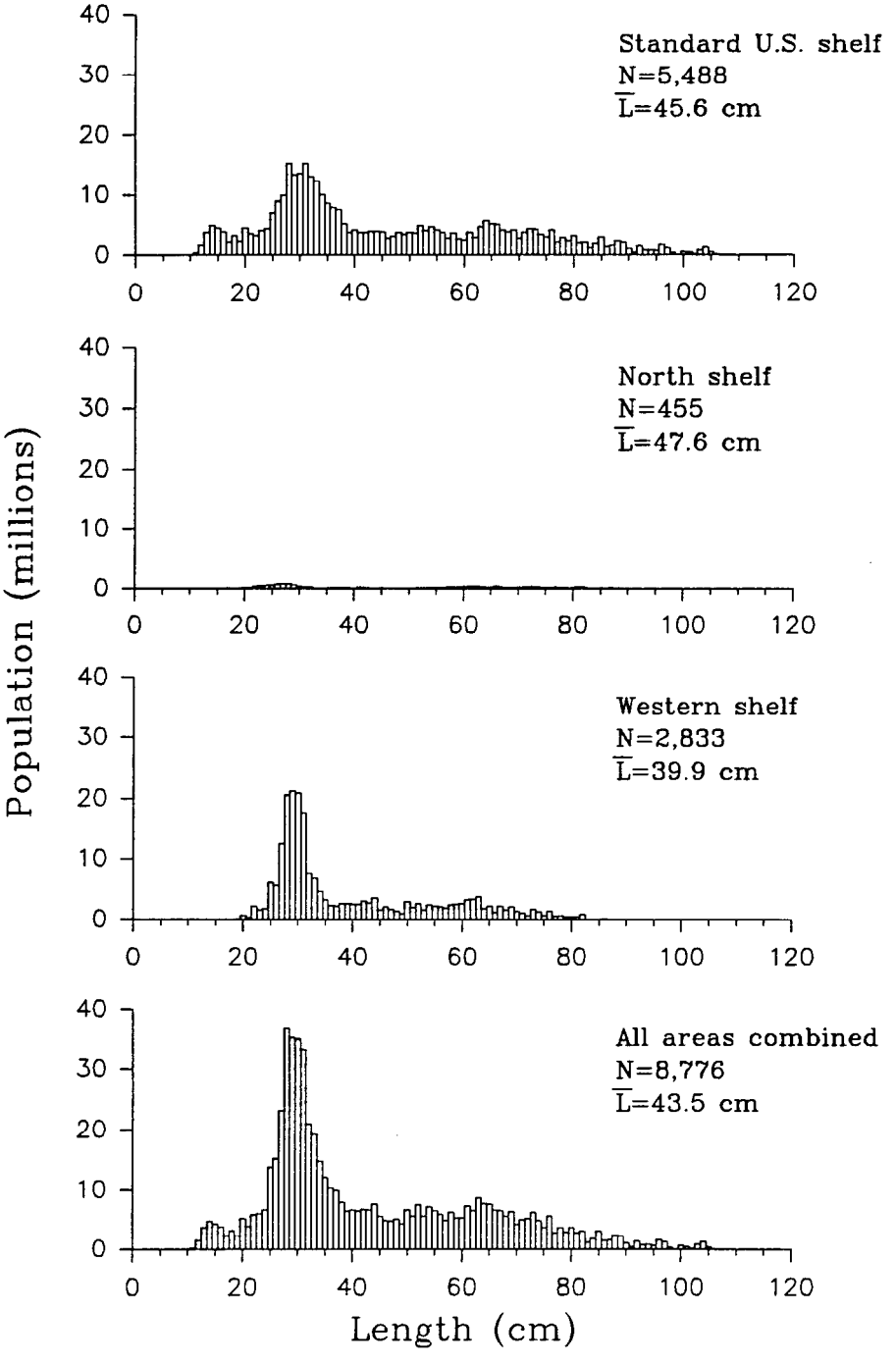

Figure 21. --Estimated size composition of Pacific cod by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

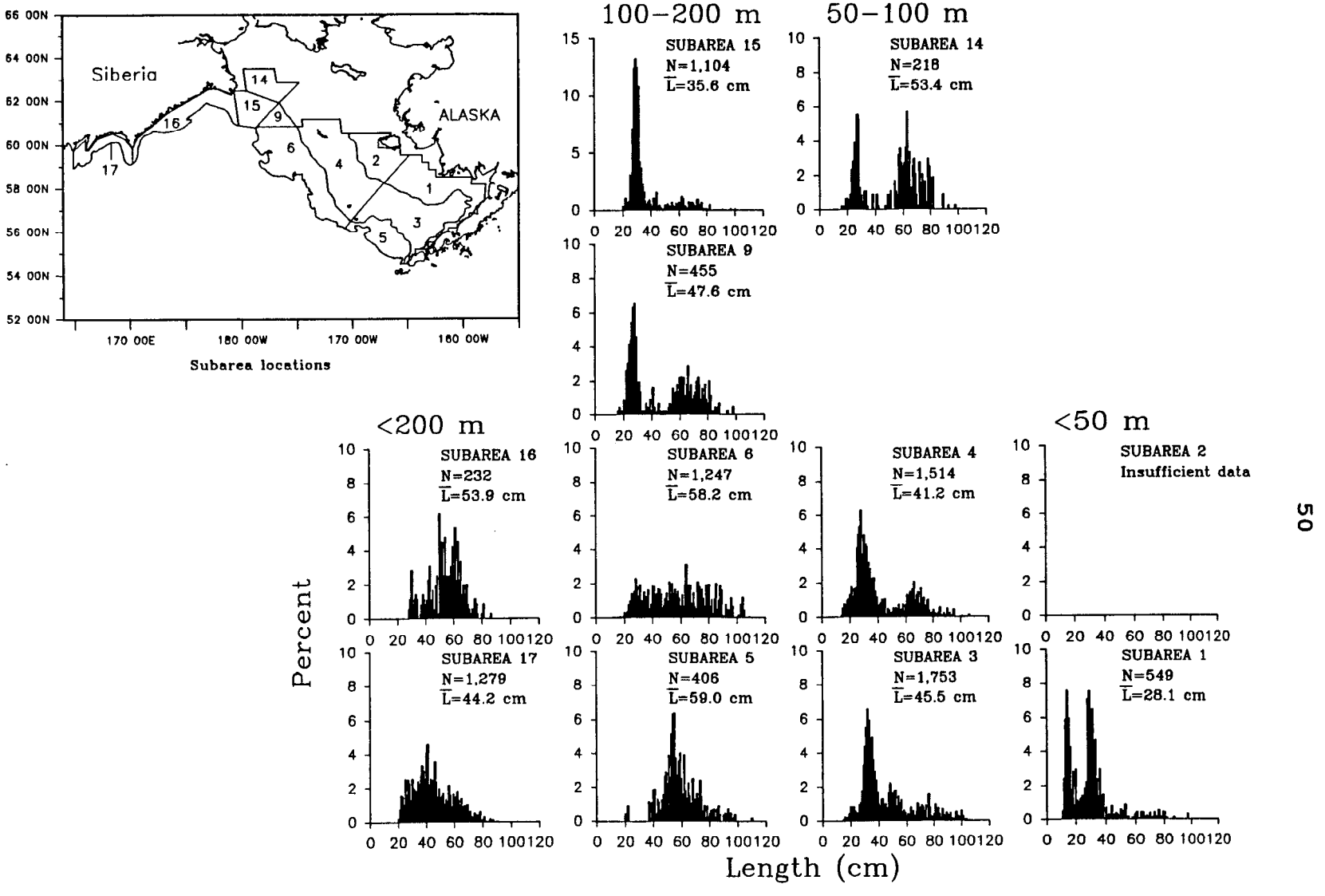

Figure 22. --Estimated relative size composition of Pacific cod (sexes combined) by subarea during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Small fish accounted for 13% of the population in Subarea 16 and 40% in Subarea 17.

Age composition--Although fish as small as 11 cm were encountered in the survey, no Pacific cod smaller than 22 cm were included in the age structure collections and they were all aged as being age 2 or older. Therefore, fish smaller than 22 cm were grouped together as ≤1 year old. Approximately one-half of the Pacific cod population was comprised of age-2 and age-3 fish (Fig. 23). All age groups over age 7 each comprised less than 5% of the population. Age groups of cod 5-9 years old comprised 60% of the total biomass, with the mode at age groups 6 and 7 (Fig. 24).

Growth--Von Bertalanffy growth curves fitted to age data for Pacific cod indicated similar growth between the sexes (Fig. 25). Growth completion rates (K) were nearly equal, although the asymptotic length was higher for females than males (Table 10).

Yellowfin sole

Distribution and abundance--Yellowfin sole were identified in 60% of the hauls and were the seventh most frequently encountered species of commercial importance. They were primarily distributed on the standard U.S. shelf at depths less than 100 m (Fig. 26). Yellowfin sole were also observed in the far western region of the survey in the Olyutorski Gulf. The overall mean CPUE for yellowfin sole was 13.7 kg/ha (Table 11). Highest catch rates were encountered in the standard U.S. shelf

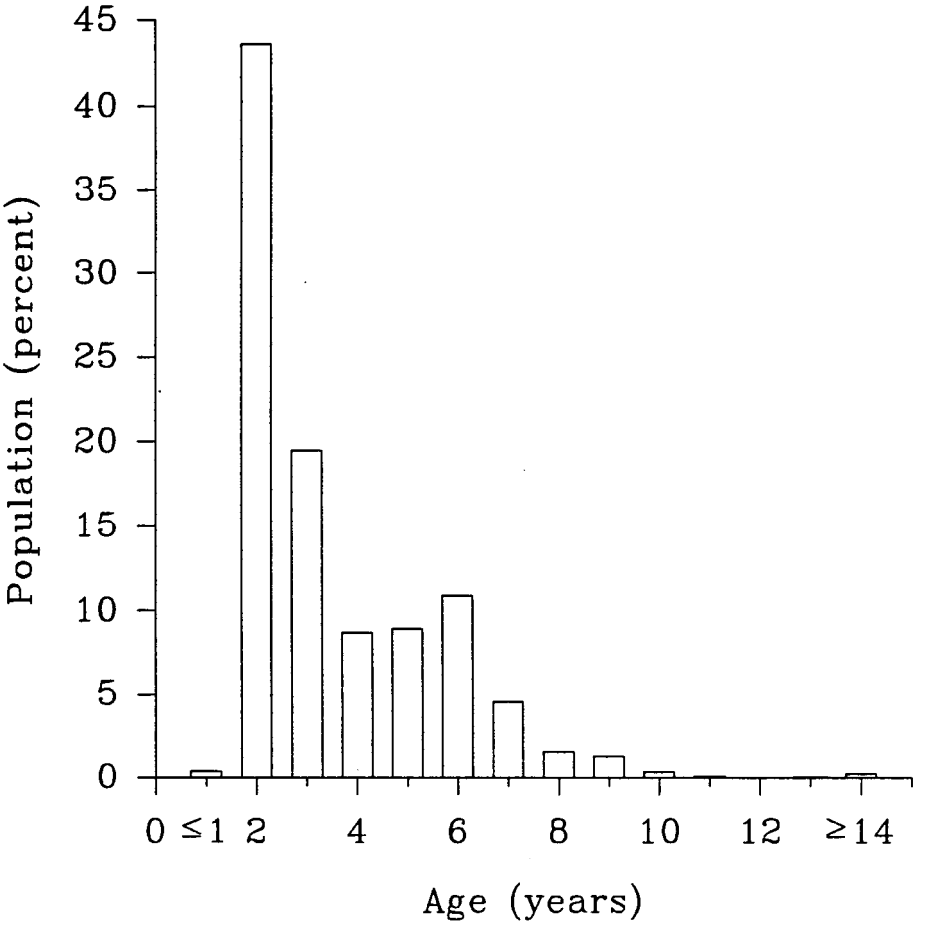

Figure 23.--Relative age composition of Pacific cod as shown by age data collected aboard the RV *Novodrutsk.*

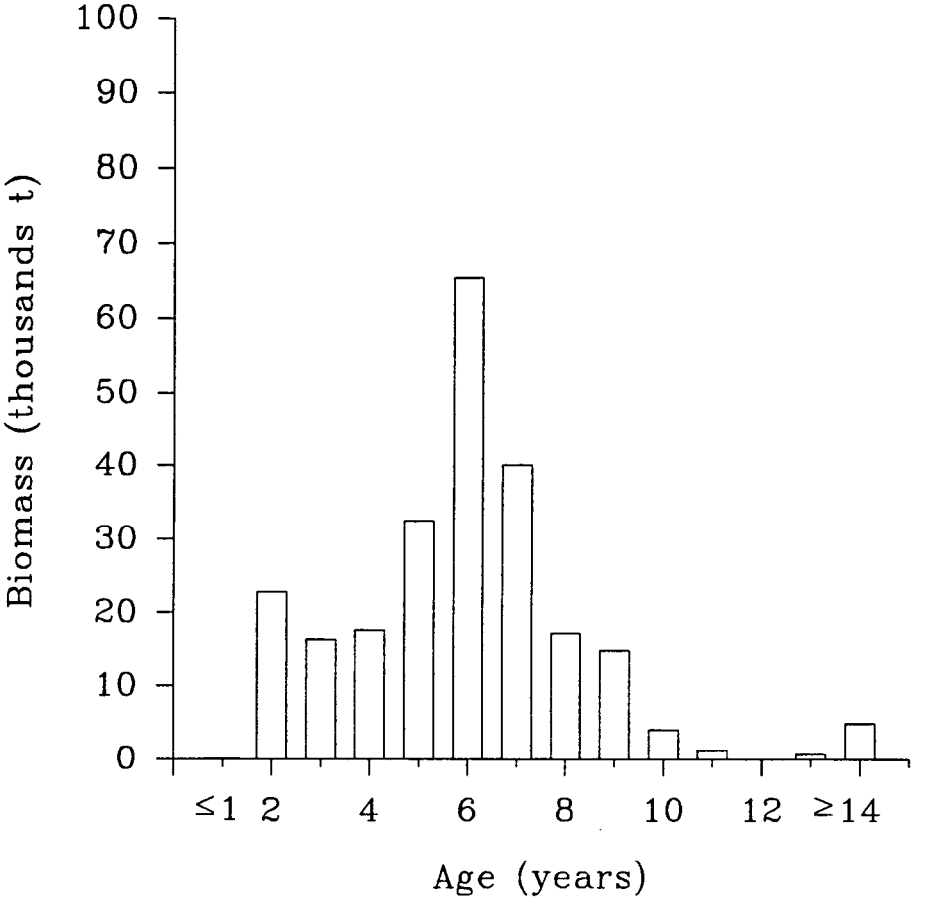

Figure 24.--Biomass in metric tons (t) estimated by age for Pacific cod as shown by age data collected aboard the RV *Novodrutsk.*

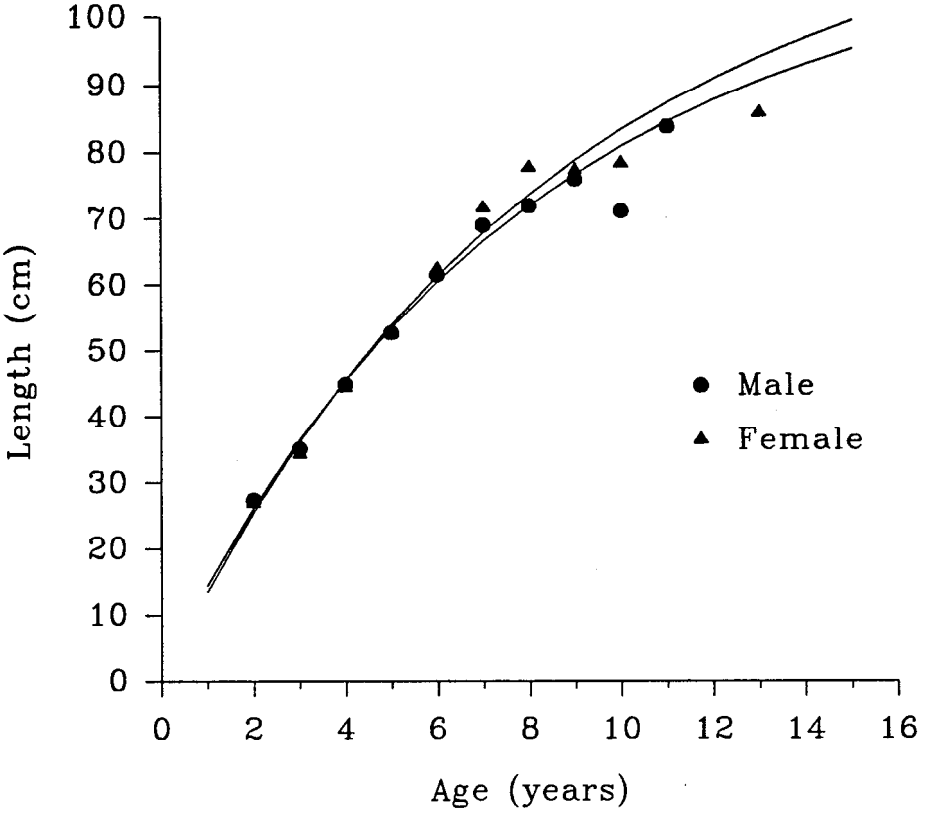

Figure 25. --Von Bertalanffy growth curves and mean lengths at age for male and female Pacific cod as shown by age data collected aboard the RV *Novodrutsk* during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 10. --Parameters of the von Bertalanffy growth curves for Pacific cod by sex based on age readings from otoliths and length data from the 1991 U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Sex	Number of age readings	Age range	Length range (cm)	Parameters		
				L_{inf}	K	t_0
Male	242	2-11	22-85	110.856	0.1294	-0.0841
Female	231	2-13	20-87	118.165	0.1220	0.0078

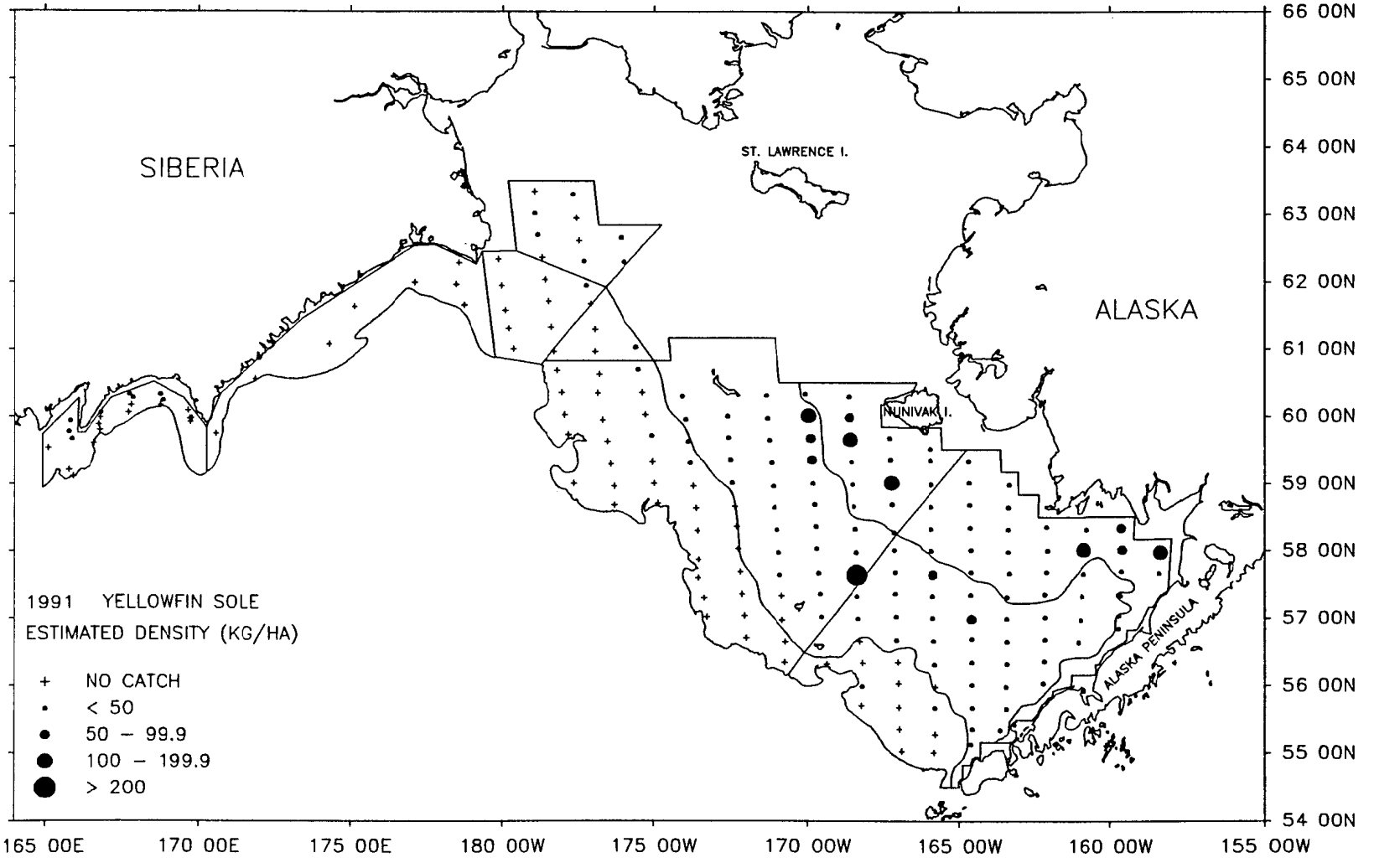

Figure 26.--Distribution and relative abundance in kg/ha of yellowfin sole sampled duri the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 11.--Abundance estimates and mean size of yellowfin sole by subarea from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	27.60	214,902	0.266	878,447,361	0.301	0.245	27.1
2	< 50	42.11	172,762	0.214	682,562,517	0.234	0.253	27.0
3	50 - 100	16.85	174,038	0.216	570,243,909	0.195	0.305	29.4
4	50 - 100	22.63	243,972	0.302	786,960,563	0.269	0.310	29.3
5	100 - 200	0.01	24	<0.001	85,425	<0.001	0.285	-
6	100 - 200	0.01	69	<0.001	269,605	<0.001	0.256	-
Subareas combined		17.39	805,767	0.998	2,918,569,379	0.999	0.276	28.1
North shelf								
9	100 - 200	0.03	34	<0.001	125,184	<0.001	0.272	-
Western shelf								
14	< 100	0.03	81	<0.001	280,669	<0.001	0.289	-
15	100 - 200	<0.01	9	<0.001	23,528	<0.001	0.363	-
16	< 200	0.00	0	0.000	0	0.000	-	-
17	< 200	0.64	1,272	0.002	3,257,803	0.001	0.390	-
Subareas combined		0.12	1,362	0.002	3,562,000	0.001	0.382	-
All areas combined		13.73	807,162	1.000	2,922,256,563	1.000	0.276	28.1

[a] Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b] - indicates no sample or insufficient data.

area with a mean CPUE of 17.4 kg/ha. Only trace catches were made in the north shelf and western shelf areas with mean CPUE values of 0.03 kg/ha and 0.1 kg/ha, respectively. The highest concentrations of yellowfin sole were in Subarea 2 with an average catch rate of 42.1 kg/ha. Yellowfin sole were also abundant in Subarea 1 (27.6 kg/ha), Subarea 4 (22.6 kg/ha), and Subarea 3 (16.9 kg/ha). Catch rates in all other subareas were less than 1 kg/ha.

The total biomass of yellowfin sole was estimated at 807,162 t, of which 99.8% was in subareas 1 through 4. The total population of yellowfin sole was estimated at 2.9 billion fish.

Size composition--Yellowfin sole were only measured in the U.S. standard shelf area. No length data were recorded in the north shelf or western shelf areas where they occurred in trace amounts. Yellowfin sole ranged in length from 10 to 45 cm, but 94% of the population was between 20 and 40 cm in length (Figs. 27 and 28).

Ninety-nine percent of the small yellowfin sole (119 cm) were in waters of less than 50 m in Subareas 1 and 2. Mid-sized yellowfin sole, ranging from 20 to 29 cm, were the most abundant size group in each subarea and accounted for 54% of the total population. They were most abundant in Subarea 2, where they comprised 69% of the population. Fish longer than 29 cm represented significant portions of the populations in Subarea 3 (48%) t Subarea 4 (45%), Subarea 1 (43%), and a smaller portion of the population in Subarea 2 (26%).

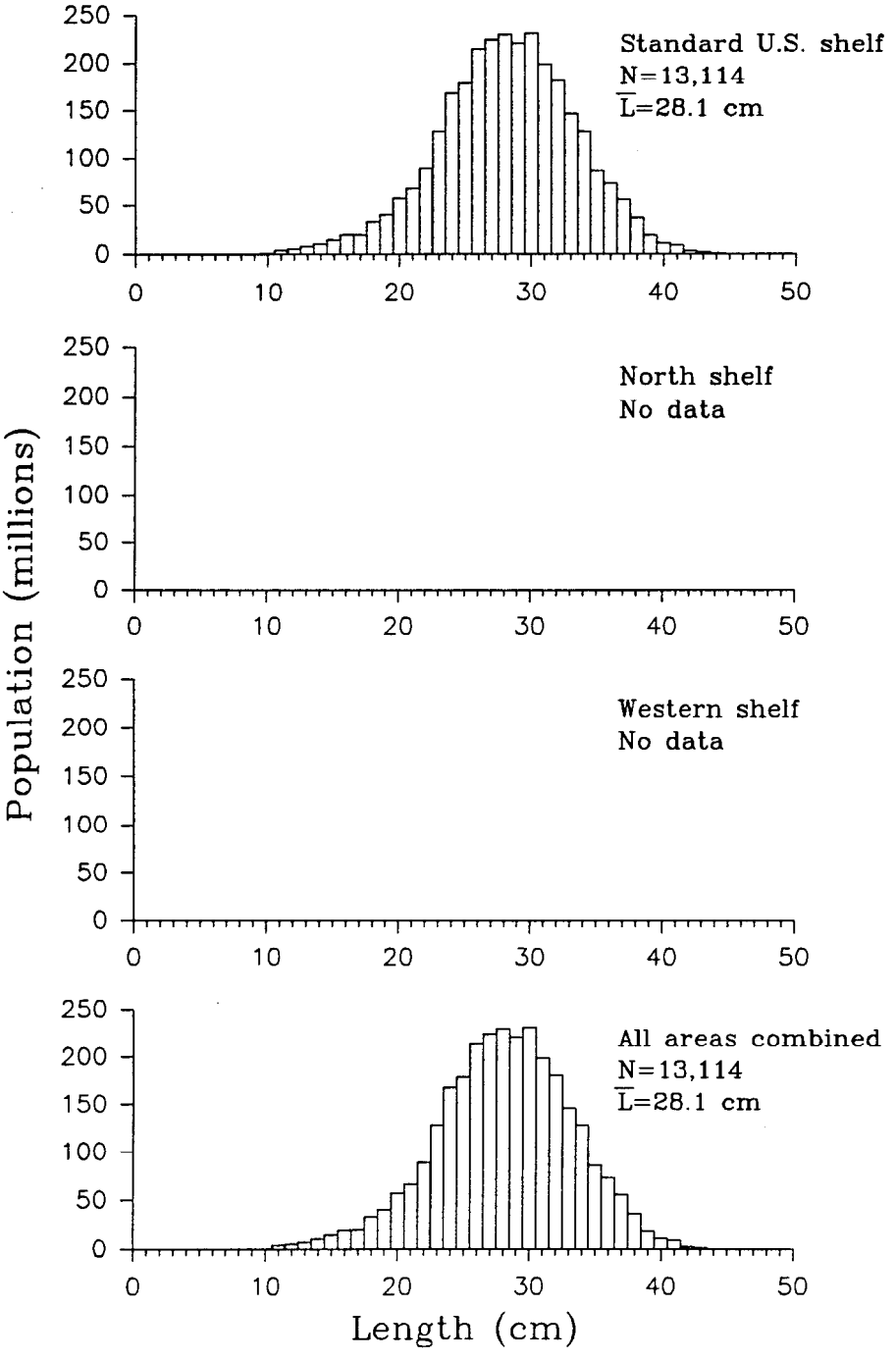

Figure 27.--Estimated size composition of yellowfin sole by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

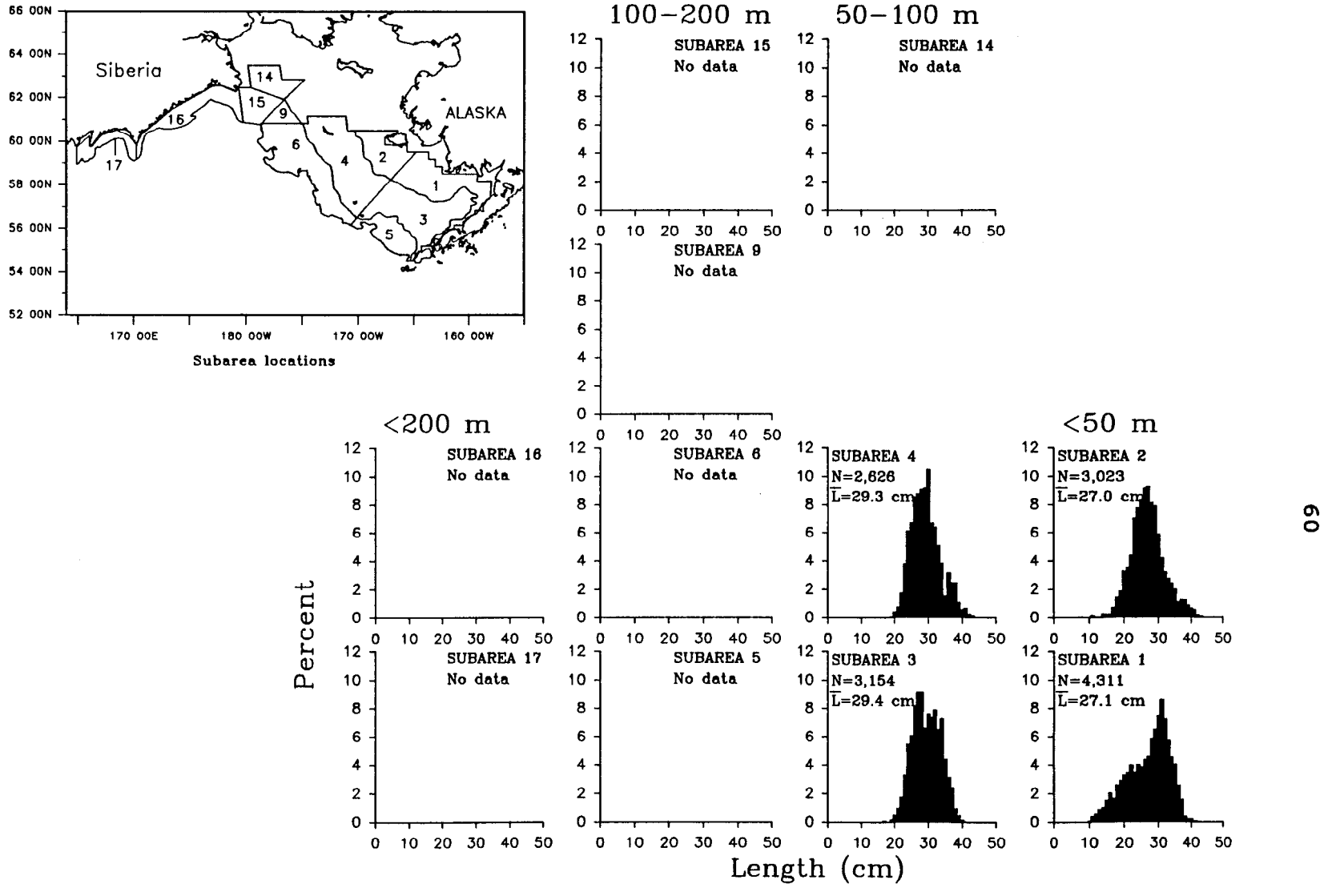

Figure 28.--Estimated relative size composition of yellowfin sole (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Rock sole

Distribution and abundance--Although rock sole were found in all subareas, the highest concentrations were observed in Bristol Bay and throughout the central portion of the eastern Bering Sea (Fig. 29). Rock sole were identified in 79% of the hauls. The overall mean CPUE value was 13.6 kg/ha (Table 12). Catch rates were highest in the standard U.S. shelf area with a mean CPUE of 17.1 kg/ha. They were encountered in trace amounts in the north shelf (0.12 kg/ha) and western shelf (0.67 kg/ha) areas. Rock sole were most abundant at depths less than 100 m, with highest concentrations occurring in subarea 1 with a mean CPUE of 34.5 kg/ha.

The total estimated biomass of rock sole was 799,855 t. Ninety-nine percent of the overall biomass occurred in the standard U.S. shelf area, 89% of which occurred in the combined Subareas of 1, 3, and 4. The total population was estimated at 3.7 billion fish, with 51% or 1.9 billion fish located in Subarea 1.

Size composition--Rock sole ranged in length from 8 to 50 cm (Fig. 30). Length measurements were collected from the standard U.S. shelf area but were not recorded from the north shelf or western shelf areas where less than 1% of the population occurred. Smaller rock sole (119 cm) were most abundant in the shallowest subareas, especially in Subarea 1, where they comprised 46% of the population (Fig. 31). Seventy-seven percent of all fish less than 20 cm were in Subarea 1. Their portion of

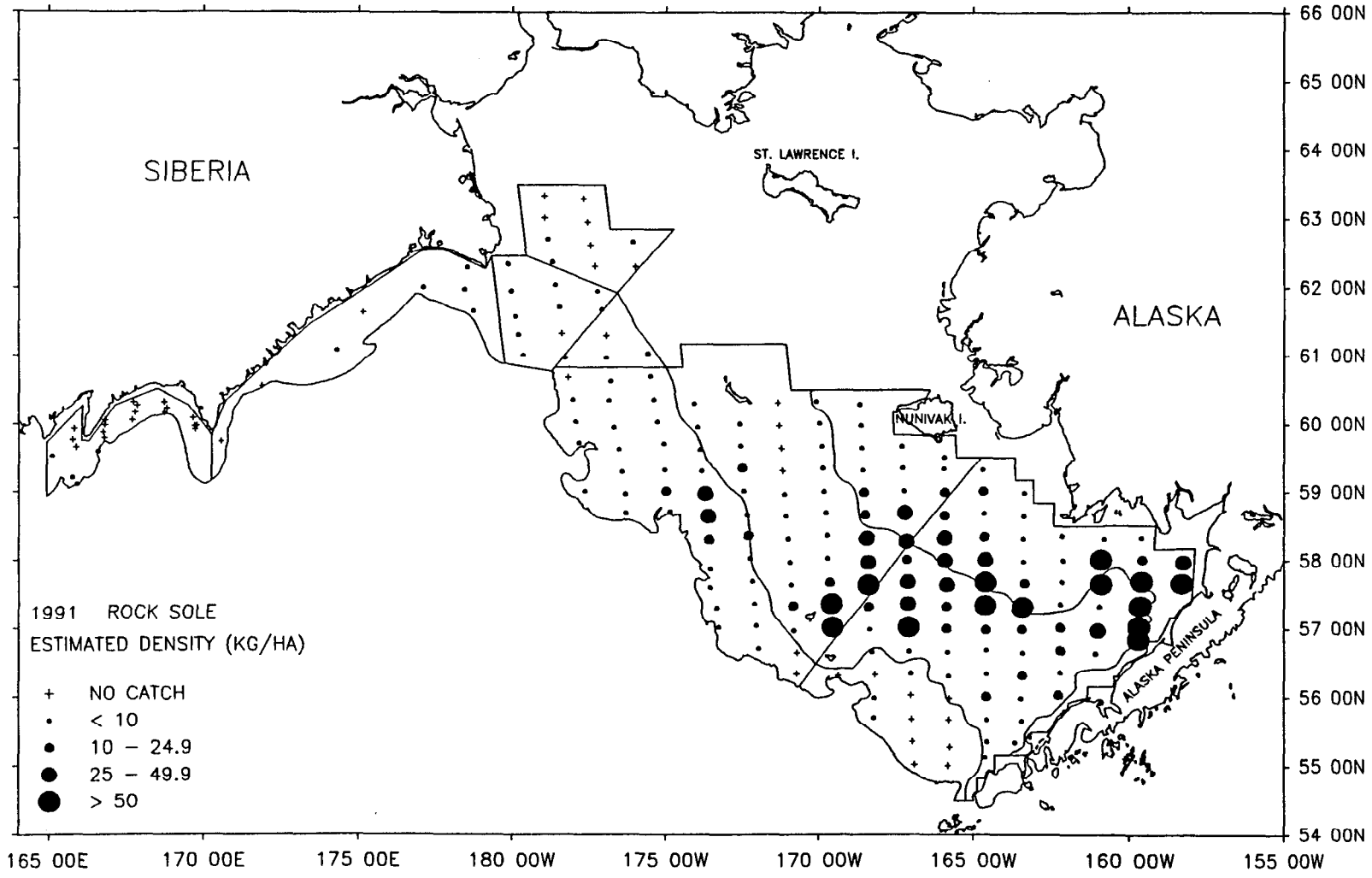

Figure 29. --Distribution and relative abundance in kg/ha of rock sole sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 12.--Abundance estimates and mean size of rock sole by subarea from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size: Weight (kg)	Mean size: Length (cm)
Standard U.S. shelf								
1	< 50	34.54	268,966	0.336	1,919,448,574	0.514	0.140	22.0
2	< 50	8.58	35,207	0.044	127,113,680	0.034	0.277	27.0
3	50 - 100	16.34	168,792	0.211	789,212,968	0.211	0.214	26.0
4	50 - 100	25.12	270,828	0.339	779,031,181	0.209	0.348	29.4
5	100 - 200	0.12	482	0.001	1,083,050	<0.001	0.445	-
6	100 - 200	5.06	47,859	0.060	104,103,389	0.028	0.460	33.8
Subareas combined		17.09	792,135	0.990	3,719,992,843	0.996	0.213	24.9
North shelf								
9	100 - 200	0.12	142	<0.001	287,934	<0.001	0.493	-
Western shelf								
14	< 100	0.03	89	<0.001	163,796	<0.001	0.541	-
15	100 - 200	0.81	2,077	0.003	4,086,651	0.001	0.508	-
16	< 200	1.27	5,236	0.007	11,505,207	0.003	0.455	-
17	< 200	0.09	177	<0.001	280,082	<0.001	0.633	-
Subareas combined		0.67	7,579	0.009	16,035,737	0.004	0.473	-
All areas combined		13.61	799,855	1.000	3,736,316,513	1.000	0.214	24.9

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

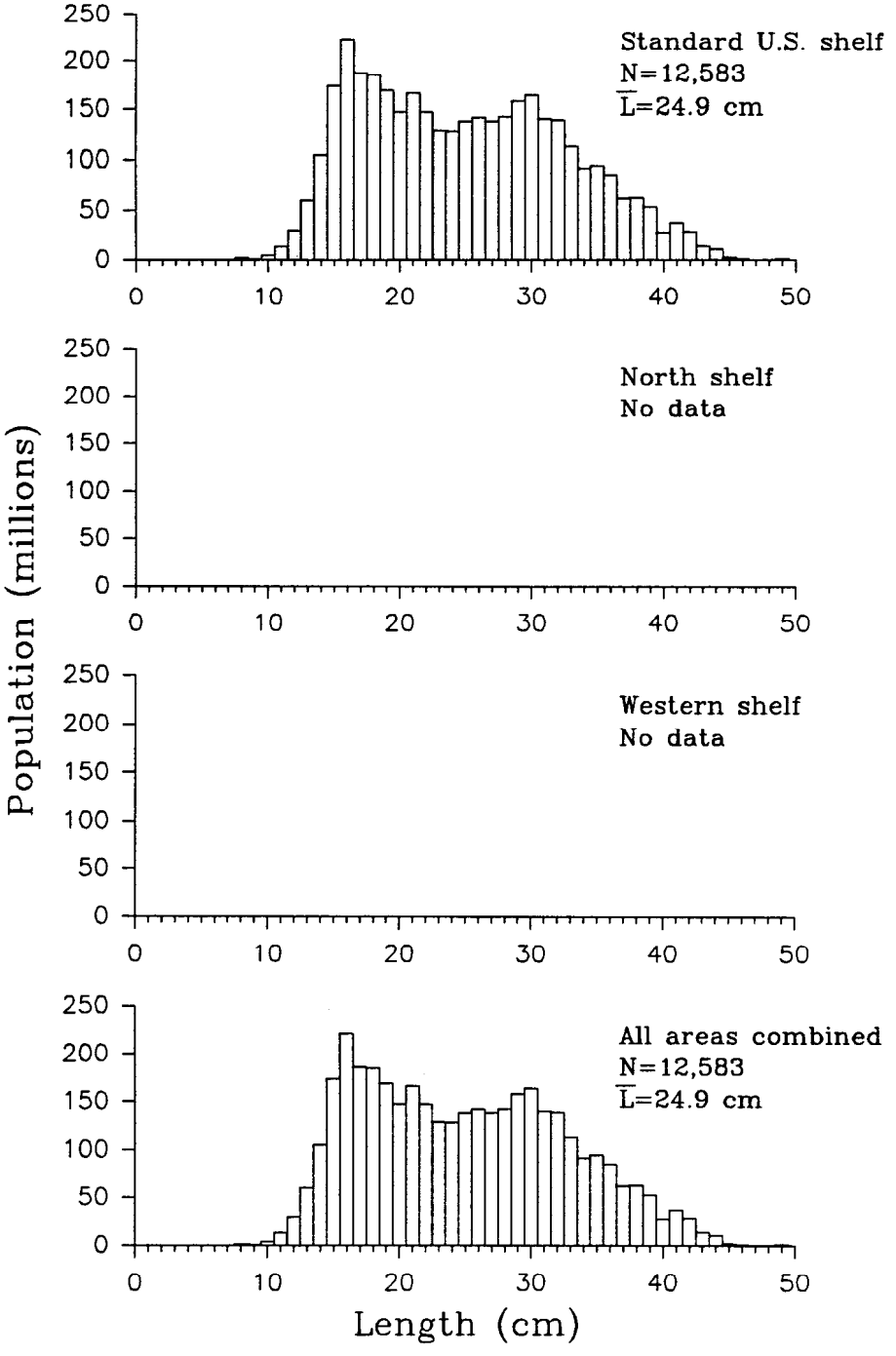

Figure 30.--Estimated size composition of rock sole by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

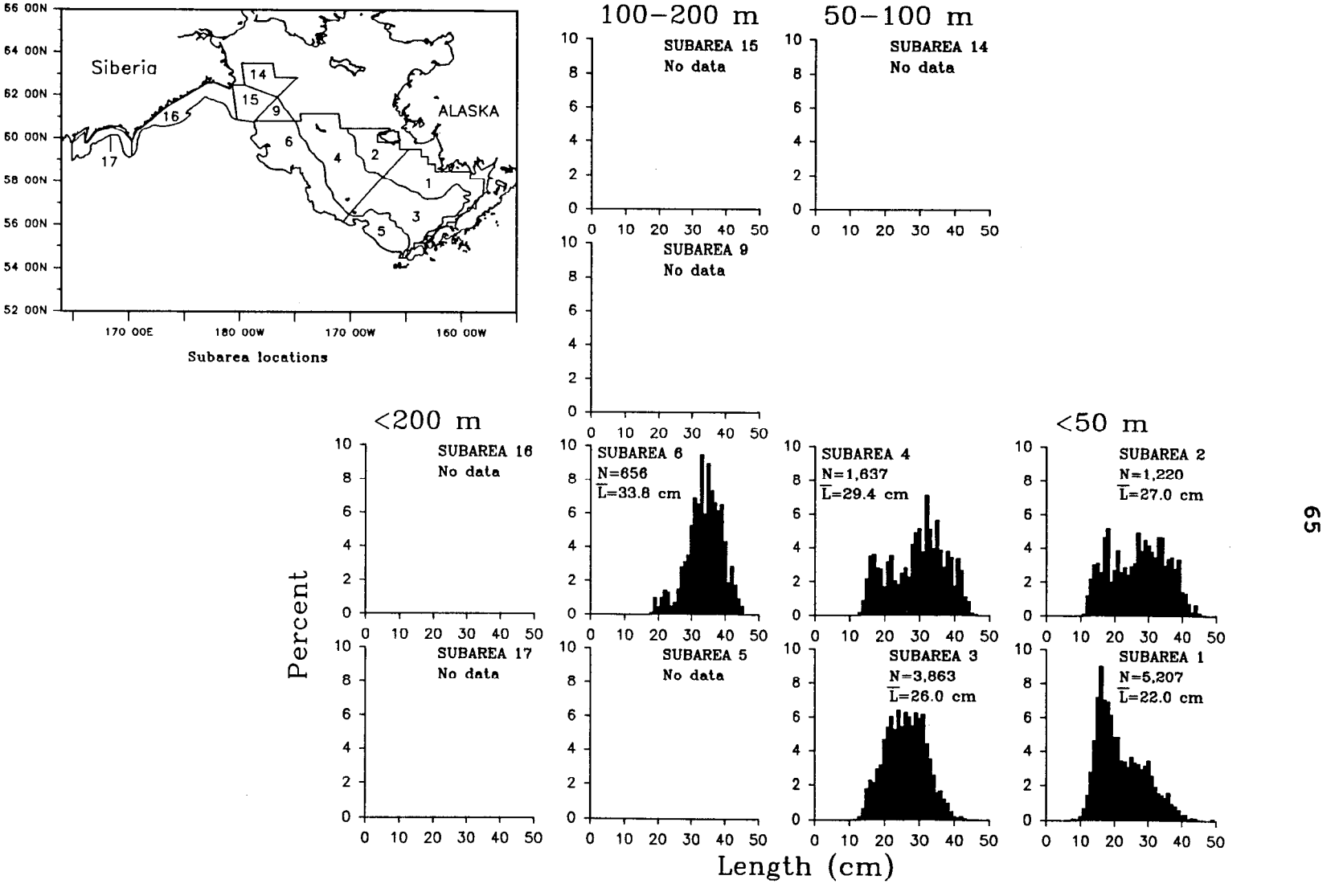

Figure 31.--Estimated relative size composition of rock sole (sexes combined) by subarea during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

the population decreased with increasing depth, and it was especially low in Subarea 6, where they accounted for only 1% of the population. Mid-sized (20-29 cm) rock sole were abundant in shallow and medium depth subareas, and they were the dominant size group in Subarea 3, where they comprised 57% of the population. Large rock sole (≤30 cm) were the most abundant size group in Subareas 2 (42%) and 4 (55%), and they were the predominate size group in Subarea 6 (82%).

