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Data Report: 2007 Gulf of Alaska Bottom Trawl Survey

by

P. G. von Szalay, M. E. Wilkins, and M. M. Martin

U.S. DEPARTMENT OF COMMERCE

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Alaska Fisheries Science Center
7600 Sand Point Way N.E.
Seattle, WA 98115
www.afsc.noaa.gov

U.S. DEPARTMENT OF COMMERCE

Carlos M. Gutierrez, Secretary

National Oceanic and Atmospheric Administration

William J. Brennan, Acting Under Secretary and Administrator

National Marine Fisheries Service

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PREFACE

This data report is one of three types of standard reports presenting data from the 2007 Gulf of Alaska groundfish survey conducted by the National Marine Fisheries Service (NMFS).

The three standard reports are:

- 1) **Cruise Report** outlines the survey objectives; documents itinerary, personnel, and vessels employed; and summarizes major accomplishments.

- 2) **Report to Industry** is a fishing log consisting of raw haul and catch data for each haul made during the survey, catch summaries for the major species, catch per unit effort by haul, and gear specifications and diagrams.

- 3) **Data Report** (this document), contains detailed descriptions of the survey planning and operation, species distribution and abundance charts, length frequency plots, tables of estimated biomass, catch per unit effort, average weight and length estimates, length frequency plots, length-weight regression parameters, list of identified species, survey strata specifications and charts, and trawl descriptions and diagrams.

ABSTRACT

Scientists of the Groundfish Assessment Program of Alaska Fisheries Science Center's Resource Assessment and Conservation Engineering (RACE) Division conducted the fifth biennial groundfish assessment survey of the Gulf of Alaska during the summer of 2007. These surveys extend the series of surveys, previously conducted every three years between 1984 and 1999, which comprise the time series used in stock assessments of Gulf of Alaska groundfish resources. The survey area covered the continental shelf and upper continental slope to 1,000 m in the Gulf of Alaska from Islands of Four Mountains (170°W long.) to Dixon Entrance (132°40'W long.). The survey was conducted aboard three chartered commercial trawlers, the F/V *Gladiator*, F/V *Sea Storm*, and F/V *Vesteraalen*. Trawl haul samples were collected successfully at 820 survey stations using standard RACE Division Poly Nor'Eastern high-opening bottom trawl nets with rubber bobbin roller gear.

The primary survey objectives were to define the distribution and estimate the relative abundance of the principal groundfish within the survey area and to collect data to estimate biological parameters useful to groundfish researchers and managers including age, growth, length-weight relationships, feeding habits, and size, sex, and age composition. The survey also collected ancillary data requested by other research groups. A total of 185 fish and 415 invertebrate species were captured in survey tows. Arrowtooth flounder (*Atheresthes stomias*), Pacific ocean perch (*Sebastes alutus*), giant grenadier (*Albatrossia pectoralis*), Pacific halibut (*Hippoglossus stenolepis*), and walleye pollock (*Theragra chalcogramma*) were, in order, the

most abundant species within the survey area. Northern rockfish (*Sebastes polyspinus*), Pacific cod (*Gadus macrocephalus*), sablefish (*Anoplopoma fimbria*), and flathead sole (*Hippoglossoides elassodon*) were locally abundant in some areas. Survey results are presented including estimates of catch per unit of effort, biomass, population size composition, and length-weight relationships, as well as charts depicting the distribution of catch for commercially important species encountered during the survey.

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INTRODUCTION

The fifth biennial groundfish survey of groundfish and invertebrate resources of the Gulf of Alaska (GOA) was conducted during the summer of 2007 by the National Marine Fisheries Service's (NMFS) Alaska Fisheries Science Center (AFSC). Scientists from the Groundfish Assessment Program of AFSC's Resource Assessment and Conservation Engineering (RACE) Division in Seattle, Washington, were responsible for the survey's design and operations. The biennial regimen extends the series begun in 1984, previously conducted every three years between 1984 and 1999, that have provided an information time series of distribution, abundance, and biological characteristics of GOA groundfish resources.

In this report, we document the operations and results of the 2007 GOA bottom trawl survey. Results of routine analyses of distribution, relative abundance, size composition, and biological characteristics are shown for the principal groundfish species in each of the five International North Pacific Fisheries Commission (INPFC) statistical areas in the GOA: Shumagin, Chirikof, Kodiak, Yakutat, and Southeastern. These results provide stock assessment scientists and resource managers the most current information to be used for subsequent stock assessments. Only the 2007 survey results are presented and no comparisons are made to previous GOA surveys.

The survey objectives were to:

- 1) Delineate the distributions of major groundfish and commercially important invertebrate species inhabiting the continental shelf and upper continental slope of the GOA in depths $\leq 1,000$ m.
- 2) Collect data used to estimate the abundance of the major groundfish species.
- 3) Collect data on specific biological characters of interest to researchers and resource managers including:
 - size, sex, and age composition
 - growth and length-weight relationships
 - food habits
- 4) Collect specimens and related information for special research projects on behalf of researchers at the Resource Assessment & Conservation Engineering (RACE), Resource Ecology & Fisheries Management (REFM), and Auke Bay Laboratories divisions of the Alaska Fisheries Science Center, the Alaska SeaLife Center, Sheldon Jackson College, the International Pacific Halibut Commission, Oregon State University, and the Northwest Fisheries Science Center. The projects included:
 - A study of how the condition of Pacific ocean perch larvae is affected by the age and size of adult female spawners;
 - Taxonomic studies of snailfish, eelpouts, cephalopods, crab, and sand lance;
 - Genetic studies of Pacific ocean perch, ronquils, flatfishes, gadoids, forage fishes, and deepwater corals;
 - A study on the relative trophic levels of Pacific sleeper shark;

- A study of light levels at trawl stations;
- A study of marine mammal food habits;
- A seabird/fishery interaction study;
- A study of arrowtooth flounder seasonal energetics.

METHODS

Survey Area

The Gulf of Alaska forms the northeastern border of the Pacific Ocean and consists of complex bathymetric features ranging from jagged, mountainous pinnacles to flat, muddy areas. These features provide a variety of habitats resulting in a complex ecosystem mosaic (Fig. 1). Prevailing rough bottom conditions in many areas require the standard use of rubber bobbin roller gear for all bottom trawling operations. The 2007 GOA survey included the entire continental shelf and upper portion of the continental slope down as deep as the 1,000 m depth contour.

The total area the survey represents is approximately 320,000 km² (Table 1). The continental shelf, waters shallower than about 200 m and consisting of about 79% of the total Gulf of Alaska survey area, extends approximately 220 km (120 nautical miles (nmi)) off Cook Inlet and narrows to 40 km (22 nmi) off Dixon Entrance and 20 km (11 nmi) off the Islands of Four Mountains. Gullies intrude onto the shelf in many areas, extending from the upper slope to the inner shore. These gully areas make up about 16% of the total survey area. The outer shelf

is bordered by the continental slope, a region approximately 20 km in width, which descends steeply to the abyssal Aleutian Trench in the western and central GOA and to the Alaska Plain in the eastern GOA. The survey assessed only that portion of the slope between 200 and 1,000 m, an area of approximately 68,635 km². About 32% (101,489 km²) of the total survey area is within the Kodiak INPFC area (Table 1). The portion of the survey area contained within the Chirikof INPFC area and the Shumagin INPFC area are approximately equal at about 21% (68,053 km²) and 20% (65,228 km²), respectively, while the Yakutat INPFC survey area makes up about 18% (57,197 km²). The Southeastern INPFC survey area comprises the smallest portion, about 9% of the total survey area (28,038 km²).

Vessels

Since the inception of the Gulf of Alaska bottom trawl survey series in 1984, commercial trawlers and crew have been chartered to conduct the survey operations under the supervision and guidance of RACE Groundfish Assessment Program staff. Three vessels (occasionally two) have been chartered each year the survey has been done. Since these surveys generate quantitative data for a time series to describe trends in abundance, distribution, and population biology characteristics of managed resources, it is essential that standardized methods be maintained. Stringent standards for selecting charter vessels are specified whenever new charters are arranged to ensure that the sampling platforms can adequately collect samples and do so in as similar a manner as possible within and between years. As such, vessels and crews must meet minimum criteria in terms of size, main engine horsepower, fishing machinery, skipper and crew experience, and navigational and safety equipment. Continuity of suitable

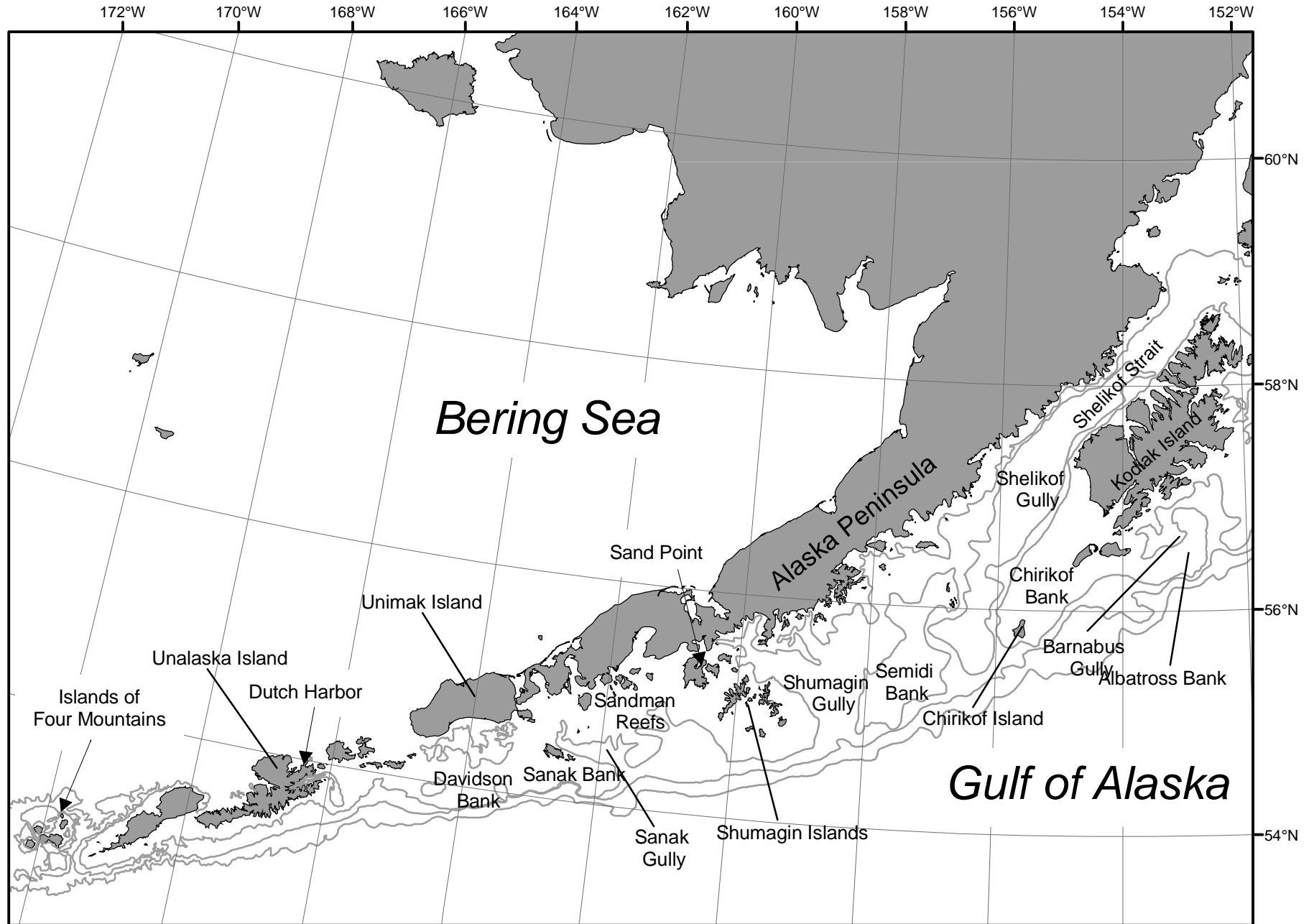


Figure 1.-- Bathymetric and geographic features of the survey area for the 2007 Gulf of Alaska biennial groundfish survey.

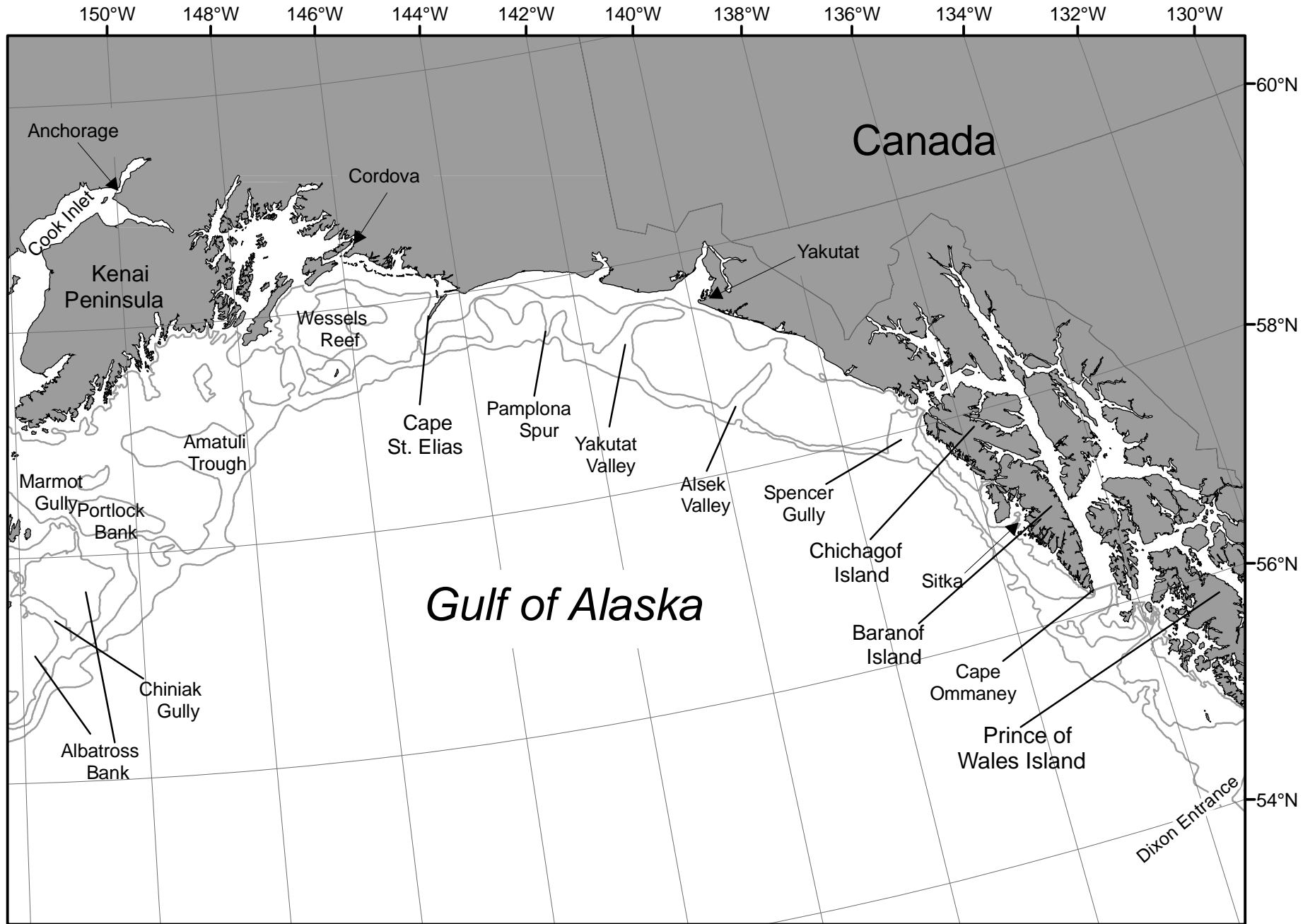


Figure 1. -- Continued.

platforms has been further enhanced in the past decade through the use of multi-year charters, assuring both the government and the contractors a stable planning situation for as much as four years at a time.

In 2007, three U.S. commercial fishing vessels, F/V *Gladiator*, F/V *Sea Storm*, and F/V *Vesteraalen* were chartered to conduct the Gulf of Alaska bottom trawl survey. All three vessels were house-forward stern trawlers with stern ramps; forward and aft net storage reels (mounted aft over the stern ramp and forward of the working deck); telescoping deck cranes; propeller nozzles; and paired, controlled-tension hydraulic trawl winches with 1,280 m, 1,460 m, and 2,200 m of 2.54 cm (*Gladiator*, *Sea Storm*, and *Vesteraalen*, respectively) diameter steel cable. The *Gladiator*, *Sea Storm*, and *Vesteraalen* are all 37.8 m in overall length (LOA) and powered by single 1,710 continuous HP main engines (1,725 HP on the *Vesteraalen*). The *Gladiator* was operated by Captain Ed French for the first and fourth legs and by Captain Buck Graham for the second and third legs. Captain Ken Sjong skippered the *Vesteraalen* for the first three legs, followed by Captain Tim Cosgrove on the final leg. The *Sea Storm* was operated by Captain Steve Branstiter for the first, second, and fourth legs, and by Captain Jerry Ellefson for the third leg. All vessels were equipped with GPS receivers with video position plotters, at least two radars, single sideband and VHF transmitter-receivers, color video fish-finders, paper recorder depth sounders, and autopilots.

Fishing Gear

The fishing gear and protocols for deployment are described in detail in Stauffer (2004).

All vessels used standard RACE Division Poly Nor'Eastern four-seam bottom trawls with 24.2 m roller gear constructed with 36 cm rubber bobbins separated by 10 cm rubber disks. The fishing dimensions of the trawls during deployment were monitored and recorded using Scanmar acoustic net mensuration equipment mounted on the wing-tips and headrope of the trawl. Each trawl and associated rigging was measured and certified as conforming to standard measurements prior to its use in the survey.

Survey Design

The 2007 biennial survey used stratified random sampling consistent with previous GOA surveys (Britt and Martin 2000, Martin and Clausen 1995, Stark and Clausen 1995, Munro and Hoff 1995). The Gulf of Alaska was divided into 59 strata defined by water depth, bottom terrain (e.g., shelf, gully, and slope), and INPFC statistical area (Appendix A). As in previous surveys, a modified Neyman optimal allocation strategy (Cochran 1977) catch rates from the 1990-2005 surveys was used to allocate effort among strata. Neyman optimum allocation calculations were made for each of the principal groundfish species for each previous survey year using the estimated time to perform a tow in a given stratum as the cost variable, since observations in deeper strata have a greater probability of unacceptable gear performance. A mean sample size was estimated for each species across years and then a weighted mean of the estimated sample sizes was calculated using each species's mean biomass multiplied by its ex-vessel value as the weighting variable. These numbers were rounded to whole numbers and represented the number of stations allocated to each stratum with the additional constraint that each stratum was required to have at least two samples.

The calculated number of stations was randomly selected without replacement from polygons formed from the intersection of a grid composed of cells 25 km² in area and the stratum boundaries. Since many of the polygons formed by this process are less than 25 km², the probability of selection was directly related to each polygon's area. Small polygons (less than 5 km² in area) were excluded from the pool available for assignment since a vessel would be unable to perform a valid tow within such a small area. To maximize efficient use of survey time and optimize fuel consumption, assignment of tows to vessels was non-random in the Central GOA where the shelf is nearly 200 km wide in places. In general, the *Vesteraalen* was assigned to sample the outer shelf and slope stations, the *Gladiator* the middle shelf stations, and the *Sea Storm* the near-shore stations. However, tows in all strata, with the exception of those between Kodiak Island and Cook Inlet, were assigned randomly between at least two boats.

We allocated 825 stations among the 59 strata. Geographic center points of the assigned station polygon were considered to define the location of the station. Vessels were assigned stations and were directed to thoroughly search each area using echosounder returns to locate sufficient trawlable bottom to perform a successful 15-minute tow, preferably through the center point. If trawlable bottom could not be found in the immediate area of the assigned point, a suitable location within the station polygon was sought. If, in the judgment of the field party chief and skipper, no trawlable grounds could be found within the polygon within 2 hours, a nearby alternate station was selected from successful tows completed during previous GOA surveys. If sufficient trawlable bottom was encountered while transiting to the alternate site, this location was instead selected for the sample.

Data Collection Techniques

The protocols used by the AFSC's RACE Division for conducting bottom trawl surveys have been standardized (Stauffer 2004). Criteria for a successful tow include maintaining a continuous vessel speed of 3 knots (5.56 m/sec) while keeping the net in contact with the bottom and in fishing configuration for 15 minutes. Occasionally, tows of shorter duration were necessary to avoid obstacles (and, hence, net damage) or when net configuration (e.g., reduced wing spread) indicated that an exceptionally large catch was affecting the performance of the trawl. The track of the vessel was recorded every 2 seconds during each tow using the vessel's global positioning system (GPS). Pressure at depth, water temperature, and time were recorded every 3 seconds during most tows using a Seabird SBE-39 bathythermograph placed on the headrope of the net. The vertical and horizontal net openings were monitored with Scanmar net mensuration equipment. Scanmar net spread data were generally not collected for tows over extremely rough bottom so as not to risk losing the instruments. Backup surface water temperatures were measured at most stations with a bucket thermometer. To minimize fishing power differences between the survey vessels, standardized trawling and gear handling methods were practiced including the use of scope ratio tables (trawl warp relative to bottom depth) and maintaining a 3-knot trawling speed.

A trawl sample was considered successful if horizontal and vertical net openings remained within established tolerances, the roller gear maintained consistent contact with the bottom, the net suffered little or no damage during the tow, and there were no conflicts with derelict fishing gear. Trawl samples were considered unsuccessful when the field party chief

judged that the catch was affected by trawl damage, an unstable trawl configuration, insufficient bottom contact, in the event the duration of the tow was less than 10 minutes.

Collection and Processing of Samples

Catches were sorted to species or other appropriate taxonomic levels and then weighed in aggregate using an electronic monion-compensating scale. Catches weighing less than approximately 1,000 kg were emptied directly onto a sorting table, sorted by species, and weighed to the nearest 0.1 kg using a Marel model M1100 digital scale. Species groups weighing less than about 2 kg were generally weighed to the nearest 2 g on a Marel model M60 digital scale. Larger catches were processed in like manner by iteratively filling the sorting table from the codend, sorting, and weighing until the entire catch had been processed. Alternatively, the total weight of the catch was weighed with Measurement Systems International Portaweigh Model 4300 crane scale and the sorting table was filled with a portion of the catch. The excess catch was dumped into a deck bin and the one-three dominant species making up the bulk of the catch were identified. The contents of the deck bin were sorted, discarding the predominant species and retaining the non-dominant species, which were sorted and weighed with those from the table. Total weight estimates for the predominant species were calculated by expanding their proportion by weight from the sorted sample to the difference between the total catch weight and the total weight of all non-dominant species. Pacific halibut were measured and discarded as promptly as possible and their weights were estimated from the length data. Numbers and weights of all taxa were estimated for each haul.

Additional biological information was recorded from individuals of species of commercial value, ecological importance, or abundance in the survey area. A random subsample of 100-300 individuals (target subsample size was species-dependent) of each of these species identified in the catch was sorted by sex and individual fork lengths (FL) were measured using Polycorder (Omnidata) data loggers with barcode readers and barcoded length strips. Fish that could not be readily sexed were classified as unsexed and measured. Age structures were collected from randomly selected samples of walleye pollock (See Appendix Table B-1 for scientific names of fish species) and stratified samples (by area, sex, and size) of other target species. Every attempt was made to distribute the age specimen collections over the entire survey area. Individuals sampled for age were measured to the nearest 1 cm (FL) and weighed to the nearest 2-5 g (scale accuracy depends on the weight of the specimen) with a Marel model M60 scale.

Stomach samples for selected species were collected throughout the survey area by biologists from the AFSC's Resource Ecology and Ecosystem Modeling (REEM) Program aboard the *Vesteraalen*. In addition, stomach samples for selected species were scanned for their content aboard the *Sea Storm* by REEM staff. Ancillary data and specimens including whole specimens, ovaries, a variety of tissues, and acoustic data, were collected for several other research projects including a study of how size and age of adult female Pacific ocean perch affect the condition of their larvae, taxonomic studies of snailfish, eelpouts, cephalopods, crabs, and sand lance, genetic studies of Pacific ocean perch, ronquils, several species of flatfishes, gadoids, forage fishes, and deepwater corals. Additional studies included a Pacific sleeper shark

study on relative trophic levels, studies of light level variability, marine mammal food habits, seabird abundance, and the seasonal energetics of arrowtooth flounder.

Abundance, Size composition, and Length-Weight Relations

Biomass estimates were calculated using the area-swept method (Alverson and Pereyra 1969). The area swept was calculated as the product of estimated distance towed by the estimated mean net spread for each tow. The distance towed was assumed to be represented by the distance traveled over ground by the vessel between the time when the footrope came into contact with the bottom (on-bottom) and the time when the center of the footrope left the bottom (off-bottom). The distance traveled by the vessel was estimated by smoothing the GPS location data and measuring the distance along this line. The mean net spread was estimated by averaging the smoothed net spread readings from the Scanmar units between on-bottom and off-bottom positions. Net spreads for tows for which there were insufficient or no Scanmar readings were estimated by a stepwise generalized additive model using net number, net height (when available), mean speed over ground (when available), depth, total catch and the actual scope/expected scope ratio as variables. For each species, catch-per unit effort (CPUE) was calculated as catch weight (kg) per area swept by the trawl in hectares (ha). Mean CPUE was calculated, including zero catches, within each stratum. Mean CPUE values of combined strata were calculated as the weighted average of the component strata CPUE means weighted by stratum area. Biomass estimates were calculated by multiplying each stratum mean CPUE by the stratum area and summing the results to obtain estimates by INPFC statistical areas and

depth intervals. The 95% confidence interval was calculated for each species biomass estimate. A detailed description of the analytical procedures is presented in Wakabayashi et al. (1985).

Population length compositions were estimated by expanding the length-frequency to the total catch for each species by length and sex category at each station (Wakabayashi et al. 1985). The stratum population within a sex-length category was calculated by multiplying the stratum population by the proportion of fish in that category from the summed station data. Population size composition estimates were summed over strata to derive estimates by area.

Individual length and weight measurements were used to establish length-weight relationships. The length-weight allometric relationship was expressed as:

$$W = a * L^b,$$

where W is weight (in grams), L is length (in mm), and a and b are the fitted parameters from a non-linear least squares regression.