Hippoglossoides spp.

Distribution and abundance--Hippoglossoides spp. were found in all subareas with largest catches occurring at depths greater than 50 m (Fig. 32). This genus occurred in 79% of the hauls and had an overall mean CPUE of 5.1 kg/ha (Table 13). Catch rates were similar in the U.S. standard shelf (5.9 kg/ha) and the north shelf (5.8 kg/ha) areas. Hippoglossoides spp. were found in low abundance in the western shelf area (1.8 kg/ha). Mean catch rates were highest in Subarea 3 (12.9 kg/ha) and Subarea 6 (10.1 kg/ha).

The total estimated biomass of Hippoglossoides spp. was 299,816 t. Approximately 91% of the total biomass was in the standard U.S. shelf area, 7% in the western shelf area, and 2% in the north shelf area. Subarea 3 accounted for 44% of the total biomass. The total estimated population of Hippoglossoides spp. was 996 million fish.

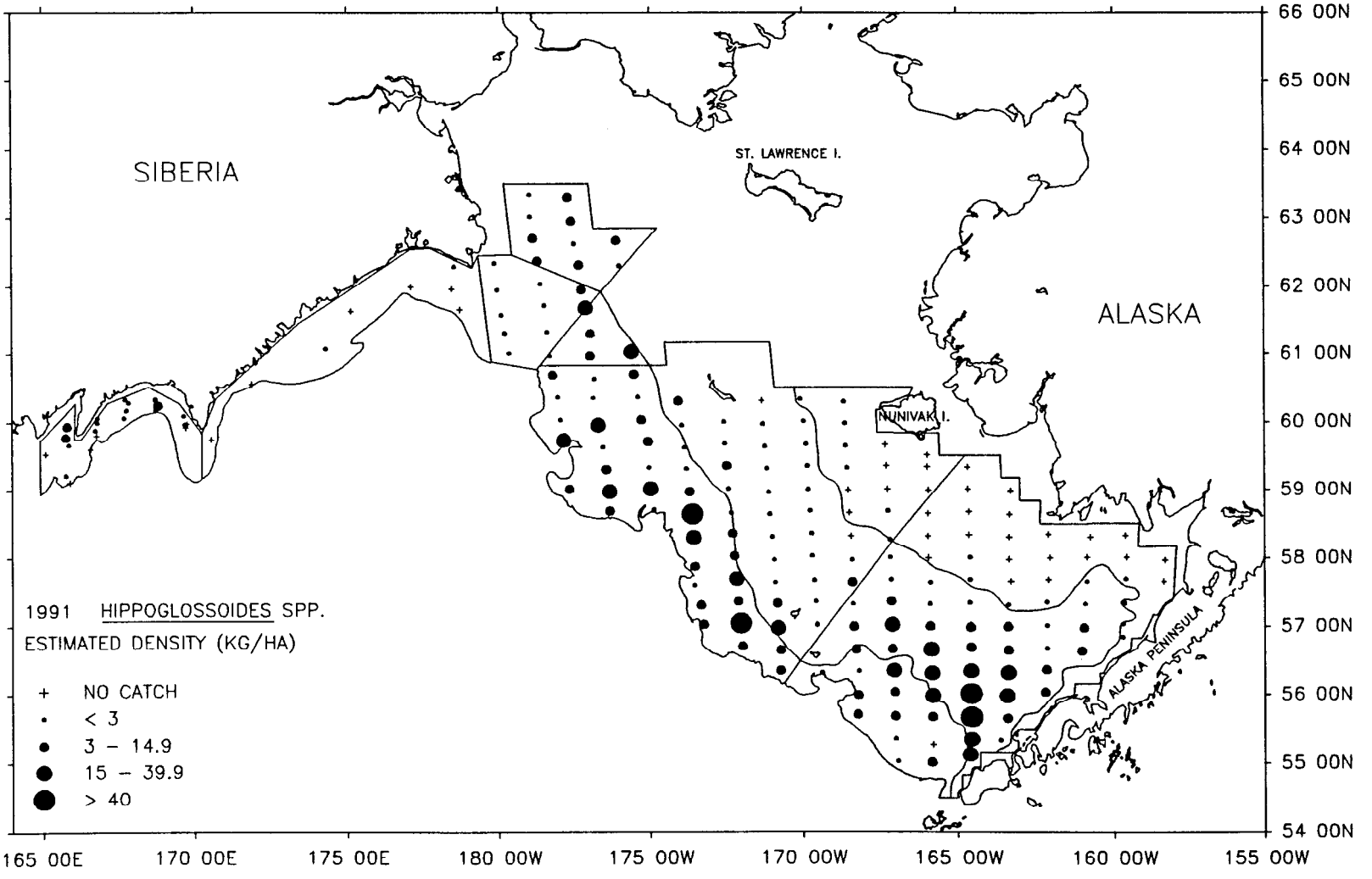

Figure 32. --Distribution and relative abundance in kg/ha of Hippoglossoides spp. sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 13. --Abundance estimates and mean size of Hippoglossoides spp. by subarea from the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf[ab].

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	0.14	1,128	0.004	4,907,628	0.005	0.230	-
2	< 50	0.08	342	0.001	768,265	0.001	0.445	-
3	50 - 100	12.89	133,111	0.444	334,634,651	0.336	0.398	34.1
4	50 - 100	2.12	22,880	0.076	67,102,324	0.067	0.341	33.7
5	100 - 200	4.91	19,065	0.064	87,490,131	0.088	0.218	28.0
6	100 - 200	10.12	95,709	0.319	331,956,261	0.333	0.288	29.2
Subareas combined		5.88	272,235	0.908	826,859,260	0.830	0.329	31.4
North shelf								
9	100 - 200	5.84	6,761	0.023	39,834,066	0.040	0.170	25.5
Western shelf								
14	< 100	3.63	9,529	0.032	66,956,963	0.067	0.142	23.2
15	100 - 200	3.36	8,609	0.029	50,102,818	0.050	0.172	-
16	< 200	0.11	460	0.002	2,372,031	0.002	0.194	-
17	< 200	1.11	2,221	0.007	10,359,948	0.010	0.214	30.9
Subareas combined		1.84	20,820	0.069	129,791,759	0.130	0.160	24.2
All areas combined		5.10	299,816	1.000	996,485,086	1.000	0.301	30.6

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Size composition--Hippoglossoides spp. ranged in size from 9 to 51 cm (Fig. 33). Mean fish size was larger in the standard U.S. shelf area (31.4 cm) than the north shelf (25.5 cm) and western shelf (24.2 cm) areas. Seven percent of the total population was ≤19 cm, while 78% of the fish ranged in length from 20 to 40 cm. Within the standard U.S. shelf area, fish were largest at depths between 50 and 100 m, averaging 34.1 cm and 33.7 cm in Subareas 3 and 4, respectively (Fig. 34). Fish in the deeper Subareas of 5 and 6 (100 m-200 m) averaged 28.0 cm and 29.2 cm, respectively. Approximately 80% and 76% of the fish in Subareas 3 and 4, respectively, were ≤30 cm. In Subareas 5 and 6, 41% and 45% of the fish, respectively, were ≤30 cm, while most of the remaining fish were in the middle size range of 20 cm-29 cm.

Alaska plaice

Distribution and abundance--Alaska plaice were encountered at 67% of the sampling sites with highest catch rates occurring in the northeast portion of the standard U.S. shelf area (Fig. 35). This was the sixth most frequently encountered fish species during the survey. The overall mean catch rate was 4.4 kg/ha (Table 14). Mean catch rates were highest at depths less than 50 m in Subarea 2 (12.2 kg/ha) and Subarea 1 (9.4 kg/ha).

The total estimated biomass of Alaska plaice was 255,750 t. Ninety-three percent of the biomass was in the standard U.S. shelf area, with 6% in the western shelf area.

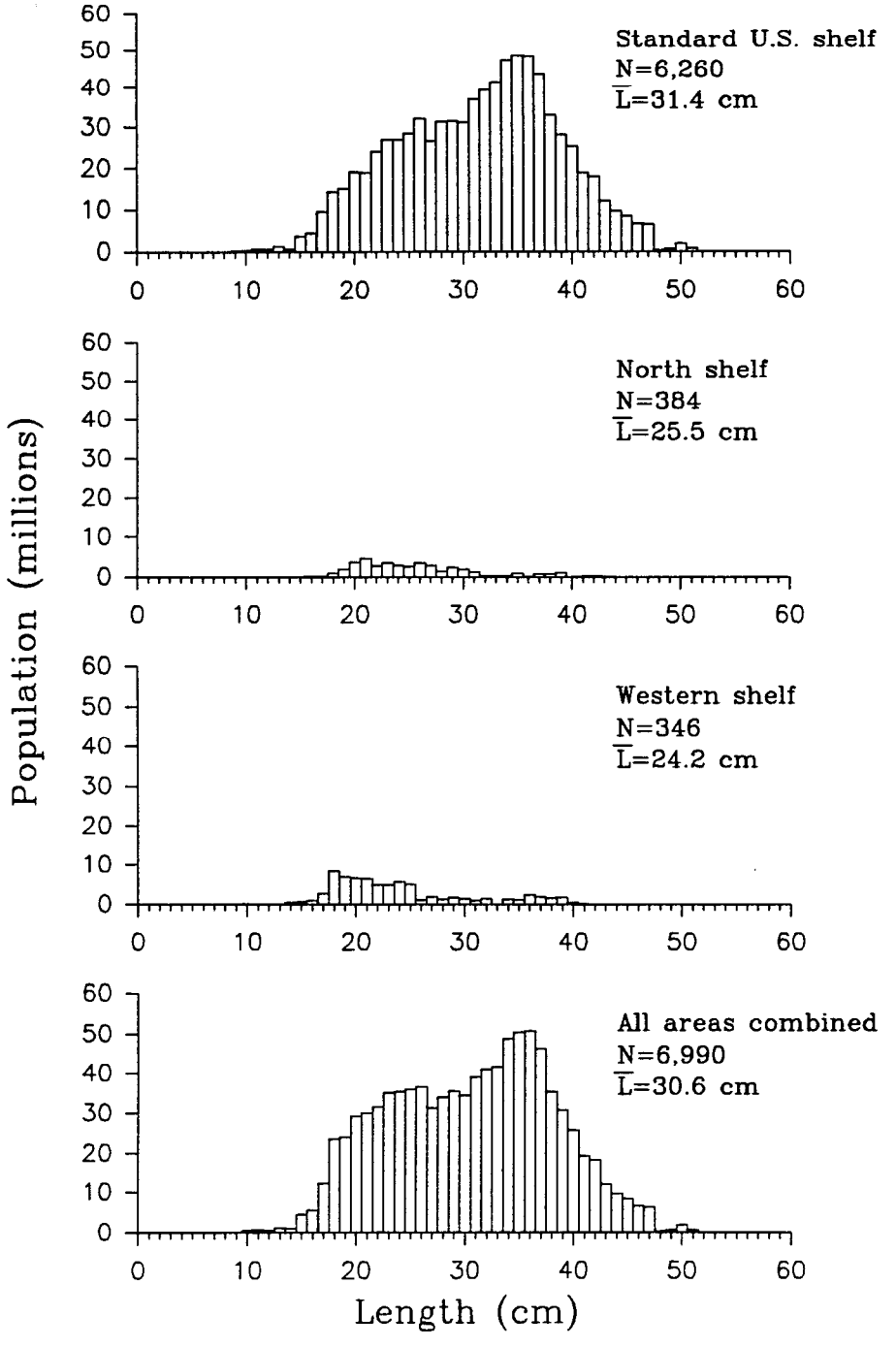

Figure 33.--Estimated size composition of Hippoglossoides spp. by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

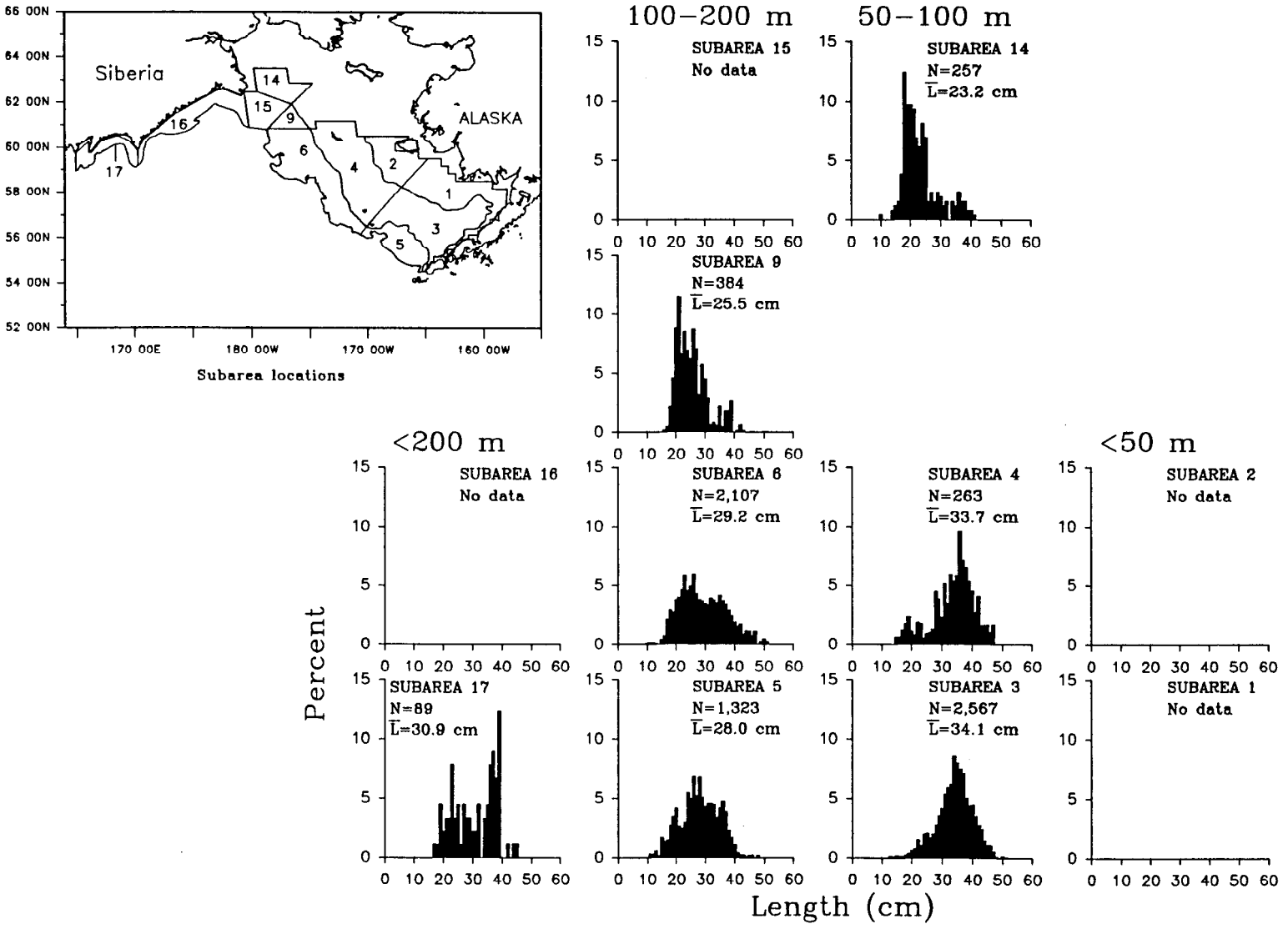

Figure 34.--Estimated relative size composition of Hippoglossoides spp. (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

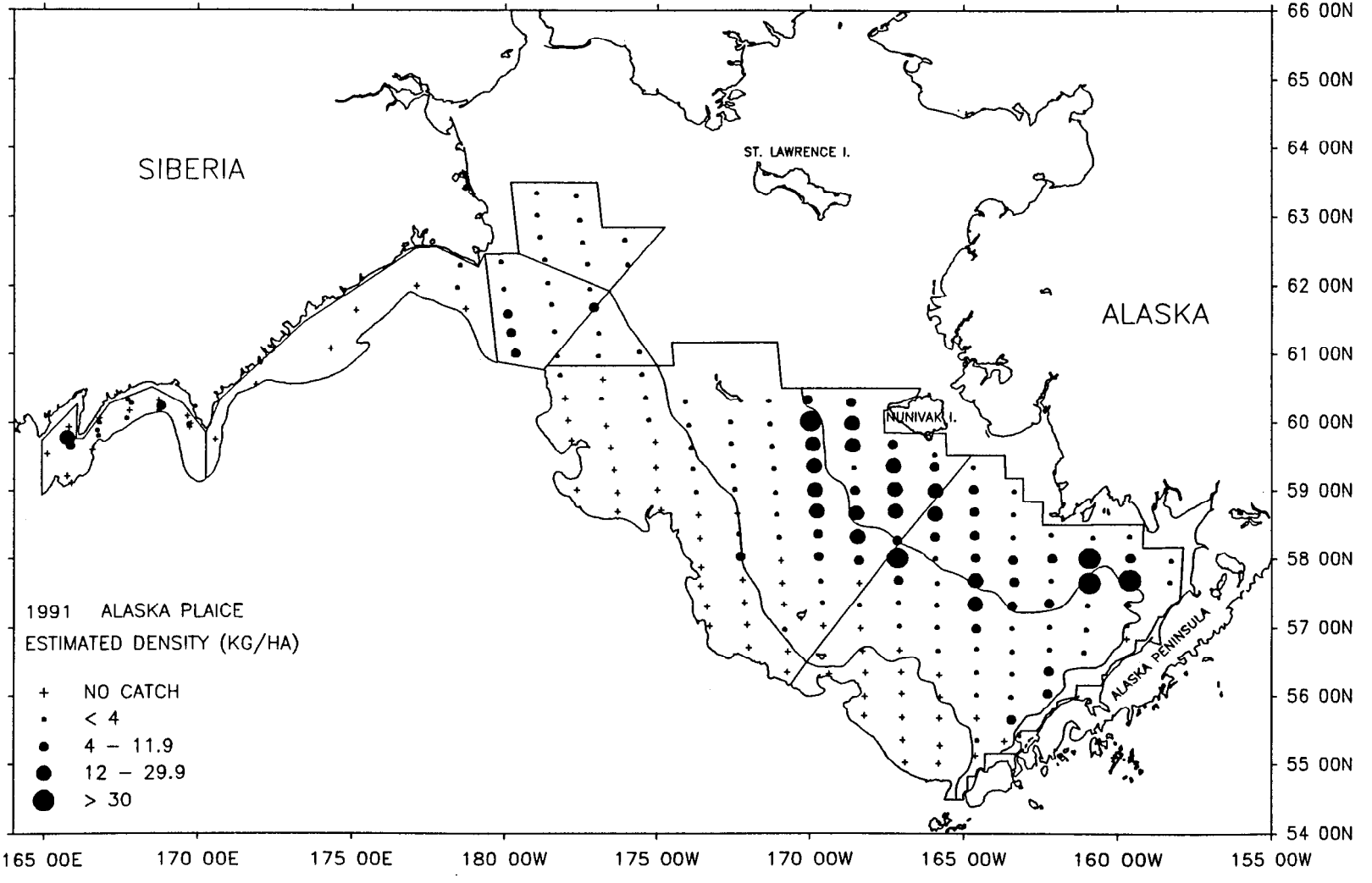

Figure 35.--Distribution and relative abundance in kg/ha of Alaska plaice sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 14.--Abundance estimates and mean size of Alaska plaice by subarea from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	9.35	72,823	0.285	124,960,972	0.354	0.583	35.9
2	< 50	12.23	50,178	0.196	77,103,529	0.219	0.651	36.0
3	50 - 100	4.38	45,274	0.177	55,131,396	0.156	0.821	39.9
4	50 - 100	6.18	66,663	0.261	73,159,038	0.207	0.911	40.2
5	100 - 200	0.00	0	0.000	0	0.000	-	-
6	100 - 200	0.37	3,540	0.014	2,277,789	0.006	1.554	-
Subareas combined		5.15	238,478	0.932	332,632,723	0.943	0.717	37.5
North shelf								
9	100 - 200	1.04	1,203	0.005	979,169	0.003	1.288	-
Western shelf								
14	< 100	0.83	2,165	0.008	4,932,664	0.014	0.439	34.0
15	100 - 200	4.00	10,251	0.040	10,847,247	0.031	0.945	-
16	< 200	0.05	202	0.001	816,563	0.002	0.248	-
17	< 200	1.73	3,451	0.013	2,573,556	0.007	1.341	-
Subareas combined		1.42	16,069	0.063	19,170,030	0.054	0.838	34.0
All areas combined		4.35	255,750	1.000	352,781,922	1.000	0.518	37.5

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Approximately 92% of the total biomass was in the combined Subareas of 1 through 4. The total estimated population was 352 million fish.

Size composition--Alaska plaice ranged from 14 to 56 cm in total length (Fig. 36). In general, mean size increased with increasing depth, ranging from approximately 36 cm in Subareas 1 and 2 (<50 m) to 40 cm in Subareas 3 and 4 (50 m-100 m) (Fig. 37). The length frequency distributions of the fish in subareas 1 and 2 showed strong modes centered around 35 cm to 36 cm.

Atheresthes spp.

Distribution and abundance--Atheresthes spp. were primarily restricted in distribution to depths greater than 100 m (Fig. 38). This genus occurred in 31% of the hauls. The average catch rate for the survey was 2.7 kg/ha (Table 15). CPUE was greatest in the standard U.S. shelf area, averaging 3.4 kg/ha, compared with the north shelf (0.05 kg/ha) and western shelf (0.09 kg/ha) areas. Atheresthes spp. were most abundant in the 100 m-200 m depth zones of Subareas 5 and 6, with mean CPUE values of 13.0 kg/ha and 7.9 kg/ha, respectively.

The estimated biomass for the survey area was 156,508 t. Over 99% of the biomass was located in the standard U.S. shelf area, primarily in Subareas 3, 5, and 6. No Atheresthes spp. were encountered in Subareas 1, 2, and 14, and only trace amounts were observed in western shelf Subareas 15, 16, and 17.

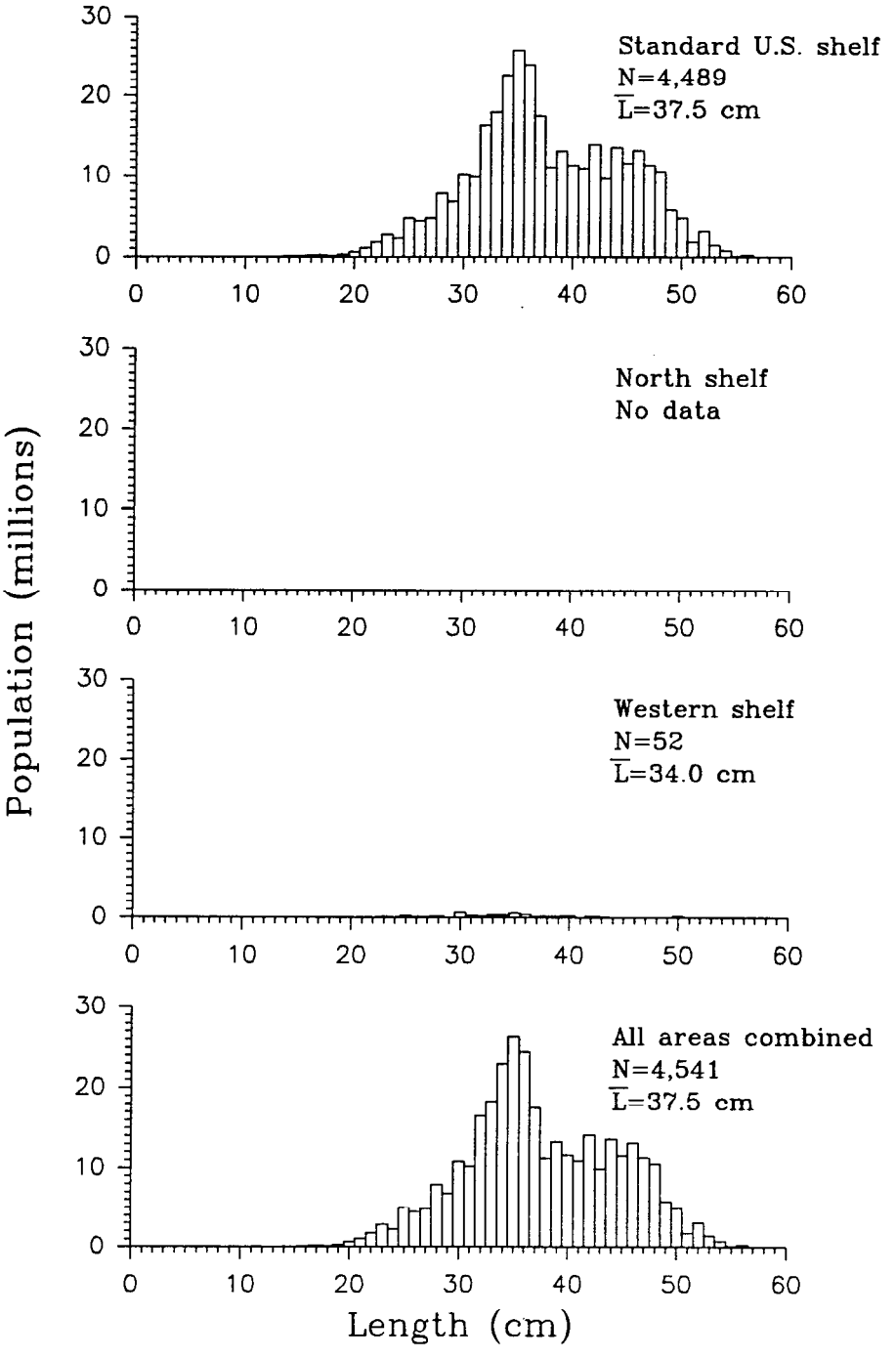

Figure 36.--Estimated size composition of Alaska plaice by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

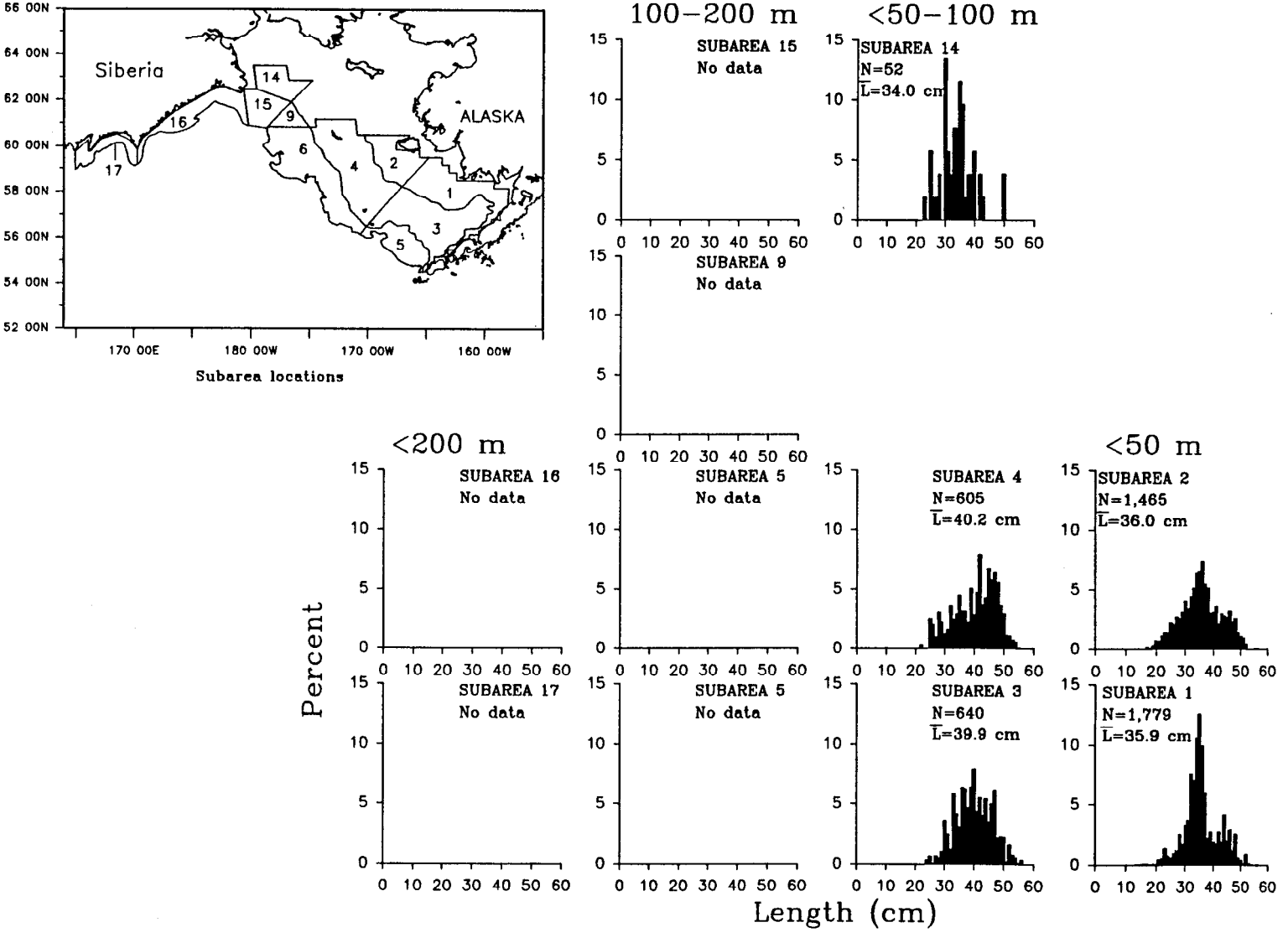

Figure 37.--Estimated relative size composition of Alaska plaice (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

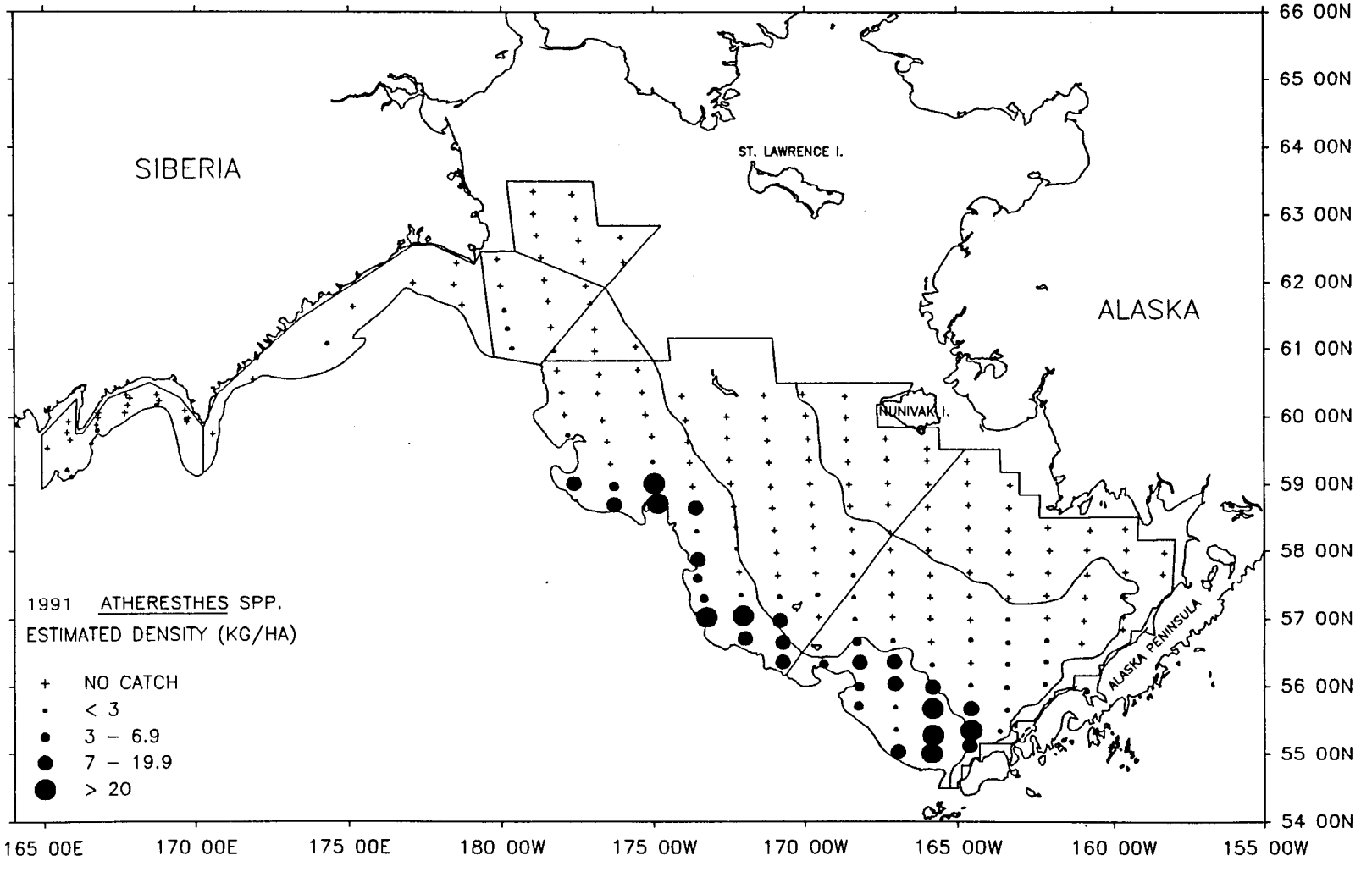

Figure 38.--Distribution and relative abundance in kg/ha of Atheresthes spp. sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 15. --Abundance estimates and mean size of Atheresthes spp. by subarea from the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	0.00	0	0.000	0	0.000	-	-
2	< 50	0.00	0	0.000	0	0.000	-	-
3	50 - 100	2.46	25,380	0.162	64,216,594	0.213	0.395	35.1
4	50 - 100	0.44	4,731	0.030	16,363,935	0.054	0.289	31.6
5	100 - 200	13.00	50,411	0.322	96,440,270	0.319	0.523	37.2
6	100 - 200	7.92	74,902	0.479	123,885,974	0.410	0.605	39.4
Subareas combined		3.35	155,425	0.993	300,906,773	0.997	0.517	37.3
North shelf								
9	100 - 200	0.05	60	0.000	22,860	0.000	2.631	-
Western shelf								
14	< 100	0.00	0	0.000	0	0.000	-	-
15	100 - 200	0.18	469	0.003	439,799	0.001	1.067	-
16	< 200	0.07	280	0.002	293,447	0.001	0.953	-
17	< 200	0.14	275	0.002	248,567	0.001	1.105	-
Subareas combined		0.09	1,024	0.007	981,813	0.003	1.043	-
All areas combined		2.66	156,508	1.000	301,911,446	1.000	0.518	37.3

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Size composition--Atheresthes spp. were only measured from catches in the standard U.S. shelf area. Lengths ranged from 13 to 68 cm (Fig. 39). Subareas 3 and 5 were dominated by fish in the 30 cm-39 cm size range, comprising 66% and 62% of the population, respectively (Fig. 40). The size distribution in Subarea 6 was not dominated by any single size group of fish, although two modes were apparent: one centered around 24 cm and the other centered at approximately 40 cm. The size distribution in Subarea 4 was also bimodal with one mode centered around 25 cm, and the other between 33 cm and 41 cm.

Pacific halibut

Distribution and abundance--The distribution of catch rates for Pacific halibut is shown in Figure 41. They occurred in 75% of the hauls with an overall catch rate of 2.0 kg/ha (Table 16). Catch rates for the western shelf area (2.0 kg/ha) averaged nearly the same as catch rates from the standard U.S. shelf area (2.1 kg/ha). Highest concentrations occurred in standard U.S. shelf Subarea 5 (4.1 kg/ha) and in western shelf Subareas 16 (3.4 kg/ha) and 17 (3.4 kg/ha).

The total biomass of Pacific halibut in the survey area was estimated at 119,413 t. The standard U.S. shelf area accounted for about 81% of the total biomass, with the western shelf area contributing 19%. The north shelf area contained less than 1.0% of the overall biomass. The total estimated population was 68 million fish with 95% located in the standard U.S. shelf area.