Survey Limitations

Due to the nature of this survey, there are some limitations in its ability to estimate fish abundance across all species. Obviously, populations whose entire depth range is not covered by the survey are not fully sampled (e.g., sablefish, shortspine thornyhead). Populations that extend into areas untrawlable with the survey gear are not fully represented (e.g., many rockfish species). Populations of species that exhibit a highly contagious distribution pattern (e.g., Atka mackerel and Pacific ocean perch) or are highly restricted in the amount of available habitat in the Gulf of Alaska (e.g., yellowfin sole and starry flounder) would be better sampled with a different survey design. For these reasons, estimates of abundance are considered more reliable for species that are widely and more uniformly distributed from this survey.

Estimates of fish abundance within the survey area are routinely represented as absolute biomass estimates. These estimates make the assumption that 100% of the fish within the path of the trawl are captured. In fact, the situation is much more complex. As with any fishing gear, the survey trawl exhibits size selectivity (e.g., fish small enough to pass through the net mesh are not sampled well, or larger fish may be able to outswim the trawl, at least for a short time). Fish are herded into the path of the trawl by the doors and the bridles in front of the trawl. Some fish escape under the footrope of the net. The rate of herding and escapement depend upon several factors including the species, water temperature, and the speed of the vessel. This is an active area of research at the AFSC (Munro and Somerton, 2002; Somerton and Weinberg 2000; Somerton and Munro, 2001). Given these limitations, survey abundance estimates are probably

best considered as relative measures of abundance and are used to monitor trends across the time series.

RESULTS

Out of a total of 892 attempted tows, 820 (92%) were completed successfully at allocated survey stations and were included in the biomass and size composition analysis (Table 1). Three of the originally allocated stations were never occupied due to lack of time. Net spread measurements were successfully collected for 821 tows (96%). Headrope depth and temperature measurements were successfully collected for 809 tows (95%). Bottom temperatures ranged from 2.3° to 11.2°C. Sea surface temperatures were successfully collected at 847 stations (99+%) and ranged from 3.2° to 15.1°C.

Net height and spread were measured for all but 27 survey hauls (for these hauls net dimensions were estimated from other bottom trawl hauls). Net spread on average ranged from 13.4 to 19.5 m. Average net heights of successfully completed tows ranged from 3.9 to 8.9 m. Temperatures were successfully recorded for all but 38 tows. Average bottom temperatures ranged from 0. °C to 11.2°C. Sea surface temperatures ranged from 3.2° to 15.1°C.

Table 1. -- Number of stations allocated, attempted, and successfully completed and sampling density for the 2007 Gulf of Alaska biennial bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth range (m)	Stations allocated	Stations attempted	Stations successful	Area (km ²)	Sampling density (stations/1000 km ²)
Shumagin	1 - 100	133	139	133	41,289	3.22
	101 - 200	39	39	39	14,677	2.66
	201 - 300	17	18	17	2,788	6.10
	301 - 500	9	10	9	2,531	3.56
	501 - 700	5	5	5	2,006	2.49
	701 - 1000	3	2	2	1,937	1.03
	All depths	206	213	205	65,228	3.14
Chirikof	1 - 100	82	82	82	26,035	3.15
	101 - 200	69	71	69	23,849	2.89
	201 - 300	26	29	26	11,546	2.25
	301 - 500	10	10	10	1,604	6.23
	501 - 700	7	7	7	1,953	3.58
	701 - 1000	5	5	5	3,066	1.63
	All depths	199	204	199	68,053	2.92
Kodiak	1 - 100	97	101	97	38,516	2.52
	101 - 200	126	130	127	43,332	2.93
	201 - 300	30	30	30	11,490	2.61
	301 - 500	10	10	10	2,912	3.43
	501 - 700	6	7	6	1,745	3.44
	701 - 1000	4	5	4	3,494	1.14
	All depths	273	283	274	101,489	2.70
Yakutat	1 - 100	11	11	11	16,661	0.66
	101 - 200	33	34	33	29,382	1.12
	201 - 300	17	17	17	5,170	3.29
	301 - 500	9	10	9	2,628	3.42
	501 - 700	3	4	3	1,469	4.08
	701 - 1000	3	3	3	1,887	---
	All depths	76	79	76	57,197	1.33
Southeastern	1 - 100	11	11	11	6,546	1.68
	101 - 200	23	26	22	11,084	1.98
	201 - 300	18	19	17	5,052	3.37
	301 - 500	13	12	11	3,117	3.53
	501 - 700	4	2	3	1,033	2.90
	701 - 1000	2	2	2	1,206	1.66
	All depths	71	72	66	28,038	2.35
All areas	1 - 100	334	344	334	129,047	2.59
	101 - 200	290	300	290	122,324	2.37
	201 - 300	108	113	107	36,046	2.97
	301 - 500	51	52	49	12,792	3.83
	501 - 700	25	25	27	8,206	3.29
	701 - 1000	17	17	13	11,590	1.12
	All depths	825	851	820	320,005	2.56

Catch Results by Area

At least 185 fish species from 40 families were captured during the 2007 survey. Appendix B presents lists of fish (Appendix B-1) and invertebrate (Appendix B-2) species encountered during the survey. Relative abundance estimates, reported as CPUE, are presented in Table 2 for the 20 most abundant groundfish species in each of the five INPFC areas.

Over the entire survey area, arrowtooth flounder was the most abundant groundfish encountered during the survey (Table 2). Arrowtooth flounder had the highest CPUE of any species in four of the five INPFC areas and had the second highest CPUE in the Yakutat area. Pacific ocean perch, giant grenadier, Pacific halibut, and walleye pollock were also very important components of the Gulf-wide species composition.

In the Shumagin INPFC area, arrowtooth flounder had by far the greatest CPUE of any species. Giant grenadier, Pacific ocean perch, northern rockfish, Pacific cod, Pacific halibut and walleye pollock were also relatively abundant in this area. In the Chirikof INPFC area, arrowtooth flounder completely dominated all other species in terms of CPUE. Giant grenadier, northern rockfish, walleye pollock, Pacific halibut, flathead sole, and Pacific ocean perch were also important components of the species composition. In the Kodiak INPFC area, arrowtooth flounder was by far the dominant component of the groundfish CPUE. Pacific ocean perch, Pacific halibut, and giant grenadier were also relatively abundant in this area. In the Yakutat INPFC area, spiny dogfish and arrowtooth flounder were the two dominant species. The mean CPUEs of both species were more than twice that of the next two most abundant species: Pacific halibut and Pacific ocean perch. In the Southeastern INPFC area, arrowtooth flounder again

predominated with a mean CPUE almost three times that of the next most abundant groundfish, Pacific ocean perch. Pacific halibut, spotted ratfish, and walleye pollock were also important catch components.

Table 2. -- Mean CPUE (kg/ha) for the 20 most abundant groundfish in each International North Pacific Fisheries Commission area during the 2007 biennial Gulf of Alaska bottom trawl survey.

Shumagin area		Chirikof area		Kodiak area	
Species	CPUE	Species	CPUE	Species	CPUE
arrowtooth flounder	40.5	arrowtooth flounder	86.5	arrowtooth flounder	83.7
giant grenadier	27.4	giant grenadier	21.3	Pacific ocean perch	29.7
Pacific ocean perch	24.2	northern rockfish	13.6	Pacific halibut	16.8
northern rockfish	17.5	walleye pollock	13.3	giant grenadier	12.9
Pacific cod	17.5	Pacific halibut	11.9	flathead sole	9.8
Pacific halibut	16.9	flathead sole	11.3	sablefish	9.4
walleye pollock	15.0	Pacific ocean perch	11.3	walleye pollock	8.0
atka mackerel	12.3	sablefish	6.1	Pacific cod	7.9
flathead sole	12.0	dusky rockfish	5.6	southern rock sole	5.3
southern rock sole	12.0	rex sole	5.4	rex sole	3.9
northern rock sole	10.1	Pacific cod	4.5	Pacific sleeper shark	2.9
yellowfin sole	3.3	eualchon	4.0	dozer sole	2.8
sablefish	3.2	starry flounder	3.4	spiny dogfish	2.7
yellow irish lord	1.9	southern rock sole	3.0	shortspine thornyhead	2.4
shortspine thornyhead	1.9	Alaska skate	2.4	starry flounder	2.1
starry flounder	1.8	northern rock sole	2.4	blackspotted rockfish	2.1
rex sole	1.8	dozer sole	2.3	northern rockfish	2.0
butter sole	1.1	shortspine thornyhead	2.0	northern rock sole	2.0
big skate	0.9	big skate	1.8	dusky rockfish	1.9
dusky rockfish	0.8	Pacific sleeper shark	1.3	yellowfin sole	1.8
Number of hauls	205	Number of hauls	199	Number of hauls	274

Yakutat area		Southeastern area		All areas	
Species	CPUE	Species	CPUE	Species	CPUE
spiny dogfish	23.0	arrowtooth flounder	38.1	arrowtooth flounder	60.6
arrowtooth flounder	22.8	Pacific ocean perch	35.2	Pacific ocean perch	21.5
Pacific halibut	10.4	Pacific halibut	17.5	giant grenadier	15.2
Pacific ocean perch	9.2	spotted ratfish	11.4	Pacific halibut	14.7
giant grenadier	5.5	walleye pollock	9.7	walleye pollock	9.9
Pacific herring	5.2	silvergray rockfish	7.4	flathead sole	8.8
sablefish	5.0	Pacific hake	7.0	Pacific cod	7.3
shortspine thornyhead	3.9	sablefish	6.1	northern rockfish	7.1
flathead sole	3.7	shortraker rockfish	5.1	sablefish	6.3
walleye pollock	3.5	shortspine thornyhead	4.5	spiny dogfish	5.1
lingcod	3.3	dozer sole	4.3	southern rock sole	5.1
starry flounder	2.9	sharpchin rockfish	4.0	rex sole	3.2
dozer sole	2.4	redstripe rockfish	3.9	northern rock sole	3.2
salmon shark	2.2	rex sole	3.5	shortspine thornyhead	2.6
eulachon	1.6	southern rock sole	2.9	atka mackerel	2.6
silvergray rockfish	1.5	Pacific cod	2.5	starry flounder	2.3
shortraker rockfish	1.4	lingcod	2.2	dusky rockfish	2.3
big skate	1.4	roughey rockfish	2.2	dozer sole	2.2
Pacific hake	1.1	blackspotted rockfish	1.9	eulachon	1.6
rex sole	1.0	flathead sole	1.4	yellowfin sole	1.3
Number of hauls	76	Number of hauls	66	Number of hauls	820

Catch Results by Species

For each commercially or ecologically important species, the following information is presented:

1. A brief synopsis of the data collected.
2. A table presenting the number of hauls, the number of hauls with catch, mean CPUE, estimated biomass with 95% confidence intervals, and mean weight of that species by INPFC area and depth.
3. A figure showing the distribution and relative abundance of that species.
4. A figure showing the estimated size composition of the population for that species.
5. CPUE and biomass estimates (with 95% confidence intervals) by stratum for that species.

For other species that were locally abundant (other flatfish and other rockfish, skates, capelin, eulachon, and Pacific hake), only items 1, 2, and 6 above are presented.

The scientific names follow the fifth edition of the Common and Scientific Names of Fishes from the United States and Canada (Robins et al. 1991). The exceptions to this are in the orders Pleuronectiformes (flatfish) and Scorpaeniformes (rockfish) scientific names. The names used throughout this report reflect recent reexamination of the phylogeny of these orders (Berendzen 1997, Cooper and Chapleau 1998, Ivankov 1996, Orr and Matarese 2000, Rass 1996, Orr and Blackburn 2004, Orr and Hawkins 2008).

FLATFISHES

Arrowtooth flounder (*Atherestes stomias*)

Arrowtooth flounder was the most abundant species caught in the 2007 survey (Table 2) with the highest mean CPUE in four out of the five INPFC areas. Arrowtooth flounder were caught throughout the survey area at all depths less than 700 m, occurring in 89% of tows at these depths, including 98% of the tows at depths between 101 and 500 m. The highest densities occurred on the broad continental shelf in the Kodiak and eastern Chirikof INPFC areas, especially on the Shelikof Edge and in the area northeast of Kodiak Island (Fig. 2 and Table 4). Mean densities were uniformly low on the continental slope at depths greater than 500 m and essentially zero at depths greater than 700 m. Length data were collected from almost 63,000 specimens. Mean weight generally increased with depth (Table 3), as fish less than 30 cm FL were relatively rare at depths greater than 300 m (Fig. 3). A distinct length mode around 40 to 45 cm for males occurred at depths between 101 and 200 m in the Yakutat and Southeastern INPFC areas and in all INPFC areas at depths between 201 m and 500 m except in the Chirikof INPFC area between 201 and 300 m. In addition, a length mode for females around 50 cm occurred in all INPFC areas between 201 and 500 m except in the Shumagin INPFC area between 201 and 300 m. The arrowtooth flounder population in the survey area was dominated by females, which accounted for approximately 68% of the total estimated population.