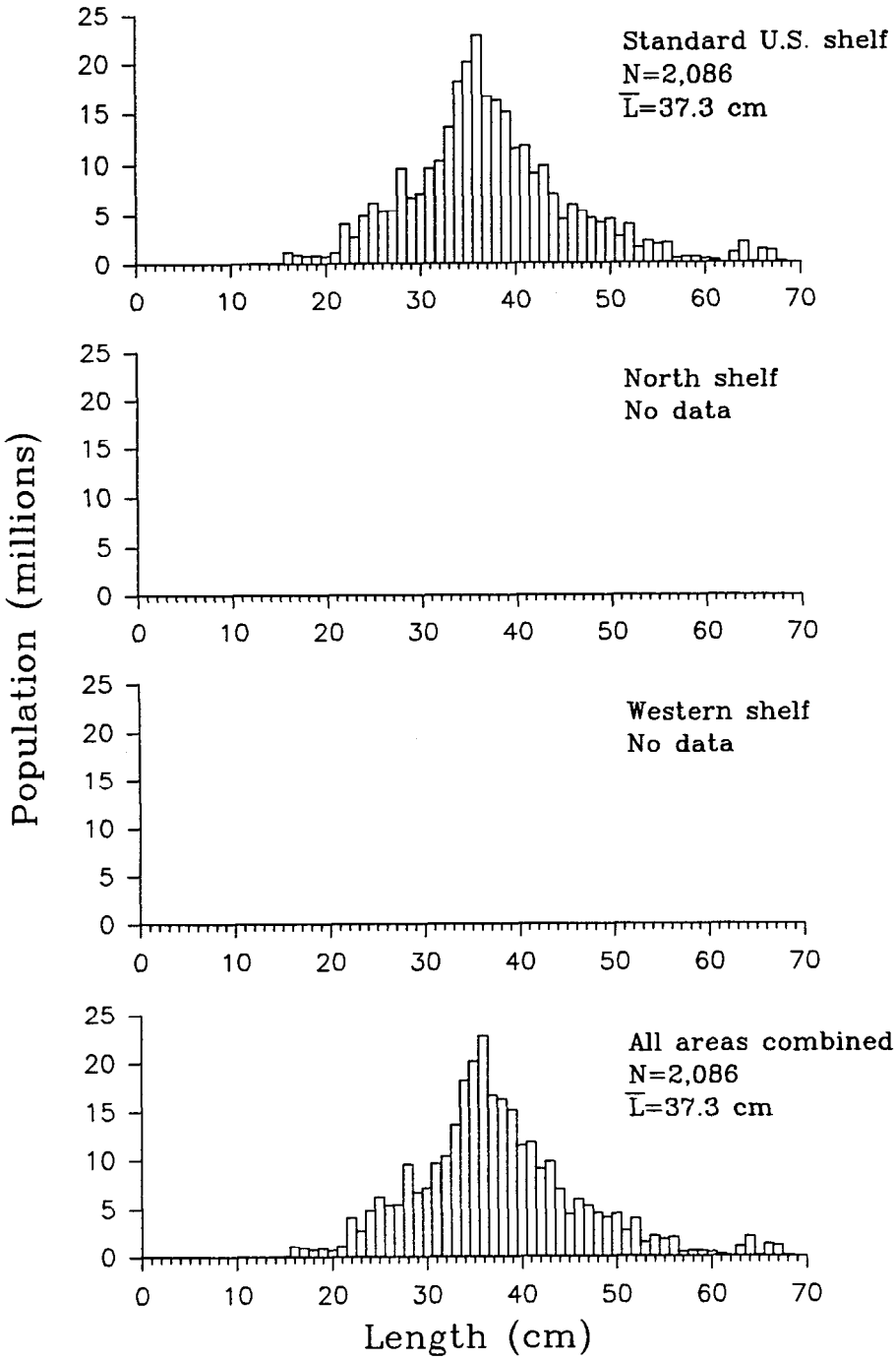

Figure 39.--Estimated size composition of Atheresthes spp. by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

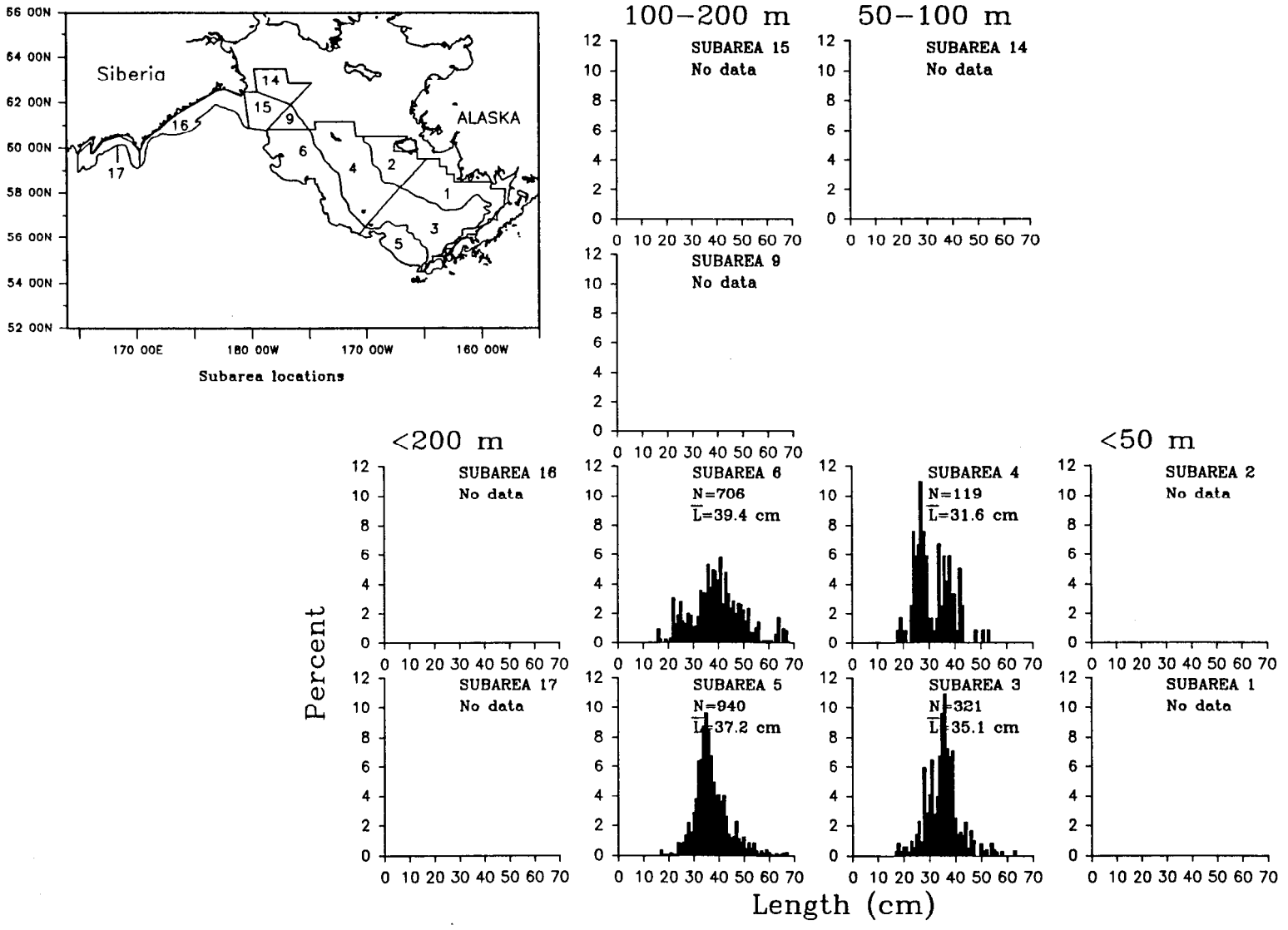

Figure 40.--Estimated relative size composition of Atheresthes spp. (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

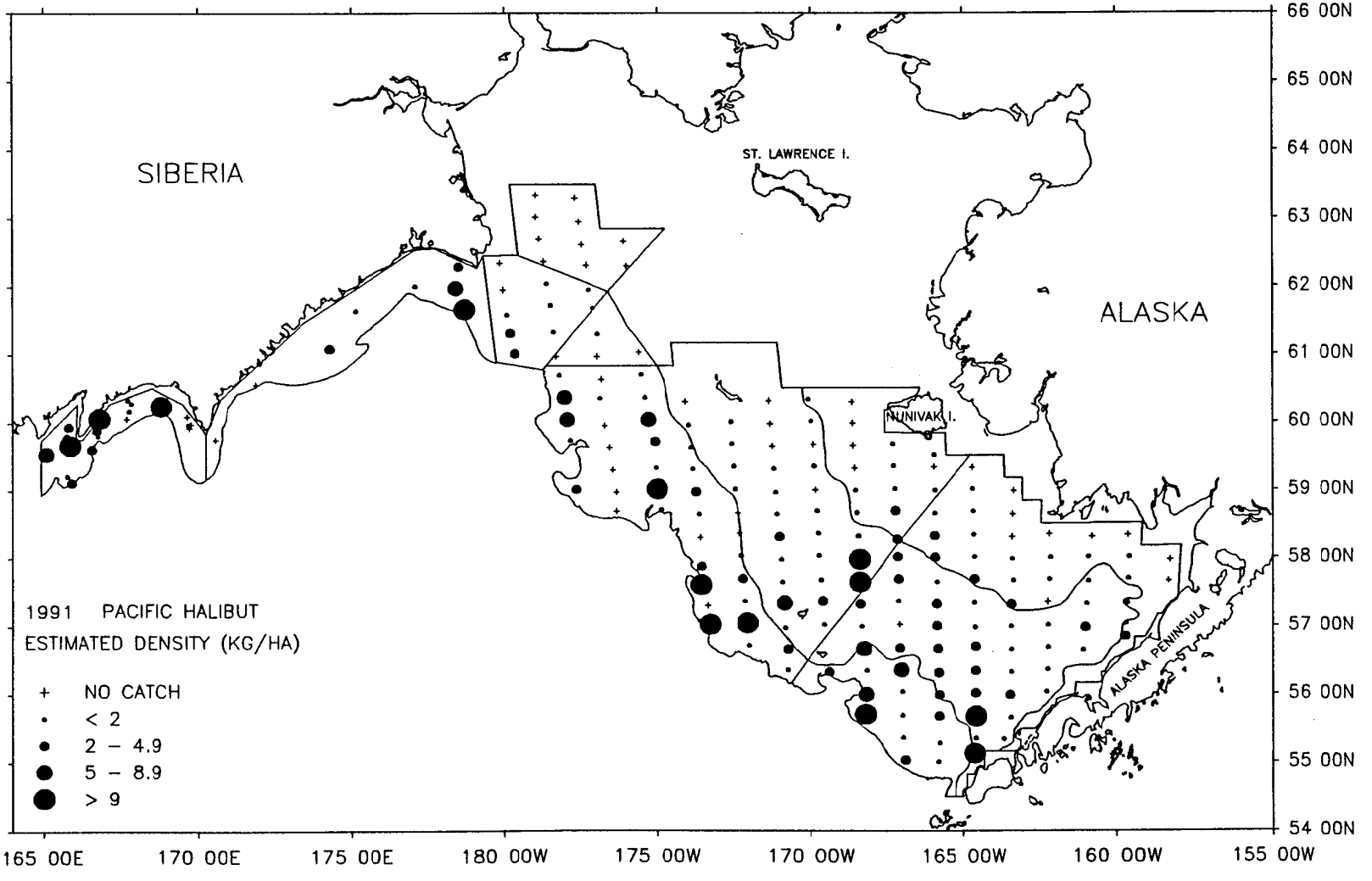

Figure 41.--Distribution and relative abundance in kg/ha of Pacific halibut sampled duri the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 16. --Abundance estimates and mean size of Pacific halibut by subarea from the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean Weight (kg)	Mean Length (cm)
Standard U.S. shelf								
1	< 50	0.82	6,400	0.054	11,108,935	0.163	0.576	40.9
2	< 50	0.56	2,307	0.019	2,379,123	0.035	0.970	41.2
3	50 - 100	2.54	26,208	0.219	21,436,511	0.314	1.223	45.8
4	50 - 100	1.69	18,240	0.153	19,147,914	0.280	0.953	41.9
5	100 - 200	4.09	15,868	0.133	2,772,543	0.041	5.723	69.1
6	100 - 200	2.89	27,283	0.228	8,320,059	0.122	3.279	55.8
Subareas combined		2.08	96,304	0.806	65,165,085	0.954	1.469	45.9
North shelf								
9	100 - 200	0.13	151	0.001	25,591	<0.001	-	-
Western shelf								
14	< 100	0.00	0	0.000	0	0.000	-	-
15	100 - 200	0.82	2,095	0.018	677,719	0.010	3.091	56.0
16	< 200	3.43	14,072	0.118	1,136,061	0.017	12.387	81.2
17	< 200	3.40	6,790	0.057	1,270,797	0.019	5.343	66.9
Subareas combined		2.03	22,957	0.192	3,084,577	0.045	7.443	69.8
All areas combined		2.03	119,413	1.000	68,275,253	1.000	1.749	47.0

[a]Difference in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Pacific halibut abundance varied widely with bottom temperature and depth. Highest catch rates were observed at depths of 55 m-145 m and in bottom temperatures ranging from 0°C to nearly 4°C.

Size composition--Pacific halibut had the greatest size range of any species measured. They ranged from 14 to 215 cm in total length (Fig. 42). Subareas l-4 all had a strong mode of small fish ($\leq$49 cm in length), which accounted for 75% to 93% of the population of these Subareas (Fig. 43). Both mean size and maximum length were greater in Subareas 5 and 6. Approximately 78% of the halibut in Subarea 5 and 49% of the halibut in Subarea 6 were 50 cm-100 cm in length, as opposed to Subareas l-4, where at most only 25% were between 50 cm and 100 cm.

Greenland turbot

Distribution and abundance--Greenland turbot occurred in 27% of the total hauls, primarily at depths greater than 100 m (Fig. 44). The average catch rate for the overall survey was 0.2 kg/ha with the highest mean CPUE of nearly 1.0 kg/ha in Subarea 6 (Table 17).

The total survey biomass of Greenland turbot was estimated at 12,621 t. Approximately 74% of the biomass was located in Subarea 6 with an additional 12% in Subarea 15. The estimated population was 27 million fish. Nearly all Greenland turbot catches occurred at bottom temperatures ranging between 0°C and approximately 2°C, and between 90 and 180 m in depth.

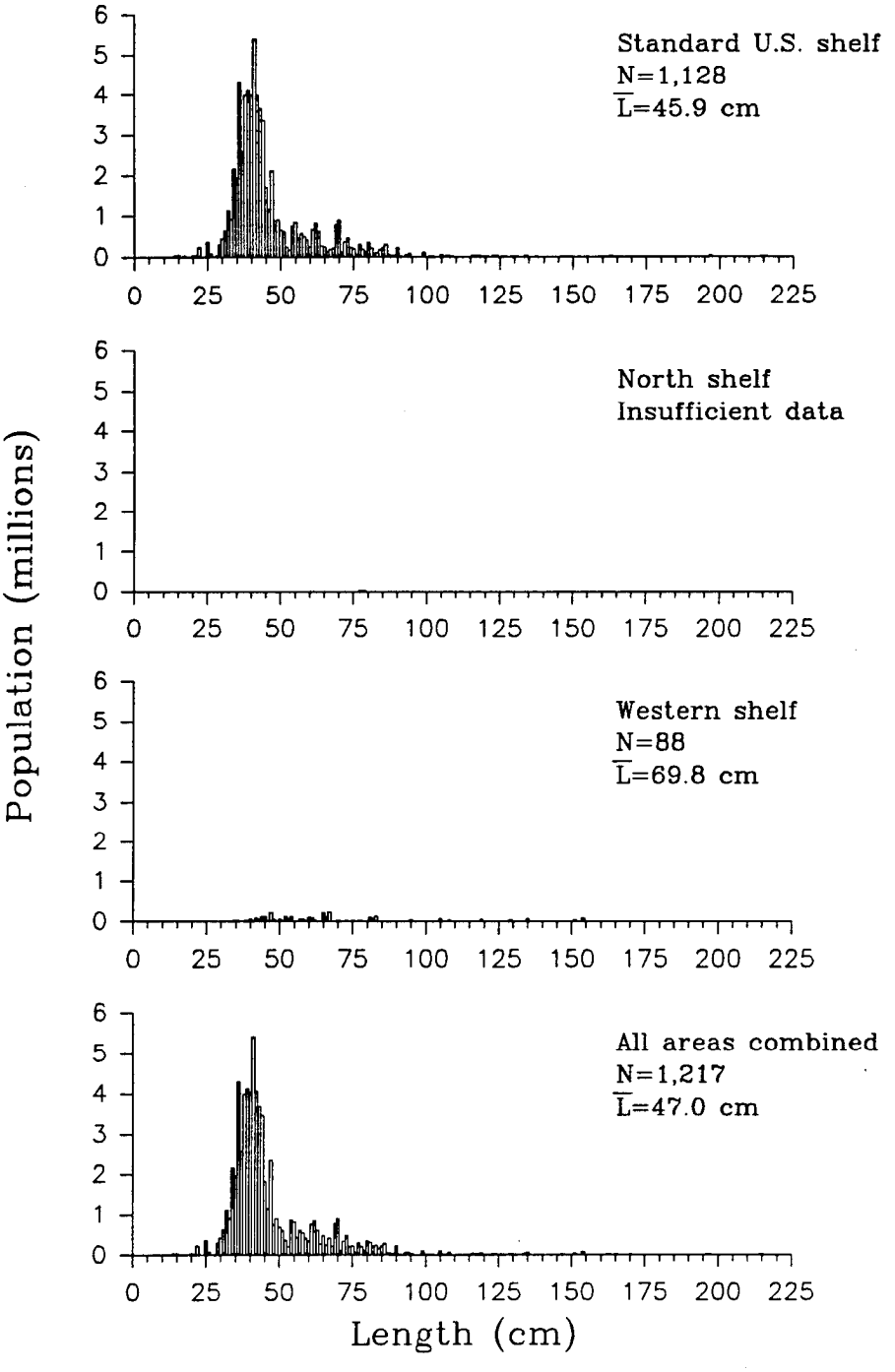

Figure 42. --Estimated size composition of Pacific halibut by region during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

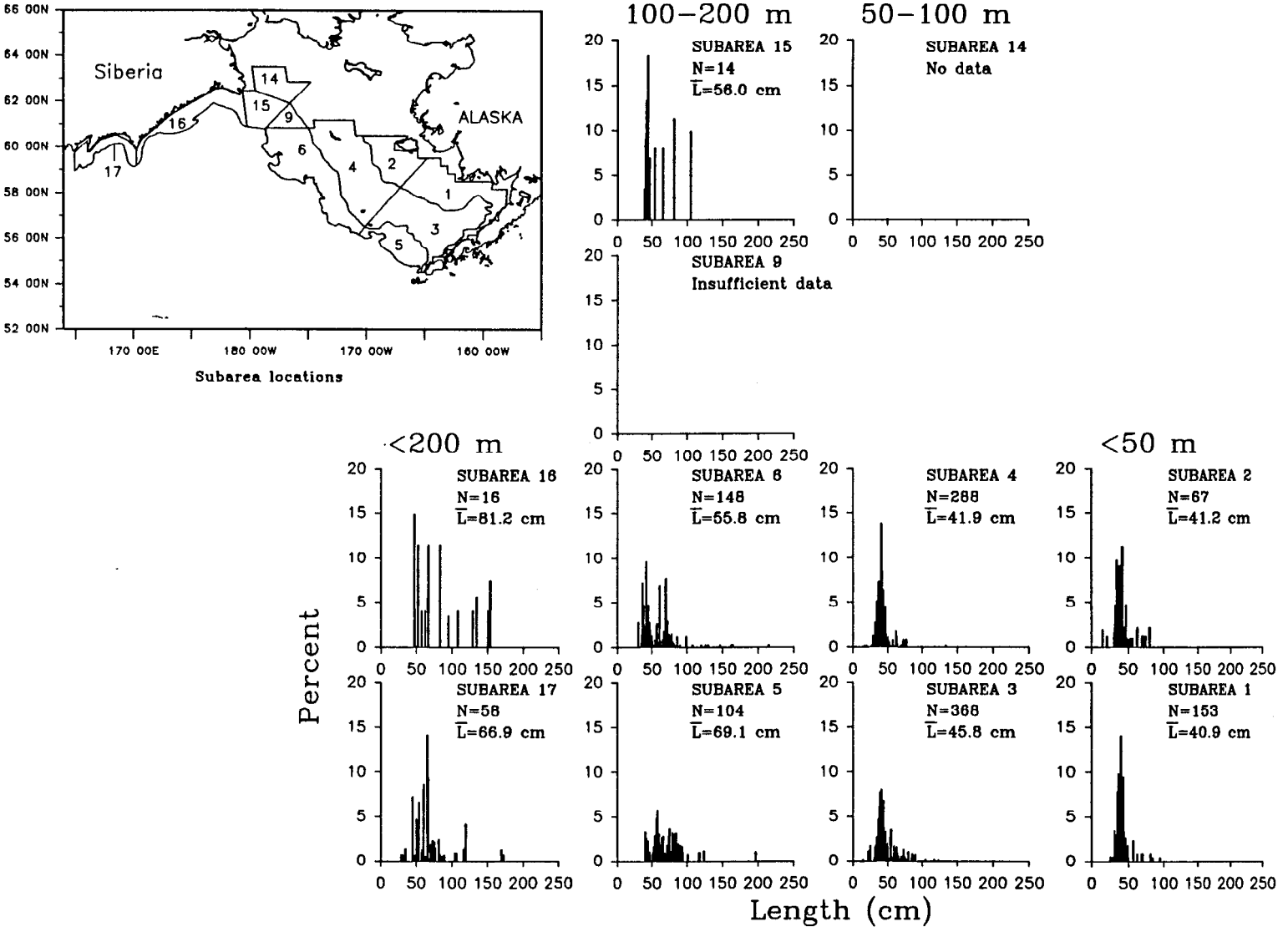

Figure 43.--Estimated relative size composition of Pacific halibut (sexes combined) by subarea during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

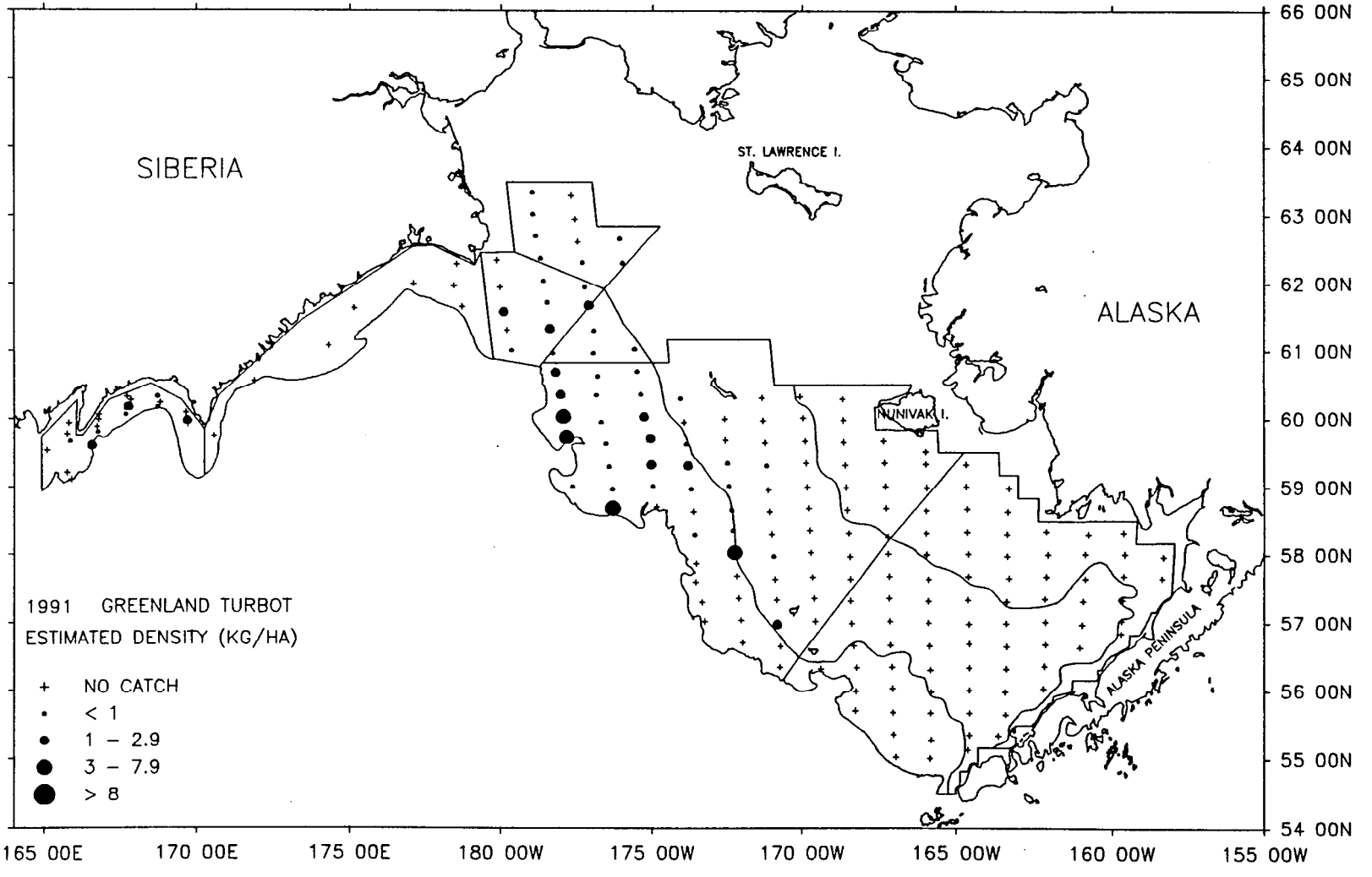

Figure 44.--Distribution and relative abundance in kg/ha of Greenland turbot sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table 17. --Abundance estimates and mean size of Greenland turbot by subarea from the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.[ab]

Subarea	Depth (m) interval	Mean CPUE (kg/ha)	Estimated biomass (t)	Proportion of estimated biomass	Estimated population numbers	Proportion of estimated population	Mean size	
							Weight (kg)	Length (cm)
Standard U.S. shelf								
1	< 50	0.000	0	0.000	0	0.000	-	-
2	< 50	0.000	0	0.000	0	0.000	-	-
3	50 - 100	0.000	0	0.000	0	0.000	-	-
4	50 - 100	0.060	633	0.050	461,487	0.017	1.371	-
5	100 - 200	0.000	0	0.000	0	0.000	-	-
6	100 - 200	0.990	9,366	0.742	12,275,716	0.452	0.763	-
Subareas combined		0.220	9,999	0.792	12,737,203	0.469	0.785	-
North shelf								
9	100 - 200	0.340	399	0.032	2,453,445	0.090	0.162	-
Western shelf								
14	< 100	0.040	109	0.009	3,929,709	0.145	0.028	-
15	100 - 200	0.570	1,471	0.117	7,100,892	0.262	0.207	-
16	< 200	0.000	0	0.000	0	0.000	-	-
17	< 200	0.320	644	0.051	917,223	0.034	0.702	-
Subareas combined		0.200	2,223	0.176	11,947,825	0.440	0.186	-
All areas combined		0.210	12,621	1.000	27,138,473	1.000	0.465	-

[a]Differences in totals and sums of biomass and population numbers by subarea are due to rounding.
[b]- indicates no sample or insufficient data.

Size composition--Greenland turbot were encountered in small numbers and no length data were collected.

Distribution of Major Crab Species

The Soviet net was inefficient at sampling most benthic as well as many epibenthic species. Catches of invertebrates, in general, were approximately ten times lower in this cooperative survey than during the 1991 U.S. bottom trawl survey. Catch data collected during the 1991 U.S.-U.S.S.R. cooperative survey was probably not indicative of the abundance of most invertebrates, including commercially important crab species. However, these data may provide some insight into the range and relative distribution of the major species of crab. Maps showing relative catch rates for snow crab (*C. opilio* and *C. bairdi*), red king crab, and blue king crab are presented in Figures 45 through 48. They are intended to show only the general distribution patterns of the commercially important crab species as encountered in the survey.

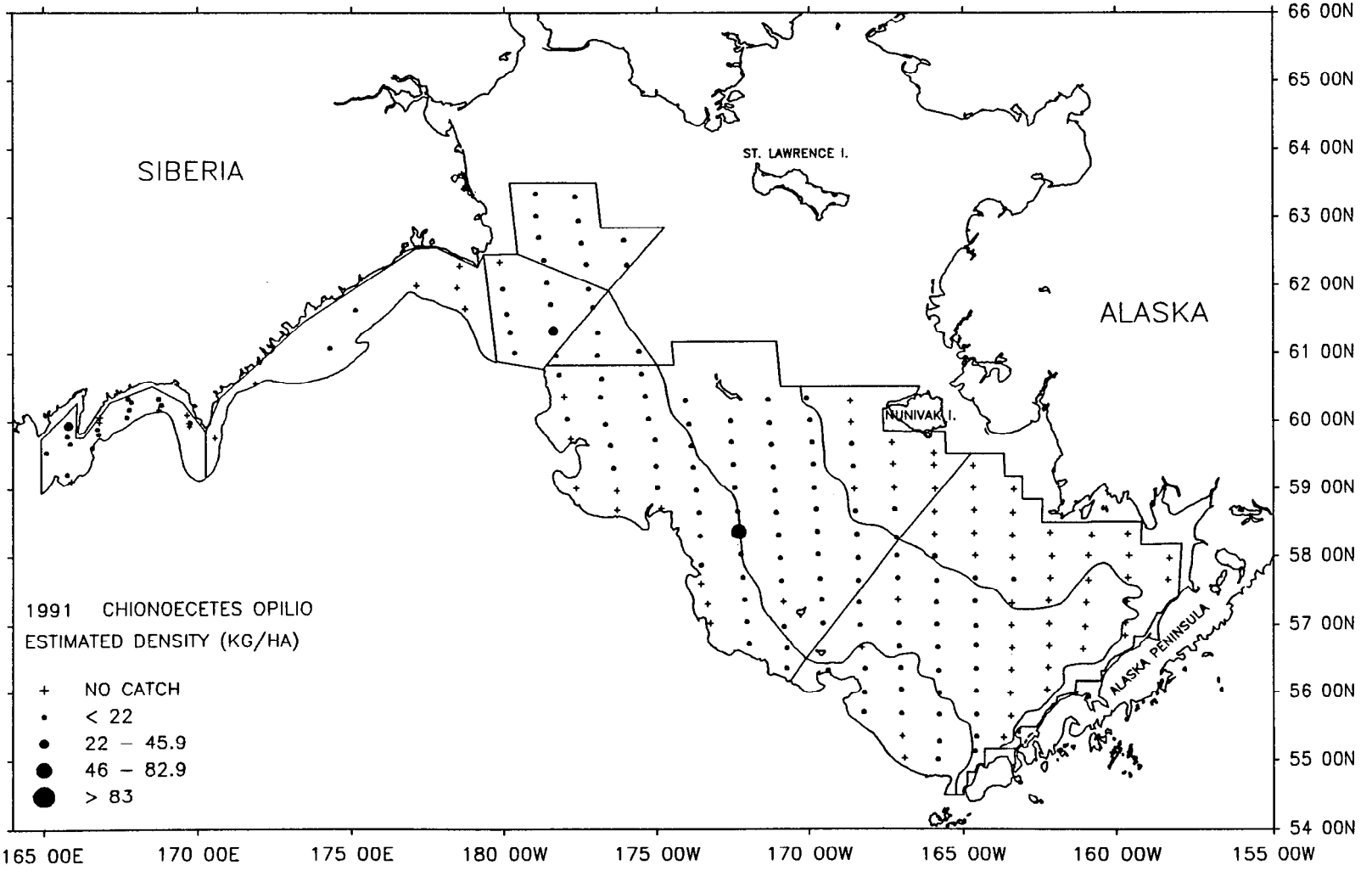

Figure 45. --Distribution and relative abundance in kg/ha of snow crab (⊆. opilio) sampled during the 1991 cooperative U.S. -U.S.S.R. bottom trawl survey of the Bering Sea shelf.

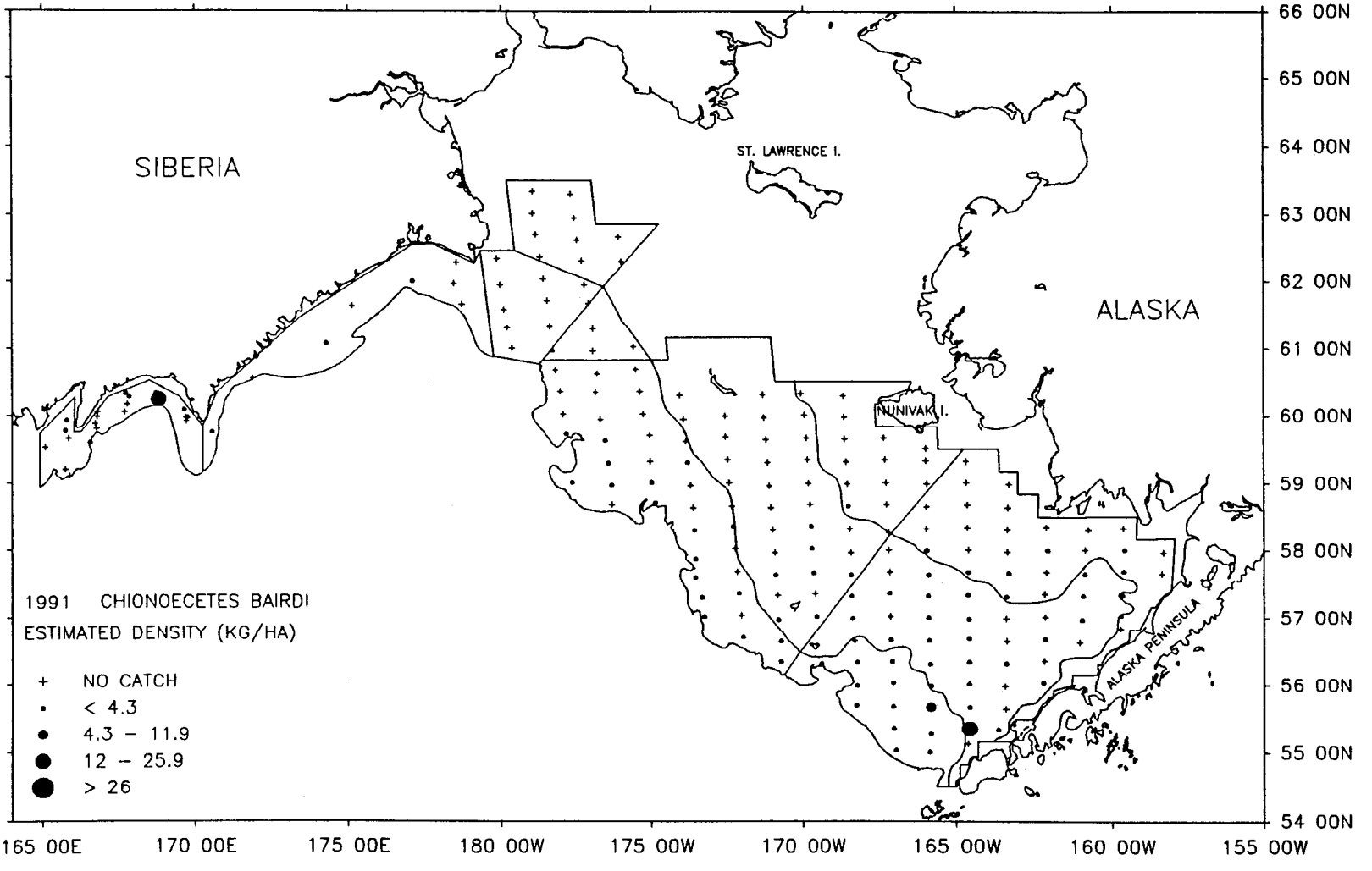

Figure 46.--Distribution and relative abundance in kg/ha of snow crab (⊆. bairdi) sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

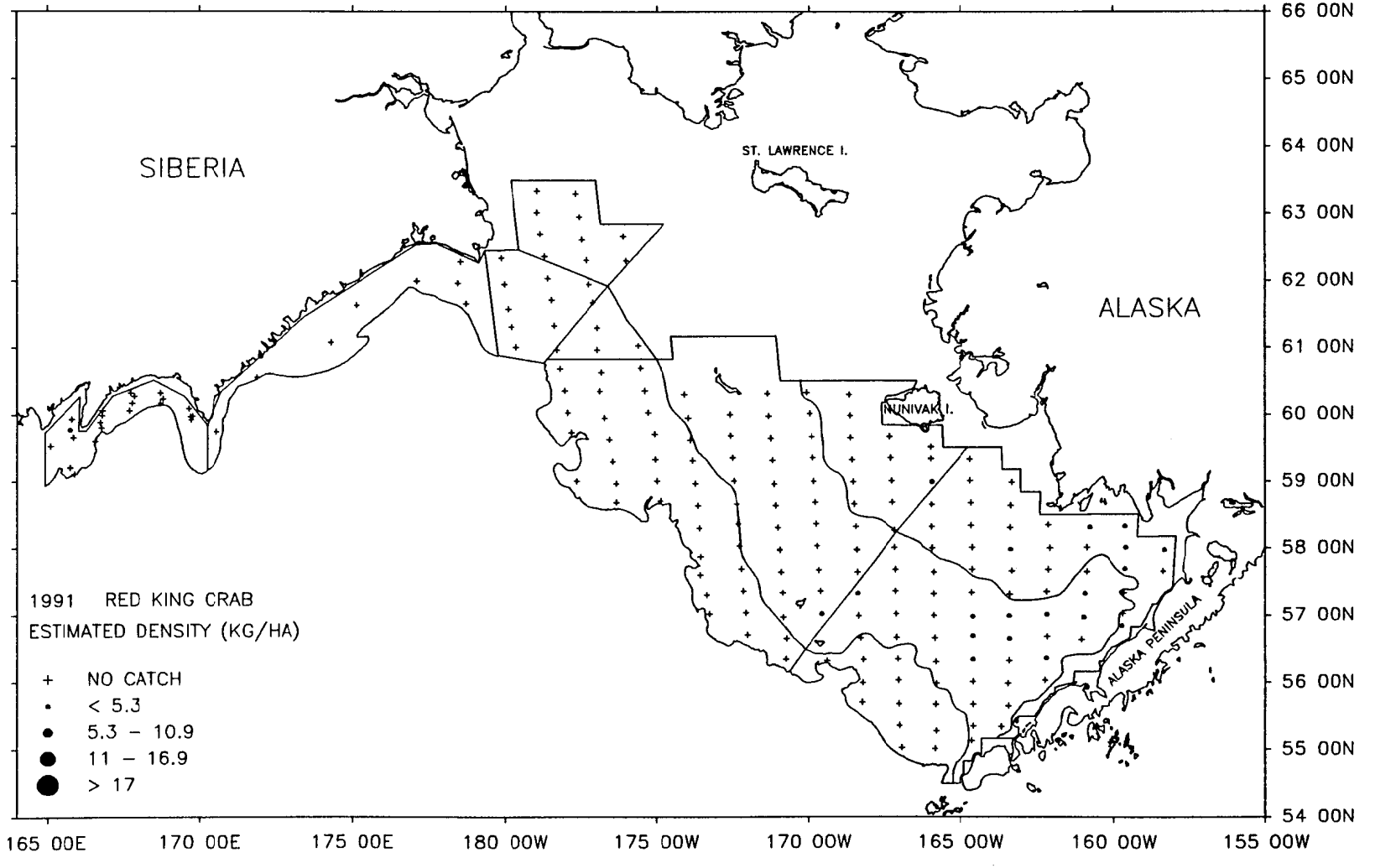

Figure 47.--Distribution and relative abundance in kg/ha of red king crab sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

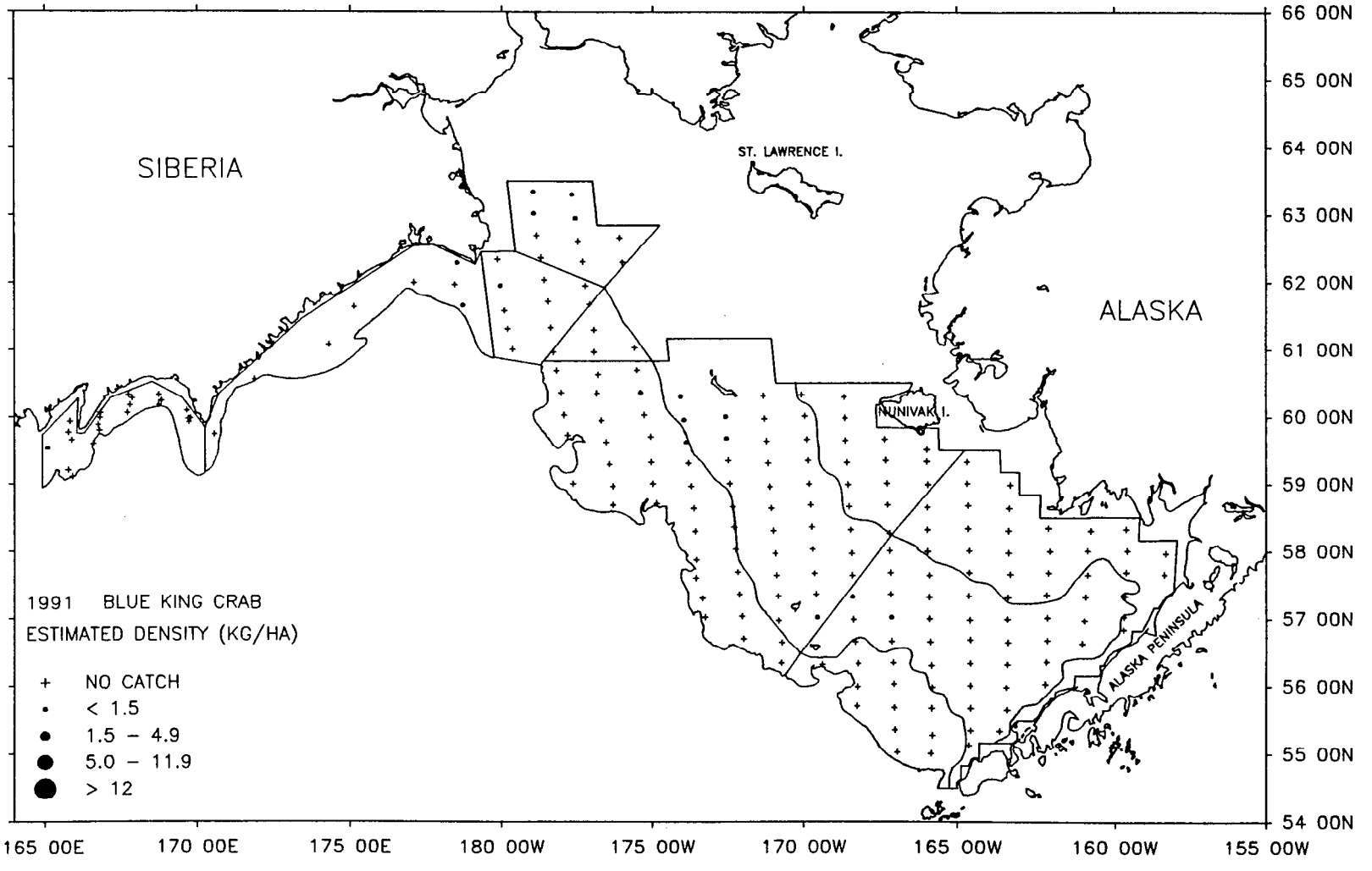

Figure 48.--Distribution and relative abundance in kg/ha of blue king crab sampled during the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

DISCUSSION

Comparison of results among past independent U.S. and cooperative U.S.-U.S.S.R. bottom trawl surveys in the Bering Sea have shown major differences in abundance estimates in areas commonly sampled. For the last 4 years of the time series (see Sample and Nichol 1994), biomass estimates of individual species from the U.S.-U.S.S.R. cooperative survey data were generally lower than biomass estimates from the independent U.S. survey data of the standard U.S. shelf area (Table 18). The cooperative survey biomass estimates of walleye pollock, Hippoglossoides Spp., and Atheresthes spp. are approximately 50% lower than from the U.S. surveys for 1988-1991. Biomass estimates from the 1991 cooperative survey were at least 40% lower than U.S. biomass estimates for all species except Greenland turbot, Pacific halibut, and Pacific cod (Table 18). The 1991 U.S.-U.S.S.R. survey biomass estimates of several invertebrate groups including crustaceans, echinoderms, ascideans, and mollusks were 90% to 99% lower than the biomass from the 1991 U.S. survey. These results likely indicate a greater fishing efficiency by the U.S. standard 83-112 bottom trawl relative to the Soviet commercial pelagic net used in the 1991 cooperative survey. The Soviet net may have had poor bottom-tending characteristics. It is noteworthy that the 1991 Soviet net had a wing mesh size of 200 mm, which was double the mesh size for the 1990 Soviet net (100 mm) and nearly double

Table 18.--Biomass estimates in metric tons for major fish species from the standard U.S. shelf commonly fished during separate U.S. and cooperative U.S.-U.S.S.R. bottom trawl surveys conducted during 1988-1991.'