Table 3. -- Number of survey hauls, number of hauls with arrowtooth flounder, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	128	30.117	124,350	69,922	178,777	0.540
	101 - 200	39	38	85.220	125,080	78,578	171,582	0.546
	201 - 300	17	17	29.396	8,195	4,231	12,160	0.731
	301 - 500	9	9	21.727	5,499	1,877	9,122	1.098
	501 - 700	5	4	3.649	732	0	2,023	1.606
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	196	40.451	263,856	193,672	334,040
Chirikof	1 - 100	82	60	33.197	86,429	32,690	140,168	0.750
	101 - 200	69	65	176.801	421,660	265,005	578,314	0.733
	201 - 300	26	26	64.790	74,807	51,231	98,383	0.936
	301 - 500	10	10	32.240	5,171	778	9,565	0.943
	501 - 700	7	3	1.834	358	0	1,058	1.271
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	164	86.466	588,425	422,953	753,897
Kodiak	1 - 100	97	68	48.801	187,961	46,224	329,698	1.113
	101 - 200	127	126	136.387	590,988	438,457	743,519	0.827
	201 - 300	30	30	53.924	61,961	30,093	93,829	0.843
	301 - 500	10	9	28.214	8,215	0	16,614	1.183
	501 - 700	6	3	1.925	336	0	1,095	1.270
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	236	83.700	849,461	641,243	1,057,679
Yakutat	1 - 100	11	8	13.364	22,267	4,982	39,551	0.775
	101 - 200	33	33	31.670	93,052	15,447	170,657	0.611
	201 - 300	17	17	18.569	9,600	1,639	17,561	1.067
	301 - 500	9	9	21.335	5,606	0	11,756	1.105
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	67	22.820	130,526	53,527	207,524
Southeastern	1 - 100	11	8	16.735	10,956	0	23,599	0.647
	101 - 200	22	21	75.200	83,353	0	191,173	0.729
	201 - 300	17	15	15.268	7,714	1,627	13,801	0.974
	301 - 500	11	11	15.287	4,765	2,419	7,111	1.130
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	55	38.084	106,787	0	215,594
All areas	1 - 100	334	272	33.473	431,961	271,462	592,461	0.771
	101 - 200	290	283	107.430	1,314,134	1,063,617	1,564,650	0.736
	201 - 300	107	105	45.019	162,277	123,580	200,974	0.894
	301 - 500	49	48	22.872	29,257	18,109	40,405	1.095
	501 - 700	24	10	1.738	1,426	0	2,920	1.423
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	718	60.594	1,939,055	1,641,938	2,236,172

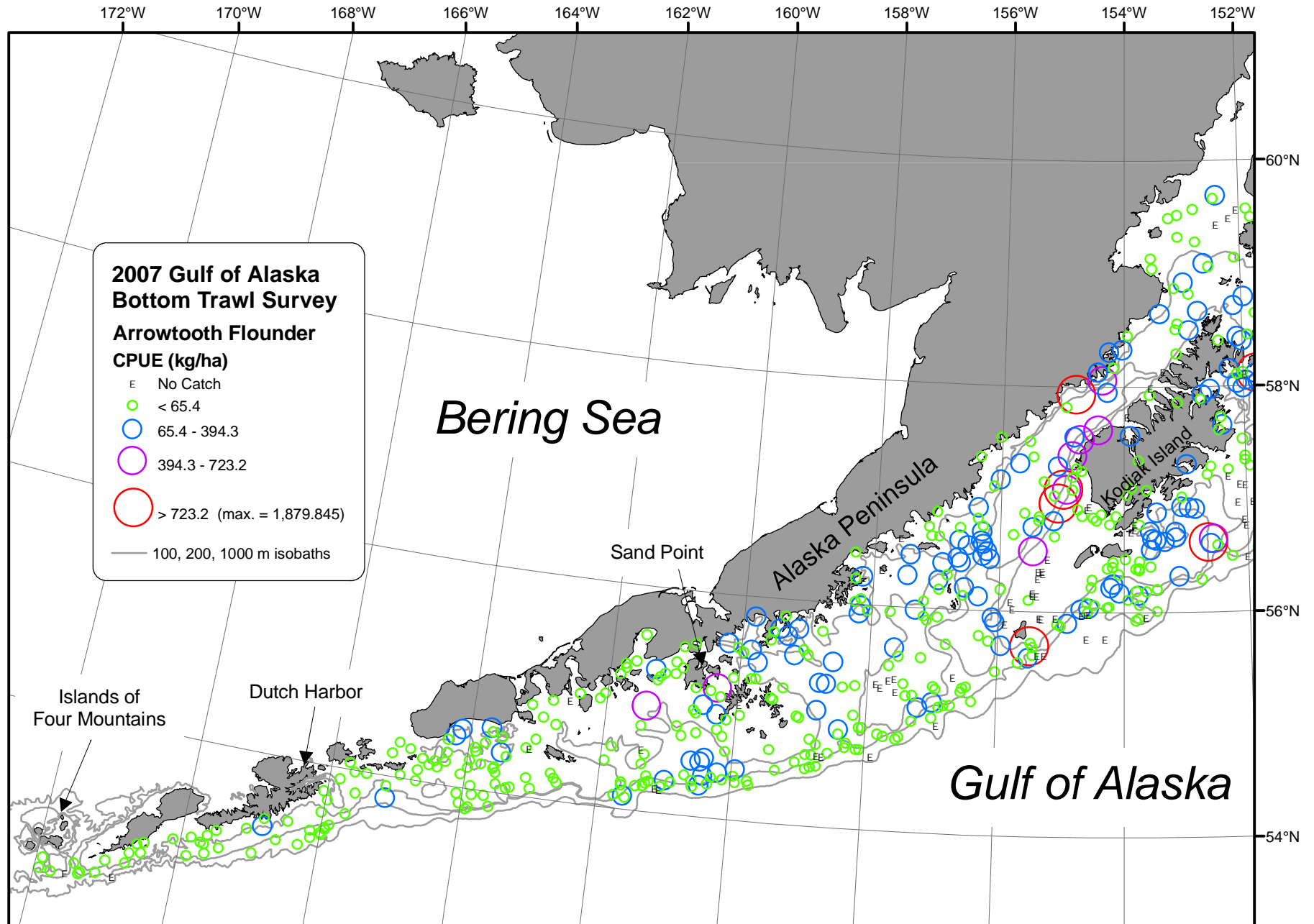


Figure 2. -- Distribution and relative abundance of arrowtooth flounder from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

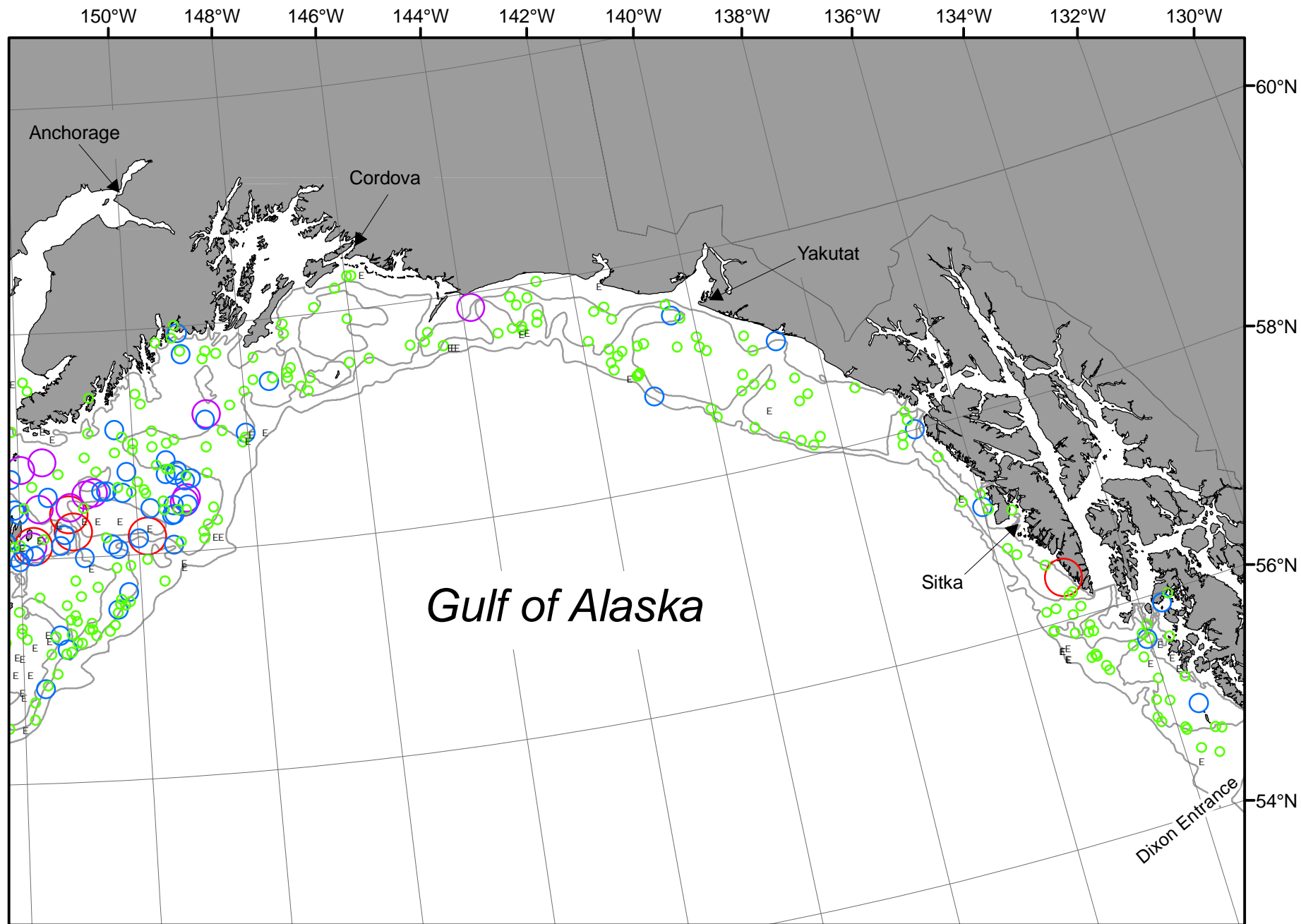


Figure 2. -- Continued (arrowtooth flounder 2007).

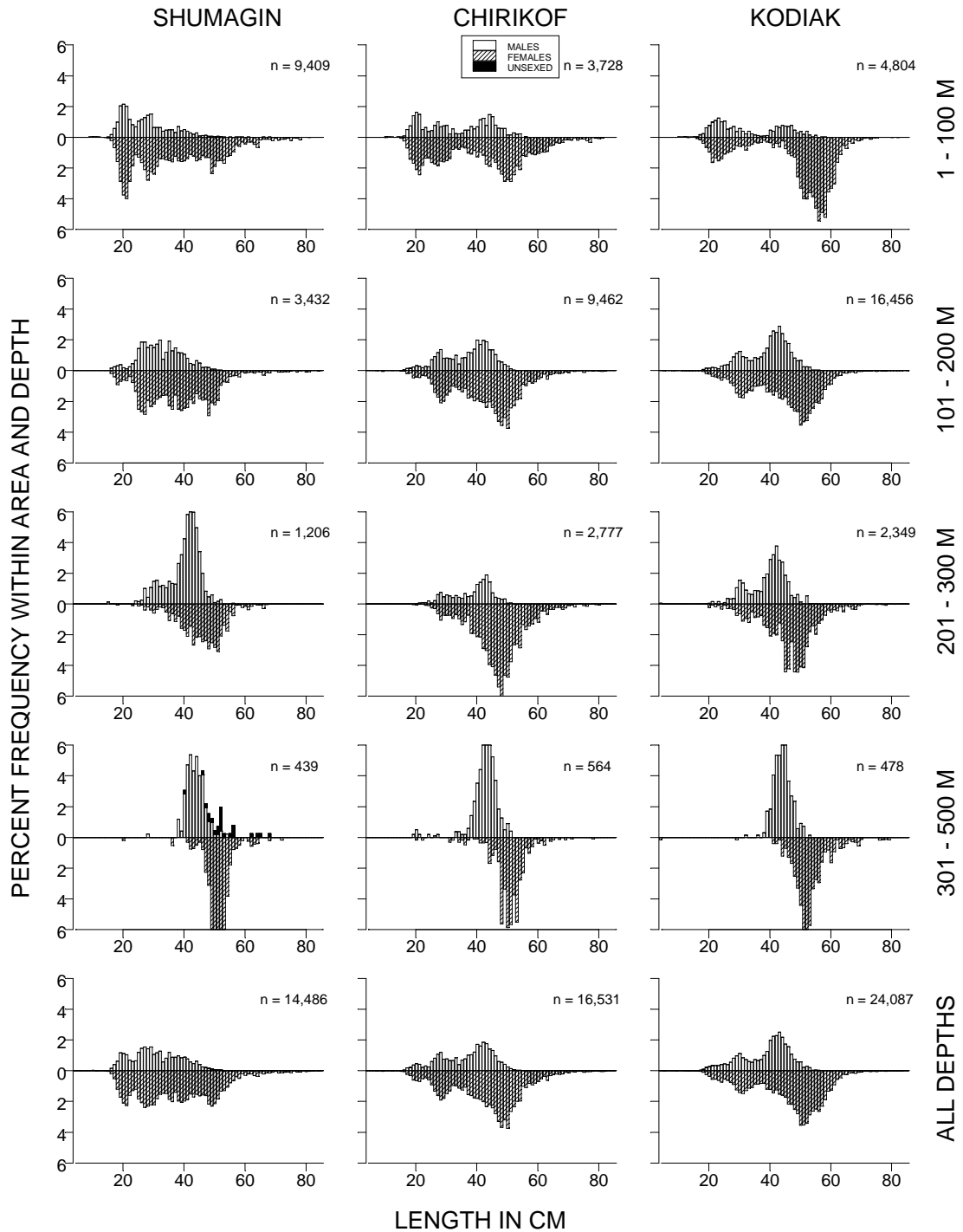


Figure 3. -- Size composition of arrowtooth flounder from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