Species	1988		1989		1990		1991	
	U.S.	Cooperative U.S.-U.S.S.R.	U.S.	Cooperative U.S.-U.S.S.R.	U.S.	Cooperative U.S.-U.S.S.R.	U.S.	Cooperative U.S.-U.S.S.R.
Fish								
Walleye pollock	6,922,000	2,052,455	5,921,600	2,922,284	7,656,972	3,153,303	5,108,969	3,070,313
Pacific cod	959,500	531,407	962,500	794,960	744,337	656,577	532,590	716,678
Yellowfin sole	2,854,600	1,230,268	2,831,800	1,431,121	2,182,822	2,492,097	2,393,333	805,767
Rock sole	1,903,500	742,108	1,318,200	988,743	1,410,582	1,304,064	1,588,256	792,135
Hippoglossoides spp.	557,500	194,020	523,200	266,947	652,488	333,121	570,348	272,235
Alaska plaice	936,800	434,279	599,400	369,183	529,387	679,443	529,092	238,478
Greenland turbot	11,600	3,963	8,900	5,431	14,371	3,156	10,658	9,999
Atheresthes spp.	306,400	105,841	410,700	170,760	467,522	255,855	389,910	155,425
Pacific halibut	138,200	50,413	77,100	85,518	89,936	99,754	97,605	96,304
Invertebrates								
Crustacea	-	-	-	-	1,568,324	923,194	1,620,835	117,628
Echinodermata	-	-	-	-	1,211,534	1,282,738	1,518,828	206,272
Coelenterata	-	-	-	-	104,568	76,372	126,311	188,731
Ascidiacea	-	-	-	-	171,219	103,328	173,399	6,246
Mollusca	-	-	-	-	433,722	72,397	324,221	5,002

[a]Biomass estimates for invertebrates are not available for 1988 and 1989.

the wing mesh size of the U.S. net (102 mm). However, there is little information to assess the 1991 Soviet net's fishing characteristics and efficiencies.

Mean size for yellowfin sole, rock sole, Alaska plaice, and Pacific halibut measured from the standard U.S. shelf area were about 2 cm to 4 cm longer during the U.S.-U.S.S.R. cooperative survey compared with the U.S. survey (Fig. 49). However, the magnitude of the population at-size was greatly reduced for all the flatfish species with the exception of Pacific halibut from the U.S.-U.S.S.R. cooperative data sets. The relative size composition was similar for both yellowfin sole and Pacific halibut. The mean length of walleye pollock was longer during the U.S. survey (37.7 cm) rather than during the U.S.-U.S.S.R. cooperative survey (31.3 cm) (Fig. 50). The Soviet commercial pelagic net appeared to be more efficient at sampling juvenile pollock while the U.S. 83-112 net was apparently more efficient at sampling the adult portion of the population. Pacific cod mean length was longer from the U.S. -U.S.S.R. cooperative survey (45.6 cm) compared with the U.S. survey (37.0 cm) (Fig. 50).

Relating the results from the U.S.-U.S.S.R. cooperative surveys to the results from the U.S. surveys can be ambiguous, as described by Sample and Nichol (1994). Potential bias in the cooperative survey data sets can not be fully evaluated. Comparative trawling experiments were not conducted with the research vessel *Novodrutsk* in 1991. Therefore the fishing efficiency of the Soviet sampling net can not be assessed further

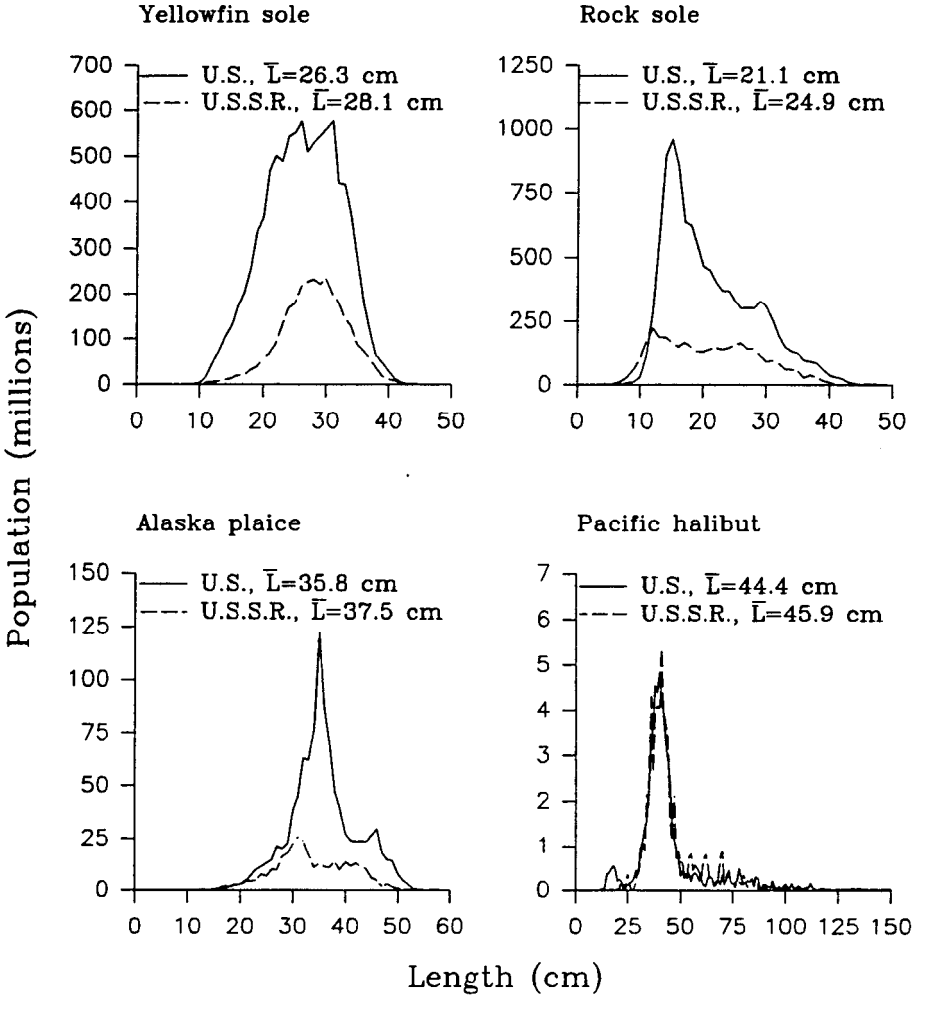

Figure 49.--Length composition of yellowfin sole, rock sole, Alaska plaice, and Pacific halibut during the 1991 independent U.S. bottom trawl survey and the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey. Data is from the standard U.S. area commonly fished during both surveys.

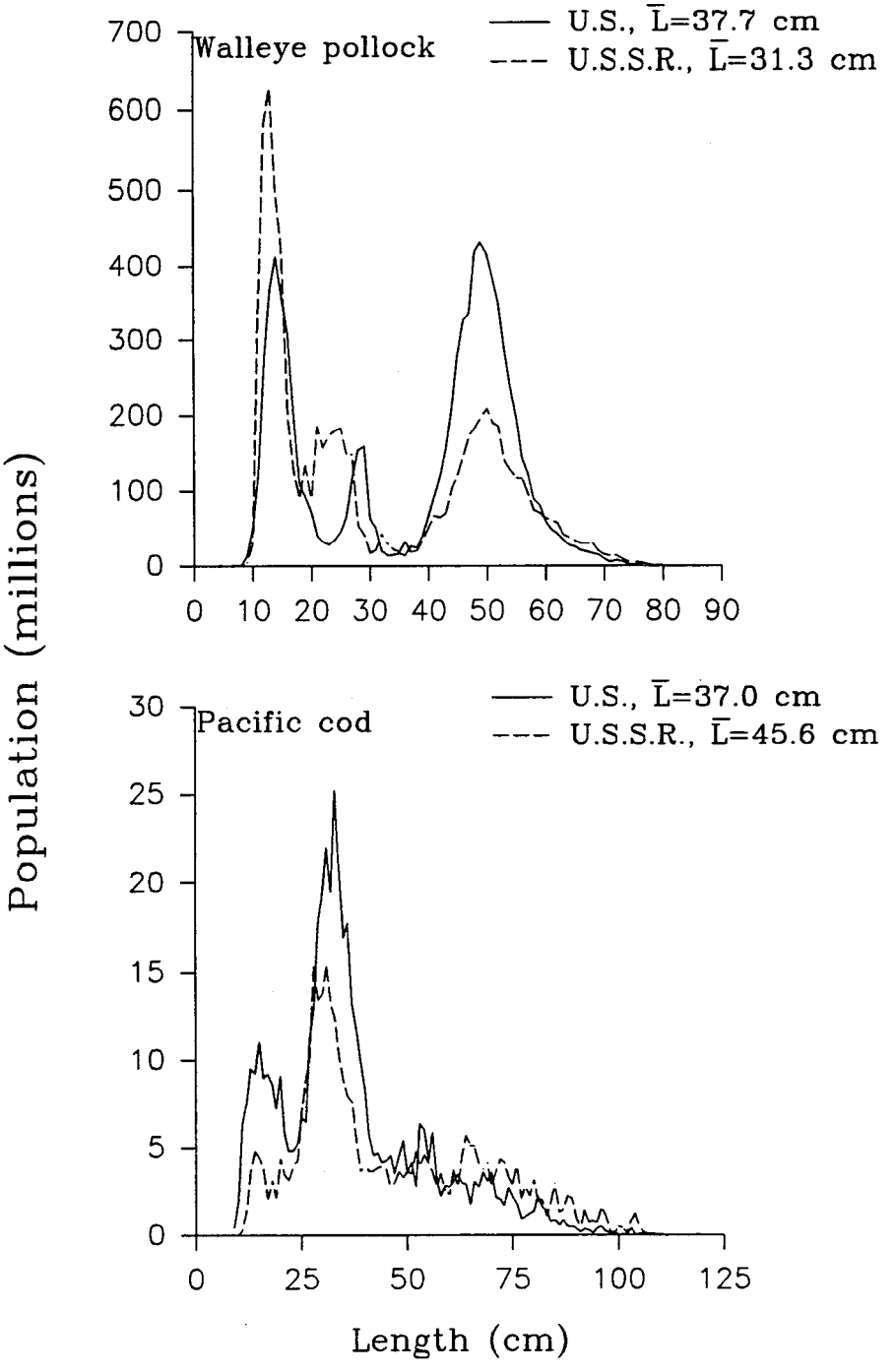

Figure 50.--Length compostion of walleye pollock and Pacific cod during the 1991 independent U.S. bottom trawl survey and the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey. Data is from the standard U.S. area commonly fished during both surveys.

or related to other sampling trawls. Also, since the net mensuration equipment malfunctioned after only a few readings were recorded, the approximate mean net width used for the biomass calculations may be inaccurate. While past U.S.-U.S.S.R. cooperative surveys have begun about 2 weeks prior to the U.S. survey, the 1991 cooperative survey started about 1 month before the U.S. survey. This difference in sampling time may have allowed for movement of some portion of the groundfish assemblage into or out of the survey area. Such movement may have accounted for at least some of the differences in biomass estimates and population parameters between the two surveys.

The 1991 cooperative U.S.-U.S.S.R. survey region extended farther west along the Bering Sea shelf than during earlier cooperative surveys. The information gathered from sampling sites in Cape Olyutorski has provided U.S. scientists with the first direct data on the biological characteristics of that region. However, potential biases in the 1991 data set may limit its value.

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APPENDIX A

Station, Haul, and Catch Data

Appendix A contains computer listings of station and catch data for all successfully completed standard stations used in the analysis of the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf. Station locations by haul number are shown in Figure A-l.

Latitudes and longitudes are in degrees, minutes, and tenths of minutes. Gear depths are in fathoms and catch weights are in kilograms. Tow duration is in tenths of hours and distance fished is in nautical miles.

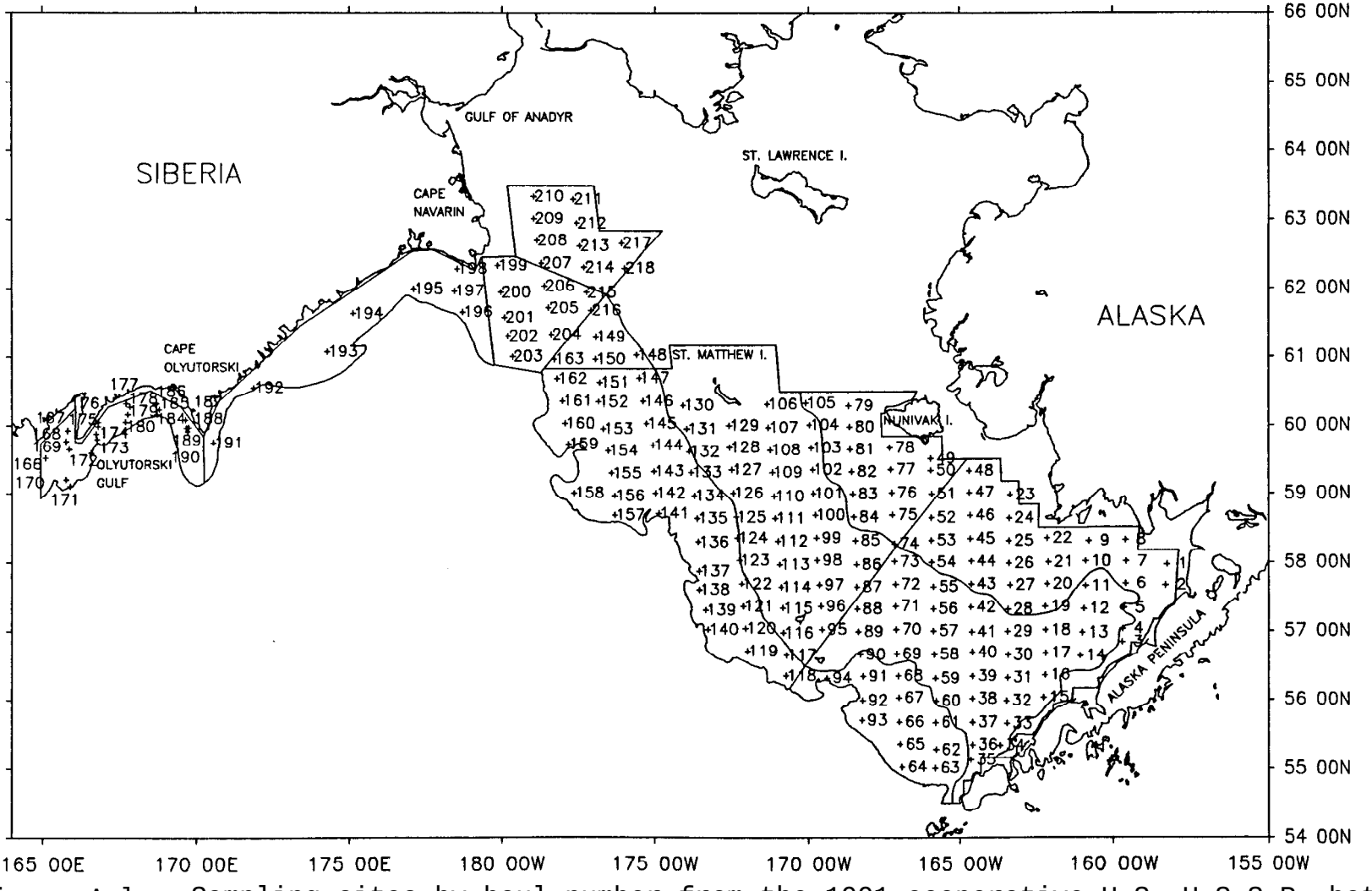

Figure A-l.--Sampling sites by haul number from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Table A-1.--Haul and catch data for successfully completed tows by the R/V Novodrutsk.

HAUL NO.	1	2	3	4	5	6	7	8	9	10	11
MONTH/DAY/YEAR	5/11/91	5/11/91	5/11/91	5/11/91	5/12/91	5/12/91	5/12/91	5/12/91	5/12/91	5/13/91	5/13/91
LATITUDE START	57 58.4	57 39.6	56 50.3	57 1.5	57 20.0	57 41.7	58 0.6	58 19.8	58 18.6	58 0.8	57 39.1
LONGITUDE START	158 18.9	158 21.9	159 43.3	159 41.9	159 39.8	159 37.3	159 35.6	159 36.9	160 46.0	160 53.0	160 52.5
LATITUDE END	57 56.3	57 35.8	56 48.1	57 4.0	57 22.3	57 43.6	58 3.1	58 19.6	58 16.6	57 58.7	57 37.0
LONGITUDE END	158 17.8	158 22.5	159 44.7	159 41.0	159 39.5	159 36.4	159 35.7	159 41.8	160 46.5	160 53.9	160 52.8
GEAR DEPTH	17	16	26	27	27	23	19	10	12	22	27
DURATION IN HOURS	0.50	0.83	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.17	3.82	2.31	2.53	2.34	2.01	2.50	2.57	1.95	2.14	2.11
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	1.5	18.9	3753.0	764.0	178.8	195.0	34.5	4.8	0.5	302.5	349.9
PAC COD	0.0	0.0	231.4	476.1	37.9	0.0	0.1	0.0	10.0	0.0	94.1
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	21.8	0.0	3.4	28.8	105.6	7.1	9.8	0.6	0.0	22.9	41.4
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	70.9	187.2	15.8	360.7	30.6	28.3	17.1	57.0	27.6	50.5	21.4
EELPOUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RNDFISH	10.3	25.9	32.1	31.3	30.9	44.3	10.7	4.2	4.1	3.6	3.3
TOT ROUNDFISH	104.5	232.0	4035.7	1660.9	383.9	274.6	72.1	66.6	42.2	379.5	510.1
YELLOW SOLE	1186.4	932.6	547.3	226.2	208.6	329.3	798.1	742.1	312.1	1178.2	159.5
ROCK SOLE	289.0	1097.5	936.7	2049.0	1320.8	941.4	224.3	63.3	74.3	1058.0	662.0
FLATHEAD SOLE	0.0	0.0	16.9	5.7	4.1	3.0	0.0	0.0	0.0	0.0	10.8
ALASKA PLAICE	22.9	3.1	0.0	12.7	19.0	335.3	137.7	49.2	6.4	1021.9	409.0
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	0.0	0.0	28.2	4.8	23.0	9.1	0.5	0.0	0.0	8.8	12.6
OTHER FLTFISH	7.6	8.4	0.0	39.6	88.0	48.1	64.0	44.2	7.5	32.8	4.2
TOT FLATFISH	1505.9	2041.7	1529.2	2337.9	1663.5	1666.3	1224.5	898.8	400.2	3299.7	1258.0
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED KING CRAB	1.3	0.0	1.1	0.0	0.0	6.1	2.3	4.3	6.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	14.2	12.5	4.0	0.6	0.0	0.0	0.0	1.5
TANNER, OPILIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	5.9	1.0	27.1	17.7	2.7	0.4	0.0	0.1	0.8	0.0	0.2
SNAILS	0.0	0.0	0.5	0.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
STARFISH	548.5	1531.3	632.0	999.6	667.8	274.7	110.2	71.2	35.7	20.0	10.2
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	5.0	26.3	33.8	132.9	24.4	27.3	3.6	1.3	6.6	2.0	17.4
TOTAL INVERTS	561.4	1558.8	694.6	1164.5	707.9	313.5	116.7	76.9	49.8	22.0	29.3
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	5.4	23.1	0.0	7.9	0.0	0.0	1.8	4.5	2.9	0.0	3.0
TOTAL CATCH	2177.3	3855.5	6259.5	5171.1	2755.6	2254.3	1415.1	1046.9	495.1	3701.3	1800.4

Table A-1.--Continued.

HAUL NO.	12	13	14	15	16	17	18	19	20	21	22
MONTH/DAY/YEAR	5/13/91	5/13/91	5/13/91	5/14/91	5/14/91	5/14/91	5/14/91	5/14/91	5/14/91	5/14/91	5/15/91
LATITUDE START	57 19.0	56 58.2	56 38.6	56 1.7	56 21.3	56 40.7	57 0.9	57 20.9	57 41.1	58 0.2	58 20.9
LONGITUDE START	160 56.6	160 59.0	161 2.9	162 13.9	162 11.4	162 10.3	162 10.4	162 10.7	162 7.3	162 4.9	162 7.1
LATITUDE END	57 16.4	56 55.9	56 37.1	56 4.1	56 23.5	56 43.1	57 2.9	57 22.8	57 43.0	58 2.7	58 22.0
LONGITUDE END	160 57.2	161 0.6	161 6.0	162 13.8	162 11.1	162 10.4	162 11.0	162 10.2	162 6.8	162 4.5	162 12.1
GEAR DEPTH	28	32	36	38	41	37	28	24	22	17	23
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.63	2.49	2.26	2.48	2.20	2.40	2.05	1.96	1.99	2.50	2.84
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	181.9	122.0	391.9	778.0	819.3	457.9	701.8	283.3	187.6	68.9	24.7
PAC COD	110.9	49.5	125.6	180.9	116.3	139.9	37.0	40.8	5.2	2.9	0.0
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	6.1	61.6	23.1	1.3	0.1	16.3	7.5	1.6	1.1	0.3	0.1
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	7.3	29.8	3.4	33.1	23.8	8.6	1.9	0.0	0.5	0.3	0.2
EELPOUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RNDFISH	2.1	3.1	0.4	2.0	0.3	0.2	0.3	0.2	0.2	0.6	0.2
TOT ROUNDFISH	308.4	266.0	544.5	995.3	959.9	623.1	748.4	325.9	194.5	73.1	25.3
YELLOW SOLE	26.3	85.2	12.0	55.2	60.1	46.0	68.7	47.9	28.6	99.6	25.6
ROCK SOLE	98.9	333.9	56.5	214.3	109.8	123.4	169.9	34.9	43.3	70.5	3.9
FLATHEAD SOLE	21.1	115.5	56.2	113.7	69.9	27.4	10.0	1.6	0.0	0.0	0.0
ALASKA PLAICE	40.6	35.2	7.5	70.2	53.2	15.6	27.7	43.2	15.9	79.2	1.0
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	10.4	2.3	0.5	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	17.9	30.3	5.0	15.6	1.9	3.4	19.1	0.0	0.4	0.5	0.0
OTHER FLTFISH	5.5	9.9	5.1	5.4	0.0	0.1	0.9	0.0	0.0	2.0	0.1
TOT FLATFISH	210.3	610.1	142.3	484.8	297.2	216.5	296.2	127.6	88.2	251.7	30.5
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED KING CRAB	23.8	25.1	0.0	0.0	10.3	0.0	1.1	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	2.5	0.3	0.0	0.5	0.0	0.2	0.0	0.0	0.0	0.1	0.0
TANNER, OPILIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
STARFISH	9.9	4.8	4.5	7.0	0.5	0.0	1.1	1.2	1.1	1.6	0.1
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	33.6	107.5	424.1	369.8	113.4	364.5	565.5	278.8	63.7	10.9	0.1
TOTAL INVERTS	69.9	138.1	428.6	377.4	124.2	364.7	567.7	280.0	65.2	12.6	0.2
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	589.0	1014.3	1115.5	1857.5	1381.3	1204.2	1612.3	733.5	347.9	337.4	56.0

Table A-I .--Continued.

HAUL NO.	23	24	25	26	27	28	29	30	31	32	33
MONTH/DAY/YEAR	5/15/91	5/15/91	5/15/91	5/15/91	5/15/91	5/16/91	5/16/91	5/16/91	5/16/91	5/16/91	5/16/91
LATITUDE START	58 58.9	58 38.5	58 18.8	57 58.6	57 39.5	57 18.7	56 59.3	56 39.2	56 18.9	55 58.6	55 39.0
LONGITUDE START	163 19.7	163 21.5	163 22.1	163 21.9	163 20.0	163 23.8	163 24.3	163 23.7	163 24.7	163 26.8	163 25.5
LATITUDE END	58 56.4	58 36.1	58 16.4	57 56.6	57 37.1	57 16.5	56 57.3	56 36.5	56 16.6	55 56.1	55 37.4
LONGITUDE END	163 20.2	163 21.4	163 22.2	163 21.4	163 19.6	163 24.2	163 24.4	163 23.9	163 25.1	163 27.5	163 28.2
GEAR DEPTH	9	14	17	19	23	27	32	38	43	44	40
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.52	2.47	2.36	1.98	2.34	2.23	1.99	2.74	2.33	2.56	2.19
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	3.0	0.0	39.7	167.6	95.3	146.7	203.5	242.4	352.8	5700.5	3375.2
PAC COD	0.0	0.0	1.6	11.6	6.7	31.0	286.9	99.6	75.1	77.2	764.6
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	4.3	0.5	1.0	0.0	0.0	3.8	10.0	4.5	0.1	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	0.1	0.4	1.1	5.1	2.7	3.2	2.1	13.2	5.0	0.0	84.1
EELPOUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RNDFISH	20.6	3.4	5.5	0.5	1.6	0.9	1.1	1.5	0.0	1.1	0.0
TOT ROUNDFISH	28.0	4.3	49.0	184.7	106.2	185.6	503.5	361.2	433.0	5778.7	4223.9
YELLOW SOLE	66.0	65.1	70.8	109.3	224.1	225.7	113.5	479.4	116.8	19.3	156.8
ROCK SOLE	0.9	0.8	4.1	84.1	173.5	611.4	181.2	125.9	133.6	47.4	38.1
FLATHEAD SOLE	0.0	0.0	0.0	0.0	0.0	4.2	63.2	159.9	286.7	294.9	114.8
ALASKA PLAICE	0.3	3.9	23.8	80.7	67.2	63.3	14.4	49.0	12.0	15.4	61.4
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	3.4	2.3	4.1	4.4	12.0
PAC HALIBUT	0.0	0.0	0.0	2.4	3.2	34.6	16.1	9.8	21.4	32.5	18.7
OTHER FLTFISH	0.1	1.8	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0
TOT FLATFISH	67.2	71.5	98.7	276.6	468.1	939.5	391.8	826.2	574.7	413.9	401.8
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.2	0.0	0.0
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.2	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	5.9	0.0	0.0	3.9	15.1	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	0.0	0.8	1.2	0.1	0.0	2.2	0.0	0.0
TANNER, OPILIO	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.6	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	0.0	0.0
SHRIMP	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
STARFISH	0.5	0.3	0.5	1.4	0.8	2.6	1.0	0.3	0.3	0.0	14.6
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	0.1	0.0	1.0	116.3	35.0	4.6	247.1	100.9	58.2	121.2	326.5
TOTAL INVERTS	0.8	0.3	1.8	123.7	37.2	8.6	252.2	117.8	61.5	121.2	341.1
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	96.0	76.1	149.4	585.1	611.7	1133.7	1147.7	1307.5	1069.6	6313.9	4966.8

Table A-1 .--Continued.

HAUL NO.	34	35	36	37	38	39	40	41	42	43	44
MONTH/DAY/YEAR	5/16/91	5/18/91	5/18/91	5/18/91	5/18/91	5/18/91	5/18/91	5/19/91	5/19/91	5/19/91	5/19/91
LATITUDE START	55 20.3	55 8.0	55 20.9	55 40.3	56 0.7	56 20.5	56 41.4	56 58.8	57 20.4	57 40.8	58 0.6
LONGITUDE START	163 39.7	164 37.3	164 33.9	164 34.2	164 35.0	164 35.0	164 34.8	164 35.2	164 37.0	164 36.6	164 36.5
LATITUDE END	55 19.4	55 10.0	55 22.9	55 42.4	56 2.7	56 22.5	56 43.8	57 0.9	57 22.4	57 43.5	58 2.7
LONGITUDE END	163 42.8	164 35.8	164 33.1	164 34.4	164 35.0	164 35.0	164 34.2	164 36.5	164 37.0	164 36.3	164 36.5
GEAR DEPTH	32	49	53	50	48	43	37	34	32	26	22
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	1.96	2.19	2.14	2.05	1.98	1.99	2.45	2.22	2.07	2.72	2.20
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	1048.9	3183.2	236.3	1805.9	366.7	165.7	146.2	236.5	205.2	355.2	112.1
PAC COD	390.3	1118.4	225.0	108.2	113.5	61.2	36.3	68.5	117.6	144.2	44.9
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.0	7.1	21.1	13.6
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	1.5	0.3	18.4	1.4	0.0	7.4	5.9	10.2	0.7	30.2	20.6
EELPOUTS	0.0	0.0	3.2	2.5	0.0	4.1	0.0	1.5	0.0	0.0	0.0
OTHER RNDFISH	0.5	0.6	0.8	0.2	0.3	0.2	0.3	1.5	1.9	6.4	5.9
TOT ROUNDFISH	1441.2	4303.1	483.9	1918.2	480.5	238.6	188.9	318.2	332.4	557.0	197.1
YELLOW SOLE	20.7	12.2	1.1	3.9	121.4	425.9	545.5	679.0	259.6	130.1	179.8
ROCK SOLE	18.5	18.9	3.4	68.2	119.2	42.2	63.5	169.9	875.2	1033.6	513.2
FLATHEAD SOLE	3.1	176.5	255.6	686.1	500.0	204.1	74.4	66.2	28.7	13.4	1.1
ALASKA PLAICE	0.0	0.0	1.2	0.0	1.9	8.4	17.0	75.1	145.1	260.9	103.6
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.7	165.9	308.4	143.5	3.6	0.0	0.1	0.0	0.0	0.0	0.0
PAC HALIBUT	19.0	131.5	19.9	108.6	49.0	42.5	30.1	12.9	1.8	61.9	9.3
OTHER FLTFISH	0.3	12.2	26.1	15.2	0.0	0.1	0.0	0.0	0.0	0.0	0.8
TOT FLATFISH	62.3	517.0	615.8	1025.5	795.1	723.2	730.6	1003.1	1310.4	1499.8	807.9
SKATES	0.0	0.0	266.5	458.1	67.3	4.4	14.1	24.0	25.6	0.0	0.0
TOT ELASMOBRH	0.0	0.0	266.5	458.1	67.3	4.4	14.1	24.0	25.6	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	31.2	9.6	8.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	4.4	0.0	266.7	18.5	0.1	9.8	6.4	2.0	0.9	4.9	0.0
TANNER, OPILIO	0.0	0.6	19.1	8.2	1.5	0.2	0.3	0.5	23.2	2.1	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.3	0.4	0.0	2.8	0.8	0.1	0.0	0.5	0.2
SNAILS	0.0	0.3	0.0	6.8	0.0	11.3	0.8	0.5	0.0	0.0	0.0
SHRIMP	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.0
STARFISH	0.9	0.0	0.0	0.0	0.9	4.0	1.1	2.9	2.0	1.8	2.4
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	26.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	591.4	91.3	41.5	98.8	55.3	41.7	127.5	55.3	56.4	15.7	5.2
TOTAL INVERTS	596.7	92.2	354.0	132.7	57.9	101.3	146.6	69.3	82.4	25.3	7.9
EMPTY SHELLS	0.0	0.0	0.0	3.5	0.7	3.9	0.4	0.2	0.0	0.0	0.1
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	2100.1	4912.3	1720.2	3538.0	1401.6	1071.4	1080.6	1414.9	1750.9	2082.1	1013.0

Table A-I .--Continued.

HAUL NO.	45	46	47	48	49	50	51	52	53	54	55
MONTH/DAY/YEAR	5/19/91	5/19/91	5/19/91	5/20/91	5/20/91	5/20/91	5/20/91	5/20/91	5/20/91	5/20/91	5/21/91
LATITUDE START	58 20.6	58 40.8	59 0.4	59 19.8	59 30.4	59 20.1	58 59.7	58 39.1	58 19.4	57 59.8	57 38.1
LONGITUDE START	164 38.3	164 39.2	164 40.0	164 41.3	165 57.7	165 57.8	165 56.0	165 56.2	165 56.6	165 55.6	165 51.9
LATITUDE END	58 22.5	58 42.8	59 2.3	59 19.2	59 28.4	59 18.0	58 57.7	58 36.8	58 17.2	57 57.5	57 35.9
LONGITUDE END	164 38.3	164 39.8	164 43.3	164 45.7	165 58.2	165 57.5	165 55.8	165 56.0	165 56.3	165 56.0	165 51.5
GEAR DEPTH	21	16	11	8	9	10	14	18	21	26	31
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	1.95	2.05	2.53	2.31	2.07	2.11	2.01	2.26	2.16	2.27	2.24
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	93.9	29.6	2.3	0.0	2.9	12.5	17.7	132.2	546.4	607.3	331.3
PAC COD	6.9	0.2	10.9	0.0	0.0	5.2	0.0	42.1	47.3	148.9	186.0
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	23.3	120.0	70.6	88.9	2.5	67.8	1.4	61.6	7.6	0.8	2.6
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	10.7	13.7	48.8	23.9	20.5	9.3	9.6	35.2	28.4	11.1	9.0
EELPOUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RNDFISH	24.0	9.1	4.0	3.6	11.7	5.9	1.9	3.6	4.3	3.0	16.0
TOT ROUNDFISH	158.8	172.6	136.5	116.4	37.6	100.7	30.6	274.6	634.0	771.0	545.0
YELLOW SOLE	161.5	295.1	146.1	411.9	406.9	186.2	276.9	336.3	130.9	202.1	947.3
ROCK SOLE	164.7	64.6	139.7	21.8	10.9	38.3	129.1	232.7	354.8	385.4	288.1
FLATHEAD SOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
ALASKA PLAICE	81.0	75.5	66.5	4.5	30.3	48.8	180.3	319.3	65.9	38.1	40.2
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	4.1	2.4	18.1	0.0	0.6	0.0	16.6	7.0	24.2	36.7	14.8
OTHER FLTFISH	0.1	4.3	4.5	2.6	25.3	10.0	4.3	5.1	0.0	0.0	0.0
TOT FLATFISH	411.3	442.0	374.8	440.8	474.0	283.3	607.2	900.5	575.7	662.3	1292.7
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	0.0
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.8
TANNER, OPILIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	7.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.1	0.2	3.4	4.8
SNAILS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	7.0
SHRIMP	0.0	0.2	0.1	0.5	4.1	0.3	0.1	0.5	0.2	0.3	1.3
STARFISH	1.9	1.8	2.7	10.7	105.5	45.4	10.4	6.1	4.8	4.1	10.7
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	0.3	1.4	0.6	0.0	0.3	0.0	0.0	1.5	0.4	2.9	27.1
TOTAL INVERTS	2.3	3.4	3.5	11.1	110.6	45.6	13.7	8.1	6.0	15.3	60.7
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
OTHER	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	572.4	618.0	514.8	568.3	622.8	429.6	651.5	1183.2	1215.7	1465.1	1898.3

Table A-I.--Continued.

HAUL NO.	56	57	58	59	60	61	62	63	64	65	66
MONTH/DAY/YEAR	5/21/91	5/21/91	5/21/91	5/21/91	5/21/91	5/21/91	5/22/91	5/22/91	5/22/91	5/22/91	5/22/91
LATITUDE START	57 19.4	56 59.8	56 39.6	56 18.7	55 58.8	55 40.2	55 16.8	55 0.4	55 1.6	55 21.8	55 41.0
LONGITUDE START	165 52.6	165 52.2	165 50.1	165 48.4	165 47.5	165 47.8	165 47.4	165 49.8	166 55.3	166 59.6	167 0.8
LATITUDE END	57 17.1	56 57.8	56 37.4	56 16.4	55 56.6	55 38.3	55 14.4	55 1.2	55 4.0	55 24.1	55 43.0
LONGITUDE END	165 52.9	165 51.9	165 50.0	165 48.5	165 48.1	165 47.6	165 48.5	165 53.0	166 55.6	166 59.8	167 2.3
GEAR DEPTH	33	36	44	48	57	61	64	69	80	73	71
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.32	2.05	2.13	2.29	2.19	1.88	2.50	2.03	2.39	2.25	2.16
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	467.2	191.1	110.8	2098.8	153.1	141.1	109.1	187.7	47.7	191.6	127.9
PAC COD	106.8	48.3	36.5	138.7	115.4	121.6	22.2	51.3	51.5	82.1	68.0
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.7	0.5	0.7	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	5.9	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	2.0	2.8	0.2	0.0	1.1	9.1	0.4	0.5	0.6	0.0	0.2
EELPOUTS	0.1	1.6	9.1	9.6	1.0	0.2	0.4	0.9	1.0	0.0	0.0
OTHER RNDFISH	4.1	2.5	0.2	0.0	2.6	0.8	0.2	0.2	2.3	2.6	2.5
TOT ROUNDFISH	586.2	246.3	157.2	2247.0	273.4	272.8	132.3	241.2	103.6	277.0	198.6
YELLOW SOLE	350.6	494.6	123.8	17.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	150.8	174.2	85.3	48.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLATHEAD SOLE	15.4	78.5	167.4	376.9	415.5	107.5	0.0	51.3	29.6	23.4	38.8
ALASKA PLAICE	17.2	31.5	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	32.4	195.5	180.1	582.6	308.2	81.2	10.7	22.5
PAC HALIBUT	47.2	30.5	41.0	26.8	23.1	30.5	17.0	17.6	50.8	6.9	2.3
OTHER FLTFISH	0.0	0.0	0.0	0.0	17.2	30.8	29.7	12.9	26.1	12.7	6.1
TOT FLATFISH	581.3	809.3	422.2	501.6	651.4	349.4	629.3	390.0	187.7	53.6	69.6
SKATES	0.0	10.4	20.2	34.7	74.8	77.6	35.4	35.0	44.0	1.8	9.1
TOT ELASMOBRH	0.0	10.4	20.2	34.7	74.8	77.6	35.4	35.0	44.0	1.8	9.1
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	1.4	3.2	18.2	4.4	1.9	62.8	15.4	6.4	0.9	0.9	1.1
TANNER, OPILIO	3.2	1.1	4.8	17.5	30.9	4.5	1.6	2.7	0.0	0.0	1.2
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.9	3.0	1.5	0.0	2.9	0.1	0.2	0.1	0.0	0.0	0.0
SNAILS	2.3	5.0	0.1	0.0	7.3	0.0	0.5	0.2	0.1	0.0	0.0
SHRIMP	0.1	0.1	0.5	0.2	0.2	0.2	0.2	0.0	6.1	0.2	0.2
STARFISH	4.5	7.1	10.6	1.9	0.2	0.5	1.4	0.0	0.0	0.0	0.1
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	13.0	5.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	43.8	50.1	22.8	48.9	48.5	22.3	53.1	7.3	1.0	0.0	4.5
TOTAL INVERTS	56.1	69.7	58.4	72.9	91.8	90.4	72.3	17.1	21.1	6.1	7.1
EMPTY SHELLS	0.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	16.8	51.3	0.0	3.6	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	1224.5	1137.5	674.8	2907.5	1091.4	793.8	869.3	683.4	356.4	338.5	284.5

Table A-I .--Continued.

HAUL NO.	67	68	69	70	71	72	73	74	75	76	77
MONTH/DAY/YEAR	5/22/91	5/23/91	5/23/91	5/23/91	5/23/91	5/23/91	5/23/91	5/23/91	5/24/91	5/24/91	5/24/91
LATITUDE START	56 1.7	56 21.2	56 40.4	57 0.9	57 21.5	57 40.9	58 0.3	58 16.1	58 41.2	59 0.4	59 21.1
LONGITUDE START	167 0.9	167 2.6	167 5.5	167 6.2	167 7.6	167 7.9	167 9.4	167 10.0	167 13.7	167 14.9	167 17.1
LATITUDE END	56 4.3	56 23.4	56 42.5	57 3.6	57 24.0	57 43.2	58 2.4	58 18.3	58 43.3	59 3.0	59 23.5
LONGITUDE END	167 1.4	167 4.1	167 7.5	167 7.0	167 7.6	167 8.1	167 9.3	167 10.6	167 14.4	167 15.6	167 17.1
GEAR DEPTH	70	91	49	38	35	34	32	27	20	19	15
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.59	2.30	2.35	2.69	2.50	2.34	2.07	2.26	2.11	2.61	2.46
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	119.7	324.5	177.6	801.6	234.8	335.9	213.1	577.3	253.5	120.9	53.3
PAC COD	2.5	68.9	33.3	204.6	166.2	131.0	121.2	86.5	76.2	64.0	11.3
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	30.0	5.1	17.5
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	0.2	17.7	23.3	15.1	5.1	8.5	38.2	35.2	45.1	136.8	35.2
EELPOUTS	0.9	1.9	7.9	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0
OTHER RNDFISH	2.1	0.3	0.1	30.3	4.2	9.2	16.8	4.1	9.1	4.0	7.0
TOT ROUNDFISH	125.5	413.3	242.3	1051.6	410.5	484.6	389.3	703.1	413.9	346.2	124.4
YELLOW SOLE	0.0	0.0	5.9	269.0	111.6	352.2	400.7	209.4	431.8	1463.6	352.4
ROCK SOLE	0.0	0.3	0.5	751.6	364.1	513.0	174.2	372.1	405.4	80.8	81.6
FLATHEAD SOLE	115.4	175.2	94.1	421.2	40.8	23.8	4.4	10.3	7.1	0.0	0.0
ALASKA PLAICE	0.0	0.0	0.0	8.3	5.9	111.9	390.0	79.0	240.8	160.1	150.8
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	136.8	133.2	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	11.7	70.3	28.6	0.0	17.2	29.5	31.9	27.3	31.3	10.8	7.1
OTHER FLTFISH	20.1	6.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
TOT FLATFISH	284.0	385.8	135.0	1450.2	539.7	1030.4	1001.1	698.0	1116.4	1715.3	597.1
SKATES	138.1	152.4	25.6	117.4	13.6	17.4	14.4	0.0	0.0	0.0	0.0
TOT ELASMOBRH	138.1	152.4	25.6	117.4	13.6	17.4	14.4	0.0	0.0	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.5	5.0	0.4	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, OPILIO	2.5	7.8	6.4	3.8	0.0	3.6	24.8	33.4	3.7	0.0	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	1.6	6.4	10.1	0.0	1.3	2.7	3.0	2.4	0.3	1.5	1.6
SNAILS	0.0	3.2	2.8	4.5	0.2	0.0	0.0	0.0	0.0	0.0	0.4
SHRIMP	0.3	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.0
STARFISH	0.7	164.7	22.1	12.2	4.5	10.4	1.5	4.8	6.3	5.1	20.9
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	12.5	1.1	28.3	36.4	24.8	8.1	6.0	35.7	7.5	0.2	0.0
TOTAL INVERTS	18.1	188.4	70.2	57.0	31.3	24.8	35.4	77.3	17.8	6.8	22.9
EMPTY SHELLS	0.1	3.2	2.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	34.9	33.9	16.2	3.2	0.0	0.0
TOTAL CATCH	565.8	1143.1	475.8	2676.2	995.1	1592.1	1474.1	1494.6	1551.3	2068.4	744.4

Table A-l .--Continued.