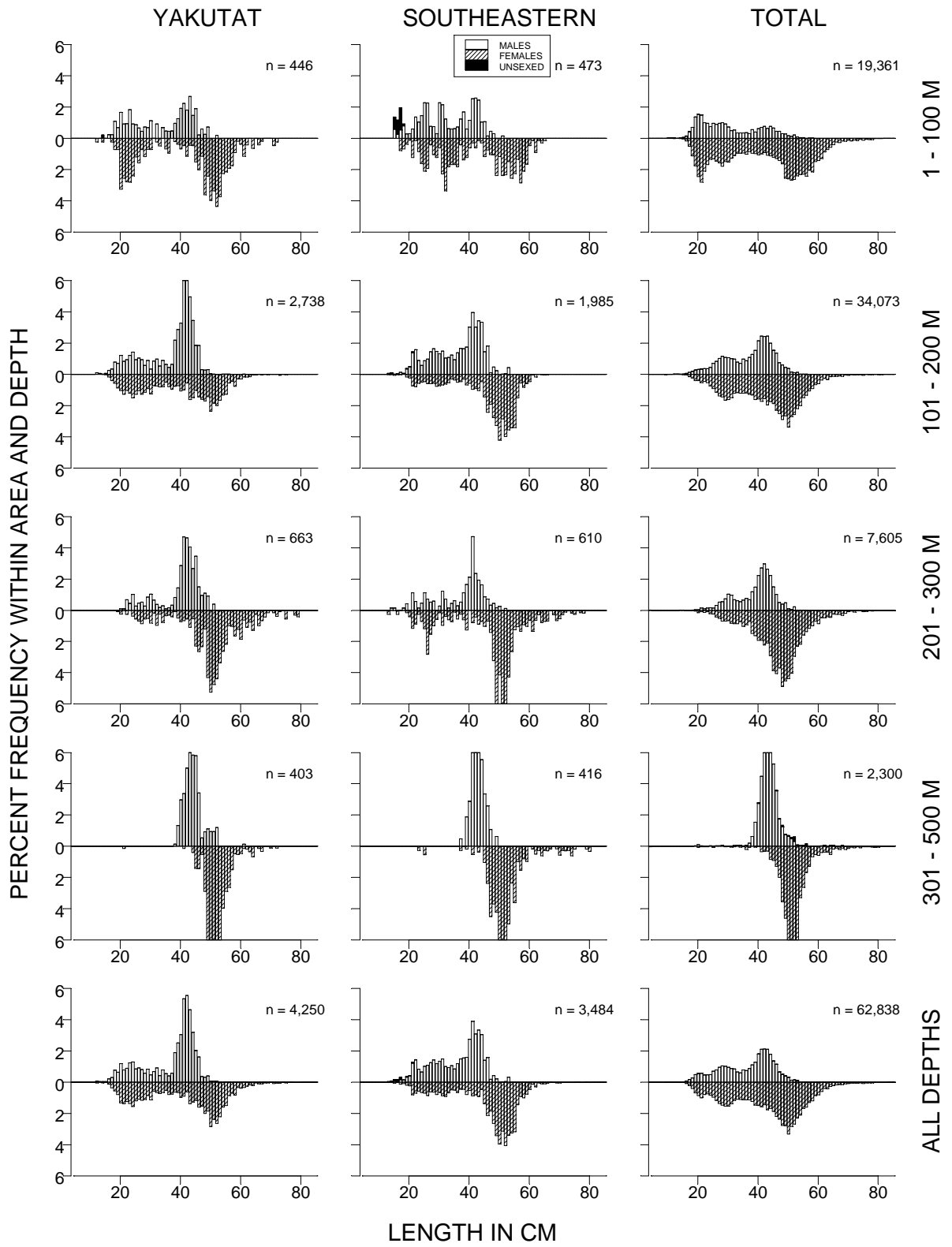


Figure 3. -- (continued)

Table 4. -- Catch per unit of effort by stratum for arrowtooth flounder sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	101 - 200	Shelikof Edge	27	26	306.76	237,265	100,460	374,069
Kodiak	101 - 200	Albatross Gullies	28	28	226.77	179,413	109,142	249,683
Shumagin	101 - 200	West Shumagin Gully	4	4	223.14	50,837	8,529	93,145
Kodiak	101 - 200	Barren Islands	18	18	171.50	188,317	82,634	293,999
Kodiak	101 - 200	Portlock Flats	35	35	156.75	114,994	51,922	178,067
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	8	142.20	59,671	0	169,976
Chirikof	101 - 200	East Shumagin Gully	17	16	124.16	137,862	74,572	201,152
Shumagin	101 - 200	Sanak Gully	7	7	103.03	43,738	9,864	77,611
Kodiak	1 - 100	Northern Kodiak Shallows	9	6	92.97	20,451	0	57,341
Chirikof	101 - 200	Chirikof Outer Shelf	25	23	92.87	46,533	0	100,735
Kodiak	1 - 100	Albatross Shallows	28	22	90.15	51,978	9,987	93,970
Kodiak	201 - 300	Upper Shelikof Gully	4	4	83.24	26,706	0	57,371
Yakutat	101 - 200	Yakataga Shelf	8	8	77.22	40,748	0	120,806
Kodiak	101 - 200	Kenai Flats	18	18	74.59	90,080	22,221	157,940
Kodiak	201 - 300	Kodiak Slope	7	7	71.50	11,602	0	26,610
Chirikof	201 - 300	Lower Shelikof Gully	18	18	68.82	68,938	45,618	92,258
Chirikof	1 - 100	Upper Alaska Peninsula	19	18	60.13	47,750	7,931	87,570
Kodiak	1 - 100	Albatross Banks	39	24	59.34	91,397	0	223,047
Shumagin	1 - 100	Shumagin Bank	36	34	50.61	62,749	10,130	115,368
Chirikof	201 - 300	Chirikof Slope	8	8	38.40	5,869	1,277	10,462
Shumagin	101 - 200	Shumagin Outer Shelf	28	27	37.41	30,506	6,983	54,029
Kodiak	101 - 200	Kodiak Outer Shelf	28	27	36.18	18,184	7,630	28,738
Kodiak	201 - 300	Kenai Gullies	19	19	35.52	23,653	4,963	42,344
Southeastern	101 - 200	Prince of Wales Shelf	14	13	34.38	23,682	2,447	44,918
Southeastern	201 - 300	Baranof-Chichagof Slope	3	2	34.05	3,832	0	13,456
Yakutat	301 - 500	Yakutat Slope	7	7	32.34	4,918	0	11,261
Chirikof	301 - 500	Chirikof Slope	10	10	32.24	5,171	711	9,632
Shumagin	201 - 300	Shumagin Slope	17	17	29.40	8,195	4,212	12,179
Chirikof	1 - 100	Chirikof Bank	40	24	29.27	31,585	0	69,069
Kodiak	1 - 100	Kenai Peninsula	7	5	28.23	14,851	0	34,473
Kodiak	301 - 500	Kodiak Slope	10	9	28.21	8,215	0	16,742
Shumagin	1 - 100	Lower Alaska Peninsula	28	26	27.45	18,877	8,774	28,980
Yakutat	101 - 200	Middleton Shelf	9	9	24.48	17,983	9,032	26,934
Yakutat	101 - 200	Yakutat Flats	8	8	22.68	20,482	6,032	34,931
Southeastern	301 - 500	Southeastern Slope	4	4	22.57	1,744	0	4,567
Shumagin	1 - 100	Davidson Bank	48	47	22.12	30,264	20,464	40,063
Yakutat	201 - 300	Yakutat Gullies	8	8	22.05	6,709	0	14,551
Shumagin	301 - 500	Shumagin Slope	9	9	21.73	5,499	1,806	9,193
Yakutat	1 - 100	Middleton Shallows	5	4	18.70	12,556	0	31,179
Yakutat	101 - 200	Fairweather Shelf	8	8	17.91	13,841	4,697	22,984
Southeastern	1 - 100	Southeastern Shallows	11	8	16.74	10,956	0	23,754
Shumagin	1 - 100	Fox Islands	21	21	14.95	12,460	4,789	20,131
Yakutat	201 - 300	Yakutat Slope	9	9	13.59	2,892	174	5,610
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	12.89	3,021	1,577	4,465
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	13	9.89	3,882	369	7,395
Yakutat	1 - 100	Yakutat Shallows	6	4	9.76	9,710	1,114	18,307
Chirikof	1 - 100	Semidi Bank	23	18	9.71	7,093	253	13,934
Kodiak	1 - 100	Lower Cook Inlet	14	11	9.39	9,284	0	19,653
Yakutat	301 - 500	Yakutat Gullies	2	2	6.22	688	0	3,292
Shumagin	501 - 700	Shumagin Slope	5	4	3.65	732	0	2,126
Kodiak	501 - 700	Kodiak Slope	6	3	1.93	336	0	1,134
Chirikof	501 - 700	Chirikof Slope	7	3	1.83	358	0	1,083

Pacific halibut (*Hippoglossus stenolepis*)

Pacific halibut was the fourth most abundant species caught in the 2007 survey (Table 2) with the third highest mean CPUE in three out of the five INPFC areas. Pacific halibut were particularly abundant at depths less than 100 m where they were caught in approximately 97% of the tows, and 68% of the estimated halibut biomass was found at these depths. The highest CPUEs were found at this depth range in all INPFC areas except in the Yakutat area where the highest CPUEs were in the 101-200 m range. The frequency of occurrence of Pacific halibut in tows decreased from west to east, ranging from about 90% of the tows in the Shumagin INPFC area to 48% of the tows in the Southeastern INPFC area. The highest densities were recorded in the Southeastern Shallows to the west of Prince of Wales Island, on the Fairweather Shelf in the Yakutat area, on Albatross Banks northeast of Kodiak Island, and on the Shumagin Bank north of the Shumagin Islands (Fig. 4 and Table 6). The mean weight of Pacific halibut was highest at depths between 201 and 300 m in the Shumagin and Chirikof areas, and between 301 and 500 m in the Kodiak, Yakutat, and Southeastern INPFC areas (Table 5). A pronounced length mode around 60 cm was noted in the shallowest depth zone of the Southeastern INPFC area, whereas two more moderate length modes around 38 and 55 cm were noted in depths less than 100 m in the Shumagin area (Fig. 5).

Table 5. -- Number of survey hauls, number of hauls with Pacific halibut, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	132	22.611	93,358	60,170	126,547	1.910
	101 - 200	39	36	10.305	15,124	10,494	19,754	3.192
	201 - 300	17	14	6.317	1,761	236	3,286	8.823
	301 - 500	9	3	1.101	279	0	611	5.050
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	185	16.944	110,522	76,988	144,057
Chirikof	1 - 100	82	81	20.033	52,156	40,388	63,924	2.420
	101 - 200	69	64	10.705	25,531	16,337	34,726	3.895
	201 - 300	26	16	3.133	3,618	1,808	5,428	5.935
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	161	11.947	81,305	66,435	96,176
Kodiak	1 - 100	97	94	31.932	122,990	64,890	181,090	2.334
	101 - 200	127	105	10.213	44,255	32,689	55,820	6.295
	201 - 300	30	10	2.267	2,605	743	4,467	5.475
	301 - 500	10	1	0.610	178	0	574	16.486
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	210	16.753	170,027	110,815	229,240
Yakutat	1 - 100	11	8	6.036	10,057	1,977	18,137	3.029
	101 - 200	33	16	15.919	46,772	0	103,316	4.297
	201 - 300	17	13	5.003	2,586	968	4,205	6.822
	301 - 500	9	1	0.418	110	0	582	6.937
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	38	10.407	59,525	3,449	115,601
Southeastern	1 - 100	11	10	65.126	42,634	0	104,696	2.933
	101 - 200	22	14	4.617	5,117	2,191	8,042	4.895
	201 - 300	17	7	2.532	1,280	112	2,447	9.891
	301 - 500	11	1	0.065	20	0	68	1.500
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	32	17.493	49,050	0	111,201
All areas	1 - 100	334	325	24.890	321,195	233,136	409,254	2.278
	101 - 200	290	235	11.183	136,799	79,576	194,023	4.522
	201 - 300	107	60	3.287	11,850	8,540	15,159	6.607
	301 - 500	49	6	0.459	587	54	1,120	6.149
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	626	14.701	470,430	367,360	573,500