HAUL NO.	78	79	80	81	82	83	84	85	86	87	88
MONTH/DAY/YEAR	5/24/91	5/25/91	5/25/91	5/25/91	5/25/91	5/25/91	5/25/91	5/25/91	5/26/91	5/26/91	5/26/91
LATITUDE START	59 40.5	60 17.5	59 58.8	59 38.9	59 19.1	58 59.6	58 39.6	58 19.3	57 58.3	57 38.7	57 19.1
LONGITUDE START	167 18.9	168 40.2	168 38.6	168 37.4	168 34.3	168 32.3	168 29.9	168 27.2	168 24.7	168 23.7	168 23.4
LATITUDE END	59 42.2	60 15.6	59 56.5	59 36.6	59 16.9	58 57.6	58 37.7	58 17.2	57 56.3	57 36.4	57 16.8
LONGITUDE END	167 22.8	168 39.8	168 38.2	168 37.2	168 34.4	168 32.0	168 29.3	168 27.0	168 25.1	168 23.7	168 23.4
GEAR DEPTH	15	16	19	19	19	23	27	33	35	36	36
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.63	1.90	2.29	2.27	2.16	2.01	1.93	2.16	2.06	2.25	2.33
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	24.9	21.3	3.2	6.5	76.1	147.0	198.8	78.7	847.1	920.1	342.5
PAC COD	0.0	0.0	0.0	15.8	21.9	44.2	68.9	67.0	249.6	367.2	21.8
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	64.8	4.5	2.0	6.9	132.4	35.7	5.0	0.6	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
SCULPINS	30.6	11.8	39.0	54.4	20.2	13.7	12.8	25.5	4.4	48.8	24.0
EELPOUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
OTHER RNDFISH	2.2	0.3	1.2	18.7	19.9	11.1	2.5	2.3	4.4	7.8	0.7
TOT ROUNDFISH	122.5	38.0	45.4	102.4	270.4	251.7	288.0	174.1	1105.4	1344.2	389.8
YELLOW SOLE	224.3	463.1	940.2	1209.2	192.3	226.3	106.6	350.9	162.6	2337.7	78.7
ROCK SOLE	23.1	1.6	16.5	66.2	81.2	137.2	200.0	341.5	265.2	2200.2	193.9
FLATHEAD SOLE	0.0	0.7	1.7	0.7	1.3	0.0	0.0	0.0	1.0	42.2	23.4
ALASKA PLAICE	62.8	108.0	302.2	263.3	31.3	112.5	125.0	309.3	71.9	0.0	5.2
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	4.8
PAC HALIBUT	3.9	0.0	0.0	0.0	0.0	2.8	11.0	2.3	96.4	140.9	26.8
OTHER FLTFISH	3.4	0.8	0.7	2.0	4.4	0.6	0.0	0.0	0.0	0.0	0.0
TOT FLATFISH	317.5	574.2	1261.3	1541.4	310.4	479.4	442.6	1003.9	597.1	4724.1	332.7
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	117.2	73.7
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	117.2	73.7
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
TANNER, BAIRDI	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.3	0.6
TANNER, OPILIO	0.0	0.0	0.0	0.1	0.1	0.0	13.0	80.2	18.8	73.4	3.5
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.8	0.1	1.5	0.0	0.0	9.3	3.0	2.6	7.8	0.1
SNAILS	0.0	0.1	0.0	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.2	0.1	0.0	0.3	0.3	0.1	1.5	0.0	0.0	0.0	0.0
STARFISH	14.7	17.5	30.6	22.0	8.3	2.9	6.2	8.9	3.4	23.5	5.7
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	0.0	2.5	0.7	0.8	6.9	8.3	14.7	3.9	57.7	54.7	10.4
TOTAL INVERTS	14.9	21.0	31.4	25.3	15.6	11.6	47.4	96.1	82.5	159.7	21.5
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	2.0	18.6	0.0	295.3	20.6
TOTAL CATCH	455.0	633.1	1338.1	1669.1	596.5	742.7	780.0	1292.8	1784.9	6640.6	838.4

Table A-I .--Continued.

HAUL NO.	89	90	91	92	93	94	95	96	97	98	99
MONTH/DAY/YEAR	5/26/91	5/26/91	5/26/91	5/26/91	5/27/91	5/27/91	5/27/91	5/27/91	5/28/91	5/28/91	5/28/91
LATITUDE START	56 59.3	56 39.3	56 20.4	55 59.1	55 42.3	56 19.1	57 1.4	57 21.3	57 40.1	58 1.7	58 21.7
LONGITUDE START	168 21.1	168 16.7	168 11.5	168 12.5	168 13.9	169 23.0	169 32.8	169 35.1	169 38.5	169 42.4	169 44.0
LATITUDE END	56 57.2	56 37.5	56 19.5	55 56.4	55 44.0	56 19.2	57 3.8	57 23.6	57 42.4	58 3.8	58 24.1
LONGITUDE END	168 21.1	168 16.1	168 8.5	168 12.2	168 16.2	169 19.2	169 32.7	169 35.2	169 38.9	169 42.7	169 44.1
GEAR DEPTH	42	56	79	78	72	85	32	33	36	36	36
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.12	1.85	1.90	2.72	2.19	2.14	2.45	2.22	2.36	2.12	2.43
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	306.4	257.0	50.0	139.4	69.2	173.3	531.2	1891.6	732.8	1249.7	642.0
PAC COD	13.6	37.2	22.7	204.6	216.5	415.3	903.2	270.0	128.3	10.3	155.8
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	3.1	7.6	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	9.9	5.1	12.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	37.5	21.4	15.3	32.4	1.7	15.8	772.6	66.9	26.2	48.2	32.6
EELPOUTS	0.2	0.7	0.0	0.0	0.7	0.0	0.0	0.0	1.0	0.0	3.9
OTHER RNDFISH	0.6	0.1	1.6	0.0	1.2	23.1	7.6	3.4	3.4	5.3	7.5
TOT ROUNDFISH	358.4	316.4	89.5	376.4	289.2	632.8	2222.2	2237.6	901.7	1318.5	853.7
YELLOW SOLE	13.2	0.0	0.0	0.5	0.0	0.0	63.1	139.5	48.0	83.5	321.1
ROCK SOLE	78.7	1.1	0.0	15.2	3.9	0.0	3027.9	1667.7	223.0	86.7	25.6
FLATHEAD SOLE	35.2	30.4	13.2	71.9	54.0	2.5	12.1	20.4	11.5	7.7	2.3
ALASKA PLAICE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1	26.2	44.3	78.7
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.9	57.8	97.3	36.5	23.1	15.2	0.0	0.9	0.0	0.0	0.0
PAC HALIBUT	18.0	72.1	17.1	97.9	148.5	47.0	10.7	22.9	11.0	8.0	12.2
OTHER FLTFISH	0.0	3.2	16.0	28.8	45.3	30.5	0.0	0.0	0.0	0.0	0.0
TOT FLATFISH	145.9	164.6	143.6	250.8	274.7	95.2	3113.7	1882.5	319.7	230.2	439.8
SKATES	13.6	91.6	99.1	636.7	234.1	126.1	112.7	76.0	8.9	0.0	0.0
TOT ELASMOBRH	13.6	91.6	99.1	636.7	234.1	126.1	112.7	76.0	8.9	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	46.5	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	17.9	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.1	0.0	6.0	0.7	6.8	0.5	5.2	0.0	0.2	2.6	0.8
TANNER, OPILIO	2.9	0.0	12.5	18.6	2.3	0.3	3.4	0.7	11.8	46.3	17.9
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.0	0.1	1.1	0.4	1.8	1.7	0.0	0.0	0.0	0.0	0.0
STARFISH	2.4	1.1	0.0	0.0	92.3	40.4	2.4	0.0	30.6	9.0	3.9
SQUID	0.0	0.0	0.0	6.1	11.1	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	1.6	0.0	1.7	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	124.1	23.8	5.2	6.3	3.3	7.7	9.7	46.5	28.0	64.9	55.6
TOTAL INVERTS	129.7	25.0	24.8	33.7	117.6	52.5	85.1	47.2	71.6	122.7	78.2
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	647.5	599.0	357.0	1297.6	915.6	906.5	5533.8	4243.3	1301.9	1671.5	1371.8

Table A-I .--Continued.

HAUL NO.	100	101	102	103	104	105	106	107	108	109	110
MONTH/DAY/YEAR	5/28/91	5/29/91	5/29/91	5/29/91	5/29/91	5/29/91	5/29/91	5/30/91	5/30/91	5/30/91	5/30/91
LATITUDE START	58 41.5	59 0.3	59 21.3	59 40.5	60 0.6	60 19.9	60 18.5	59 58.5	59 38.6	59 18.5	58 57.9
LONGITUDE START	169 46.2	169 49.9	169 51.6	169 54.2	169 57.9	170 4.9	171 21.1	171 18.4	171 14.3	171 10.6	171 7.0
LATITUDE END	58 43.6	59 2.7	59 23.5	59 43.0	60 2.5	60 19.9	60 15.8	59 56.0	59 36.4	59 16.0	58 55.7
LONGITUDE END	169 46.2	169 50.3	169 51.9	169 54.4	169 58.2	170 10.1	171 20.0	171 17.9	171 13.7	171 10.0	171 6.6
GEAR DEPTH	34	34	30	30	27	27	34	36	37	38	40
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.15	2.42	2.23	2.55	1.95	2.56	2.75	2.44	2.19	2.53	2.21
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	68.7	12.5	3.4	9.6	0.3	2.9	0.0	0.1	5.9	9.5	31.0
PAC COD	12.9	0.1	4.8	0.1	59.5	4.5	0.0	0.0	0.1	0.1	1.0
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	1.6	6.6	1.8	216.1	122.7	37.9	0.1	8.0	6.8	0.2	2.2
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	20.6	16.7	35.2	37.5	151.8	29.9	14.3	11.4	10.9	5.0	15.1
EELPOUTS	1.4	0.0	0.0	0.0	0.0	0.0	1.0	0.6	0.0	3.8	34.2
OTHER RNDFISH	1.1	2.0	2.5	1.1	4.8	2.3	2.0	0.5	0.2	0.9	11.9
TOT ROUNDFISH	106.3	37.9	47.6	264.5	339.1	77.6	17.5	20.6	24.0	19.5	95.5
YELLOW SOLE	124.5	445.9	609.2	913.6	1373.0	224.0	3.2	12.7	20.4	47.2	103.6
ROCK SOLE	16.6	9.3	0.5	17.9	6.1	3.4	0.0	0.0	0.1	0.1	5.2
FLATHEAD SOLE	1.6	2.0	2.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1
ALASKA PLAICE	196.2	200.9	309.1	249.7	432.6	71.9	6.7	1.1	9.1	3.1	5.2
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	3.1	0.1	0.8	0.0	17.2	1.0	0.0	0.0	0.0	0.4	2.3
OTHER FLTFISH	0.0	0.0	0.0	4.1	8.8	1.5	0.0	0.3	0.8	0.8	2.9
TOT FLATFISH	342.0	658.3	922.5	1185.8	1837.7	301.8	9.9	14.2	30.4	51.6	120.3
SKATES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOT ELASMOBRH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, OPILIO	17.0	38.0	16.8	6.7	26.6	1.6	4.1	10.9	6.2	1.1	7.3
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.1	0.1	0.0	1.3	0.1	0.0	0.1	0.0	0.0	0.3
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	4.9
SHRIMP	0.0	0.2	0.1	0.0	0.3	0.1	0.1	0.1	0.5	0.2	0.0
STARFISH	4.8	5.4	1.6	1.6	33.1	3.6	2.2	0.6	1.1	0.6	4.9
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	31.4	35.4	19.1	2.9	125.2	5.7	0.0	10.9	32.7	42.4	31.4
TOTAL INVERTS	53.3	79.1	37.7	11.2	186.5	11.1	6.4	22.6	40.5	44.5	48.7
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	9.3	0.0	10.4	0.0	0.0	1.6	0.0	0.0	0.0	0.0
TOTAL CATCH	501.6	784.5	1007.9	1471.9	2363.3	390.5	35.4	57.3	94.9	115.6	264.5

Table A-I .--Continued.

HAUL NO.	111	112	113	114	115	116	117	118	119	120	121
MONTH/DAY/YEAR	5/30/91	5/30/91	5/30/91	5/31/91	5/31/91	5/31/91	5/31/91	5/31/91	6/ 1/91	6/ 1/91	6/ 1/91
LATITUDE START	58 38.3	58 18.3	57 58.4	57 38.1	57 19.6	56 58.5	56 38.8	56 21.2	56 42.5	57 2.3	57 21.6
LONGITUDE START	171 4.8	171 0.1	170 56.5	170 54.2	170 50.2	170 49.0	170 43.1	170 43.9	171 59.0	172 2.2	172 7.1
LATITUDE END	58 36.3	58 16.4	57 55.9	57 35.7	57 21.8	56 56.1	56 36.5	56 22.6	56 44.9	57 4.7	57 24.3
LONGITUDE END	171 4.3	170 59.7	170 55.1	170 53.9	170 49.3	170 48.5	170 42.8	170 47.0	171 59.2	172 2.6	172 7.1
GEAR DEPTH	43	44	45	44	43	50	60	63	64	61	57
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.08	1.92	2.63	2.45	2.29	2.42	2.34	2.30	2.43	2.37	2.67
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	116.5	356.5	1857.3	1420.4	1908.9	1362.9	1146.8	1212.1	371.2	19536.0	1531.2
PAC COD	134.9	294.2	245.5	79.0	384.6	297.8	33.9	32.8	131.8	2530.8	72.9
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.6	0.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	3.3	9.5	0.0	7.7	87.8	27.7	9.5	19.7	13.7	12.1	10.0
EELPOUTS	15.6	5.5	4.0	6.9	7.1	14.1	1.3	6.9	0.7	0.0	15.0
OTHER RNDFISH	1.1	0.2	0.0	0.0	0.5	3.5	1.6	0.0	0.4	0.0	0.4
TOT ROUNDFISH	272.1	666.0	2109.1	1513.9	2388.8	1706.0	1193.0	1275.0	517.8	22078.9	1629.5
YELLOW SOLE	108.9	57.2	21.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	13.2	22.7	29.4	53.7	286.2	12.8	0.0	0.0	5.1	6.0	39.1
FLATHEAD SOLE	8.2	9.3	18.8	9.2	159.8	231.0	122.6	126.0	49.2	480.8	98.9
ALASKA PLAICE	0.7	7.5	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
GREENLAND TBT	0.0	0.0	0.6	0.0	0.0	20.6	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.0	0.0	5.9	144.3	161.7	94.3	88.0	604.0	22.8
PAC HALIBUT	8.7	45.8	24.9	3.7	87.3	22.9	30.8	15.6	5.4	274.2	7.9
OTHER FLTFISH	4.7	4.0	0.0	0.0	0.5	9.3	8.7	114.9	67.4	123.2	7.7
TOT FLATFISH	144.2	146.4	94.8	69.0	539.6	444.8	323.6	350.8	215.0	1488.3	176.4
SKATES	0.0	17.0	44.8	287.5	80.2	231.3	67.8	82.1	29.7	398.7	202.4
TOT ELASMOBRH	0.0	17.0	44.8	287.5	80.2	231.3	67.8	82.1	29.7	398.7	202.4
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	3.9	0.0	1.5	1.8	6.9	0.5	0.0	2.0
TANNER, OPILIO	2.3	16.9	3.4	10.0	0.0	5.0	1.5	15.6	173.5	24.2	85.1
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
SNAILS	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.0	0.0	0.0	2.3	0.5	0.0	0.0	5.9	2.2	0.0	9.1
STARFISH	2.3	0.9	21.7	4.6	10.6	5.0	14.6	50.1	11.4	36.2	2.6
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	111.6	108.5	53.4	113.8	160.9	18.5	7.8	15.5	2.6	0.0	20.2
TOTAL INVERTS	116.1	126.3	82.9	134.5	187.3	30.3	25.7	93.9	190.1	60.4	119.0
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	15.3	14.2	0.0	3.4	0.0	0.0	0.0
TOTAL CATCH	532.4	955.7	2331.5	2004.9	3211.3	2426.6	1610.2	1805.2	952.6	24026.3	2127.3

Table A-l .--Continued.

HAUL NO.	122	123	124	125	126	127	128	129	130	131	132
MONTH/DAY/YEAR	6/ 1/91	6/ 1/91	6/ 1/91	6/ 1/91	6/ 2/91	6/ 2/91	6/ 2/91	6/ 2/91	6/ 2/91	6/ 3/91	6/ 3/91
LATITUDE START	57 41.5	58 1.6	58 21.7	58 39.5	59 0.4	59 20.9	59 40.9	60 0.3	60 18.1	59 57.2	59 37.4
LONGITUDE START	172 10.6	172 14.7	172 18.3	172 21.3	172 27.1	172 30.2	172 33.9	172 35.1	174 4.2	173 57.0	173 52.8
LATITUDE END	57 43.7	58 3.9	58 23.8	58 41.8	59 2.7	59 23.0	59 43.0	60 0.8	60 16.2	59 54.8	59 35.3
LONGITUDE END	172 11.1	172 15.5	172 19.0	172 21.9	172 27.6	172 31.3	172 34.6	172 30.8	174 3.5	173 56.7	173 53.3
GEAR DEPTH	56	54	54	53	51	46	48	33	48	52	56
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.26	2.39	2.13	2.39	2.33	2.21	2.12	2.19	1.99	2.45	2.14
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	839.6	1104.7	4535.5	1447.3	241.1	435.0	20.2	2.8	11.8	179.7	635.0
PAC COD	172.8	322.0	331.2	320.7	185.1	735.6	30.2	0.5	24.7	447.9	435.4
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	1.1	1.5	27.4	141.7	191.9	39.9	498.5	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
SCULPINS	28.8	57.6	106.3	5.0	7.5	98.0	6.0	76.6	56.3	11.2	8.8
EELPOUTS	12.9	24.5	7.9	2.9	12.2	10.8	12.5	2.5	21.8	53.6	29.8
OTHER RNDFISH	1.3	1.3	0.4	0.4	4.9	0.3	4.9	6.5	14.8	20.4	0.1
TOT ROUNDFISH	1055.4	1510.1	4982.4	1777.8	478.2	1421.7	265.6	128.8	628.0	712.8	1109.1
YELLOW SOLE	0.0	0.0	0.0	0.0	0.5	158.0	26.8	21.8	17.9	1.8	1.0
ROCK SOLE	59.8	52.8	114.6	16.3	78.2	197.5	1.3	0.7	0.5	3.2	33.2
FLATHEAD SOLE	176.6	122.6	69.8	7.1	9.5	15.8	0.0	0.0	0.0	5.9	0.6
ALASKA PLAICE	0.0	84.1	3.6	0.0	6.8	13.9	2.0	5.9	5.9	4.8	1.3
GREENLAND TBT	0.0	35.9	3.6	2.7	0.5	0.1	0.0	0.0	0.1	0.0	0.6
ARROWTOOTH FL	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	27.6	6.9	0.0	0.0	11.0	15.3	2.3	0.1	0.0	1.0	1.8
OTHER FLTFISH	0.0	0.0	0.0	0.0	4.1	59.5	12.1	6.1	47.5	19.9	12.1
TOT FLATFISH	264.1	302.7	191.6	26.1	110.6	460.2	44.4	34.6	72.0	36.5	50.5
SKATES	352.8	279.8	107.4	150.7	44.2	0.0	0.0	0.0	0.0	31.5	41.8
TOT ELASMOBRH	352.8	279.8	107.4	150.7	44.2	0.0	0.0	0.0	0.0	31.5	41.8
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.9	2.9	13.6	1.0
TANNER, BAIRDI	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, OPILIO	44.9	133.9	493.5	52.8	28.3	4.4	24.7	0.6	2.0	3.9	22.6
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	6.2	27.5	16.1	2.1	0.6	0.1	0.7	0.6	0.5	0.3	0.0
STARFISH	7.4	5.2	17.9	5.9	6.7	6.1	2.4	1.1	1.1	1.1	1.8
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	36.1	122.2	191.6	66.4	49.7	10.8	4.5	8.1	15.1	36.3	33.5
TOTAL INVERTS	94.5	288.8	727.3	127.3	85.2	21.4	35.7	11.5	21.5	55.2	58.8
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	28.7	0.0	1.4	1.9	2.9	0.0	0.0	1.4	0.6
TOTAL CATCH	1766.8	2381.4	6037.3	2081.9	719.6	1905.2	348.5	174.9	721.5	837.3	1260.9

Table A-1 .--Continued.

HAUL NO.	133	134	135	136	137	138	139	140	141	142	143
MONTH/DAY/YEAR	6/ 3/91	6/ 3/91	6/ 3/91	6/ 3/91	6/ 4/91	6/ 4/91	6/ 4/91	6/ 4/91	6/ 5/91	6/ 5/91	6/ 5/91
LATITUDE START	59 18.4	58 58.0	58 38.3	58 17.9	57 52.1	57 36.1	57 17.9	57 1.3	58 42.4	59 0.5	59 19.9
LONGITUDE START	173 48.5	173 42.6	173 37.1	173 34.7	173 32.2	173 32.9	173 20.2	173 15.7	174 51.7	174 59.0	175 2.0
LATITUDE END	59 16.0	58 55.7	58 36.1	58 15.7	57 49.5	57 33.9	57 15.6	57 3.1	58 43.1	59 2.9	59 22.4
LONGITUDE END	173 48.4	173 42.0	173 34.9	173 35.2	173 32.4	173 32.2	173 20.0	173 17.4	174 48.7	175 0.0	174 59.3
GEAR DEPTH	57	62	66	60	68	69	64	74	91	68	70
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.39	2.39	2.43	2.29	2.56	2.24	2.26	2.12	1.76	2.46	2.86
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	1024.5	5700.0	5642.5	781.1	190.4	2631.1	437.5	0.0	66.2	3169.6	2160.8
PAC COD	504.6	367.3	235.6	175.9	108.8	321.3	68.0	2800.2	46.3	486.7	1002.6
PAC OC PERCH	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	76.0	225.2	2.0	61.3	30.7	8.2	2.3	89.4	6.8	7.4	32.7
EELPOUTS	21.1	2.4	0.0	0.6	0.0	0.0	0.3	0.0	0.0	3.5	2.3
OTHER RNDFISH	7.8	2.4	0.0	0.0	1.3	0.0	0.1	0.0	13.5	0.5	0.2
TOT ROUNDFISH	1634.0	6303.1	5880.2	1018.9	332.0	2960.6	508.2	2889.6	133.1	3667.8	3198.6
YELLOW SOLE	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	88.6	537.9	434.3	206.0	8.2	15.6	2.5	36.7	0.7	249.3	19.1
FLATHEAD SOLE	21.3	146.4	746.0	217.1	112.9	28.9	83.5	80.1	5.2	491.0	15.0
ALASKA PLAICE	11.7	41.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GREENLAND TBT	12.2	6.8	0.0	3.2	0.0	0.0	0.0	0.0	0.0	11.9	30.1
ARROWTOOTH FL	0.0	0.0	97.6	0.5	187.6	35.9	42.0	557.0	199.1	324.4	22.7
PAC HALIBUT	3.4	25.1	15.5	0.0	46.0	180.2	0.0	106.9	6.1	151.5	11.2
OTHER FLTFISH	13.0	0.0	0.0	0.0	54.7	16.4	25.9	202.1	17.5	41.0	1.1
TOT FLATFISH	151.7	757.3	1293.3	426.8	409.3	277.0	153.8	982.7	228.6	1269.1	99.2
SKATES	49.3	445.6	323.2	90.7	130.5	137.7	82.1	43.4	14.5	130.5	1.9
TOT ELASMOBRH	49.3	445.6	323.2	90.7	130.5	137.7	82.1	43.4	14.5	130.5	1.9
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	2.4	0.0	0.0	4.0	6.5	1.0	4.4	2.0	0.1	1.5	0.0
TANNER, OPILIO	10.7	21.7	138.0	7.6	3.2	0.0	0.1	0.0	0.0	31.1	2.3
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	1.9	1.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	18.8	21.7	6.7	0.1	0.9	0.0	2.4	0.7	4.8	5.0	12.3
STARFISH	23.2	0.0	0.0	1.7	1.5	0.0	0.6	319.5	1.3	6.4	0.6
SQUID	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	1.6	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	54.8	73.5	22.2	5.3	0.2	2.0	0.0	0.0	17.6	0.0	55.3
TOTAL INVERTS	111.8	117.9	167.0	18.8	12.9	3.0	7.5	322.2	25.3	44.0	70.4
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	53.6	14.5	20.2	0.6	2.3	1.0	6.1	3.4	1.1	5.0	0.0
TOTAL CATCH	2000.3	7638.5	7683.9	1555.9	887.0	3379.2	757.8	4241.2	402.6	5116.4	3370.2

Table A-l .--Continued.

HAUL NO.	144	145	146	147	148	149	150	151	152	153	154
MONTH/DAY/YEAR	6/ 5/91	6/ 5/91	6/ 5/91	6/ 6/91	6/ 6/91	6/ 6/91	6/ 6/91	6/ 6/91	6/ 6/91	6/ 7/91	6/ 7/91
LATITUDE START	59 42.4	60 1.9	60 21.5	60 41.9	61 1.7	61 17.9	60 58.2	60 38.0	60 21.1	59 57.1	59 37.8
LONGITUDE START	175 3.4	175 16.3	175 22.9	175 30.7	175 35.3	176 56.4	176 57.0	176 48.4	176 50.7	176 41.4	176 31.8
LATITUDE END	59 44.7	60 4.1	60 24.3	60 44.1	61 4.0	61 15.7	60 56.0	60 36.0	60 18.4	59 54.7	59 35.6
LONGITUDE END	175 3.4	175 17.2	175 24.2	175 31.4	175 36.2	176 56.5	176 55.8	176 49.8	176 50.5	176 40.3	176 31.2
GEAR DEPTH	65	61	58	57	53	62	65	69	74	74	72
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.35	2.31	2.86	2.27	2.31	2.26	2.31	2.08	2.74	2.42	2.19
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	1289.7	695.7	54.4	17.8	3.1	103.9	56.2	92.7	83.4	978.7	901.6
PAC COD	390.9	397.8	205.3	31.1	29.9	497.0	410.5	205.1	206.7	705.5	395.3
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.7	0.3	2.6	27.2	3.2	0.5	0.2	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	60.1	29.4	12.3	3.1	9.5	13.1	10.1	2.3	60.2	16.2	10.9
EELPOUTS	5.9	29.9	38.3	8.2	45.1	10.0	14.2	4.5	14.3	11.3	3.9
OTHER RNDFISH	7.0	6.3	4.2	7.6	69.8	9.7	2.9	0.2	5.1	0.7	0.6
TOT ROUNDFISH	1753.7	1159.8	314.9	70.3	184.7	636.8	494.4	305.0	369.7	1712.4	1312.2
YELLOW SOLE	0.3	0.0	0.0	0.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	23.5	7.1	5.8	0.5	0.3	0.1	1.5	0.8	1.6	2.1	4.4
FLATHEAD SOLE	34.9	18.0	6.1	3.6	0.7	1.0	4.3	3.2	12.0	262.8	25.1
ALASKA PLAICE	0.0	6.9	11.3	1.2	9.2	0.2	5.7	0.0	0.3	0.0	0.0
GREENLAND TBT	21.9	18.4	3.9	0.5	0.3	4.2	3.6	2.4	4.0	2.9	3.1
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	50.5	70.1	5.9	0.7	0.0	5.9	0.0	0.0	2.0	0.0	0.0
OTHER FLTFISH	16.9	20.4	9.3	46.4	182.5	38.0	36.5	20.5	13.7	13.1	0.4
TOT FLATFISH	148.0	141.0	42.3	53.3	194.3	49.5	51.6	27.0	33.5	281.0	33.0
SKATES	58.2	161.6	46.7	1.3	16.6	36.5	38.9	66.5	289.9	141.4	19.9
TOT ELASMOBRH	58.2	161.6	46.7	1.3	16.6	36.5	38.9	66.5	289.9	141.4	19.9
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
TANNER, OPILIO	5.0	11.7	33.4	11.8	11.4	6.6	9.9	10.5	17.1	5.2	0.3
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	24.5	3.2	0.8	1.7	1.1	1.6	0.7	2.4	4.4	8.7	3.6
STARFISH	2.7	4.1	9.7	5.3	2.2	9.2	8.1	20.5	236.9	126.6	2.0
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	16.5	35.6	36.9	39.7	59.3	6.6	23.7	8.2	0.0	5.4	7.3
TOTAL INVERTS	48.7	54.7	82.4	58.5	74.0	24.0	42.3	41.5	258.4	145.9	13.8
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	9.9	2.4	18.1	1.4	0.5	1.6	3.9	6.4	9.3	5.2	0.0
TOTAL CATCH	2018.4	1519.5	504.5	184.8	470.1	748.4	631.1	446.4	960.8	2286.0	1378.9

Table A-1 .--Continued.

HAUL NO.	155	156	157	158	159	160	161	162	163	166	167
MONTH/DAY/YEAR	6/ 7/91	6/ 7/91	6/ 7/91	6/ 8/91	6/ 8/91	6/ 8/91	6/ 8/91	6/ 8/91	6/ 8/91	6/14/91	6/15/91
LATITUDE START	59 18.2	58 58.2	58 41.5	59 0.7	59 43.9	60 1.7	60 21.3	60 41.3	60 57.9	59 31.6	59 55.9
LONGITUDE START	176 25.1	176 18.6	176 18.0	177 38.4	177 49.6	177 56.5	178 2.0	178 12.1	178 18.0	165 4.6E	165 48.0E
LATITUDE END	59 15.6	58 56.0	58 42.4	59 2.9	59 47.5	60 4.1	60 23.8	60 43.3	61 0.4	59 33.2	59 53.6
LONGITUDE END	176 25.0	176 17.9	176 21.9	177 39.3	177 52.1	177 57.3	178 2.5	178 13.5	178 18.4	165 7.4E	165 47.9E
GEAR DEPTH	73	70	72	72	81	76	82	87	85	42	30
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.62	2.17	2.17	2.24	2.20	2.48	2.50	2.15	2.53	2.11	2.35
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	2169.4	2545.1	1636.6	287.8	4060.5	2868.1	2160.5	1376.0	274.8	514.9	119.8
PAC COD	204.1	250.9	439.2	411.3	192.5	273.6	125.0	141.5	130.4	527.1	151.5
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	23.1	35.8	0.0	0.0	40.9	291.7	11.8	4.6	84.2	24.0	65.1
EELPOUTS	4.3	1.0	0.0	0.0	2.4	2.2	0.9	0.7	7.9	0.0	0.0
OTHER RNDFISH	1.1	0.0	0.0	0.0	2.4	0.3	2.1	0.0	2.2	0.2	13.2
TOT ROUNDFISH	2401.9	2832.8	2075.9	699.1	4298.7	3435.8	2300.3	1522.7	499.5	1066.3	349.7
YELLOW SOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2
ROCK SOLE	6.1	10.2	96.8	67.7	45.7	5.8	1.4	0.0	4.2	1.7	0.0
FLATHEAD SOLE	45.1	173.4	90.4	94.0	176.7	15.1	25.0	59.2	7.4	0.0	0.0
ALASKA PLAICE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	36.1	0.0	0.0
GREENLAND TBT	7.3	8.3	34.5	5.8	87.3	76.2	15.0	31.8	8.4	0.0	0.0
ARROWTOOTH FL	0.0	0.0	112.1	83.4	0.0	0.0	0.0	0.0	2.6	0.0	0.0
PAC HALIBUT	0.0	0.0	0.0	30.0	8.8	72.2	95.9	2.5	0.0	80.7	41.5
OTHER FLTFISH	0.0	34.5	14.8	0.7	17.1	0.0	0.0	0.0	0.6	0.1	137.8
TOT FLATFISH	58.6	226.3	348.5	281.7	335.5	169.1	137.3	98.0	59.3	82.6	192.5
SKATES	13.5	44.0	0.0	115.6	77.4	28.8	15.0	91.9	288.8	0.0	0.0
TOT ELASMOBRH	13.5	44.0	0.0	115.6	77.4	28.8	15.0	91.9	288.8	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
TANNER, BAIRDI	3.5	1.5	0.0	1.4	1.2	0.0	0.0	0.0	0.8	0.0	1.9
TANNER, OPILIO	2.1	0.0	0.0	0.0	0.0	6.7	0.0	0.5	27.2	0.1	453.4
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	1.9
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	24.1	1.0	0.0	0.1	2.4	2.8	2.0	26.9	35.3	0.5	5.3
STARFISH	8.4	5.8	0.6	2.7	8.3	11.3	0.0	11.9	14.9	11.1	1070.0
SQUID	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	2.0	0.0	1.7	4.9	5.6	1.0	3.7	1.7	12.4	15.6	59.5
TOTAL INVERTS	40.2	8.3	2.3	12.4	19.5	22.2	5.7	41.0	90.6	28.7	1591.9
EMPTY SHELLS	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	1.1	4.8	0.0	5.5	0.0	0.0	0.0	1.9	0.0	1.9	0.0
TOTAL CATCH	2515.3	3116.2	2426.7	1114.6	4731.1	3655.9	2458.4	1755.5	938.3	1179.4	2134.1

Table A-l .--Continued.

HAUL NO.	168	169	170	171	172	173	174	175	176	177	178
MONTH/DAY/YEAR	6/15/91	6/15/91	6/15/91	6/15/91	6/15/91	6/16/91	6/16/91	6/16/91	6/16/91	6/16/91	6/16/91
LATITUDE START	59 45.9	59 39.4	59 12.8	59 6.8	59 36.2	59 47.9	59 52.9	59 59.5	60 3.6	60 19.8	60 16.5
LONGITUDE START	165 45.0E	165 50.9E	165 45.1E	165 53.1E	166 33.7E	166 45.3E	166 43.2E	166 47.5E	166 47.9E	167 42.8E	167 50.0E
LATITUDE END	59 45.5	59 38.7	59 10.9	59 7.2	59 34.1	59 49.2	59 52.3	59 57.5	60 1.7	60 18.9	60 15.8
LONGITUDE END	165 41.3E	165 54.9E	165 42.5E	165 56.3E	166 32.3E	166 48.5E	166 40.2E	166 45.7E	166 45.6E	167 38.5E	167 45.4E
GEAR DEPTH	43	54	81	106	112	79	54	45	32	32	39
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	1.95	2.18	2.32	1.74	2.16	2.09	1.65	2.17	2.25	2.34	2.37
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	230.8	122.6	122.6	237.8	196.7	245.9	272.6	1491.0	929.6	212.4	330.8
PAC COD	280.8	1056.4	52.8	98.2	170.6	147.1	107.3	61.4	116.4	65.4	76.4
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.5	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.9	0.0	2.0	0.0	0.4	0.0	0.0
SCULPINS	49.7	156.4	24.0	41.5	1.2	12.8	21.2	5.6	30.0	22.6	23.5
EELPOUTS	14.3	2.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
OTHER RNDFISH	2.0	14.3	2.2	4.0	7.1	4.4	0.7	1.4	0.5	1.7	3.1
TOT ROUNDFISH	577.6	1351.7	201.7	381.5	376.5	410.3	404.6	1559.3	1077.2	302.6	433.8
YELLOW SOLE	71.5	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.4	1.2
ROCK SOLE	0.0	0.0	1.0	14.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0
FLATHEAD SOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.1	0.7
ALASKA PLAICE	222.4	62.6	0.0	0.0	0.0	4.1	0.9	1.3	0.0	4.4	8.2
GREENLAND TBT	0.0	10.6	0.0	0.0	21.1	4.9	0.0	0.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	1.1	1.1	1.4	3.5	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	23.8	180.3	19.7	24.9	33.2	15.6	30.0	43.9	120.5	4.2	14.5
OTHER FLTFISH	90.1	47.4	3.4	0.0	0.8	4.9	0.1	0.9	1.8	1.8	29.3
TOT FLATFISH	407.9	307.1	25.3	40.0	57.5	33.0	31.0	48.4	122.9	15.9	53.8
SKATES	0.0	0.0	5.4	26.4	19.6	24.2	6.8	0.0	0.0	9.1	0.0
TOT ELASMOBRH	0.0	0.0	5.4	26.4	19.6	24.2	6.8	0.0	0.0	9.1	0.0
RED KING CRAB	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	2.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.1	0.6
TANNER, OPILIO	43.7	4.6	0.2	0.0	0.5	0.9	0.1	0.0	0.0	1.9	0.7
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	1.2	0.6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0
SNAILS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	4.0	0.0	5.6	0.4	0.4	5.4	3.3	0.0	0.0	0.2	0.3
STARFISH	2230.4	1700.0	326.1	44.0	10.8	0.0	14.1	0.0	10.2	5.6	1.3
SQUID	0.0	0.0	0.0	11.1	11.1	1.4	0.9	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	39.7	37.9	5.0	91.2	2.2	15.6	25.4	7.0	0.8	8.6	5.4
TOTAL INVERTS	2348.4	1743.0	336.9	150.9	26.2	23.2	43.8	7.0	10.9	17.3	8.3

Table A-1.--Continued.

HAUL NO.	179	180	184	185	186	187	188	189	190	191	192
MONTH/DAY/YEAR	6/16/91	6/16/91	6/18/91	6/18/91	6/18/91	6/18/91	6/18/91	6/19/91	6/19/91	6/19/91	6/19/91
LATITUDE START	60 10.5	60 3.5	60 10.2	60 14.2	60 20.0	60 5.5	59 59.0	59 58.5	59 55.2	59 45.2	60 33.6
LONGITUDE START	167 45.5E	167 40.6E	168 43.0E	168 47.7E	168 42.6E	169 38.2E	169 45.8E	169 41.1E	169 43.4E	170 33.8E	171 52.9E
LATITUDE END	60 10.5	60 1.2	60 10.5	60 14.8	60 19.1	60 6.6	59 57.4	59 56.8	59 53.6	59 46.6	60 31.9
LONGITUDE END	167 40.8E	167 39.1E	168 47.9E	168 37.2E	168 43.8E	169 35.1E	169 49.5E	169 44.8E	169 46.8E	170 38.0E	171 49.8E
GEAR DEPTH	55	69	49	35	27	28	39	51	61	65	54
DURATION IN HOURS	0.50	0.50	0.50	1.00	0.25	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.32	2.43	2.48	5.26	1.07	1.92	2.46	2.53	2.33	2.58	2.31
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	124.7	24.0	572.1	7542.9	169.1	2104.3	126.7	1507.3	1940.8	23.8	9608.2
PAC COD	39.9	63.0	245.6	1678.6	67.8	129.8	12.4	468.0	587.5	0.0	301.5
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.5	4.4	0.9	0.0	0.0	0.0	2323.0
ATKA MACKEREL	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0
SCULPINS	9.8	9.5	8.9	313.9	17.6	16.9	12.5	54.5	3.9	0.1	7.4
EELPOUTS	0.0	1.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RNDFISH	2.4	2.8	1.2	1.0	2.3	1.3	1.4	8.4	0.0	0.5	6.4
TOT ROUNDFISH	176.8	101.0	828.0	9536.5	257.3	2256.6	153.8	2039.8	2532.2	24.5	12246.5
YELLOW SOLE	0.0	0.0	0.0	108.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLATHEAD SOLE	2.0	0.0	1.8	34.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0
ALASKA PLAICE	0.0	2.0	0.2	142.7	0.0	0.0	0.0	27.6	0.0	0.0	0.0
GREENLAND TBT	14.1	11.5	1.4	0.0	0.1	0.0	0.0	18.0	0.0	0.0	0.0
ARROWTOOTH FL	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	5.3	0.0	3.6	341.4	0.0	0.0	0.0	23.4	0.0	0.0	0.0
OTHER FLTFISH	34.6	5.8	22.0	586.6	25.3	1.0	0.0	14.1	0.0	0.0	0.0
TOT FLATFISH	56.0	19.3	29.6	1214.5	28.3	1.0	0.0	83.1	0.0	0.0	0.0
SKATES	7.3	0.0	0.0	71.9	4.3	0.0	0.0	25.4	31.3	0.0	0.0
TOT ELASMOBRH	7.3	0.0	0.0	71.9	4.3	0.0	0.0	25.4	31.3	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	320.3	10.0	0.2	0.5	0.0	0.0	0.9	0.0
TANNER, OPILIO	0.4	2.7	0.0	32.7	2.7	0.0	0.1	0.0	0.0	0.0	0.0
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.1	0.0	0.1	55.0	1.1	0.0	0.1	0.0	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHRIMP	0.6	6.0	1.4	6.4	0.3	0.0	0.3	5.8	1.0	0.0	0.0
STARFISH	2.9	3.9	0.0	502.1	35.5	1.1	6.7	0.6	0.0	0.0	0.0
SQUID	0.0	0.0	1.4	0.0	0.0	0.0	0.0	6.5	15.8	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	1.6	2.3	0.1	3750.3	30.3	0.0	1.9	0.0	0.6	0.0	0.0
TOTAL INVERTS	5.6	14.9	3.0	4666.8	80.0	1.3	9.5	12.9	17.5	0.9	0.0
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	245.6	135.2	860.6	15489.6	369.9	2258.9	163.4	2161.3	2581.0	25.4	12246.5

Table A-1.--Continued.