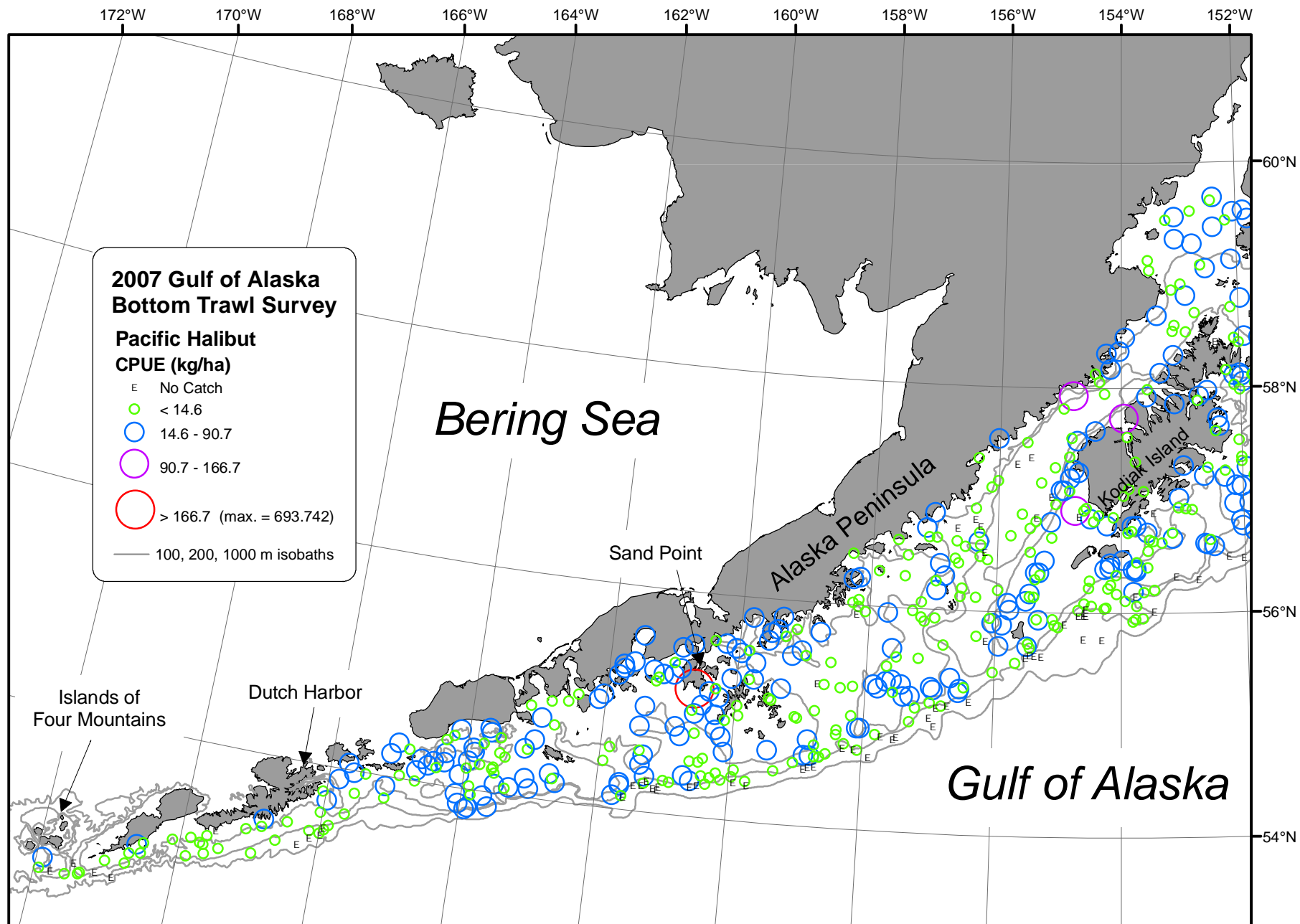


Figure 4. -- Distribution and relative abundance of Pacific halibut from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

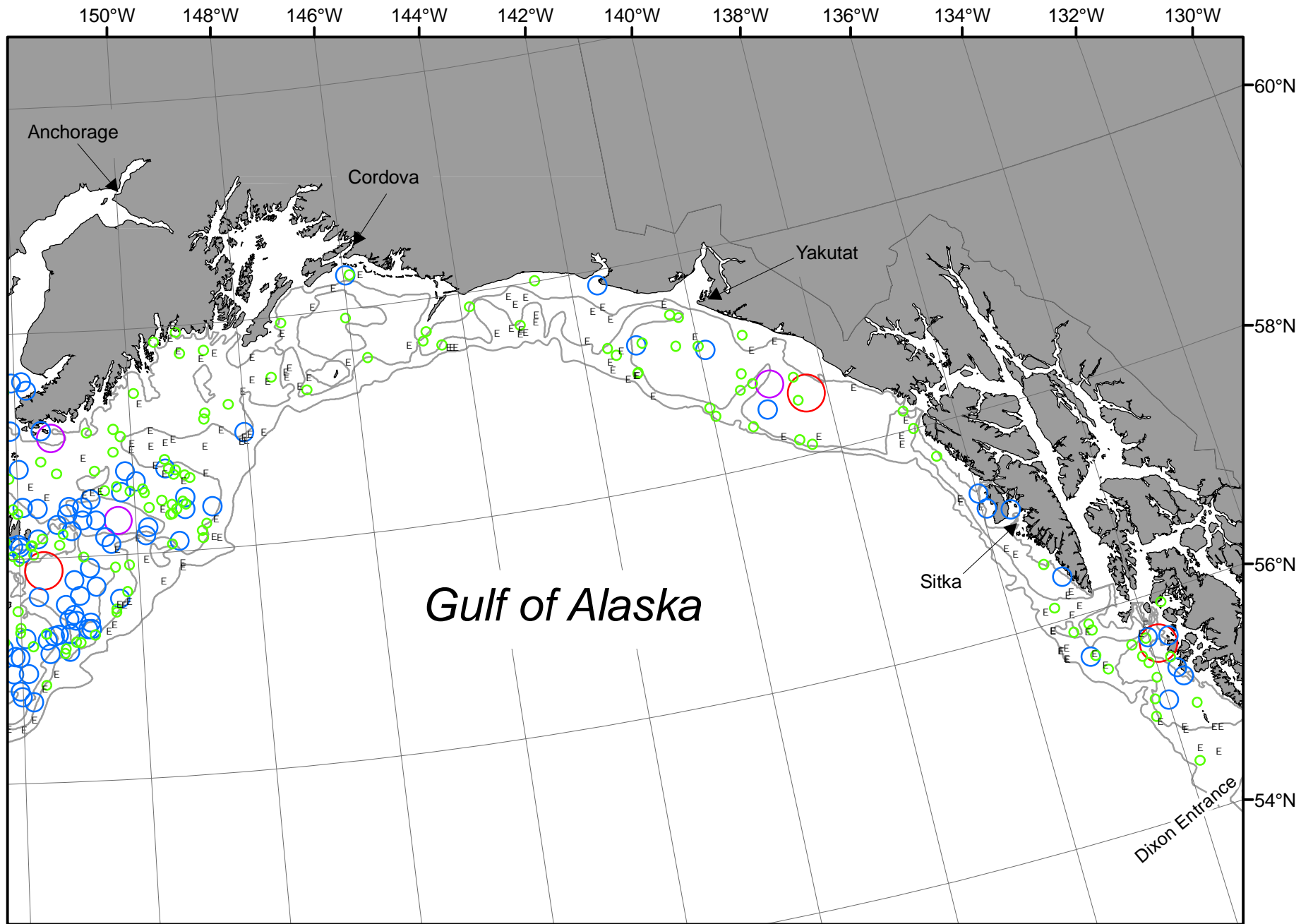


Figure 4. -- Continued (Pacific halibut 2007).

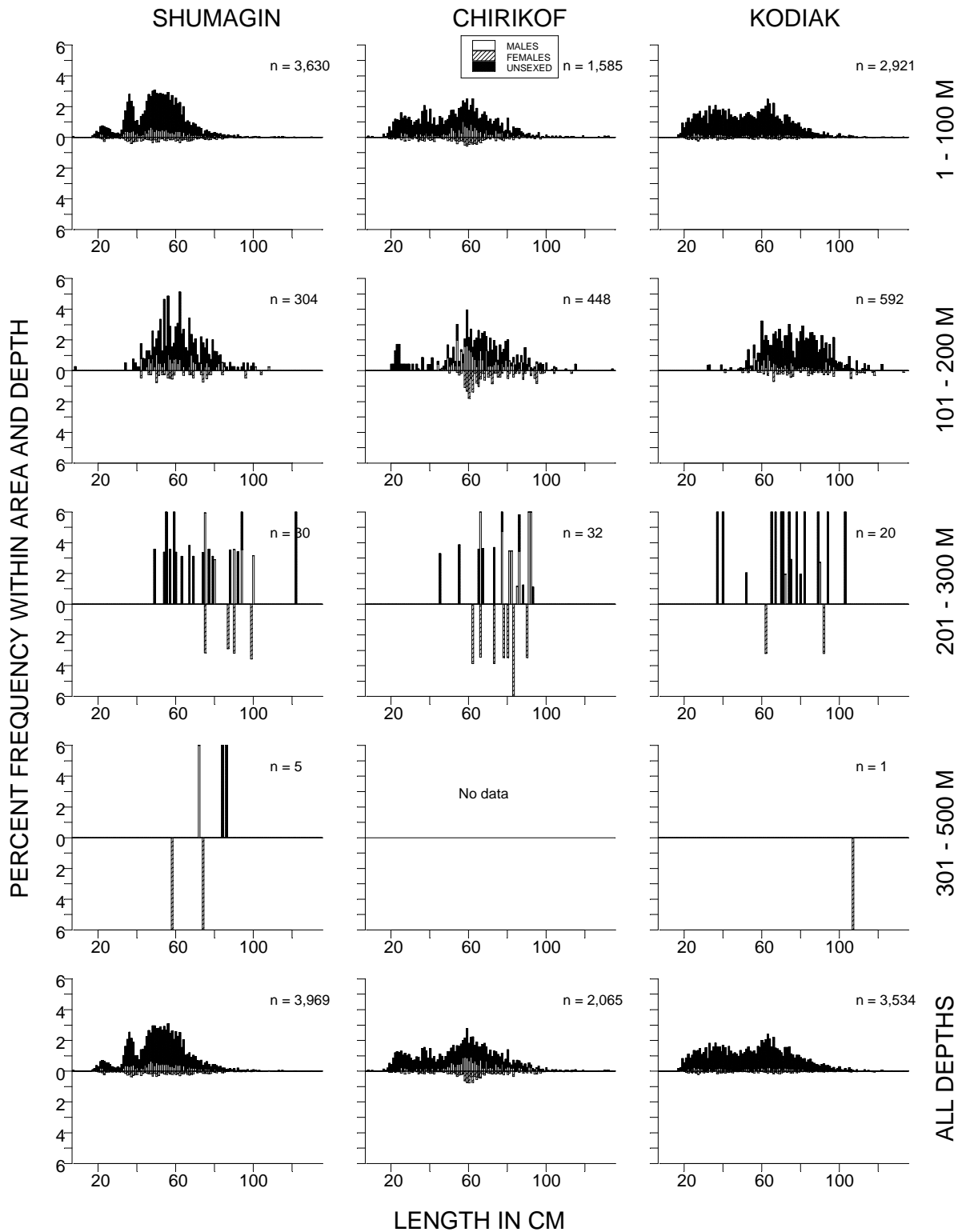


Figure 5. -- Size composition of Pacific halibut from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

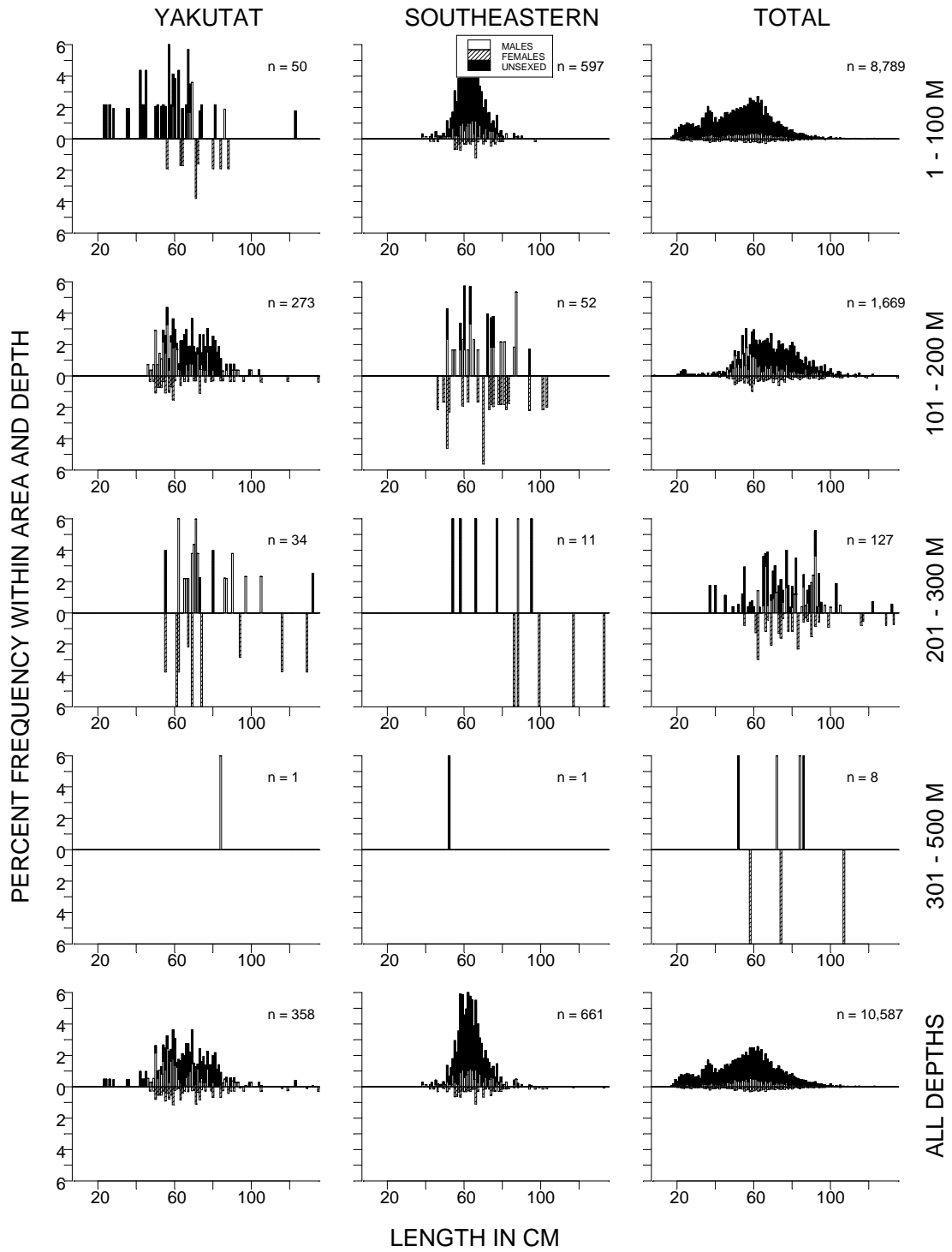


Figure 5. -- (continued).

Table 6. -- Catch per unit of effort by stratum for Pacific halibut sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	1 - 100	Southeastern Shallows	11	10	65.13	42,634	0	105,457
Yakutat	101 - 200	Fairweather Shelf	8	6	50.03	38,662	0	96,038
Kodiak	1 - 100	Albatross Banks	39	39	48.86	75,256	20,629	129,882
Shumagin	1 - 100	Shumagin Bank	36	36	33.39	41,396	9,113	73,678
Kodiak	1 - 100	Northern Kodiak Shallows	9	9	26.95	5,927	1,513	10,342
Kodiak	1 - 100	Kenai Peninsula	7	5	21.96	11,549	0	34,027
Kodiak	1 - 100	Lower Cook Inlet	14	14	21.33	21,092	11,260	30,923
Chirikof	1 - 100	Chirikof Bank	40	39	20.62	22,249	14,116	30,382
Chirikof	1 - 100	Upper Alaska Peninsula	19	19	20.03	15,905	8,218	23,591
Shumagin	1 - 100	Lower Alaska Peninsula	28	28	19.68	13,534	10,337	16,732
Chirikof	1 - 100	Semidi Bank	23	23	19.18	14,002	9,195	18,809
Shumagin	1 - 100	Davidson Bank	48	48	17.60	24,081	19,470	28,691
Shumagin	1 - 100	Fox Islands	21	20	17.22	14,348	7,088	21,607
Shumagin	101 - 200	West Shumagin Gully	4	4	17.14	3,905	427	7,383
Kodiak	1 - 100	Albatross Shallows	28	27	15.90	9,167	6,240	12,095
Kodiak	101 - 200	Kodiak Outer Shelf	28	26	14.59	7,332	4,697	9,968
Kodiak	101 - 200	Barren Islands	18	16	14.27	15,668	6,132	25,203
Kodiak	101 - 200	Albatross Gullies	28	26	13.61	10,771	6,615	14,928
Chirikof	101 - 200	Shelikof Edge	27	24	12.18	9,421	3,490	15,352
Chirikof	101 - 200	Chirikof Outer Shelf	25	25	11.48	5,753	3,886	7,621
Kodiak	101 - 200	Portlock Flats	35	28	10.51	7,713	3,456	11,970
Shumagin	101 - 200	Shumagin Outer Shelf	28	25	9.63	7,848	4,832	10,864
Chirikof	101 - 200	East Shumagin Gully	17	15	9.33	10,357	3,396	17,318
Yakutat	101 - 200	Yakutat Flats	8	6	8.05	7,267	0	15,611
Shumagin	101 - 200	Sanak Gully	7	7	7.94	3,372	128	6,615
Kodiak	201 - 300	Upper Shelikof Gully	4	4	6.43	2,063	0	4,244
Yakutat	1 - 100	Yakutat Shallows	6	4	6.40	6,367	0	14,264
Shumagin	201 - 300	Shumagin Slope	17	14	6.32	1,761	229	3,293
Southeastern	101 - 200	Prince of Wales Shelf	14	11	5.54	3,814	1,356	6,271
Yakutat	1 - 100	Middleton Shallows	5	4	5.50	3,689	0	8,753
Yakutat	201 - 300	Yakutat Slope	9	7	5.22	1,110	222	1,997
Yakutat	201 - 300	Yakutat Gullies	8	6	4.85	1,477	0	2,959
Chirikof	201 - 300	Lower Shelikof Gully	18	12	3.28	3,286	1,496	5,076
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	3	3.11	1,303	0	3,259
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	6	3.08	1,208	43	2,374
Kodiak	101 - 200	Kenai Flats	18	9	2.29	2,770	795	4,745
Chirikof	201 - 300	Chirikof Slope	8	4	2.17	332	0	683
Shumagin	301 - 500	Shumagin Slope	9	3	1.10	279	0	617
Kodiak	201 - 300	Kodiak Slope	7	3	1.07	174	0	387
Yakutat	101 - 200	Middleton Shelf	9	3	1.06	779	0	1,882
Yakutat	301 - 500	Yakutat Gullies	2	1	0.99	110	0	1,506
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	0.63	71	0	377
Kodiak	301 - 500	Kodiak Slope	10	1	0.61	178	0	580
Kodiak	201 - 300	Kenai Gullies	19	3	0.55	368	0	825
Yakutat	101 - 200	Yakataga Shelf	8	1	0.12	64	0	216
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.09	20	0	70

Flathead sole (*Hippoglossoides elassodon*)

Flathead sole was the sixth most abundant species caught in the 2007 survey (Table 2). The population was primarily concentrated in bays around Kodiak Island and along the Alaska Peninsula, with 97% of the estimated biomass in waters less than 200 m deep and the remainder at depths between 201 and 300 m (Fig. 6 and Tables 7-8). Although the mean CPUE was considerably higher in the West Shumagin Gully, the lower Alaska Peninsula, and Albatross Shallows than in any of the other strata, the biomass of flathead sole was not predominant in any individual stratum. Only about 9% of the estimated biomass was found in the Yakutat and Southeastern INPFC areas even though they account for 27% of the total survey area. The mean weight of flathead sole did not exhibit a consistent correlation with depth among the individual INPFC areas, but over the entire survey area the mean weight increased somewhat with increasing depth (Table 7). The length frequency data did not exhibit a consistent length mode for either males or females in the different INPFC areas or depth ranges, but over the entire survey area and across all depth ranges a relatively broad length mode occurred between approximately 30 and 35 cm for males and between approximately 32 and 38 cm for females. A distinct length mode around 35 cm occurred in the 101 to 200 m depth range for males in the Kodiak and Yakutat INPFC areas and in the shallowest depth zone for females in the Yakutat area (Fig. 7). The sex ratio for flathead sole was relatively even with males comprising approximately 47% of the population.

Table 7. -- Number of survey hauls, number of hauls with flathead sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	90	14.473	59,759	38,063	81,456	0.306
	101 - 200	39	19	12.645	18,560	2,216	34,903	0.256
	201 - 300	17	5	0.152	42	0	87	0.245
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	114	12.013	78,361	53,214	103,508
Chirikof	1 - 100	82	36	12.245	31,879	14,512	49,246	0.328
	101 - 200	69	54	16.669	39,754	22,719	56,788	0.380
	201 - 300	26	19	4.690	5,415	3,905	6,926	0.422
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	109	11.322	77,048	53,211	100,884
Kodiak	1 - 100	97	39	10.156	39,118	18,593	59,642	0.330
	101 - 200	127	91	12.959	56,152	33,865	78,439	0.396
	201 - 300	30	21	3.665	4,212	1,342	7,081	0.397
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	151	9.802	99,481	69,261	129,701
Yakutat	1 - 100	11	7	3.074	5,122	0	12,776	0.331
	101 - 200	33	20	5.499	16,157	3,376	28,939	0.450
	201 - 300	17	4	0.292	151	0	403	0.309
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	31	3.747	21,430	7,593	35,267
Southeastern	1 - 100	11	2	6.001	3,929	0	9,846	0.132
	101 - 200	22	3	0.035	39	0	105	0.330
	201 - 300	17	1	0.005	3	0	8	0.226
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	6	1.416	3,970	0	9,888
All areas	1 - 100	334	174	10.834	139,806	104,780	174,832	0.306
	101 - 200	290	187	10.682	130,661	98,307	163,016	0.368
	201 - 300	107	50	2.725	9,823	6,653	12,992	0.408
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	411	8.759	280,290	232,733	327,846

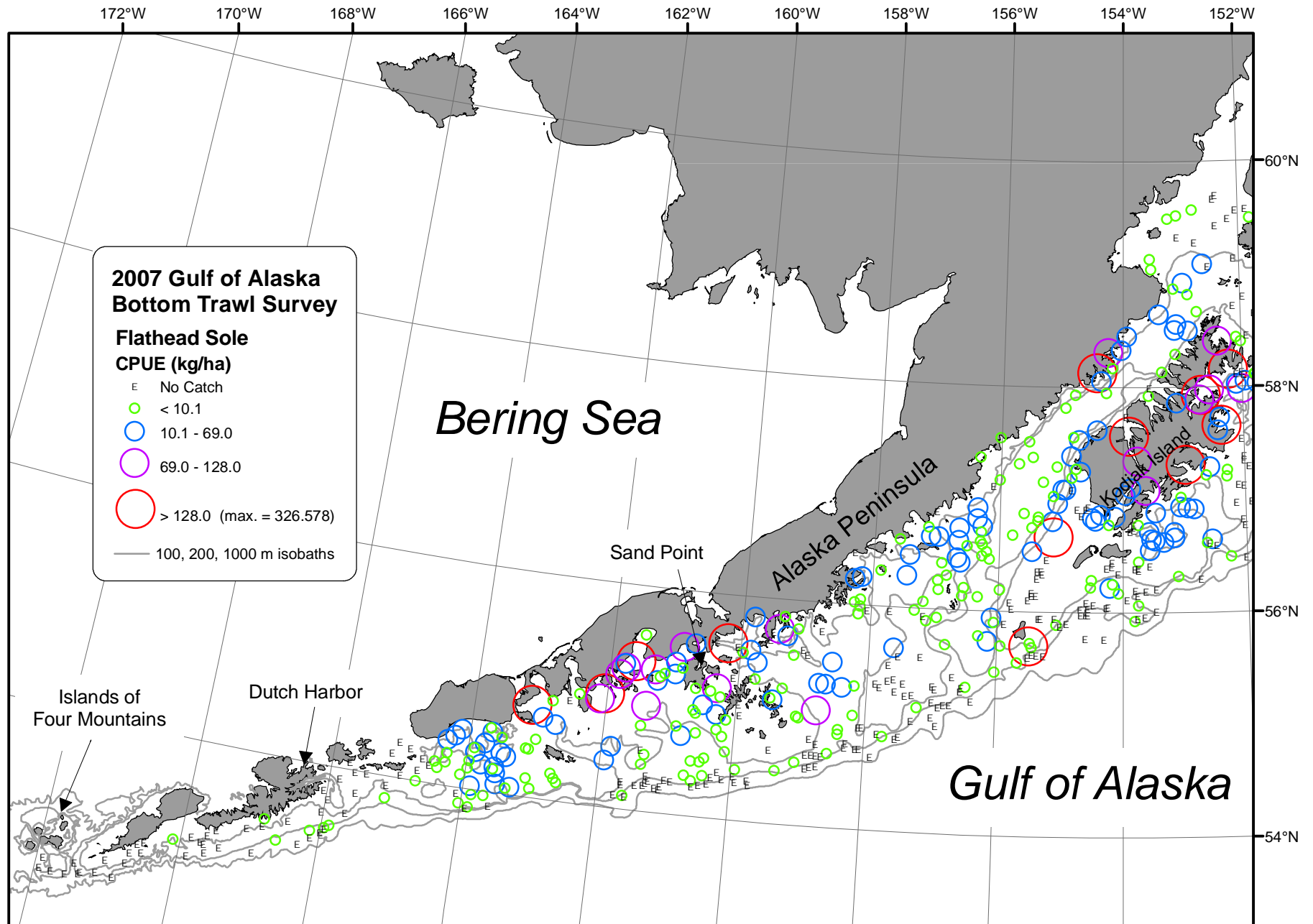


Figure 6. -- Distribution and relative abundance of flathead sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