HAUL NO.	193	194	195	196	197	198	199	200	201	202	203
MONTH/DAY/YEAR	6/20/91	6/20/91	6/20/91	6/21/91	6/21/91	6/21/91	6/21/91	6/21/91	6/22/91	6/22/91	6/22/91
LATITUDE START	61 5.0	61 38.2	61 59.8	61 39.9	61 58.4	62 17.5	62 20.4	61 56.9	61 34.8	61 18.7	61 0.4
LONGITUDE START	174 17.6E	175 7.7E	177 5.8E	178 43.2E	178 26.5E	178 31.6E	179 51.8E	179 57.8E	179 54.7	179 47.8	179 38.7
LATITUDE END	61 4.0	61 38.8	61 59.9	61 41.5	61 58.7	62 17.0	62 20.0	61 54.8	61 32.5	61 16.7	61 0.4
LONGITUDE END	174 13.8E	175 13.1E	177 10.5E	178 40.8E	178 31.1E	178 34.8E	179 49.9E	179 58.9E	179 54.1	179 47.3	179 33.9
GEAR DEPTH	61	28	49	78	48	20	49	89	74	78	97
DURATION IN HOURS	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.10	2.65	2.23	2.02	2.22	1.60	0.98	2.20	2.38	2.02	2.31
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	1231.4	3.9	65.4	792.8	2.1	22.3	143.9	528.2	941.3	871.7	1125.4
PAC COD	314.5	2.8	55.0	75.3	328.4	3.4	208.2	89.8	328.8	624.8	125.8
PAC OC PERCH	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	17.8	18.3	25.8	238.0	23.2	46.0	61.3	24.1	27.2	143.8	45.7
EELPOUTS	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.6	2.6	0.8
OTHER RNDFISH	0.1	1.8	2.8	0.5	0.2	2.4	1.9	0.1	6.8	0.5	0.3
TOT ROUNDFISH	1563.8	26.9	149.0	1106.9	354.0	75.0	415.3	642.2	1305.7	1643.4	1298.0
YELLOW SOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROCK SOLE	18.5	0.0	4.3	61.4	12.1	7.0	4.2	2.2	6.7	18.2	29.9
FLATHEAD SOLE	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7
ALASKA PLAICE	0.0	0.0	0.0	0.0	1.5	2.0	0.8	3.2	69.6	101.7	82.1
GREENLAND TBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.1	0.0	5.5
ARROWTOOTH FL	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	1.9
PAC HALIBUT	34.2	11.1	3.9	94.6	98.7	37.6	0.0	0.0	11.7	22.0	41.5
OTHER FLTFISH	3.8	0.0	0.0	0.0	0.0	2.8	0.5	6.9	11.7	1.7	0.3
TOT FLATFISH	64.1	11.1	8.2	156.0	112.4	49.5	5.5	12.2	120.8	155.8	181.0
SKATES	3.8	0.0	0.0	0.0	0.0	7.2	0.0	17.6	11.5	40.7	0.0
TOT ELASMOBRH	3.8	0.0	0.0	0.0	0.0	7.2	0.0	17.6	11.5	40.7	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	1.2	0.0	1.1	0.0	3.7	0.0	0.0	0.0
TANNER, BAIRDI	3.8	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, OPILIO	0.3	0.4	0.0	0.0	0.0	0.0	0.0	1.7	9.0	2.7	0.3
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.1	0.1	0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
SHRIMP	1.5	1.8	2.9	13.9	0.4	1.0	7.2	3.0	6.0	4.5	8.2
STARFISH	0.0	0.1	0.6	1.2	0.6	0.2	2.2	1.0	0.0	0.8	0.0
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	0.0	5.8	1.5	36.2	0.6	63.0	22.5	4.4	7.4	2.7	0.0
TOTAL INVERTS	5.6	8.2	5.8	52.7	1.6	65.5	32.0	13.8	22.5	10.8	8.9
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CATCH	1637.4	46.1	163.0	1315.6	467.9	197.2	452.8	685.8	1460.5	1850.7	1487.9

Table A-1.--Continued.

HAUL NO.	204	205	206	207	208	209	210	211	212	213	214
MONTH/DAY/YEAR	6/22/91	6/23/91	6/23/91	6/23/91	6/23/91	6/23/91	6/23/91	6/24/91	6/24/91	6/24/91	6/24/91
LATITUDE START	61 19.9	61 43.0	62 2.2	62 21.9	62 42.0	63 1.4	63 20.2	63 17.8	62 57.1	62 37.0	62 18.8
LONGITUDE START	178 23.3	178 28.6	178 36.5	178 42.5	178 51.5	178 57.4	178 58.3	177 41.2	177 34.3	177 28.5	177 19.2
LATITUDE END	61 22.1	61 45.0	62 4.5	62 24.0	62 44.1	63 3.7	63 20.1	63 15.2	62 55.1	62 34.6	62 16.5
LONGITUDE END	178 22.0	178 29.8	178 38.0	178 38.2	178 52.1	178 57.3	178 52.9	177 40.2	177 33.8	177 28.2	177 18.7
GEAR DEPTH	93	72	62	55	49	45	40	47	48	50	52
DURATION IN HOURS	0.83	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DISTANCE FISHED	2.28	2.06	2.42	2.90	2.11	2.31	2.42	2.64	2.02	2.42	2.29
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773	0 /773
POLLOCK	736.8	447.5	136.2	2.0	24.5	5.0	64.7	0.0	0.1	1.2	2.9
PAC COD	145.1	114.2	362.2	0.2	891.6	55.9	135.6	1.4	1.5	0.3	0.3
PAC OC PERCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCULPINS	163.9	94.9	40.4	12.6	39.4	4.8	20.2	0.2	0.9	0.1	1.6
EELPOUTS	11.0	1.2	2.3	2.6	4.4	0.0	0.6	2.4	3.0	1.5	7.8
OTHER RNDFISH	9.3	0.4	2.3	45.6	13.0	2.8	1.6	57.8	99.2	376.5	13.7
TOT ROUNDFISH	1066.1	658.1	543.7	63.1	973.0	68.5	222.7	61.7	104.9	379.7	26.2
YELLOW SOLE	0.0	0.0	0.0	0.0	1.5	0.1	0.0	0.4	0.0	0.0	0.7
ROCK SOLE	0.0	3.5	3.9	0.5	2.8	0.0	0.0	0.0	0.0	0.0	0.0
FLATHEAD SOLE	19.4	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALASKA PLAICE	32.8	34.1	25.2	26.1	23.8	2.7	7.5	3.6	0.9	3.3	29.8
GREENLAND TBT	15.3	1.9	0.5	1.4	0.3	0.2	0.1	0.0	0.0	0.0	0.7
ARROWTOOTH FL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAC HALIBUT	3.1	2.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FLTFISH	1.5	1.2	28.0	63.0	76.5	12.6	25.3	62.0	54.0	19.4	68.7
TOT FLATFISH	72.1	43.9	58.5	90.9	104.8	15.6	32.9	66.0	54.9	22.7	99.9
SKATES	358.8	38.8	10.0	7.5	0.0	10.3	0.0	0.0	0.0	0.0	0.0
TOT ELASMOBRH	358.8	38.8	10.0	7.5	0.0	10.3	0.0	0.0	0.0	0.0	0.0
RED KING CRAB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0	0.0	1.0	0.8	0.2	0.1	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TANNER, OPILIO	356.7	17.4	7.7	13.7	78.3	11.2	103.6	26.9	2.5	2.1	12.7
TANNER, HYBRID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
SHRIMP	18.0	5.2	1.4	6.9	3.9	0.2	4.6	2.9	3.4	0.2	0.6
STARFISH	1.2	1.9	1.0	0.9	0.0	0.1	18.1	4.7	0.5	2.2	0.7
SQUID	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER INVERTS	72.8	3.4	9.1	10.9	21.2	1.5	75.5	2.4	3.0	4.2	0.9
TOTAL INVERTS	448.6	27.9	19.2	32.5	103.8	15.0	202.6	37.2	9.5	8.7	14.9
EMPTY SHELLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	27.5	1.3	4.3	0.0	0.0	0.0	18.9	4.5	0.0	1.5
TOTAL CATCH	1945.6	796.1	632.8	198.2	1181.7	109.5	458.2	183.8	173.8	411.1	142.5

Table A-1.--Continued.

HAUL NO.	215	216	217	218
MONTH/DAY/YEAR	6/24/91	6/24/91	6/25/91	6/25/91
LATITUDE START	61 57.2	61 40.6	62 39.4	62 18.2
LONGITUDE START	177 14.3	177 6.1	176 5.6	175 59.6
LATITUDE END	61 55.0	61 44.8	62 37.2	62 16.0
LONGITUDE END	177 13.6	176 52.1	176 5.0	175 58.7
GEAR DEPTH	59	59	44	46
DURATION IN HOURS	0.50	1.83	0.50	0.50
DISTANCE FISHED	2.18	7.88	2.27	2.22
PERFORMANCE / GEAR	0 /773	0 /773	0 /773	1 /773
POLLOCK	43.5	846.6	0.1	0.1
PAC COD	394.5	8377.3	2.4	0.0
PAC OC PERCH	0.0	0.0	0.0	0.0
OTHER RCKFISH	0.0	0.0	0.0	0.0
SABLEFISH	0.0	0.0	0.0	0.0
PAC HERRING	0.0	0.0	0.0	0.0
ATKA MACKEREL	0.0	0.0	0.0	0.0
SCULPINS	31.4	1295.7	0.2	0.4
EELPOUTS	10.2	62.6	3.5	2.2
OTHER RNDFISH	73.0	114.1	403.2	210.6
TOT ROUNDFISH	552.6	10696.4	409.4	213.3
YELLOW SOLE	0.4	0.0	0.6	0.1
ROCK SOLE	1.0	52.4	0.5	0.0
FLATHEAD SOLE	0.0	0.0	0.0	0.0
ALASKA PLAICE	15.1	268.9	0.9	0.3
GREENLAND TBT	3.4	63.4	2.0	0.3
ARROWTOOTH FL	0.0	0.0	0.0	0.0
PAC HALIBUT	4.4	17.8	0.0	0.0
OTHER FLTFISH	49.1	850.8	36.8	8.1
TOT FLATFISH	73.4	1253.4	40.9	8.8
SKATES	6.3	427.1	9.8	0.0
TOT ELASMOBRH	6.3	427.1	9.8	0.0
RED KING CRAB	0.0	0.0	0.0	0.0
BLUE KING CRAB	0.0	0.0	0.0	0.0
TANNER, BAIRDI	0.0	0.0	0.0	0.0
TANNER, OPILIO	22.5	700.3	19.4	7.6
TANNER, HYBRID	0.0	0.0	0.0	0.0
OTHER CRAB	0.0	0.0	0.0	0.0
SNAILS	0.0	0.0	0.0	0.0
SHRIMP	0.5	2.5	1.1	1.1
STARFISH	81.4	0.0	15.6	4.0
SQUID	0.0	0.0	0.0	0.0
OCTOPUS	0.0	0.0	0.0	0.0
OTHER INVERTS	12.8	899.9	16.5	6.3
TOTAL INVERTS	117.3	1602.7	52.6	18.9
EMPTY SHELLS	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0
TOTAL CATCH	749.6	13979.6	512.6	241.0

APPENDIX B

Abundance Estimates for Principal Fish Species

Appendix B presents estimates of population size in terms of number of individuals and biomass estimates in metric tons with confidence intervals for the principal species of fish sampled during the 1991 U.S.-U.S.S.R. cooperative survey. Estimates are given by subarea, standard U.S. area (SA), north shelf (NS), western shelf (WS), and for all areas combined.

List of Tables

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Table B-1.--CPUE, population, and biomass for walleye pollock.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	27	27	17	24.63	.124692E+03	20.46	.724140E+02
2	14	14	14	9	6.31	.453692E+01	5.57	.661179E+01
3	35	35	35	35	67.35	.275917E+03	172.51	.903680E+04
4	31	30	30	20	43.37	.934184E+02	89.20	.376062E+03
5	13	13	13	13	13.72	.468578E+01	33.98	.484399E+02
6	37	36	36	33	173.02	.212503E+04	484.28	.138801E+05
9	4	4	4	2	9.01	.212587E+02	21.18	.425173E+02
14	10	9	9	1	0.86	.298011E+00	9.97	.380267E+02
15	10	10	10	10	48.50	.105659E+03	100.71	.967318E+03
16	8	8	8	6	129.82	.103045E+05	195.17	.233099E+05
17	22	22	22	18	62.05	.267735E+03	195.09	.690816E+04
SA	159	155	155	127	66.26	.110859E+03	164.82	.104995E+04
NS	4	4	4	2	9.01	.212587E+02	21.18	.425173E+02
WS	50	49	49	35	69.41	.137764E+04	130.68	.335291E+04
TOTAL	213	208	208	164	65.74	.119725E+03	155.43	.776076E+03

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	159,358,240	.439113040E+16	28.00	23,646,281	295,070,198
2	22,847,699	.111290958E+15	13.00	60,881	45,634,517
3	1,782,044,730	.964311655E+18	34.00	0	3,779,027,147
4	961,819,507	.437196440E+17	30.00	534,852,767	1,388,786,248
5	131,832,628	.728949342E+15	12.00	73,001,673	190,663,584
6	4,579,419,227	.124116763E+19	36.00	2,318,511,302	6,840,327,153
9	24,501,391	.568956530E+14	3.00	499,817	48,502,965
14	26,164,001	.261785681E+15	9.00	0	62,762,691
15	258,302,383	.636284522E+16	9.00	77,868,423	438,736,342
16	801,892,515	.393483262E+18	7.00	0	2,285,415,490
17	389,478,822	.275337266E+17	21.00	44,338,395	734,619,250
SA	7,637,322,031	.225443030E+19	72.39	4,640,375,855	10,634,268,208
NS	24,501,391	.568956530E+14	3.00	499,817	48,502,965
WS	1,475,837,721	.427641619E+18	8.25	0	2,983,830,582
TOTAL	9,137,661,143	.268212881E+19	77.88	5,872,046,236	12,403,276,051

Table B-1.--continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	191,777	.756120079E+10	28.00	13,693	369,861
2	25,888	.763664359E+08	13.00	7,013	44,764
3	695,722	.294429622E+11	34.00	346,777	1,044,666
4	467,626	.108604877E+11	30.00	254,821	680,430
5	53,221	.705140743E+08	12.00	34,923	71,519
6	1,636,079	.190020864E+12	36.00	751,435	2,520,722
9	10,426	.284478380E+08	3.00	0	27,398
14	2,264	.205158684E+07	9.00	0	5,504
15	124,384	.695008882E+09	9.00	64,751	184,018
16	533,370	.173944764E+12	7.00	0	1,519,733
17	123,881	.106710652E+10	21.00	55,934	191,827
SA	3,070,313	.238032396E+12	54.77	2,091,980	4,048,646
NS	10,426	.284478380E+08	3.00	0	27,398
WS	783,898	.175708931E+12	7.14	0	1,775,251
TOTAL	3,864,638	.413769774E+12	31.96	2,553,824	5,175,451

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	3,022,881	4,706,394	7,018,614,439	11,256,707,848
90.000 PERCENT	2,774,716	4,954,559	6,407,417,105	11,867,905,181
95.000 PERCENT	2,553,824	5,175,451	5,872,046,236	12,403,276,051

Table B-2.--CPUE, population, and biomass for Pacific cod.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	20	20	9	3.76	.219424E+01	7.95	.183427E+02
2	14	9	9	2	2.06	.518469E+00	0.53	.315081E-01
3	35	35	35	27	14.77	.111064E+02	7.78	.128382E+01
4	31	29	29	13	14.60	.115661E+02	10.46	.909956E+01
5	13	13	13	9	9.53	.838367E+01	3.44	.114849E+01
6	37	37	37	19	35.11	.733235E+02	11.24	.279091E+01
9	4	4	4	3	23.10	.978906E+02	10.76	.736281E+01
14	10	9	9	3	10.11	.696553E+02	4.21	.744530E+01
15	10	10	10	8	45.36	.374433E+03	59.59	.167059E+04
16	8	7	7	3	12.33	.235200E+02	6.33	.575415E+01
17	22	22	22	16	21.92	.260819E+02	18.83	.287273E+02
SA	159	143	143	79	15.47	.435659E+01	8.13	.119904E+01
NS	4	4	4	3	23.10	.978906E+02	10.76	.736281E+01
WS	50	48	48	30	21.01	.269983E+02	20.14	.882186E+02
TOTAL	213	195	195	112	16.68	.374096E+01	10.49	.400349E+01

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	61,915,475	.111228821E+16	28.00	0	130,218,292
2	2,159,396	.530350864E+12	13.00	586,372	3,732,420
3	80,320,546	.136995832E+15	34.00	56,518,230	104,122,862
4	112,740,655	.105788144E+16	30.00	46,324,422	179,156,887
5	13,332,477	.172831074E+14	12.00	4,273,729	22,391,224
6	106,308,828	.249563755E+15	36.00	74,249,205	138,368,451
9	12,442,728	.985273723E+13	3.00	2,454,725	22,430,730
14	11,054,137	.512554031E+14	9.00	0	27,248,446
15	152,825,954	.109888271E+17	9.00	0	389,946,000
16	26,027,362	.971328408E+14	7.00	2,718,869	49,335,855
17	37,593,880	.114497929E+15	21.00	15,337,109	59,850,651
SA	376,777,376	.257454269E+16	79.10	275,618,826	477,935,926
NS	12,442,728	.985273723E+13	3.00	2,454,725	22,430,730
WS	227,501,333	.112517133E+17	9.43	0	467,440,933
TOTAL	616,721,437	.138361088E+17	14.18	364,411,543	869,031,330

Table B-2.--Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	29,268	.133057280E+09	28.00	5,644	52,892
2	8,456	.872697629E+07	13.00	2,075	14,837
3	152,563	.118515192E+10	34.00	82,554	222,571
4	157,419	.134462824E+10	30.00	82,540	232,297
5	36,964	.126161977E+09	12.00	12,489	61,439
6	332,009	.655660867E+10	36.00	167,682	496,335
9	26,726	.130994900E+09	3.00	0	63,145
14	26,520	.479525266E+09	9.00	0	76,053
15	116,329	.246295624E+10	9.00	4,070	228,588
16	50,671	.397028568E+09	7.00	3,547	97,795
17	43,757	.103954275E+09	21.00	22,550	64,964
SA	716,678	.935433505E+10	67.43	523,468	909,888
NS	26,726	.130994900E+09	3.00	0	63,145
WS	237,277	.344346435E+10	16.41	112,873	361,680
TOTAL	980,681	.129287943E+11	82.50	754,143	1,207,218

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	833,624	1,127,737	458,513,135	774,929,738
90.000 PERCENT	791,246	1,170,115	409,580,308	823,862,566
95.000 PERCENT	754,143	1,207,218	364,411,543	869,031,330

Table 33.--CPUE, population, and biomass for yellowfin sole.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	29	29	29	27.60	.271798E+02	112.81	.381488E+03
2	14	14	14	14	42.11	.817205E+02	166.37	.116634E+04
3	35	34	34	26	16.85	.117002E+02	55.20	.136096E+03
4	31	29	29	21	22.63	.643208E+02	72.99	.630531E+03
5	13	2	2	0	0.01	.187699E-04	0.02	.284383E-03
6	37	4	4	0	0.01	.159514E-04	0.03	.211479E-03
9	4	1	1	0	0.03	.867396E-03	0.11	.117108E-01
14	10	6	6	0	0.03	.203320E-03	0.11	.167036E-02
15	10	1	1	0	0.00	.110812E-04	0.01	.841545E-04
16	8	0	0	0	0.00	0.	0.00	0.
17	22	8	8	0	0.64	.138143E+00	1.63	.886024E+00
SA	159	112	112	90	17.39	.547229E+01	62.98	.608202E+02
NS	4	1	1	0	0.03	.867396E-03	0.11	.117108E-01
WS	50	15	15	0	0.12	.432845E-02	0.32	.277824E-01
TOTAL	213	128	128	90	13.73	.340001E+01	49.71	.377877E+02

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	878,447,361	.231331433E+17	28.00	566,955,089	1,189,939,633
2	682,562,517	.196320019E+17	13.00	379,915,746	985,209,288
3	570,243,909	.145227065E+17	34.00	325,174,381	815,313,436
4	786,960,563	.733032824E+17	30.00	234,097,662	1,339,823,465
5	85,425	.427955391E+10	12.00	0	227,971
6	269,605	.189105221E+11	36.00	0	548,679
9	125,184	.156711226E+11	3.00	0	523,521
14	280,669	.114992284E+11	9.00	38,105	523,233
15	23,528	.553553543E+09	9.00	0	76,747
16	0	0.	0.00	0	0
17	3,257,803	.353141190E+13	21.00	0	7,166,550
SA	2,918,569,379	.130591157E+18	72.86	2,197,387,363	3,639,751,396
NS	125,184	.156711226E+11	3.00	0	523,521
WS	3,562,000	.354346468E+13	21.14	0	7,477,411
TOTAL	2,922,256,563	.130594716E+18	72.86	2,201,064,719	3,643,448,408

Table B-3. --Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	214,902	.164816514E+10	28.00	131,758	298,046
2	172,762	.137553567E+10	13.00	92,651	252,872
3	174,038	.124852143E+10	34.00	102,182	245,894
4	243,972	.747770643E+10	30.00	67,393	420,551
5	24	.282459698E+03	12.00	0	61
6	69	.142638026E+04	36.00	0	146
9	34	.116072993E+04	3.00	0	142
14	81	.139971001E+04	9.00	0	166
15	9	.728900390E+02	9.00	0	28
16	0	0.	0.00	0	0
17	1,272	.550593648E+06	21.00	0	2,815
SA	805,767	.117499304E+11	64.15	589,117	1,022,416
NS	34	.116072993E+04	3.00	0	142
WS	1,362	.552066248E+06	21.11	0	2,907
TOTAL	807,162	.117504836E+11	64.15	590,508	1,023,817

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	666,727	947,598	2,454,457,588	3,390,055,539
90.000 PERCENT	626,121	988,204	2,319,410,289	3,525,102,838
95.000 PERCENT	590,508	1,023,817	2,201,064,719	3,643,448,408

Table B-4.--CPUE, population, and biomass for rock sole.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	29	29	25	34.54	.595246E+02	246.49	.318699E+04
2	14	14	14	11	8.58	.779500E+01	30.98	.137438E+03
3	35	34	34	26	16.34	.101505E+02	76.40	.253100E+03
4	31	29	29	14	25.12	.114559E+03	72.25	.714386E+03
5	13	4	4	0	0.12	.760859E-02	0.28	.259859E-01
6	37	34	33	9	5.06	.261575E+01	0.00	0.
9	4	4	4	0	0.12	.569792E-02	0.25	.686494E-02
14	10	3	3	0	0.03	.669929E-03	0.06	.156176E-02
15	10	9	9	0	0.81	.723276E-01	1.59	.343445E+00
16	8	5	5	0	1.27	.521103E+00	2.80	.288321E+01
17	22	4	4	0	0.09	.536706E-02	0.14	.132472E-01
SA	159	144	143	85	17.09	.855827E+01	78.03	.142341E+03
NS	4	4	4	0	0.12	.569792E-02	0.25	.686494E-02
WS	50	21	21	0	0.67	.729025E-01	1.42	.399806E+00
TOTAL	213	169	168	85	13.61	.531982E+01	61.79	.884491E+02

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	1,919,448,574	.193256501E+18	28.00	1,019,128,345	2,819,768,803
2	127,113,680	.231338896E+16	13.00	23,222,643	231,004,717
3	789,212,968	.270081519E+17	34.00	455,007,950	1,123,417,986
4	779,031,181	.830519492E+17	30.00	190,552,611	1,367,509,752
5	1,083,050	.391049830E+12	12.00	0	2,445,665
6	104,103,389	0.	0.00	0	0
9	287,934	.918650985E+10	3.00	0	592,917
14	163,796	.107515789E+11	9.00	0	398,343
15	4,086,651	.225911801E+13	9.00	686,783	7,486,519
16	11,505,207	.486700085E+14	7.00	0	28,004,368
17	280,082	.527991703E+11	21.00	0	758,026
SA	3,719,992,843	.305630382E+18	58.91	2,613,735,408	4,826,250,277
NS	287,934	.918650985E+10	3.00	0	592,917
WS	16,035,737	.509926773E+14	7.67	0	32,502,688
TOTAL	3,736,316,513	.305681384E+18	58.93	2,629,966,779	4,842,666,247

Table B-4. --Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	268,966	.360952471E+10	28.00	145,924	392,008
2	35,207	.131207075E+09	13.00	10,466	59,949
3	168,792	.108315161E+10	34.00	101,863	235,720
4	270,828	.133181565E+11	30.00	35,173	506,484
5	482	.114498064E+06	12.00	0	1,219
6	47,859	.233900963E+09	36.00	16,822	78,896
9	142	.762482749E+04	3.00	0	420
14	89	.461196617E+04	9.00	0	242
15	2,077	.475758277E+06	9.00	517	3,638
16	5,236	.879648330E+07	7.00	0	12,250
17	177	.213914219E+05	21.00	0	481
SA	792,135	.183760554E+11	52.64	520,022	1,064,248
NS	142	.762482749E+04	3.00	0	420
WS	7,579	.929824496E+07	7.80	547	14,611
TOTAL	799,855	.183853613E+11	52.69	527,674	1,072,037

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	623,795	975,916	3,019,584,559	4,453,048,468
90.000 PERCENT	572,663	1,027,048	2,812,086,967	4,660,546,059
95.000 PERCENT	527,674	1,072,037	2,629,966,779	4,842,666,247

Table B-5.--CPUE, population, and biomass for Hippoglossoides spp.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	8	8	0	0.14	.382254E-02	0.63	.198338E+00
2	14	6	6	0	0.08	.226145E-02	0.19	.660349E-02
3	35	35	35	27	12.89	.682588E+01	32.39	.389177E+02
4	31	29	29	3	2.12	.558544E+00	6.22	.387211E+01
5	13	12	12	10	4.91	.155164E+01	22.55	.307810E+02
6	37	37	37	19	10.12	.444019E+01	35.10	.365405E+02
9	4	4	4	3	5.84	.114724E+02	34.43	.409782E+03
14	10	10	10	1	3.63	.495187E+00	25.52	.209267E+02
15	10	10	10	0	3.36	.427267E+01	19.54	.165204E+03
16	8	2	2	0	0.11	.570500E-02	0.58	.159874E+00
17	22	16	16	1	1.11	.147560E+00	5.19	.337059E+01
SA	159	127	127	59	5.88	.565388E+00	17.84	.388691E+01
NS	4	4	4	3	5.84	.114724E+02	34.43	.409782E+03
WS	50	38	38	2	1.84	.252449E+00	11.49	.977609E+01
TOTAL	213	169	169	64	5.10	.365026E+00	16.95	.293433E+01

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	4,907,628	.120270347E+14	28.00	0	12,010,095
2	768,265	.111151363E+12	13.00	48,135	1,488,395
3	334,634,651	.415288038E+16	34.00	203,583,680	465,685,622
4	67,102,324	.450157417E+15	30.00	23,777,387	110,427,262
5	87,490,131	.463208241E+15	12.00	40,593,098	134,387,164
6	331,956,261	.326746720E+16	36.00	215,952,178	447,960,344
9	39,834,066	.548361071E+15	3.00	0	114,347,312
14	66,956,963	.144064811E+15	9.00	39,806,855	94,107,071
15	50,102,818	.108668001E+16	9.00	0	124,669,263
16	2,372,031	.269874902E+13	7.00	0	6,257,222
17	10,359,948	.134340975E+14	21.00	2,736,216	17,983,679
SA	826,859,260	.834585143E+16	84.08	644,878,842	1,008,839,678
NS	39,834,066	.548361071E+15	3.00	0	114,347,312
WS	129,791,759	.124687767E+16	11.64	52,848,753	206,734,766
TOTAL	996,485,086	.101410902E+17	96.82	796,321,129	1,196,649,042

Table B-5.--Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	1,128	.231795733E+06	28.00	142	2,114
2	342	.380651527E+05	13.00	0	763
3	133,111	.728385520E+09	34.00	78,227	187,995
4	22,880	.649343382E+08	30.00	6,425	39,335
5	19,065	.233498442E+08	12.00	8,535	29,594
6	95,709	.397043123E+09	36.00	55,271	136,147
9	6,761	.153520400E+08	3.00	0	19,229
14	9,529	.340899413E+07	9.00	5,353	13,706
15	8,609	.281048651E+08	9.00	0	20,601
16	460	.963032269E+05	7.00	0	1,194
17	2,221	.588128150E+06	21.00	626	3,816
SA	272,235	.121398269E+10	73.07	202,701	341,768
NS	6,761	.153520400E+08	3.00	0	19,229
WS	20,820	.321982906E+08	11.64	8,456	33,184
TOTAL	299,816	.126153302E+10	78.26	228,993	370,639

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	253,859	345,772	866,408,725	1,126,561,446
90.000 PERCENT	240,603	359,028	829,017,708	1,163,952,463
95.000 PERCENT	228,993	370,639	796,321,129	1,196,649,042

Table B-6.--CPUE, population, and biomass for Alaska plaice.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	28	28	17	9.35	.116914E+02	16.05	.388045E+02
2	14	14	14	14	12.23	.438842E+01	18.79	.934845E+01
3	35	28	28	12	4.38	.230461E+01	5.34	.362262E+01
4	31	26	26	9	6.18	.380521E+01	6.79	.495793E+01
5	13	0	0	0	0.00	0.	0.00	0.
6	37	10	10	0	0.37	.439011E-01	0.24	.111646E-01
9	4	4	4	0	1.04	.389862E+00	0.85	.146245E+00
14	10	10	10	1	0.83	.988562E-01	1.88	.505374E+00
15	10	10	10	0	4.00	.109578E+01	4.23	.103761E+01
16	8	2	2	0	0.05	.116035E-02	0.20	.346742E-01
17	22	11	11	0	1.73	.113131E+01	1.29	.583707E+00
SA	159	106	106	52	5.15	.686976E+00	7.18	.161813E+01
NS	4	4	4	0	1.04	.389862E+00	0.85	.146245E+00
WS	50	33	33	1	1.42	.973549E-01	1.70	.103621E+00
TOTAL	213	143	143	53	4.35	.430552E+00	6.00	.100920E+01

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	124,960,972	.235307650E+16	28.00	25,615,523	224,306,421
2	77,103,529	.157355094E+15	13.00	50,008,217	104,198,840
3	55,131,396	.386567775E+15	34.00	15,148,122	95,114,671
4	73,159,038	.576390410E+15	30.00	24,134,432	122,183,644
5	0	0.	0.00	0	0
6	2,277,789	.998344168E+12	36.00	250,070	4,305,508
9	979,169	.195701411E+12	3.00	0	2,386,827
14	4,932,664	.347912516E+13	9.00	713,489	9,151,840
15	10,847,247	.682523145E+13	9.00	4,937,739	16,756,754
16	816,563	.585318315E+12	7.00	0	2,625,932
17	2,573,556	.232647088E+13	21.00	0	5,746,133
SA	332,632,723	.347438813E+16	56.11	214,497,278	450,768,169
NS	979,169	.195701411E+12	3.00	0	2,386,827
WS	19,170,030	.132161458E+14	25.58	11,695,644	26,644,416
TOTAL	352,781,922	.348779997E+16	56.55	234,480,693	471,083,151

Table B-6. --Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	72,823	.708957888E+09	28.00	18,293	127,354
2	50,178	.738667722E+08	13.00	31,614	68,742
3	45,274	.245923028E+09	34.00	13,383	77,165
4	66,663	.442379845E+09	30.00	23,714	109,612
5	0	0.	0.00	0	0
6	3,540	.392564699E+07	36.00	0	7,561
9	1,203	.521704231E+06	3.00	0	3,501
14	2,165	.680552073E+06	9.00	299	4,031
15	10,251	.720781456E+07	9.00	4,178	16,324
16	202	.195872714E+05	7.00	0	533
17	3,451	.450904204E+07	21.00	0	7,868
SA	238,478	.147505318E+10	81.57	161,947	315,009
NS	1,203	.521704231E+06	3.00	0	3,501
WS	16,069	.124169959E+08	22.70	8,779	23,360
TOTAL	255,750	.148799188E+10	82.99	178,897	332,603

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	205,861	305,639	276,181,264	429,382,581
90.000 PERCENT	191,484	320,016	253,981,512	451,582,332
95.000 PERCENT	178,897	332,603	234,480,693	471,083,151

Table B-7.--CPUE, population, and biomass for Atheresthes spp.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	0	0	0	0.00	0.	0.00	0.
2	14	0	0	0	0.00	0.	0.00	0.
3	35	19	19	4	2.46	.122825E+01	6.22	.667939E+01
4	31	4	4	1	0.44	.167113E+00	1.52	.158115E+01
5	13	13	13	11	13.00	.138835E+02	24.86	.368786E+02
6	37	19	19	8	7.92	.690805E+01	13.10	.172088E+02
9	4	1	1	0	0.05	.270280E-02	0.02	.390508E-03
14	10	0	0	0	0.00	0.	0.00	0.
15	10	3	3	0	0.18	.151179E-01	0.17	.162009E-01
16	8	1	1	0	0.07	.462851E-02	0.07	.510122E-02
17	22	6	6	0	0.14	.394066E-02	0.12	.315993E-02
SA	159	55	55	24	3.35	.455083E+00	6.49	.139270E+01
NS	4	1	1	0	0.05	.270280E-02	0.02	.390508E-03
WS	50	10	10	0	0.09	.151541E-02	0.09	.160943E-02
TOTAL	213	66	66	24	2.66	.282793E+00	5.14	.865323E+00

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	0	0.	0.00	0	0
2	0	0.	0.00	0	0
3	64,216,594	.712753210E+15	34.00	9,924,684	118,508,505
4	16,363,935	.183818722E+15	30.00	0	44,049,323
5	96,440,270	.554969414E+15	12.00	45,107,848	147,772,692
6	123,885,974	.153881912E+16	36.00	44,277,107	203,494,841
9	22,860	.522568247E+09	3.00	0	95,599
14	0	0.	0.00	0	0
15	439,799	.106566417E+12	9.00	0	1,178,218
16	293,447	.861112031E+11	7.00	0	987,450
17	248,567	.125944691E+11	21.00	15,139	481,995
SA	300,906,773	.299036047E+16	83.18	191,957,642	409,855,905
NS	22,860	.522568247E+09	3.00	0	95,599
WS	981,813	.205272089E+12	18.09	29,914	1,933,713
TOTAL	301,911,446	.299056626E+16	83.19	192,958,566	410,864,327

Table B-7. --Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	0	0.	0.00	0	0
2	0	0.	0.00	0	0
3	25,380	.131065646E+09	34.00	2,099	48,661
4	4,731	.194279726E+08	30.00	0	13,732
5	50,411	.208925683E+09	12.00	18,916	81,907
6	74,902	.617720324E+09	36.00	24,463	125,341
9	60	.361682569E+04	3.00	0	252
14	0	0.	0.00	0	0
15	469	.994430932E+05	9.00	0	1,183
16	280	.781316185E+05	7.00	0	941
17	275	.157062354E+05	21.00	14	535
SA	155,425	.977139625E+09	64.71	92,958	217,891
NS	60	.361682569E+04	3.00	0	252
WS	1,024	.193280947E+06	18.84	104	1,944
TOTAL	156,508	.977336523E+09	64.74	94,036	218,981

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	116,011	197,006	231,185,041	372,637,852
90.000 PERCENT	104,303	208,714	210,803,542	393,019,351
95.000 PERCENT	94,036	218,981	192,958,566	410,864,327

Table B-8.--CPUE, population, and biomass for Pacific halibut.

CPUE

STRATUM	TOTAL HAULS	HAULS WITH CATCH	HAULS WITH NUMS.	HAULS WITH L-F	MEAN CPUE KG/HA	VARIANCE MEAN CPUE KG/HA	MEAN CPUE NO/HA	VARIANCE MEAN CPUE NO/HA
1	29	19	19	11	0.82	.507444E-01	1.43	.186738E+00
2	14	9	9	9	0.56	.528104E-01	0.58	.506081E-01
3	35	34	34	26	2.54	.175447E+00	2.08	.602664E-01
4	31	26	26	26	1.69	.283881E+00	1.78	.394384E+00
5	13	13	13	13	4.09	.111169E+01	0.71	.238407E-01
6	37	27	27	27	2.89	.699317E+00	0.88	.520946E-01
9	4	1	1	1	0.13	.170164E-01	0.02	.489388E-03
14	10	0	0	0	0.00	0.	0.00	0.
15	10	8	8	8	0.82	.138198E+00	0.26	.323959E-02
16	8	6	6	6	3.43	.190171E+01	0.28	.923233E-02
17	22	17	17	17	3.40	.945321E+00	0.64	.484545E-01
SA	159	128	128	112	2.08	.628518E-01	1.41	.323558E-01
NS	4	1	1	1	0.13	.170164E-01	0.02	.489388E-03
WS	50	31	31	31	2.03	.288361E+00	0.27	.290317E-02
TOTAL	213	160	160	144	2.03	.496974E-01	1.16	.202095E-01

POPULATION

STRATUM	POPULATION	VARIANCE POPULATION	EFFECTIVE DEGREES FREEDOM	POPULATION 95% CONFIDENCE LIMITS LOWER	UPPER
1	11,108,935	.113236731E+14	28.00	4,217,279	18,000,592
2	2,379,123	.851846502E+12	13.00	385,539	4,372,706
3	21,436,511	.643098627E+13	34.00	16,279,425	26,593,596
4	19,147,914	.458496931E+14	30.00	5,321,042	32,974,786
5	2,772,543	.358767160E+12	12.00	1,467,384	4,077,703
6	8,320,059	.465832042E+13	36.00	3,939,976	12,700,142
9	25,591	.654888224E+09	3.00	0	107,021
14	0	0.	0.00	0	0
15	677,719	.213094297E+11	9.00	347,518	1,007,920
16	1,136,061	.155846359E+12	7.00	202,421	2,069,701
17	1,270,797	.193124431E+12	21.00	356,722	2,184,872
SA	65,165,085	.694732866E+14	63.06	48,503,292	81,826,877
NS	25,591	.654888224E+09	3.00	0	107,021
WS	3,084,577	.370280220E+12	25.89	1,833,488	4,335,667
TOTAL	68,275,253	.698442217E+14	63.73	51,571,825	84,978,681

Table B-8.--Continued.

BIOMASS

STRATUM	BIOMASS (T)	VARIANCE BIOMASS	EFFECTIVE DEGREES FREEDOM	BIOMASS (T) 95% CONFIDENCE LIMITS LOWER	UPPER
1	6,400	.307710093E+07	28.00	2,807	9,992
2	2,307	.888915143E+06	13.00	271	4,344
3	26,208	.187218698E+08	34.00	17,408	35,007
4	18,240	.330030089E+08	30.00	6,509	29,971
5	15,868	.167293655E+08	12.00	6,956	24,780
6	27,283	.625332025E+08	36.00	11,234	43,331
9	151	.227710187E+05	3.00	0	631
14	0	0.	0.00	0	0
15	2,095	.909041863E+06	9.00	0	4,251
16	14,072	.321017928E+08	7.00	673	27,472
17	6,790	.376775109E+07	21.00	2,753	10,828
SA	96,304	.134953463E+09	101.77	73,233	119,376
NS	151	.227710187E+05	3.00	0	631
WS	22,957	.367785858E+08	9.14	9,239	36,675
TOTAL	119,413	.171754820E+09	90.23	93,333	145,493

CONFIDENCE LIMITS	TOTAL BIOMASS (T) LOWER	UPPER	TOTAL POPULATION LOWER	UPPER
80.000 PERCENT	102,474	136,352	57,448,111	79,102,395
90.000 PERCENT	97,599	141,227	54,317,471	82,233,034
95.000 PERCENT	93,333	145,493	51,571,825	84,978,681

APPENDIX C

Population Estimates by Sex and Size Groups for Principal Fish Species

Appendix C presents estimates of numbers of individuals by centimeter interval, sex, and area for the principal species of fish sampled during the 1991 U.S.-U.S.S.R. cooperative survey. Estimates are given for the standard U.S. area, north shelf and western shelf. Estimates of total abundance for yellowfin sole, rock sole, Hippoglossoides spp., Alaska plaice, and Atheresthes Spp. are less than those given earlier (Tables 11-15) because of missing length data.

List of Tables

List of Tables continued

Table C-1.--Population estimates by sex and size groups for walleye pollock from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
8	0	0	102,930	102,930	0.00001	0.00001
9	0	0	4,405,576	4,405,576	0.00058	0.00059
10	158,269	0	29,095,261	29,253,530	0.00383	0.00442
11	5,771,086	350,316	322,466,830	328,588,232	0.04302	0.04744
12	9,510,449	226,965	574,533,441	584,270,855	0.07650	0.12395
13	23,289,085	441,693	604,055,284	627,786,062	0.08220	0.20615
14	18,028,442	3,215,608	476,810,372	498,054,421	0.06521	0.27136
15	21,142,119	9,825,108	394,819,441	425,786,668	0.05575	0.32711
16	14,179,639	14,005,297	166,630,632	194,815,568	0.02551	0.35262
17	19,795,926	16,517,608	88,651,379	124,964,913	0.01636	0.36898
18	21,980,769	11,246,360	58,153,206	91,380,335	0.01196	0.38095
19	50,402,792	34,755,474	48,147,807	133,306,073	0.01746	0.39840
20	39,630,483	33,974,174	13,874,794	87,479,451	0.01145	0.40985
21	79,432,037	101,060,295	4,187,716	184,680,048	0.02418	0.43404
22	79,809,437	77,197,556	378,641	157,385,634	0.02061	0.45464
23	79,989,388	92,915,578	0	172,904,966	0.02264	0.47728
24	86,741,157	89,427,379	3,809,074	179,977,610	0.02357	0.50085
25	86,611,434	96,388,449	0	182,999,883	0.02396	0.52481
26	75,506,869	73,165,619	0	148,672,488	0.01947	0.54428
27	91,205,326	56,759,217	0	147,964,543	0.01937	0.56365
28	32,458,130	21,445,442	0	53,903,572	0.00706	0.57071
29	23,535,913	18,224,269	0	41,760,183	0.00547	0.57618
30	7,392,220	9,981,362	0	17,373,582	0.00227	0.57845
31	8,902,978	12,907,240	0	21,810,218	0.00286	0.58131
32	22,340,403	19,938,707	0	42,279,110	0.00554	0.58684
33	15,911,014	12,888,377	0	28,799,392	0.00377	0.59061
34	13,918,623	7,254,739	0	21,173,361	0.00277	0.59339
35	13,470,738	5,310,291	0	18,781,030	0.00246	0.59585
36	20,334,620	11,936,373	0	32,270,994	0.00423	0.60007
37	4,947,722	13,345,494	0	18,293,216	0.00240	0.60247
38	9,865,489	11,008,737	0	20,874,226	0.00273	0.60520
39	23,010,033	11,424,982	0	34,435,015	0.00451	0.60971
40	25,844,556	25,352,841	0	51,197,397	0.00670	0.61641
41	44,723,538	22,357,171	0	67,080,709	0.00878	0.62519
42	37,516,581	27,164,488	0	64,681,069	0.00847	0.63366
43	41,543,565	29,862,456	0	71,406,021	0.00935	0.64301
44	57,085,843	45,459,052	0	102,544,895	0.01343	0.65644
45	71,972,216	48,257,141	0	120,229,357	0.01574	0.67218
46	95,796,176	51,523,810	0	147,319,986	0.01929	0.69147
47	88,693,039	84,440,177	0	173,133,216	0.02267	0.71414
48	99,714,090	84,104,198	0	183,818,288	0.02407	0.73821
49	105,460,419	90,864,766	0	196,325,185	0.02571	0.76392
50	106,925,897	101,225,849	0	208,151,746	0.02725	0.79117
51	99,389,007	90,692,916	0	190,081,923	0.02489	0.81606
52	87,758,855	96,945,948	0	184,704,803	0.02418	0.84024
53	80,958,847	58,466,446	0	139,425,293	0.01826	0.85850
54	65,829,080	61,344,437	0	127,173,517	0.01665	0.87515
55	59,105,676	57,870,874	0	116,976,550	0.01532	0.89047
56	56,460,287	59,213,013	0	115,673,300	0.01515	0.90561
57	43,499,479	53,082,058	0	96,581,536	0.01265	0.91826
58	33,849,495	40,151,230	0	74,000,725	0.00969	0.92795
59	36,312,055	34,126,494	0	70,438,550	0.00922	0.93717
60	25,940,594	37,359,461	0	63,300,055	0.00829	0.94546
61	22,327,482	38,574,929	0	60,902,412	0.00797	0.95343
62	25,438,916	31,889,649	0	57,328,565	0.00751	0.96094
63	18,102,258	23,355,413	0	41,457,671	0.00543	0.96637
64	13,999,237	23,865,171	0	37,864,408	0.00496	0.97133
65	10,698,947	23,411,520	0	34,110,467	0.00447	0.97579
66	12,220,496	17,962,445	0	30,182,941	0.00395	0.97974

Table C-1.--Continued.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
67	11,227,934	18,724,331	0	29,952,265	0.00392	0.98367
68	6,613,313	23,452,220	0	30,065,533	0.00394	0.98760
69	4,954,497	14,781,310	0	19,735,807	0.00258	0.99019
70	3,274,844	11,173,961	0	14,448,805	0.00189	0.99208
71	3,333,763	10,274,824	0	13,608,586	0.00178	0.99386
72	2,542,016	10,838,423	0	13,380,439	0.00175	0.99561
73	1,688,093	7,961,458	0	9,649,551	0.00126	0.99688
74	794,715	5,120,779	0	5,915,494	0.00077	0.99765
75	1,371,224	4,654,768	0	6,025,991	0.00079	0.99844
76	623,544	3,864,140	0	4,487,684	0.00059	0.99903
77	320,963	3,170,425	0	3,491,388	0.00046	0.99948
78	142,149	1,376,139	0	1,518,288	0.00020	0.99968
79	115,113	1,063,152	0	1,178,265	0.00015	0.99984
80	0	444,179	0	444,179	0.00006	0.99990
81	31,386	223,033	0	254,419	0.00003	0.99993
82	0	418,168	0	418,168	0.00005	0.99998
84	0	31,386	0	31,386	0.00000	0.99999
86	30,350	0	0	30,350	0.00000	0.99999
87	30,812	30,350	0	61,162	0.00001	1.00000
TOTAL	2,503,533,941	2,343,665,708	2,790,122,382	7,637,322,031		

North shelf area

8	0	0	196	196	0.00001	0.00001
9	0	0	8,400	8,400	0.00034	0.00034
10	0	0	55,472	55,472	0.00226	0.00261
11	0	0	614,807	614,807	0.02509	0.02771
12	35,464	0	1,095,390	1,130,854	0.04615	0.07386
13	35,464	0	1,151,676	1,187,140	0.04845	0.12231
14	106,391	0	909,074	1,015,465	0.04145	0.16376
15	35,464	0	752,752	788,216	0.03217	0.19593
16	0	0	317,694	317,694	0.01297	0.20890
17	106,391	0	169,020	275,411	0.01124	0.22014
18	212,783	0	110,874	323,656	0.01321	0.23335
19	35,464	35,464	91,797	162,725	0.00664	0.23999
20	212,783	106,391	26,453	345,627	0.01412	0.25409
21	361,547	248,247	7,984	617,778	0.02521	0.27931
22	361,547	255,156	722	617,425	0.02520	0.30451
23	361,547	439,384	0	800,931	0.03269	0.33720
24	35,464	148,764	7,262	191,490	0.00782	0.34501
25	106,391	35,464	0	141,855	0.00579	0.35080
26	35,464	0	0	35,464	0.00145	0.35225
28	106,391	0	0	106,391	0.00434	0.35659
29	0	35,464	0	35,464	0.00145	0.35804
30	35,464	35,464	0	70,928	0.00289	0.36093
31	35,464	106,391	0	141,855	0.00579	0.36672
32	35,464	0	0	35,464	0.00145	0.36817
33	35,464	141,855	0	177,319	0.00724	0.37541
34	148,764	0	0	148,764	0.00607	0.38148
35	106,391	0	0	106,391	0.00434	0.38582
36	35,464	0	0	35,464	0.00145	0.38727
37	35,464	262,065	0	297,529	0.01214	0.39941
39	368,456	106,391	0	474,848	0.01938	0.41879
40	35,464	0	0	35,464	0.00145	0.42024
41	141,855	35,464	0	177,319	0.00724	0.42748
43	219,692	0	0	219,692	0.00897	0.43644

Table C-I.--Continued.

North shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
44	219,692	35,464	0	255,156	0.01041	0.44686
45	262,065	226,601	0	488,666	0.01994	0.46680
46	219,692	148,764	0	368,456	0.01504	0.48184
47	0	255,156	0	255,156	0.01041	0.49226
48	106,391	375,366	0	481,757	0.01966	0.51192
49	148,764	113,301	0	262,065	0.01070	0.52261
50	332,993	148,764	0	481,757	0.01966	0.54228
51	141,855	255,156	0	397,011	0.01620	0.55848
52	106,391	248,247	0	354,638	0.01447	0.57295
53	0	326,084	0	326,084	0.01331	0.58626
54	148,764	141,855	0	290,620	0.01186	0.59812
55	106,391	255,156	0	361,547	0.01476	0.61288
56	319,174	219,692	0	538,866	0.02199	0.63487
57	319,174	361,547	0	680,722	0.02778	0.66266
58	574,330	439,384	0	1,013,714	0.04137	0.70403
59	0	694,540	0	694,540	0.02835	0.73238
60	141,855	368,456	0	510,312	0.02083	0.75320
61	361,547	361,547	0	723,095	0.02951	0.78272
62	319,174	574,330	0	893,505	0.03647	0.81918
63	35,464	574,330	0	609,794	0.02489	0.84407
64	212,783	439,384	0	652,167	0.02662	0.87069
65	106,391	113,301	0	219,692	0.00897	0.87966
66	141,855	248,247	0	390,102	0.01592	0.89558
67	141,855	588,149	0	730,004	0.02979	0.92537
68	226,601	35,464	0	262,065	0.01070	0.93607
69	35,464	368,456	0	403,920	0.01649	0.95255
70	141,855	106,391	0	248,247	0.01013	0.96269
71	0	35,464	0	35,464	0.00145	0.96413
72	106,391	148,764	0	255,156	0.01041	0.97455
73	0	106,391	0	106,391	0.00434	0.97889
74	0	262,065	0	262,065	0.01070	0.98959
75	35,464	0	0	35,464	0.00145	0.99103
76	0	113,301	0	113,301	0.00462	0.99566
77	0	106,391	0	106,391	0.00434	1.00000
TOTAL	8,394,344	10,787,475	5,319,573	24,501,391		

Western shelf area

10	66,318	0	0	66,318	0.00004	0.00004
11	66,318	0	139,010	205,328	0.00014	0.00018
12	66,318	0	9,798,980	9,865,298	0.00668	0.00687
13	658,350	467,367	3,868,701	4,994,418	0.00338	0.01025
14	1,936,538	642,410	2,420,883	4,999,831	0.00339	0.01364
15	4,477,466	400,100	14,223,717	19,101,283	0.01294	0.02658
16	4,764,590	2,900,033	20,014,987	27,679,610	0.01876	0.04534
17	4,781,404	1,221,426	17,594,104	23,596,934	0.01599	0.06133
18	2,745,869	2,789,773	21,601,815	27,137,457	0.01839	0.07971
19	5,645,601	4,508,823	19,458,950	29,613,374	0.02007	0.09978
20	7,214,116	6,353,802	10,076,998	23,644,916	0.01602	0.11580
21	15,247,390	12,828,293	12,497,881	40,573,564	0.02749	0.14329
22	13,449,071	13,401,352	3,312,663	30,163,086	0.02438	0.16373
23	19,389,185	17,563,009	8,073,143	45,025,337	0.03508	0.19424
24	23,167,827	10,869,951	1,586,827	35,624,605	0.02414	0.21838
25	13,059,554	11,856,242	1,586,827	26,502,623	0.01798	0.23634
26	9,732,391	9,737,310	1,586,827	21,056,528	0.01427	0.25060
27	5,696,603	7,503,504	0	13,200,108	0.00894	0.25955

Table C-1.--Continued.

Western shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
28	7,112,488	7,971,704	0	15,084,192	0.01022	0.26977
29	7,900,908	4,745,011	0	12,645,919	0.00857	0.27834
30	4,355,955	4,295,634	0	8,651,588	0.00586	0.28420
31	5,817,928	6,013,238	0	11,831,167	0.00802	0.29222
32	3,708,407	8,770,970	0	12,479,377	0.00846	0.30067
33	5,737,588	9,844,047	0	15,581,635	0.01056	0.31123
34	4,688,887	1,386,415	0	6,075,302	0.00412	0.31535
35	5,884,473	4,107,185	0	9,991,658	0.00677	0.32212
36	16,716,652	4,925,316	0	21,641,968	0.01466	0.33678
37	15,051,593	17,145,603	0	32,197,196	0.02182	0.35860
38	24,116,325	21,222,965	0	45,339,290	0.03072	0.38932
39	25,087,996	17,584,561	0	42,672,557	0.02891	0.41823
40	35,590,508	27,637,512	0	63,228,020	0.04284	0.46107
41	34,445,874	32,154,145	0	66,600,019	0.04513	0.50620
42	34,901,650	41,857,118	0	76,758,768	0.05201	0.55821
43	21,187,031	21,967,289	0	43,154,320	0.02924	0.58745
44	30,532,596	33,774,952	0	64,307,548	0.04357	0.63103
45	28,287,060	43,198,135	0	71,485,196	0.04844	0.67946
46	16,420,017	28,242,607	0	44,662,623	0.03026	0.70973
47	16,784,334	19,837,110	0	36,621,445	0.02481	0.73454
48	15,521,980	17,356,381	0	32,878,361	0.02228	0.75682
49	15,343,912	23,633,813	0	38,977,725	0.02641	0.78323
50	12,125,535	15,515,665	0	27,641,200	0.01873	0.80196
51	11,233,445	14,319,957	0	25,553,402	0.01731	0.81927
52	18,707,963	15,818,681	0	34,526,643	0.02339	0.84267
53	11,873,611	15,680,081	0	27,553,692	0.01867	0.86134
54	9,332,205	12,340,448	0	21,672,654	0.01468	0.87602
55	11,441,870	21,269,854	0	32,711,723	0.02216	0.89819
56	6,878,083	23,550,136	0	30,428,219	0.02062	0.91880
57	5,997,611	18,372,422	0	24,370,034	0.01651	0.93532
58	3,396,079	16,876,268	0	20,272,347	0.01374	0.94905
59	1,533,668	11,584,369	0	13,118,037	0.00889	0.95794
60	1,386,434	6,844,313	0	8,230,748	0.00558	0.96352
61	1,446,994	9,623,698	0	11,070,692	0.00750	0.97102
62	868,730	5,687,488	0	6,556,218	0.00444	0.97546
63	681,375	3,178,462	0	3,859,837	0.00262	0.97808
64	1,079,303	3,584,141	0	4,663,444	0.00316	0.98124
65	754,033	3,305,811	0	4,059,844	0.00275	0.98399
66	1,207,515	3,603,409	0	4,810,924	0.00326	0.98725
67	552,494	3,501,148	0	4,053,642	0.00275	0.98999
68	681,736	2,825,630	0	3,507,366	0.00238	0.99237
69	390,229	1,632,437	0	2,022,666	0.00137	0.99374
70	395,051	2,134,065	0	2,529,116	0.00171	0.99545
71	197,300	997,821	0	1,195,121	0.00081	0.99626
72	21,194	1,090,699	0	1,111,894	0.00075	0.99702
73	127,180	678,867	0	806,047	0.00055	0.99756
74	75,927	1,562,508	0	1,638,435	0.00111	0.99867
75	21,194	750,424	0	771,618	0.00052	0.99920
76	0	349,751	0	349,751	0.00024	0.99943
77	0	128,134	0	128,134	0.00009	0.99952
78	52,400	235,712	0	288,111	0.00020	0.99972
79	0	302,503	0	302,503	0.00020	0.99992
80	0	95,975	0	95,975	0.00007	0.99999
81	0	21,194	0	21,194	0.00001	1.00000
TOTAL	609,818,231	718,177,179	147,842,311	1,475,837,721		

Table C-2.--Population estimates by sex and size groups for Pacific cod from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
11	0	0	303,695	303,695	0.00081	0.00081
12	0	0	1,553,953	1,553,953	0.00412	0.00493
13	0	44,466	3,644,345	3,688,812	0.00979	0.01472
14	187,838	233,829	4,393,639	4,815,306	0.01278	0.02750
15	625,352	136,449	3,640,041	4,401,843	0.01168	0.03918
16	796,387	919,334	2,034,125	3,749,845	0.00995	0.04914
17	270,492	162,998	1,681,994	2,115,484	0.00561	0.05475
18	542,564	332,292	2,256,536	3,131,393	0.00831	0.06306
19	709,828	393,287	1,084,161	2,187,277	0.00581	0.06887
20	798,200	1,408,441	2,182,958	4,389,599	0.01165	0.08052
21	1,669,724	1,528,174	261,289	3,459,187	0.00918	0.08970
22	1,276,358	1,350,497	564,985	3,191,840	0.00847	0.09817
23	1,477,415	2,198,970	264,691	3,941,076	0.01046	0.10863
24	1,746,515	2,233,532	313,126	4,293,173	0.01139	0.12002
25	2,831,316	3,804,035	303,695	6,939,047	0.01842	0.13844
26	4,347,226	4,463,582	70,951	8,881,759	0.02357	0.16201
27	5,131,587	4,804,211	0	9,935,797	0.02637	0.18838
28	7,587,193	7,449,791	303,695	15,340,680	0.04072	0.22910
29	6,639,821	6,772,733	0	13,412,554	0.03560	0.26470
30	5,927,461	7,784,716	0	13,712,177	0.03639	0.30109
31	6,660,379	8,692,178	0	15,352,557	0.04075	0.34184
32	5,612,634	7,519,623	0	13,132,257	0.03485	0.37669
33	5,318,895	7,071,042	0	12,389,937	0.03288	0.40958
34	4,799,728	5,277,329	0	10,077,056	0.02675	0.43632
35	4,936,768	3,741,410	0	8,678,178	0.02303	0.45935
36	4,646,157	3,263,637	0	7,909,795	0.02099	0.48035
37	3,083,911	4,529,953	0	7,613,864	0.02021	0.50056
38	2,126,461	3,018,052	0	5,144,513	0.01365	0.51421
39	2,019,338	1,673,401	0	3,692,739	0.00980	0.52401
40	2,143,059	1,938,655	0	4,081,714	0.01083	0.53484
41	1,797,835	1,904,098	0	3,701,934	0.00983	0.54467
42	1,874,442	1,819,462	0	3,693,904	0.00980	0.55447
43	2,010,237	1,893,265	0	3,903,502	0.01036	0.56483
44	2,057,380	1,867,141	0	3,924,521	0.01042	0.57525
45	1,408,096	2,414,501	0	3,822,597	0.01015	0.58539
46	1,304,939	1,376,960	0	2,681,898	0.00712	0.59251
47	1,893,386	1,098,917	0	2,992,303	0.00794	0.60045
48	1,990,569	1,649,999	0	3,640,567	0.00966	0.61012
49	2,266,182	1,047,822	0	3,314,004	0.00880	0.61891
50	1,512,537	2,139,153	0	3,651,690	0.00969	0.62860
51	1,708,363	1,843,500	0	3,551,863	0.00943	0.63803
52	2,387,750	2,397,052	0	4,784,801	0.01270	0.65073
53	1,608,898	2,332,023	0	3,940,920	0.01046	0.66119
54	1,613,811	2,990,084	0	4,603,895	0.01222	0.67341
55	2,029,795	2,088,273	0	4,118,068	0.01093	0.68434
56	1,098,577	2,546,794	0	3,645,371	0.00968	0.69401
57	1,538,595	1,233,836	0	2,772,431	0.00736	0.70137
58	1,909,419	1,638,027	0	3,547,446	0.00942	0.71079
59	1,096,842	1,503,087	0	2,599,929	0.00690	0.71769
60	1,351,625	1,008,266	0	2,359,891	0.00626	0.72395
61	2,138,399	1,573,171	0	3,711,570	0.00985	0.73380
62	1,654,794	1,148,731	0	2,803,525	0.00744	0.74124
63	2,575,729	2,046,468	0	4,622,197	0.01227	0.75351
64	2,756,292	2,923,209	0	5,679,500	0.01507	0.76858
65	2,197,506	2,921,303	0	5,118,809	0.01359	0.78217
66	3,162,229	1,918,094	0	5,080,322	0.01348	0.79565
67	2,382,149	1,737,700	0	4,119,849	0.01093	0.80659
68	1,767,617	2,032,536	0	3,800,153	0.01009	0.81667
69	2,108,187	2,021,290	0	4,129,477	0.01096	0.82763

Table C-2.--Continued.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
70	1,054,213	1,673,701	0	2,727,914	0.00724	0.83487
71	1,544,562	2,113,396	0	3,657,958	0.00971	0.84458
72	1,832,663	2,502,583	0	4,335,245	0.01151	0.85609
73	1,788,910	2,409,223	0	4,198,134	0.01114	0.86723
74	1,774,798	1,547,090	0	3,321,888	0.00882	0.87605
75	1,344,000	1,584,526	0	2,928,526	0.00777	0.88382
76	2,047,012	1,998,634	0	4,045,646	0.01074	0.89456
77	1,027,965	1,090,669	0	2,118,633	0.00562	0.90018
78	634,412	2,183,724	0	2,818,136	0.00748	0.90766
79	1,154,728	1,129,016	0	2,283,744	0.00606	0.91372
80	541,357	2,592,471	0	3,133,829	0.00832	0.92204
81	993,772	1,021,665	0	2,015,438	0.00535	0.92739
82	769,206	1,284,844	0	2,054,050	0.00545	0.93284
83	181,911	939,381	0	1,121,292	0.00298	0.93582
84	457,089	1,385,207	0	1,842,296	0.00489	0.94071
85	1,233,146	1,716,499	0	2,949,645	0.00783	0.94853
86	872,936	464,881	0	1,337,817	0.00355	0.95209
87	130,333	1,373,881	0	1,504,213	0.00399	0.95608
88	876,327	1,403,655	0	2,279,982	0.00605	0.96213
89	701,994	1,424,887	0	2,126,881	0.00564	0.96777
90	523,508	510,503	0	1,034,010	0.00274	0.97052
91	223,950	155,014	0	378,964	0.00101	0.97152
92	645,822	789,215	0	1,435,037	0.00381	0.97533
93	32,219	737,813	0	770,032	0.00204	0.97738
94	24,318	782,958	0	807,276	0.00214	0.97952
95	163,693	568,858	0	732,551	0.00194	0.98146
96	217,320	1,406,704	0	1,624,024	0.00431	0.98577
97	542,545	608,950	0	1,151,494	0.00306	0.98883
98	217,320	50,698	0	268,018	0.00071	0.98954
99	0	30,425	0	30,425	0.00008	0.98962
100	217,320	310,981	0	528,301	0.00140	0.99102
101	203,959	232,769	0	436,728	0.00116	0.99218
102	0	136,729	0	136,729	0.00036	0.99255
103	31,136	835,733	0	866,869	0.00230	0.99485
104	0	1,260,073	0	1,260,073	0.00334	0.99819
105	0	469,206	0	469,206	0.00125	0.99944
106	0	141,402	0	141,402	0.00038	0.99981
109	0	45,576	0	45,576	0.00012	0.99993
110	0	25,349	0	25,349	0.00007	1.00000
TOTAL	163,119,228	188,800,267	24,857,881	376,777,376		

North shelf area

16	0	27,130	0	27,130	0.00218	0.00218
17	27,130	27,130	0	54,261	0.00436	0.00654
18	27,130	0	0	27,130	0.00218	0.00872
19	0	27,130	0	27,130	0.00218	0.01090
20	81,391	27,130	0	108,521	0.00872	0.01962
21	27,130	27,130	0	54,261	0.00436	0.02398
22	135,652	189,912	0	325,564	0.02616	0.05015
23	244,173	135,652	0	379,824	0.03053	0.08068
24	217,643	298,433	0	516,076	0.04148	0.12215
25	271,903	271,303	0	543,206	0.04366	0.16581
26	272,504	406,955	0	679,458	0.05461	0.22041
27	436,486	353,294	0	789,780	0.06347	0.28389
28	409,356	407,555	0	816,910	0.06565	0.34954

Table C-2.--Continued.

North shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
29	109,121	462,416	0	571,537	0.04593	0.39548
30	163,982	81,391	0	245,373	0.01972	0.41520
31	54,261	190,512	0	244,773	0.01967	0.43487
32	109,121	54,861	0	163,982	0.01318	0.44805
33	27,130	0	0	27,130	0.00218	0.45023
34	27,731	0	0	27,731	0.00223	0.45246
35	0	27,731	0	27,731	0.00223	0.45468
36	82,591	0	0	82,591	0.00664	0.46132
37	27,731	27,130	0	54,861	0.00441	0.46573
38	0	54,861	0	54,861	0.00441	0.47014
39	27,731	83,192	0	110,922	0.00891	0.47905
40	0	27,731	0	27,731	0.00223	0.48128
41	83,192	110,322	0	193,514	0.01555	0.49684
42	27,130	27,130	0	54,261	0.00436	0.50120
44	0	27,731	0	27,731	0.00223	0.50342
45	0	82,591	0	82,591	0.00664	0.51006
46	0	27,731	0	27,731	0.00223	0.51229
48	27,130	0	0	27,130	0.00218	0.51447
49	0	27,731	0	27,731	0.00223	0.51670
50	27,130	0	0	27,130	0.00218	0.51888
52	27,130	27,130	0	54,261	0.00436	0.52324
53	55,461	27,130	0	82,591	0.00664	0.52988
54	27,731	27,130	0	54,861	0.00441	0.53429
55	54,861	136,852	0	191,713	0.01541	0.54970
56	110,322	0	0	110,322	0.00887	0.55856
57	54,261	110,322	0	164,583	0.01323	0.57179
58	109,121	109,121	0	218,243	0.01754	0.58933
59	27,130	137,452	0	164,583	0.01323	0.60256
60	136,852	137,452	0	274,304	0.02205	0.62460
61	55,461	221,244	0	276,705	0.02224	0.64684
62	165,183	109,722	0	274,904	0.02209	0.66893
63	164,583	109,722	0	274,304	0.02205	0.69098
64	109,722	27,130	0	136,852	0.01100	0.70198
65	109,722	110,322	0	220,044	0.01768	0.71966
66	138,052	220,044	0	358,096	0.02878	0.74844
67	54,261	109,722	0	163,982	0.01318	0.76162
68	27,731	191,113	0	218,843	0.01759	0.77921
69	55,461	55,461	0	110,922	0.00891	0.78812
70	27,731	109,121	0	136,852	0.01100	0.79912
71	82,591	83,192	0	165,783	0.01332	0.81245
72	165,183	82,591	0	247,774	0.01991	0.83236
73	220,044	54,261	0	274,304	0.02205	0.85440
74	109,722	109,121	0	218,843	0.01759	0.87199
75	27,731	82,591	0	110,322	0.00887	0.88086
76	27,130	165,183	0	192,313	0.01546	0.89631
77	27,130	110,922	0	138,052	0.01110	0.90741
78	27,130	193,514	0	220,644	0.01773	0.92514
79	0	109,722	0	109,722	0.00882	0.93396
80	27,130	54,861	0	81,991	0.00659	0.94055
81	54,861	192,313	0	247,174	0.01986	0.96041
82	27,731	110,322	0	138,052	0.01110	0.97151
83	27,731	0	0	27,731	0.00223	0.97374
84	0	27,130	0	27,130	0.00218	0.97592
85	0	54,261	0	54,261	0.00436	0.98028
86	0	27,130	0	27,130	0.00218	0.98246
87	27,731	27,130	0	54,861	0.00441	0.98687
88	54,861	27,130	0	81,991	0.00659	0.99346
94	0	27,130	0	27,130	0.00218	0.99564
98	0	54,261	0	54,261	0.00436	1.00000
TOTAL	5,361,957	7,080,770	0	12,442,728		

Table C-2.--Continued.

Western shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
16	0	23,316	0	23,316	0.00010	0.00010
17	23,316	0	0	23,316	0.00010	0.00020
19	23,316	46,632	0	69,948	0.00031	0.00051
20	621,829	47,742	0	669,571	0.00294	0.00346
21	112,062	274,194	0	386,256	0.00170	0.00515
22	1,355,407	965,582	0	2,320,989	0.01020	0.01536
23	1,029,913	646,571	0	1,676,484	0.00737	0.02272
24	1,502,315	386,076	0	1,888,391	0.00830	0.03103
25	4,208,926	1,984,432	0	6,193,358	0.02722	0.05825
26	3,187,031	2,417,147	0	5,604,179	0.02463	0.08288
27	4,539,817	7,908,752	0	12,448,569	0.05472	0.13760
28	8,753,609	11,799,234	0	20,552,844	0.09034	0.22794
29	8,421,269	12,759,543	0	21,180,811	0.09310	0.32104
30	10,449,527	10,484,211	0	20,933,738	0.09202	0.41306
31	8,581,815	9,005,709	0	17,587,524	0.07731	0.49037
32	4,212,637	3,440,220	0	7,652,857	0.03364	0.52401
33	3,187,707	3,714,080	0	6,901,786	0.03034	0.55434
34	2,987,747	1,710,643	0	4,698,389	0.02065	0.57500
35	1,539,795	1,767,754	0	3,307,549	0.01454	0.58953
36	1,114,964	1,273,033	0	2,387,997	0.01050	0.60003
37	998,906	1,277,015	0	2,275,921	0.01000	0.61004
38	1,391,505	1,331,543	0	2,723,047	0.01197	0.62200
39	1,039,558	1,648,368	0	2,687,925	0.01181	0.63382
40	1,355,969	1,197,879	0	2,553,848	0.01123	0.64505
41	1,454,177	1,127,897	0	2,582,074	0.01135	0.65639
42	775,696	2,290,282	0	3,065,977	0.01348	0.66987
43	1,188,643	1,605,774	0	2,794,417	0.01228	0.68215
44	1,708,386	1,894,195	0	3,602,580	0.01584	0.69799
45	847,124	830,307	0	1,677,430	0.00737	0.70536
46	1,035,738	1,170,825	0	2,206,563	0.00970	0.71506
47	828,350	924,613	0	1,752,963	0.00771	0.72277
48	743,463	683,385	0	1,426,847	0.00627	0.72904
49	477,031	535,224	0	1,012,255	0.00445	0.73349
50	1,506,312	1,459,166	0	2,965,478	0.01303	0.74652
51	808,283	1,252,544	0	2,060,827	0.00906	0.75558
52	1,983,830	656,891	0	2,640,721	0.01161	0.76719
53	974,162	623,505	0	1,597,667	0.00702	0.77421
54	1,531,585	973,787	0	2,505,372	0.01101	0.78523
55	1,535,747	770,135	0	2,305,882	0.01014	0.79536
56	689,716	1,471,933	0	2,161,649	0.00950	0.80486
57	1,017,528	916,645	0	1,934,173	0.00850	0.81336
58	1,828,941	602,789	0	2,431,730	0.01069	0.82405
59	1,151,349	1,388,643	0	2,539,992	0.01116	0.83522
60	1,298,486	1,373,676	0	2,672,162	0.01175	0.84696
61	1,807,922	1,528,374	0	3,336,296	0.01466	0.86163
62	1,303,884	2,152,568	0	3,456,452	0.01519	0.87682
63	1,864,938	1,930,443	0	3,795,381	0.01668	0.89350
64	800,608	1,070,529	0	1,871,137	0.00822	0.90173
65	1,085,943	1,230,948	0	2,316,892	0.01018	0.91191
66	531,265	684,742	0	1,216,008	0.00535	0.91726
67	1,212,059	1,029,451	0	2,241,510	0.00985	0.92711
68	832,265	761,430	0	1,593,694	0.00701	0.93412
69	897,165	1,257,006	0	2,154,172	0.00947	0.94359
70	1,067,666	318,834	0	1,386,500	0.00609	0.94968
71	262,324	864,845	0	1,127,169	0.00495	0.95463
72	205,490	448,734	0	654,224	0.00288	0.95751
73	179,353	1,608,379	0	1,787,732	0.00786	0.96537
74	428,887	918,567	0	1,347,454	0.00592	0.97129
75	231,418	480,783	0	712,201	0.00313	0.97442
76	402,193	1,006,510	0	1,408,703	0.00619	0.98061

Table C-2. --Continued.

Western shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
77	168,133	380,265	0	548,398	0.00241	0.98302
78	281,791	371,288	0	653,079	0.00287	0.98589
79	136,294	321,814	0	458,108	0.00201	0.98791
80	116,124	380,253	0	496,378	0.00218	0.99009
81	292,928	198,565	0	491,493	0.00216	0.99225
82	137,728	781,760	0	919,487	0.00404	0.99629
84	0	9,919	0	9,919	0.00004	0.99634
85	69,072	42,451	0	111,524	0.00049	0.99683
86	0	160,360	0	160,360	0.00070	0.99753
87	34,940	61,586	0	96,526	0.00042	0.99796
89	92,809	0	0	92,809	0.00041	0.99836
90	23,864	11,106	0	34,969	0.00015	0.99852
91	0	51,879	0	51,879	0.00023	0.99875
93	0	24,426	0	24,426	0.00011	0.99885
96	0	21,694	0	21,694	0.00010	0.99895
97	0	108,034	0	108,034	0.00047	0.99942
98	23,316	0	0	23,316	0.00010	0.99953
100	0	108,034	0	108,034	0.00047	1.00000
TOTAL	108,513,862	118,987,471	0	227,501,333		

Table C-3.--Population estimates by sex end size groups for yellowfin sole from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
10	0	430,138	0	430,138	0.00015	0.00015
11	2,895,847	1,248,211	0	4,144,058	0.00142	0.00157
12	2,181,631	3,162,655	0	5,344,287	0.00183	0.00340
13	4,138,132	3,578,526	0	7,716,658	0.00264	0.00604
14	4,304,973	6,276,225	0	10,581,198	0.00363	0.00967
15	7,831,685	6,750,087	0	14,581,772	0.00500	0.01467
16	9,713,067	9,738,639	0	19,451,706	0.00667	0.02133
17	6,339,789	13,505,306	0	19,845,095	0.00680	0.02813
18	14,421,643	18,478,119	0	32,899,763	0.01127	0.03941
19	19,125,671	21,073,318	0	40,198,989	0.01378	0.05318
20	28,817,731	28,596,601	0	57,414,332	0.01967	0.07286
21	33,782,869	32,898,632	0	66,681,500	0.02285	0.09571
22	41,472,368	47,753,145	0	89,225,513	0.03058	0.12628
23	63,658,783	64,593,887	0	128,252,670	0.04395	0.17023
24	79,636,375	88,497,676	0	168,134,051	0.05762	0.22785
25	78,333,821	100,596,563	0	178,930,384	0.06132	0.28916
26	104,242,278	110,526,127	0	214,768,406	0.07360	0.36276
27	93,698,695	131,094,769	0	224,793,465	0.07703	0.43979
28	106,073,943	124,145,793	0	230,219,737	0.07889	0.51868
29	99,989,516	121,013,046	0	221,002,562	0.07573	0.59441
30	99,737,358	131,821,772	0	231,559,130	0.07935	0.67376
31	88,825,149	110,097,950	0	198,923,098	0.06817	0.74193
32	65,017,014	116,209,429	0	181,226,443	0.06210	0.80403
33	40,710,479	105,803,780	0	146,514,259	0.05021	0.85423
34	22,126,033	106,157,683	0	128,283,716	0.04396	0.89819
35	11,911,152	74,812,715	0	86,723,866	0.02972	0.92791
36	5,832,188	67,563,135	0	73,395,323	0.02515	0.95306
37	5,304,835	50,643,665	0	55,948,500	0.01917	0.97224
38	1,467,204	35,196,935	0	36,664,139	0.01256	0.98480
39	604,864	18,190,332	0	18,795,196	0.00644	0.99124
40	446,780	10,820,315	0	11,267,095	0.00386	0.99510
41	796,212	8,561,795	0	9,358,007	0.00321	0.99831
42	0	3,005,791	0	3,005,791	0.00103	0.99934
43	0	1,539,957	0	1,539,957	0.00053	0.99987
44	0	337,889	0	337,889	0.00012	0.99998
45	0	55,656	0	55,656	0.00002	1.00000
TOTAL	1,143,438,087	1,774,776,263	0	2,918,214,350		

Table C-4.--Population estimates by sex and size groups for rock sole from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
8	1,663,071	0	0	1,663,071	0.00045	0.00045
9	820,003	0	0	820,003	0.00022	0.00067
10	3,840,283	694,237	0	4,534,520	0.00122	0.00189
11	10,017,476	3,563,348	0	13,580,824	0.00365	0.00554
12	20,535,611	9,116,713	0	29,652,324	0.00797	0.01351
13	41,767,713	17,593,189	536,088	59,896,990	0.01611	0.02962
14	62,886,936	41,866,772	670,110	105,423,817	0.02835	0.05797
15	110,195,658	63,111,771	402,066	173,709,494	0.04671	0.10468
16	127,124,166	94,664,034	134,022	221,922,223	0.05967	0.16435
17	99,952,430	86,562,429	0	186,514,859	0.05015	0.21450
18	88,431,951	96,497,686	0	184,929,637	0.04973	0.26423
19	77,311,929	91,721,431	0	169,033,360	0.04545	0.30968
20	76,829,574	70,536,554	0	147,366,129	0.03963	0.34931
21	80,683,261	85,727,821	0	166,411,083	0.04475	0.39406
22	83,032,292	64,213,029	0	147,245,322	0.03959	0.43365
23	58,143,933	70,807,056	0	128,950,989	0.03467	0.46832
24	61,583,476	66,848,457	0	128,431,932	0.03453	0.50286
25	77,355,050	60,921,186	0	138,276,236	0.03718	0.54004
26	70,418,998	71,647,063	0	142,066,061	0.03820	0.57824
27	68,793,621	69,446,556	0	138,240,177	0.03717	0.61541
28	74,821,880	67,770,434	0	142,592,313	0.03834	0.65376
29	89,058,360	69,188,999	0	158,247,359	0.04255	0.69631
30	100,421,562	63,787,248	0	164,208,810	0.04416	0.74046
31	78,534,971	61,807,191	0	140,342,162	0.03774	0.77820
32	76,287,654	62,926,969	0	139,214,623	0.03743	0.81564
33	44,207,117	69,468,379	0	113,675,497	0.03057	0.84620
34	27,578,735	64,101,415	0	91,680,150	0.02465	0.87085
35	8,605,829	86,017,422	0	94,623,250	0.02544	0.89630
36	9,692,036	75,566,047	0	85,258,083	0.02293	0.91922
37	2,151,788	59,700,564	0	61,852,351	0.01663	0.93586
38	1,121,372	61,380,628	0	62,501,999	0.01681	0.95266
39	0	52,907,464	0	52,907,464	0.01423	0.96689
40	1,208,379	26,547,921	0	27,756,300	0.00746	0.97435
41	812,390	36,393,248	0	37,205,639	0.01000	0.98436
42	386,696	27,863,289	0	28,249,985	0.00760	0.99195
43	386,696	13,784,619	0	14,171,315	0.00381	0.99576
44	0	11,056,496	0	11,056,496	0.00297	0.99874
45	0	2,355,671	0	2,355,671	0.00063	0.99937
46	0	933,536	0	933,536	0.00025	0.99962
47	0	48,291	0	48,291	0.00001	0.99963
49	0	1,321,261	0	1,321,261	0.00036	0.99999
50	0	38,186	0	38,186	0.00001	1.00000
TOTAL	1,736,662,897	1,980,504,611	1,742,285	3,718,909,793		

Table C-5.--Population estimates by sex and size groups for Hippoglossoides spp. from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
9	89,722	0	0	89,722	0.00011	0.00011
10	224,900	24,307	0	249,206	0.00030	0.00041
11	348,928	268,784	0	617,711	0.00075	0.00116
12	471,189	105,273	0	576,461	0.00070	0.00187
13	821,191	388,447	0	1,209,638	0.00147	0.00334
14	463,684	69,168	0	532,852	0.00065	0.00399
15	2,410,638	1,231,986	0	3,642,624	0.00444	0.00842
16	2,942,866	1,441,366	0	4,384,232	0.00534	0.01376
17	5,709,281	3,686,804	0	9,396,085	0.01144	0.02521
18	8,130,360	6,030,447	92,532	14,253,340	0.01736	0.04256
19	9,208,781	5,984,575	0	15,193,356	0.01850	0.06106
20	10,416,837	8,511,344	92,532	19,020,713	0.02316	0.08423
21	10,919,748	8,026,530	0	18,946,278	0.02307	0.10730
22	15,670,613	8,347,647	0	24,018,260	0.02925	0.13655
23	16,228,564	10,482,586	92,532	26,803,682	0.03264	0.16919
24	16,662,585	10,175,455	0	26,838,040	0.03268	0.20187
25	15,017,381	13,168,681	277,596	28,463,658	0.03466	0.23653
26	18,122,924	13,664,240	277,596	32,064,760	0.03905	0.27558
27	13,976,145	12,380,398	185,064	26,541,607	0.03232	0.30790
28	18,858,869	12,196,668	185,064	31,240,601	0.03804	0.34594
29	18,903,843	12,229,783	277,596	31,411,223	0.03825	0.38419
30	18,857,807	12,093,295	185,064	31,136,166	0.03792	0.42211
31	22,726,747	14,117,358	92,532	36,936,637	0.04498	0.46709
32	25,743,094	13,189,400	277,596	39,210,090	0.04775	0.51484
33	28,332,257	12,512,745	462,660	41,307,662	0.05030	0.56514
34	30,660,101	16,081,040	462,660	47,203,801	0.05748	0.62262
35	31,874,983	15,575,105	925,320	48,375,408	0.05891	0.68153
36	26,952,887	20,634,097	647,724	48,234,708	0.05874	0.74027
37	21,374,351	21,996,714	185,064	43,556,129	0.05304	0.79331
38	12,677,448	20,053,781	185,064	32,916,293	0.04008	0.83340
39	7,664,898	20,351,102	0	28,016,000	0.03412	0.86751
40	4,289,829	20,841,535	92,532	25,223,896	0.03072	0.89823
41	2,025,099	16,662,153	277,596	18,964,848	0.02309	0.92132
42	1,465,029	16,380,920	185,064	18,031,013	0.02196	0.94328
43	115,265	11,881,563	0	11,996,828	0.01461	0.95789
44	0	9,512,855	92,532	9,605,387	0.01170	0.96959
45	0	8,301,955	0	8,301,955	0.01011	0.97970
46	288,430	6,379,125	0	6,667,554	0.00812	0.98782
47	0	6,386,816	0	6,386,816	0.00778	0.99559
48	145,504	208,766	0	354,270	0.00043	0.99603
49	0	616,506	0	616,506	0.00075	0.99678
50	0	1,888,854	0	1,888,854	0.00230	0.99908
51	0	758,497	0	758,497	0.00092	1.00000
TOTAL	420,792,775	394,838,671	5,551,921	821,183,367		

North shelf area

16	41,593	41,593	0	83,186	0.00209	0.00209
17	178,201	0	0	178,201	0.00447	0.00656
18	869,110	0	0	869,110	0.02182	0.02838
19	836,850	982,060	0	1,818,910	0.04566	0.07404
20	1,201,854	2,307,960	0	3,509,814	0.08811	0.16215
21	700,243	3,874,085	0	4,574,327	0.11483	0.27699
22	1,242,714	1,400,485	0	2,643,199	0.06636	0.34334
23	646,820	2,738,214	0	3,385,035	0.08498	0.42832

Table C-5.--Continued.

North shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
24	281,817	2,480,055	0	2,761,873	0.06933	0.49766
25	136,608	2,335,578	0	2,472,186	0.06206	0.55972
26	0	3,477,172	0	3,477,172	0.08729	0.64701
27	124,779	2,679,769	0	2,804,548	0.07041	0.71742
28	124,779	1,175,667	0	1,300,446	0.03265	0.75006
29	281,817	1,991,005	0	2,272,823	0.05706	0.80712
30	0	1,783,041	0	1,783,041	0.04476	0.85188
31	240,224	937,589	0	1,177,813	0.02957	0.88145
32	41,593	213,688	0	255,281	0.00641	0.88786
33	0	335,239	0	335,239	0.00842	0.89627
34	0	240,224	0	240,224	0.00603	0.90230
35	0	857,281	0	857,281	0.02152	0.92383
36	53,422	136,608	0	190,030	0.00477	0.92860
37	0	720,673	0	720,673	0.01809	0.94669
38	0	720,673	0	720,673	0.01809	0.96478
39	53,422	1,002,490	0	1,055,912	0.02651	0.99129
41	0	53,422	0	53,422	0.00134	0.99263
42	0	240,224	0	240,224	0.00603	0.99866
43	0	53,422	0	53,422	0.00134	1.00000
TOTAL	7,055,847	32,778,219	0	39,834,066		

Western shelf area

10	260,533	0	0	260,533	0.00337	0.00337
14	260,533	260,533	0	521,066	0.00674	0.01011
15	260,533	521,066	0	781,599	0.01011	0.02022
16	1,042,132	0	0	1,042,132	0.01348	0.03370
17	898,003	1,823,731	0	2,721,733	0.03520	0.06890
18	3,126,395	5,327,063	0	8,453,458	0.10934	0.17823
19	4,373,610	2,605,329	0	6,978,939	0.09026	0.26850
20	4,140,802	2,605,329	0	6,746,131	0.08725	0.35575
21	2,317,071	4,284,931	0	6,602,002	0.08539	0.44114
22	1,796,005	3,242,799	0	5,038,804	0.06517	0.50631
23	1,651,876	3,331,478	0	4,983,354	0.06445	0.57076
24	2,577,604	3,242,799	0	5,820,403	0.07528	0.64604
25	1,419,069	3,736,140	0	5,155,208	0.06668	0.71272
26	0	1,158,536	0	1,158,536	0.01498	0.72770
27	376,937	1,651,876	0	2,028,813	0.02624	0.75395
28	0	1,391,343	0	1,391,343	0.01800	0.77194
29	376,937	1,535,472	0	1,912,409	0.02473	0.79668
30	260,533	1,274,940	0	1,535,472	0.01986	0.81653
31	0	1,014,407	0	1,014,407	0.01312	0.82965
32	260,533	1,247,214	0	1,507,747	0.01950	0.84916
34	0	1,391,343	0	1,391,343	0.01800	0.86715
35	0	1,247,214	0	1,247,214	0.01613	0.88328
36	0	2,378,025	0	2,378,025	0.03076	0.91404
37	0	1,973,363	0	1,973,363	0.02552	0.93956
38	0	1,740,555	0	1,740,555	0.02251	0.96207
39	116,404	1,685,105	0	1,801,509	0.02330	0.98537
40	0	521,066	0	521,066	0.00674	0.99211
41	0	260,533	0	260,533	0.00337	0.99548
42	0	116,404	0	116,404	0.00151	0.99699
44	0	116,404	0	116,404	0.00151	0.99849
45	0	116,404	0	116,404	0.00151	1.00000
TOTAL	25,515,509	51,801,402	0	77,316,911		

Table C-6.--Population estimates by sex and size groups for Alaska plaice from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
14	0	43,889	0	43,889	0.00013	0.00013
15	0	43,889	0	43,889	0.00013	0.00027
16	46,046	73,899	0	119,945	0.00036	0.00063
17	106,067	125,854	0	231,921	0.00070	0.00133
18	30,011	51,955	0	81,965	0.00025	0.00158
19	0	274,969	0	274,969	0.00083	0.00241
20	449,307	183,534	0	632,841	0.00192	0.00433
21	437,841	618,451	0	1,056,291	0.00320	0.00752
22	903,947	873,955	0	1,777,902	0.00538	0.01291
23	1,523,866	1,246,800	0	2,770,666	0.00839	0.02129
24	1,188,455	1,049,507	0	2,237,962	0.00677	0.02807
25	2,571,041	2,140,995	0	4,712,037	0.01426	0.04233
26	2,450,846	1,935,362	0	4,386,208	0.01328	0.05561
27	2,675,943	2,056,402	0	4,732,345	0.01433	0.06993
28	4,845,311	2,918,753	0	7,764,064	0.02350	0.09344
29	4,211,491	2,591,823	0	6,803,314	0.02059	0.11403
30	6,889,954	3,296,909	0	10,186,862	0.03084	0.14487
31	6,488,187	3,436,323	0	9,924,510	0.03004	0.17491
32	11,555,123	4,760,625	0	16,315,748	0.04939	0.22430
33	13,714,651	4,243,795	0	17,958,446	0.05436	0.27866
34	16,735,273	5,898,561	0	22,633,834	0.06851	0.34717
35	19,021,785	6,770,682	0	25,792,466	0.07808	0.42525
36	16,564,596	7,436,262	0	24,000,858	0.07265	0.49790
37	11,066,625	6,415,604	0	17,482,230	0.05292	0.55082
38	5,865,385	5,218,147	0	11,083,531	0.03355	0.58437
39	4,435,114	8,662,388	0	13,097,502	0.03965	0.62401
40	3,155,529	8,212,376	0	11,367,905	0.03441	0.65843
41	1,391,684	9,565,676	0	10,957,361	0.03317	0.69159
42	865,928	13,127,988	0	13,993,916	0.04236	0.73395
43	485,678	9,293,419	0	9,779,097	0.02960	0.76356
44	63,352	13,521,499	0	13,584,851	0.04112	0.80468
45	0	11,596,893	0	11,596,893	0.03510	0.83978
46	0	13,165,301	0	13,165,301	0.03985	0.87963
47	0	11,341,746	0	11,341,746	0.03433	0.91397
48	0	10,541,795	0	10,541,795	0.03191	0.94588
49	0	5,786,024	0	5,786,024	0.01751	0.96339
50	0	4,699,519	0	4,699,519	0.01423	0.97762
51	0	1,797,153	0	1,797,153	0.00544	0.98306
52	0	3,111,219	0	3,111,219	0.00942	0.99247
53	0	1,412,351	0	1,412,351	0.00428	0.99675
54	0	749,616	0	749,616	0.00227	0.99902
55	0	86,493	0	86,493	0.00026	0.99928
56	0	237,499	0	237,499	0.00072	1.00000
TOTAL	139,739,037	190,615,898	0	330,354,935		

North shelf area

23	94,859	0	0	94,859	0.01923	0.01923
25	189,718	94,859	0	284,577	0.05769	0.07692
26	0	94,859	0	94,859	0.01923	0.09615
27	94,859	0	0	94,859	0.01923	0.11538
28	94,859	94,859	0	189,718	0.03846	0.15385
30	284,577	379,436	0	664,013	0.13462	0.28846
31	94,859	189,718	0	284,577	0.05769	0.34615
32	94,859	94,859	0	189,718	0.03846	0.38462

Table C-6.--Continued.

North shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
33	284,577	94,859	0	379,436	0.07692	0.46154
34	94,859	284,577	0	379,436	0.07692	0.53846
35	284,577	284,577	0	569,154	0.11538	0.65385
36	0	474,295	0	474,295	0.09615	0.75000
37	0	94,859	0	94,859	0.01923	0.76923
38	0	189,718	0	189,718	0.03846	0.80769
39	94,859	94,859	0	189,718	0.03846	0.84615
40	0	284,577	0	284,577	0.05769	0.90385
42	0	189,718	0	189,718	0.03846	0.94231
43	0	94,859	0	94,859	0.01923	0.96154
50	0	189,718	0	189,718	0.03846	1.00000
TOTAL	1,707,461	3,225,204	0	4,932,664		

Table C-7.--Population estimates by sex and size groups for Atheresthes spp. from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
13	54,485	0	0	54,485	0.00018	0.00018
15	62,690	0	0	62,690	0.00021	0.00039
16	54,485	1,092,924	0	1,147,410	0.00381	0.00420
17	859,380	54,485	0	913,865	0.00304	0.00724
18	630,349	137,512	0	767,861	0.00255	0.00979
19	430,167	446,658	0	876,825	0.00291	0.01271
20	298,198	389,772	0	687,970	0.00229	0.01499
21	398,200	744,532	0	1,142,731	0.00380	0.01879
22	1,799,743	2,300,902	0	4,100,645	0.01363	0.03242
23	872,339	1,850,517	0	2,722,856	0.00905	0.04147
24	1,870,236	2,963,155	0	4,833,391	0.01606	0.05753
25	2,566,408	3,616,032	0	6,182,441	0.02055	0.07807
26	2,593,166	2,729,761	0	5,322,927	0.01769	0.09576
27	1,668,954	3,733,576	0	5,402,529	0.01795	0.11372
28	3,341,526	6,243,690	0	9,585,217	0.03185	0.14557
29	1,380,082	5,292,173	0	6,672,256	0.02217	0.16775
30	2,090,405	5,015,167	0	7,105,572	0.02361	0.19136
31	4,001,182	5,611,730	0	9,612,912	0.03195	0.22331
32	4,065,613	6,260,926	0	10,326,538	0.03432	0.25763
33	6,332,166	7,281,571	0	13,613,737	0.04524	0.30287
34	6,959,465	11,204,142	0	18,163,608	0.06036	0.36323
35	8,229,023	11,913,332	0	20,142,355	0.06694	0.43017
36	8,494,255	14,317,847	0	22,812,102	0.07581	0.50598
37	4,637,686	12,011,741	0	16,649,426	0.05533	0.56131
38	4,245,344	12,019,936	0	16,265,279	0.05405	0.61537
39	3,332,221	11,795,085	0	15,127,306	0.05027	0.66564
40	3,417,254	8,073,428	0	11,490,683	0.03819	0.70382
41	2,171,928	9,607,244	0	11,779,172	0.03915	0.74297
42	1,695,166	7,401,395	0	9,096,562	0.03023	0.77320
43	4,804,998	4,984,901	0	9,789,899	0.03253	0.80574
44	2,279,128	4,745,015	0	7,024,143	0.02334	0.82908
45	1,424,629	3,035,932	0	4,460,561	0.01482	0.84390
46	2,691,198	3,248,878	0	5,940,075	0.01974	0.86364
47	1,016,051	4,299,077	0	5,315,128	0.01766	0.88131
48	864,657	3,703,761	0	4,568,417	0.01518	0.89649
49	775,160	3,347,097	0	4,122,258	0.01370	0.91019
50	363,581	4,116,222	0	4,479,802	0.01489	0.92508
51	495,242	2,203,318	0	2,698,560	0.00897	0.93404
52	0	3,962,328	0	3,962,328	0.01317	0.94721
53	725,771	838,885	0	1,564,655	0.00520	0.95241
54	0	2,219,362	0	2,219,362	0.00738	0.95979
55	167,733	1,720,752	0	1,888,485	0.00628	0.96606
56	0	2,047,922	0	2,047,922	0.00681	0.97287
57	0	422,713	0	422,713	0.00140	0.97427
58	0	576,625	0	576,625	0.00192	0.97619
59	110,009	443,351	0	553,359	0.00184	0.97803
60	0	417,934	0	417,934	0.00139	0.97942
61	0	252,289	0	252,289	0.00084	0.98026
63	0	1,078,273	0	1,078,273	0.00358	0.98384
64	0	2,118,593	0	2,118,593	0.00704	0.99088
65	0	83,175	0	83,175	0.00028	0.99116
66	0	1,339,869	0	1,339,869	0.00445	0.99561
67	0	1,210,985	0	1,210,985	0.00402	0.99963
68	0	110,009	0	110,009	0.00037	1.00000
TOTAL	94,270,273	206,636,501	0	300,906,773		

Table C-B.--Population estimates by sex and size groups for Pacific halibut from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey of the Bering Sea shelf.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
14	0	0	32,275	32,275	0.00050	0.00050
15	0	0	44,908	44,908	0.00069	0.00118
17	0	0	28,743	28,743	0.00044	0.00163
20	0	0	31,761	31,761	0.00049	0.00211
21	0	0	29,157	29,157	0.00045	0.00256
22	0	0	232,986	232,986	0.00358	0.00614
25	0	0	361,455	361,455	0.00555	0.01168
26	0	0	86,322	86,322	0.00132	0.01301
28	0	0	28,391	28,391	0.00044	0.01344
29	0	0	299,252	299,252	0.00459	0.01803
30	0	0	432,134	432,134	0.00663	0.02467
31	0	0	629,287	629,287	0.00966	0.03432
32	0	0	1,113,931	1,113,931	0.01709	0.05142
33	0	0	911,652	911,652	0.01399	0.06541
34	0	0	2,158,305	2,158,305	0.03312	0.09853
35	0	0	1,938,537	1,938,537	0.02975	0.12828
36	0	0	4,307,143	4,307,143	0.06610	0.19437
37	0	0	2,590,622	2,590,622	0.03975	0.23413
38	0	0	3,999,084	3,999,084	0.06137	0.29549
39	0	0	4,103,338	4,103,338	0.06297	0.35846
40	0	0	3,985,555	3,985,555	0.06116	0.41962
41	0	0	5,413,935	5,413,935	0.08308	0.50270
42	0	0	3,991,001	3,991,001	0.06124	0.56395
43	0	0	3,662,079	3,662,079	0.05620	0.62015
44	0	0	3,359,464	3,359,464	0.05155	0.67170
45	0	0	1,787,062	1,787,062	0.02742	0.69912
46	0	0	1,155,552	1,155,552	0.01773	0.71686
47	0	0	2,118,922	2,118,922	0.03252	0.74937
48	0	0	696,957	696,957	0.01070	0.76007
49	0	0	903,492	903,492	0.01386	0.77393
50	0	0	643,754	643,754	0.00988	0.78381
51	0	0	607,678	607,678	0.00933	0.79314
52	0	0	253,947	253,947	0.00390	0.79703
53	0	0	165,765	165,765	0.00254	0.79958
54	0	0	736,376	736,376	0.01130	0.81088
55	0	0	834,171	834,171	0.01280	0.82368
56	0	0	453,340	453,340	0.00696	0.83063
57	0	0	570,265	570,265	0.00875	0.83939
58	0	0	492,594	492,594	0.00756	0.84694
59	0	0	414,123	414,123	0.00635	0.85330
60	0	0	256,353	256,353	0.00393	0.85723
61	0	0	659,481	659,481	0.01012	0.86735
62	0	0	811,782	811,782	0.01246	0.87981
63	0	0	613,130	613,130	0.00941	0.88922
64	0	0	268,886	268,886	0.00413	0.89335
65	0	0	252,833	252,833	0.00388	0.89723
66	0	0	138,883	138,883	0.00213	0.89936
67	0	0	181,903	181,903	0.00279	0.90215
68	0	0	222,962	222,962	0.00342	0.90557
69	0	0	775,419	775,419	0.01190	0.91747
70	0	0	881,495	881,495	0.01353	0.93100
71	0	0	116,102	116,102	0.00178	0.93278
72	0	0	360,005	360,005	0.00552	0.93830
73	0	0	459,175	459,175	0.00705	0.94535
74	0	0	232,840	232,840	0.00357	0.94892
75	0	0	201,162	201,162	0.00309	0.95201
76	0	0	61,555	61,555	0.00094	0.95295
77	0	0	293,070	293,070	0.00450	0.95745
78	0	0	189,620	189,620	0.00291	0.96036

Table C-8.--Continued.

Standard U.S. shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
79	0	0	121,577	121,577	0.00187	0.96223
80	0	0	350,092	350,092	0.00537	0.96760
81	0	0	211,549	211,549	0.00325	0.97084
82	0	0	73,431	73,431	0.00113	0.97197
83	0	0	109,199	109,199	0.00168	0.97365
84	0	0	169,179	169,179	0.00260	0.97624
85	0	0	213,180	213,180	0.00327	0.97952
86	0	0	293,993	293,993	0.00451	0.98403
87	0	0	55,613	55,613	0.00085	0.98488
88	0	0	27,249	27,249	0.00042	0.98530
89	0	0	35,442	35,442	0.00054	0.98584
90	0	0	221,130	221,130	0.00339	0.98924
91	0	0	21,940	21,940	0.00034	0.98957
93	0	0	46,909	46,909	0.00072	0.99029
94	0	0	71,691	71,691	0.00110	0.99139
99	0	0	101,410	101,410	0.00156	0.99295
101	0	0	21,940	21,940	0.00034	0.99328
105	0	0	38,114	38,114	0.00058	0.99387
107	0	0	24,109	24,109	0.00037	0.99424
108	0	0	20,609	20,609	0.00032	0.99456
116	0	0	25,946	25,946	0.00040	0.99495
117	0	0	32,692	32,692	0.00050	0.99546
118	0	0	25,946	25,946	0.00040	0.99585
120	0	0	20,609	20,609	0.00032	0.99617
123	0	0	27,681	27,681	0.00042	0.99660
124	0	0	32,257	32,257	0.00050	0.99709
126	0	0	20,444	20,444	0.00031	0.99740
130	0	0	20,609	20,609	0.00032	0.99772
134	0	0	36,228	36,228	0.00056	0.99828
147	0	0	21,749	21,749	0.00033	0.99861
163	0	0	22,126	22,126	0.00034	0.99895
165	0	0	20,444	20,444	0.00031	0.99926
197	0	0	27,249	27,249	0.00042	0.99968
215	0	0	20,777	20,777	0.00032	1.00000
TOTAL	0	0	65,165,085	65,165,085		

North shelf area

78	0	0	25,591	25,591	1.00000	1.00000
TOTAL	0	0	25,591	25,591		

Western shelf area

29	0	0	8,601	8,601	0.00279	0.00279
31	0	0	8,601	8,601	0.00279	0.00558
35	0	0	17,202	17,202	0.00558	0.01115
39	0	0	23,528	23,528	0.00763	0.01878
40	0	0	60,875	60,875	0.01974	0.03852
42	0	0	89,983	89,983	0.02917	0.06769
43	0	0	44,722	44,722	0.01450	0.08219
44	0	0	123,670	123,670	0.04009	0.12228
45	0	0	128,929	128,929	0.04180	0.16408

Table C-8. --Continued.

Western shelf area

LENGTH (CM)	MALES	FEMALES	UNSEXED	TOTAL	PROPORTION	CUMULATIVE PROPORTION
47	0	0	224,195	224,195	0.07268	0.23676
48	0	0	54,658	54,658	0.01772	0.25448
49	0	0	7,822	7,822	0.00254	0.25702
50	0	0	60,431	60,431	0.01959	0.27661
51	0	0	8,402	8,402	0.00272	0.27933
52	0	0	138,078	138,078	0.04476	0.32410
53	0	0	52,029	52,029	0.01687	0.34096
54	0	0	137,636	137,636	0.04462	0.38558
57	0	0	56,694	56,694	0.01838	0.40396
58	0	0	63,267	63,267	0.02051	0.42447
59	0	0	15,480	15,480	0.00502	0.42949
60	0	0	99,565	99,565	0.03228	0.46177
61	0	0	109,910	109,910	0.03563	0.49740
62	0	0	46,057	46,057	0.01493	0.51233
63	0	0	7,822	7,822	0.00254	0.51487
65	0	0	233,431	233,431	0.07568	0.59055
66	0	0	123,878	123,878	0.04016	0.63071
67	0	0	249,362	249,362	0.08084	0.71155
70	0	0	24,559	24,559	0.00796	0.71951
73	0	0	29,341	29,341	0.00951	0.72902
75	0	0	27,796	27,796	0.00901	0.73803
76	0	0	7,822	7,822	0.00254	0.74057
77	0	0	19,113	19,113	0.00620	0.74677
81	0	0	107,064	107,064	0.03471	0.78148
83	0	0	140,851	140,851	0.04566	0.82714
85	0	0	7,822	7,822	0.00254	0.82967
88	0	0	8,402	8,402	0.00272	0.83240
90	0	0	8,402	8,402	0.00272	0.83512
95	0	0	38,757	38,757	0.01256	0.84769
104	0	0	10,999	10,999	0.00357	0.85125
105	0	0	66,611	66,611	0.02159	0.87285
106	0	0	10,999	10,999	0.00357	0.87641
108	0	0	46,264	46,264	0.01500	0.89141
116	0	0	16,726	16,726	0.00542	0.89683
119	0	0	52,029	52,029	0.01687	0.91370
129	0	0	46,264	46,264	0.01500	0.92870
135	0	0	64,192	64,192	0.02081	0.94951
151	0	0	46,264	46,264	0.01500	0.96451
154	0	0	84,741	84,741	0.02747	0.99198
170	0	0	16,131	16,131	0.00523	0.99721
173	0	0	8,601	8,601	0.00279	1.00000
TOTAL	0	0	3,084,577	3,084,577		

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APPENDIX D

Age-Length Keys for Walleye Pollock and Pacific cod

Appendix D presents age-length keys for walleye pollock and Pacific cod by sex and sexes combined from the 1991 cooperative U.S.-U.S.S.R. bottom trawl survey. Lengths are expressed in millimeters. Asterisks indicate ages affected by linear interpolation used to assign length distributions to age classes that are not represented by collected age data.

List of Tables

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Table D-1.--Age length keys for male walleye pollock sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
150	1.00	0.00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 200	2.00	0.00		0.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
210	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 250	2.50	0.00		0.0		0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
260	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	3.00	0.00	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	3.00	0.00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	3.50	0.71	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	3.50	0.84	6	0	0	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	3.50	0.71	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	4.00	0.00	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
340	4.14	0.90	7	0	0	0	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	3.86	0.38	7	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	4.11	0.33	9	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	4.13	0.35	8	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	4.13	0.35	8	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	4.20	0.42	10	0	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	4.50	0.52	12	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	4.90	0.57	10	0	0	0	0	2	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
411	5.00	0.00	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	5.27	1.49	11	0	0	0	0	3	6	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	5.20	0.68	15	0	0	0	0	1	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	5.27	0.47	11	0	0	0	0	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	5.79	0.70	14	0	0	0	0	0	5	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	5.63	0.74	8	0	0	0	0	0	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	6.85	2.08	13	0	0	0	0	0	3	3	5	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
480	7.73	2.74	15	0	0	0	0	0	1	7	2	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
490	7.82	3.19	11	0	0	0	0	0	2	4	1	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
500	10.15	3.05	13	0	0	0	0	0	0	2	1	1	2	1	2	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0
510	10.43	2.17	14	0	0	0	0	0	0	0	0	2	5	2	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
520	10.71	3.34	14	0	0	0	0	0	0	2	2	0	1	1	3	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0
530	11.15	2.79	13	0	0	0	0	0	0	1	0	1	3	1	0	1	3	2	1	0	0	0	0	0	0	0	0	0	0	0
540	11.08	2.61	12	0	0	0	0	0	0	0	0	2	3	1	1	1	0	3	1	0	0	0	0	0	0	0	0	0	0	0
550	11.67	2.50	12	0	0	0	0	0	0	0	0	1	2	2	1	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0

Table D-1.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
560	10.56	2.70	9	0	0	0	0	0	1	0	0	0	2	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
570	11.25	2.87	4	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
580	11.90	2.77	10	0	0	0	0	0	0	0	1	0	1	1	0	3	2	1	0	0	1	0	0	0	0	0	0	0	0	0
590	12.00	2.19	6	0	0	0	0	0	0	0	0	0	1	0	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
600	12.17	2.40	6	0	0	0	0	0	0	0	0	0	0	2	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
610	11.17	1.83	6	0	0	0	0	0	0	0	0	0	2	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
620	13.50	1.73	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
* 630	13.40	1.75		0.0		0.0		0.0		0.0		0.0		0.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			2.5		0.0		0.0		0.0		0.0		0.0		0.0		0.5		1.0		0.0		0.0		0.0		0.0		0.0	
640	13.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
650	11.50	0.71	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
660	13.00	1.41	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
670	13.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
* 680	12.75	1.54		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.5		0.0		0.0		0.0		0.0		0.0		0.0
			2.0		0.0		0.0		0.0		0.0		0.0		0.5		1.0		0.0		0.0		0.0		0.0		0.0		0.0	
690	12.67	1.53	3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
* 700	13.00	1.73		0.0		0.0		0.0		0.0		0.0		0.0		0.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0
			2.0		0.0		0.0		0.0		0.0		0.0		0.5		0.5		0.0		0.0		0.0		0.0		0.0		0.0	
710	14.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
* 720	15.67	0.00		0.0		0.0		0.0		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0	
* 730	17.33	0.00		0.0		0.0		0.0		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0	
740	19.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
TOTAL	7.74	3.91		0.0		5.5		57.0		35.0		9.0		13.0		17.0		22.5		2.0		0.0		0.0		0.0		0.0		0.0
			341.5		1.0		17.5		64.0		17.0		27.0		18.0		21.0		12.0		1.0		2.0		0.0		0.0		0.0	

Table D-2.--Age length keys for female walleye pollock sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
190	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 200	2.00	0.00	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	2.67	0.58	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 270	2.75	0.61	2.0	0.0	0.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280	3.00	0.00	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 290	3.43	0.59	3.5	0.0	0.0	0.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	3.75	0.50	4	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 330	3.67	0.58	3.0	0.0	0.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	4.00	0.00	8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	4.00	0.00	9	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	4.10	0.32	10	0	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	4.20	0.42	10	0	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	4.10	0.32	10	0	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	4.64	0.92	11	0	0	0	0	6	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	4.83	0.72	12	0	0	0	0	4	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	5.31	1.80	13	0	0	0	0	5	5	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	5.29	0.61	14	0	0	0	0	0	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	5.13	0.52	15	0	0	0	0	1	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	5.36	0.50	14	0	0	0	0	0	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	6.00	0.63	11	0	0	0	0	0	2	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	5.71	1.14	14	0	0	0	0	0	8	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480	6.09	1.30	11	0	0	0	0	1	3	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
490	6.70	0.82	10	0	0	0	0	0	1	2	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	7.00	1.15	7	0	0	0	0	0	0	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
510	8.07	2.40	14	0	0	0	0	0	1	3	4	0	2	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
520	8.73	2.55	15	0	0	0	0	0	0	3	4	0	2	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
530	9.87	2.42	15	0	0	0	0	0	0	0	3	2	3	2	1	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0
540	9.80	2.53	10	0	0	0	0	0	0	0	2	1	3	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0

Table D-2.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
550	10.38	2.81	13	0	0	0	0	0	0	0	1	3	3	1	1	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0
560	10.19	1.68	16	0	0	0	0	0	0	0	0	2	4	6	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
570	11.00	2.17	12	0	0	0	0	0	0	0	0	0	5	2	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0
580	11.83	1.85	12	0	0	0	0	0	0	0	0	0	1	2	2	3	3	0	0	1	0	0	0	0	0	0	0	0	0	0
590	11.00	2.16	13	0	0	0	0	0	0	0	0	0	6	1	0	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0
600	12.67	1.94	9	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	0	1	0	0	0	0	0	0	0	0	0	0
610	12.62	2.33	13	0	0	0	0	0	0	0	0	0	1	1	2	3	2	2	1	0	0	1	0	0	0	0	0	0	0	0
620	12.27	2.58	15	0	0	0	0	0	0	0	0	1	2	1	3	0	2	2	3	1	0	0	0	0	0	0	0	0	0	0
630	12.27	1.56	11	0	0	0	0	0	0	0	0	0	0	0	5	1	4	0	0	1	0	0	0	0	0	0	0	0	0	0
640	12.67	3.16	9	0	0	0	0	0	0	0	0	1	1	0	1	1	2	1	0	1	0	1	0	0	0	0	0	0	0	0
650	14.00	4.82	6	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0	1	0	0	0	0	0	0	0	1	0	0	0
660	13.71	2.14	7	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	1	0	0	1	0	0	0	0	0	0	0	0
670	12.25	1.98	8	0	0	0	0	0	0	0	0	0	0	1	3	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
680	16.00	2.83	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
690	16.50	4.95	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
700	13.80	0.84	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0
710	13.50	0.58	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
* 720	14.83	2.59	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
730	17.50	2.12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
740	16.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
* 750	14.00	0.00	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
760	12.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 770	16.50	11.45	1.3333	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6667	0.0	0.0	0.0	.3333	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3333
* 780	19.20	9.08	1.6667	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3333	0.0	0.0	0.0	.6667	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6667
790	21.00	7.07	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
* 800	20.00	7.48	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
810	18.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
TOTAL	8.43	4.27	435.0	0.0	0.0	5.5	13.5	70.5	65.0	38.0	29.0	15.0	36.0	28.0	19.0	21.5	38.0	24.0	8.0	12.5	0.0	5.5	1.5	1.0	0.0	0.0	1.0	0.0	0.0	2.5

Table D-3.--Age length keys for total walleye pollock sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
130	1.50	0.71	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	1.00	0.00	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	1.00	0.00	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	1.50	0.71	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 170	1.67	0.82		0.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.5		0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
180	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	2.00	0.00	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 200	2.00	0.00		0.0		2.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			2.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
210	2.00	0.00	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	2.67	0.58	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	2.50	0.71	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	3.00	0.00	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	3.50	0.71	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	3.60	0.70	10	0	0	0	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	3.33	0.58	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	3.80	0.45	5	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
340	4.00	0.82	10	0	0	0	3	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	3.93	0.26	15	0	0	0	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	4.06	0.24	18	0	0	0	0	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	4.11	0.32	18	0	0	0	0	16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	4.17	0.38	18	0	0	0	0	15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	4.15	0.37	20	0	0	0	0	17	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	4.57	0.73	23	0	0	0	0	12	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	4.86	0.64	22	0	0	0	0	6	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
411	5.00	0.00	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	5.29	1.63	24	0	0	0	0	8	11	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	5.24	0.64	29	0	0	0	0	1	22	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	5.19	0.49	26	0	0	0	0	1	19	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	5.57	0.63	28	0	0	0	0	0	14	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	5.84	0.69	19	0	0	0	0	0	6	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	6.26	1.72	27	0	0	0	0	0	11	7	6	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
480	7.04	2.36	26	0	0	0	0	1	4	10	4	2	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
490	7.29	2.39	21	0	0	0	0	0	3	6	7	1	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
500	9.05	2.95	20	0	0	0	0	0	0	5	3	2	3	1	2	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0

Table D-3.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
510	9.25	2.55	28	0	0	0	0	0	1	3	4	2	7	5	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0
520	9.69	3.07	29	0	0	0	0	0	0	5	6	0	3	5	3	1	0	3	3	0	0	0	0	0	0	0	0	0	0	0
530	10.46	2.63	28	0	0	0	0	0	0	1	3	3	6	3	1	1	6	3	1	0	0	0	0	0	0	0	0	0	0	0
540	10.50	2.60	22	0	0	0	0	0	0	0	2	3	6	2	2	1	0	5	1	0	0	0	0	0	0	0	0	0	0	0
550	11.00	2.69	25	0	0	0	0	0	0	0	1	4	5	3	2	1	3	4	0	2	0	0	0	0	0	0	0	0	0	0
560	10.32	2.06	25	0	0	0	0	0	1	0	0	2	6	7	1	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0
570	11.06	2.26	16	0	0	0	0	0	0	0	0	1	5	2	2	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0
580	11.86	2.25	22	0	0	0	0	0	0	0	1	0	2	3	2	6	5	1	0	1	1	0	0	0	0	0	0	0	0	0
590	11.32	2.16	19	0	0	0	0	0	0	0	0	0	7	1	2	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0
600	12.47	2.07	15	0	0	0	0	0	0	0	0	0	0	4	1	3	2	3	0	2	0	0	0	0	0	0	0	0	0	0
610	12.16	2.24	19	0	0	0	0	0	0	0	0	0	3	1	3	4	4	2	1	0	0	1	0	0	0	0	0	0	0	0
620	12.53	2.44	19	0	0	0	0	0	0	0	0	1	2	1	3	2	2	2	5	1	0	0	0	0	0	0	0	0	0	0
630	12.27	1.56	11	0	0	0	0	0	0	0	0	0	0	0	5	1	4	0	0	1	0	0	0	0	0	0	0	0	0	0
640	12.70	2.98	10	0	0	0	0	0	0	0	0	1	1	0	1	1	3	1	0	1	0	1	0	0	0	0	0	0	0	0
650	13.38	4.24	8	0	0	0	0	0	0	0	0	0	1	0	1	3	1	0	1	0	0	0	0	0	0	0	1	0	0	0
660	13.56	1.94	9	0	0	0	0	0	0	0	0	0	0	0	0	3	3	1	1	0	0	1	0	0	0	0	0	0	0	0
670	12.33	1.87	9	0	0	0	0	0	0	0	0	0	0	1	3	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0
680	16.00	2.83	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
690	14.20	3.42	5	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0
700	13.80	0.84	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0
710	13.60	0.55	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0
* 720	14.71	2.34		0.0		0.0		0.0		0.0		0.0		0.0		0.0		1.5		0.5		0.0		0.0		0.0		0.0		0.0
			3.5		0.0		0.0		0.0		0.0		0.0		0.0		1.0		0.0		0.0		0.5		0.0		0.0		0.0	
730	17.50	2.12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
740	17.50	2.12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
* 750	15.67	4.97		0.0		0.0		0.0		0.0		0.0		0.0		0.5		0.0		0.5		0.0		0.0		0.0		0.0		0.0
			1.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.5		0.0		0.0		0.0	
760	12.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 770	16.50	11.45		0.0		0.0		0.0		0.0		0.0		0.0		.6667		0.0		.3333		0.0		0.0		0.0		0.0		.3333
			1.3333		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
* 780	19.20	9.08		0.0		0.0		0.0		0.0		0.0		0.0		.3333		0.0		.6667		0.0		0.0		0.0		0.0		.6667
			1.6667		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
790	21.00	7.07	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
* 800	20.00	7.48		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.5		0.5		0.0		0.0		0.0		0.5
			1.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
810	18.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
TOTAL	8.03	4.15		0.0		15.5		124.0		73.0		24.0		41.0		37.5		44.5		14.5		5.5		1.0		0.0		0.0		2.5
			771.5		7.5		26.0		129.0		46.0		63.0		36.0		57.0		19.0		1.0		3.0		0.0		1.0		0.0	

Table D-4.--Age length keys for male Pacific cod sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
220	2.00	0.00	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	2.00	0.00	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	2.20	0.45	5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	2.00	0.00	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	2.25	0.50	4	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	2.60	0.55	5	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	2.33	0.52	6	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	2.60	0.55	5	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
340	3.00	0.00	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	3.00	0.00	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	3.20	0.45	5	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
392	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	3.50	0.71	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	4.00	0.00	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	3.75	0.50	4	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	4.00	0.00	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	4.00	0.00	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	4.00	0.00	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	4.40	0.55	5	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	4.50	0.71	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480	4.50	0.58	4	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
490	4.40	0.55	5	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	4.80	0.45	5	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
510	5.00	0.00	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
520	4.80	0.45	5	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530	4.75	0.50	4	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
540	5.33	0.58	3	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
550	5.20	0.45	5	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
560	5.67	0.52	6	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
570	5.50	0.55	6	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
580	5.60	0.55	5	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
590	6.00	0.00	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
600	6.20	0.45	5	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
610	6.20	0.45	5	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
620	6.80	0.84	5	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
630	5.80	0.45	5	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
640	6.20	0.45	5	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
650	6.20	0.45	5	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D-4.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
660	7.33	1.53	3	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670	6.00	0.00	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
680	7.20	0.45	5	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
690	6.60	0.55	5	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
700	7.20	0.45	5	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
710	8.00	1.41	5	0	0	0	0	0	0	0	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
720	7.75	0.96	4	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
730	8.00	0.71	5	0	0	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740	8.33	0.58	3	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	7.50	0.71	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
760	7.50	0.71	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
770	8.00	1.41	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 780	8.33	1.63	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
790	9.00	0.00	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
800	9.00	0.00	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 810	9.40	0.00	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.8000	0.0	.2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 820	9.80	0.00	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6000	0.0	.4000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 830	10.20	0.00	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4000	0.0	.6000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 840	10.60	0.00	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2000	0.0	.8000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
850	11.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4.87	2.14	247.5	0.0	44.0	0.0	33.0	35.0	47.0	27.5	11.0	11.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table D-5.--Age length keys for female Pacific cod sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
200	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	2.00	0.00	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	2.00	0.00	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	2.20	0.45	5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	2.00	0.00	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	2.20	0.45	5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	2.20	0.45	5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	2.40	0.55	5	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	2.20	0.45	5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	2.50	0.58	4	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	2.50	0.58	4	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
340	2.80	0.45	5	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	3.00	0.00	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	3.00	0.00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	3.50	0.71	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	4.00	0.00	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	4.00	0.00	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	4.00	0.00	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	4.00	0.00	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	4.50	0.71	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	4.75	0.50	4	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	4.75	0.50	4	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480	4.67	0.58	3	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
490	4.50	0.58	4	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	5.00	0.00	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
510	5.00	0.00	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
520	4.75	0.50	4	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530	4.50	0.71	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
540	5.20	0.45	5	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
550	5.20	0.45	5	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
560	5.25	0.50	4	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
570	5.60	0.55	5	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
580	5.60	0.55	5	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
590	5.50	0.58	4	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
600	5.80	0.45	5	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
610	6.00	0.00	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
620	6.00	0.00	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
630	6.00	0.00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
640	6.00	0.71	5	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D-5.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
650	6.20	0.45	5	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
660	6.40	0.55	5	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670	6.00	0.00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
680	6.60	0.89	5	0	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
690	6.75	0.50	4	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
700	7.40	0.89	5	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
710	7.00	0.00	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
720	7.20	1.10	5	0	0	0	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
730	7.00	0.00	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740	8.00	1.22	5	0	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	8.50	0.71	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
760	8.25	0.96	4	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 770	8.14	0.99		0.0		0.0		0.0		0.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			3.5		0.0		0.0		0.0		1.0		1.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
780	8.00	1.00	3	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 790	8.80	1.51		0.0		0.0		0.0		0.0		0.5		1.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			2.5		0.0		0.0		0.0		0.5		0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
800	10.00	0.00	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
810	8.00	0.00	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 820	8.33	0.00		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
* 830	8.67	0.00		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
840	9.00	0.00	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 850	10.00	3.74		0.0		0.0		0.0		0.0		0.5		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.5		0.0		0.0		0.0		0.0		0.5		0.0		0.5		0.0		0.0		0.0		0.0		0.0		0.0	
860	10.50	3.54	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
870	7.00	0.00	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4.93	2.22		0.0		48.0		23.0		47.0		11.0		4.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			240.5		0.0		28.0		42.0		25.5		10.5		0.0		1.5		0.0		0.0		0.0		0.0		0.0		0.0	

Table D-6.--Age length keys for total Pacific cod sampled during the 1991 U.S.-U.S.S.R. Bering Sea survey.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
200	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	2.00	0.00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	2.00	0.00	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	2.00	0.00	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	2.00	0.00	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	2.10	0.32	10	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	2.10	0.32	10	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	2.00	0.00	10	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	2.11	0.33	9	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	2.22	0.44	9	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	2.20	0.42	10	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
310	2.40	0.52	10	0	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	2.40	0.52	10	0	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	2.56	0.53	9	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
340	2.89	0.33	9	0	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	3.00	0.00	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360	3.00	0.00	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	3.00	0.00	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	3.29	0.49	7	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
392	3.00	0.00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	3.67	0.58	3	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
410	3.86	0.38	7	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	3.89	0.33	9	0	0	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	4.00	0.00	7	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	4.00	0.00	8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	4.20	0.45	5	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	4.56	0.53	9	0	0	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
470	4.67	0.52	6	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480	4.57	0.53	7	0	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
490	4.44	0.53	9	0	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	4.90	0.32	10	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
510	5.00	0.00	6	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
520	4.78	0.44	9	0	0	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530	4.67	0.52	6	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
540	5.25	0.46	8	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
550	5.20	0.42	10	0	0	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
560	5.50	0.53	10	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
570	5.55	0.52	11	0	0	0	0	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
580	5.60	0.52	10	0	0	0	0	0	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
590	5.78	0.44	9	0	0	0	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
600	6.00	0.47	10	0	0	0	0	0	1	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
610	6.10	0.32	10	0	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
620	6.40	0.70	10	0	0	0	0	0	0	7	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
630	5.89	0.33	9	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D-6.--Continued.

LEN-GTH	AVG AGE	STD. DEV.	FREQ-UENCY	AGE (IN YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
640	6.10	0.57	10	0	0	0	0	0	1	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
650	6.20	0.42	10	0	0	0	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
660	6.75	1.04	8	0	0	0	0	0	0	4	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670	6.00	0.00	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
680	6.90	0.74	10	0	0	0	0	0	0	3	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
690	6.67	0.50	9	0	0	0	0	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
700	7.30	0.67	10	0	0	0	0	0	0	0	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
710	7.71	1.25	7	0	0	0	0	0	0	0	5	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
720	7.44	1.01	9	0	0	0	0	0	0	1	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
730	7.71	0.76	7	0	0	0	0	0	0	0	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740	8.13	0.99	8	0	0	0	0	0	0	0	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	8.00	0.82	4	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
760	8.00	0.89	6	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
770	8.00	1.41	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
780	8.00	1.00	3	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
790	9.00	0.00	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
800	9.67	0.58	3	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
810	8.00	0.00	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 820	8.33	0.00		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
* 830	8.67	0.00		0.0		0.0		0.0		0.0		.3333		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			1.0		0.0		0.0		0.0		0.0		.6667		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
840	9.00	0.00	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
850	11.00	0.00	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
860	10.50	3.54	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
870	7.00	0.00	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4.78	2.08		0.0		92.0		56.0		94.0		20.0		4.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
			475.0		0.0		63.0		77.0		51.0		16.0		1.0		1.0		0.0		0.0		0.0		0.0		0.0		0.0	

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