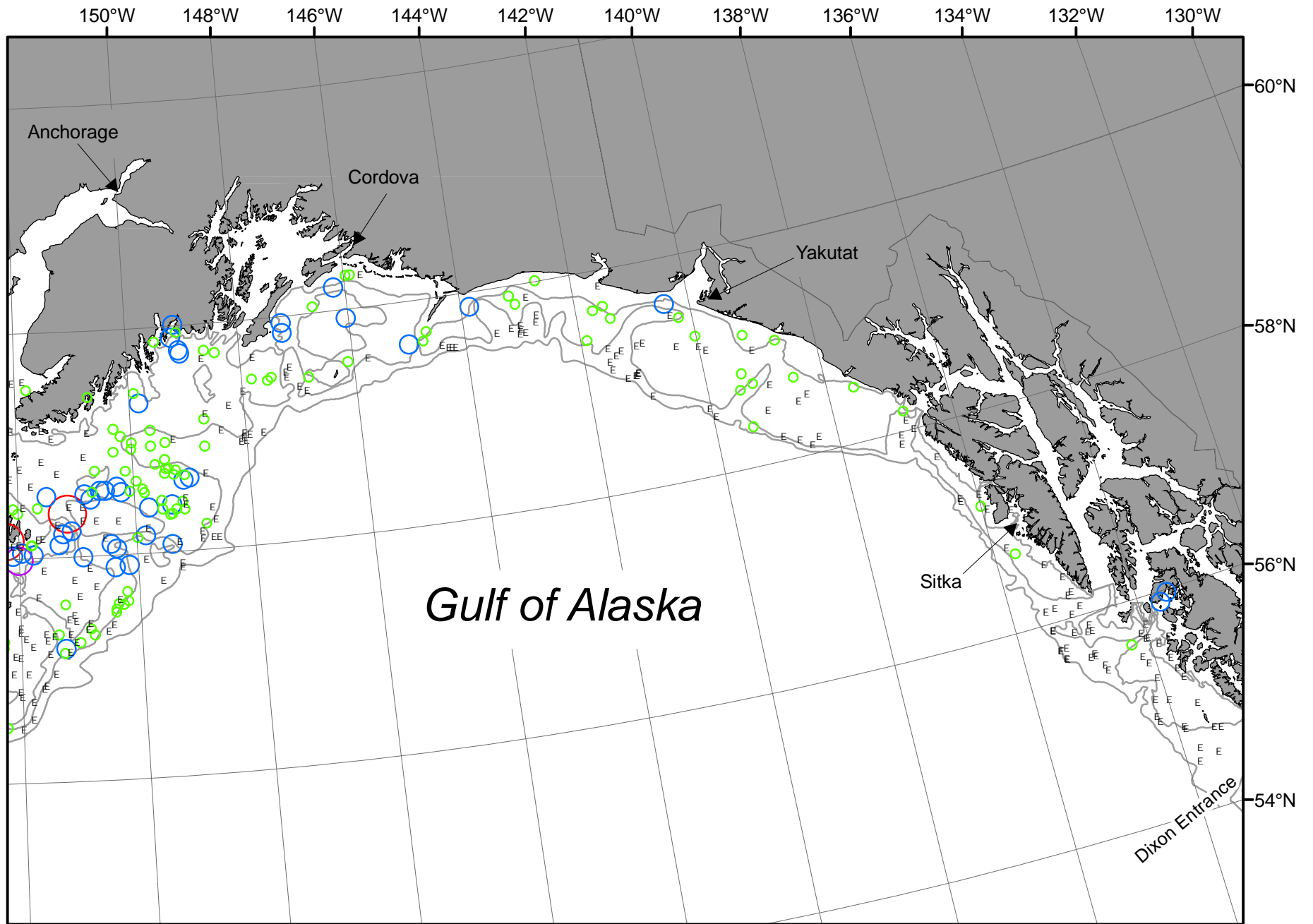


Figure 6. -- Continued (flathead sole 2007).

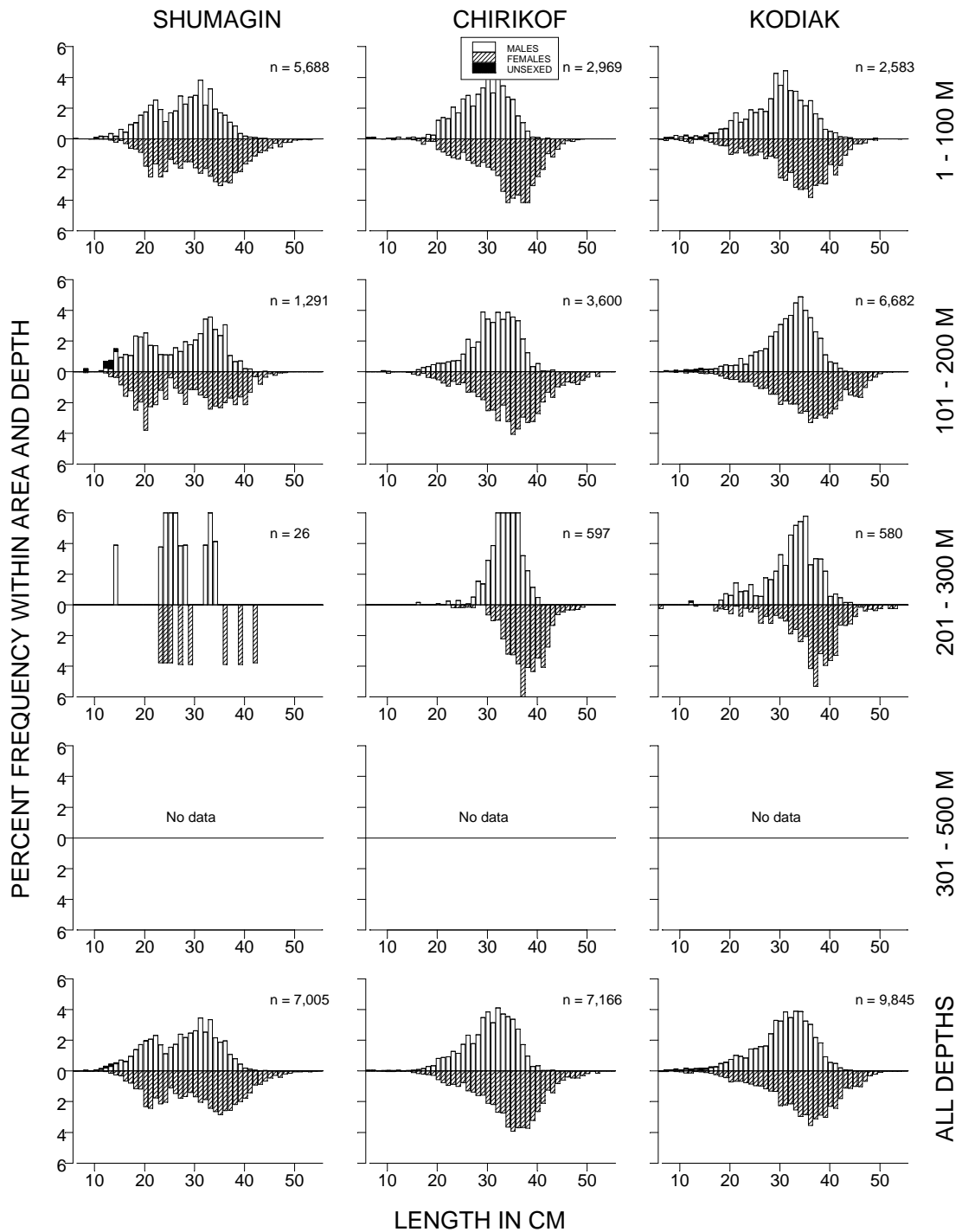


Figure 7. -- Size composition of flathead sole from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

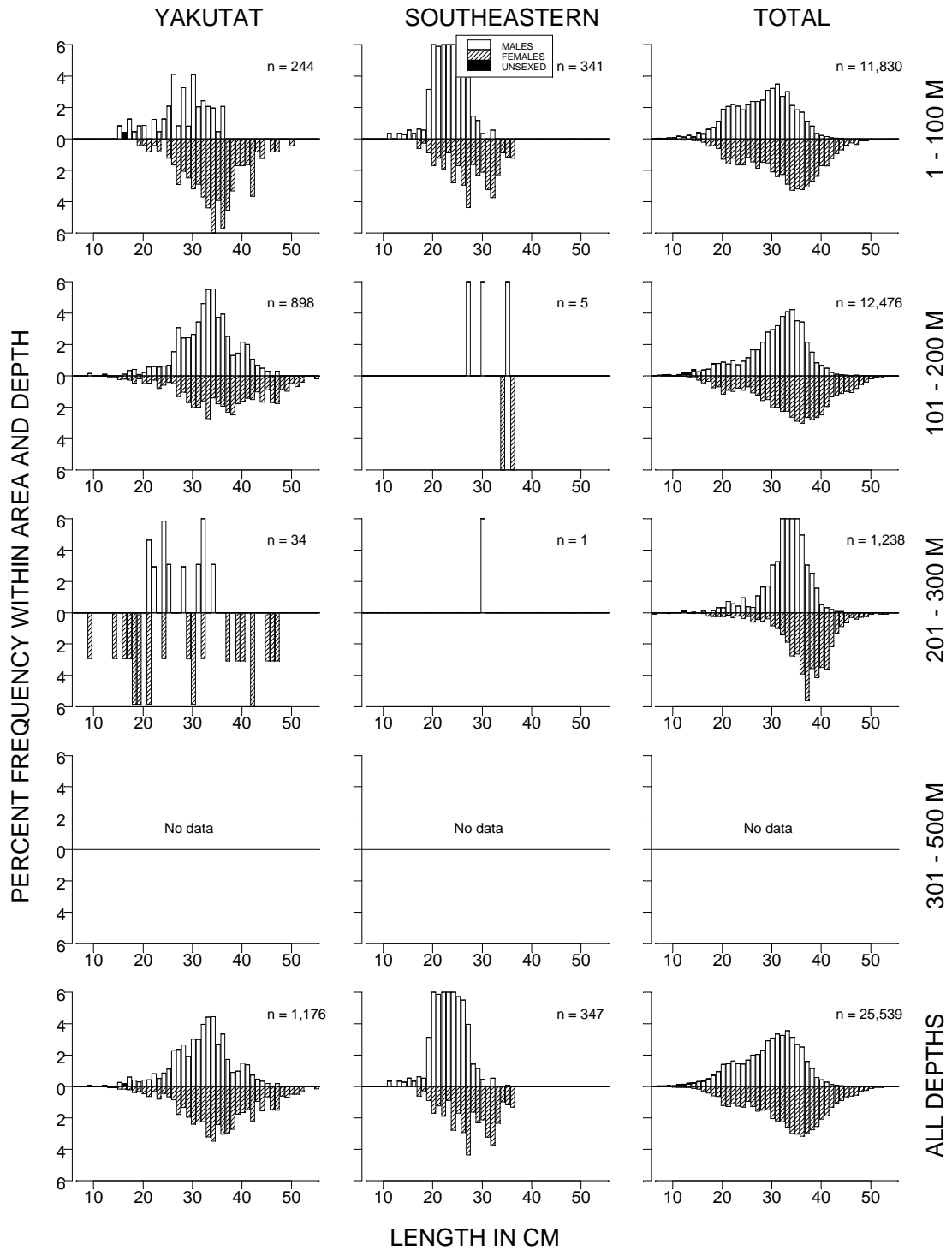


Figure 7. -- (continued).

Table 8. -- Catch per unit of effort by stratum for flathead sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Shumagin	101 - 200	West Shumagin Gully	4	4	58.44	13,315	0	32,875
Shumagin	1 - 100	Lower Alaska Peninsula	28	21	51.24	35,230	15,540	54,920
Kodiak	1 - 100	Albatross Shallows	28	18	49.97	28,811	9,865	47,757
Kodiak	1 - 100	Northern Kodiak Shallows	9	7	31.64	6,959	0	15,348
Kodiak	101 - 200	Albatross Gullies	28	26	29.30	23,185	16,615	29,755
Chirikof	1 - 100	Upper Alaska Peninsula	19	14	25.95	20,608	4,984	36,232
Chirikof	101 - 200	East Shumagin Gully	17	17	21.97	24,393	10,028	38,758
Kodiak	101 - 200	Barren Islands	18	11	17.57	19,294	0	40,209
Yakutat	101 - 200	Middleton Shelf	9	8	17.57	12,903	523	25,283
Chirikof	101 - 200	Shelikof Edge	27	26	13.82	10,688	6,427	14,949
Shumagin	101 - 200	Sanak Gully	7	7	11.63	4,937	986	8,889
Chirikof	1 - 100	Chirikof Bank	40	16	10.18	10,988	2,676	19,299
Shumagin	1 - 100	Shumagin Bank	36	28	9.39	11,642	2,304	20,980
Shumagin	1 - 100	Davidson Bank	48	40	9.37	12,821	8,443	17,200
Chirikof	101 - 200	Chirikof Outer Shelf	25	11	9.33	4,673	0	13,052
Kodiak	101 - 200	Portlock Flats	35	31	8.62	6,327	4,150	8,504
Yakutat	1 - 100	Middleton Shallows	5	4	6.51	4,374	0	12,567
Southeastern	1 - 100	Southeastern Shallows	11	2	6.00	3,929	0	9,919
Yakutat	101 - 200	Yakataga Shelf	8	7	5.85	3,085	0	8,319
Kodiak	1 - 100	Kenai Peninsula	7	4	5.75	3,026	0	6,912
Kodiak	101 - 200	Kenai Flats	18	13	5.74	6,929	1,858	12,000
Chirikof	201 - 300	Lower Shelikof Gully	18	18	5.40	5,411	3,894	6,928
Kodiak	201 - 300	Upper Shelikof Gully	4	4	4.23	1,356	953	1,758
Kodiak	201 - 300	Kenai Gullies	19	11	3.96	2,639	0	5,502
Kodiak	201 - 300	Kodiak Slope	7	6	1.34	217	5	429
Kodiak	101 - 200	Kodiak Outer Shelf	28	10	0.83	417	0	900
Yakutat	1 - 100	Yakutat Shallows	6	3	0.75	748	0	1,756
Yakutat	201 - 300	Yakutat Gullies	8	3	0.49	150	0	409
Chirikof	1 - 100	Semidi Bank	23	6	0.39	284	0	693
Shumagin	101 - 200	Shumagin Outer Shelf	28	8	0.38	308	68	547
Kodiak	1 - 100	Lower Cook Inlet	14	6	0.27	270	0	541
Shumagin	201 - 300	Shumagin Slope	17	5	0.15	42	0	87
Yakutat	101 - 200	Yakutat Flats	8	3	0.12	105	0	247
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	3	0.09	39	0	107
Yakutat	101 - 200	Fairweather Shelf	8	2	0.08	64	0	163
Shumagin	1 - 100	Fox Islands	21	1	0.08	66	0	203
Kodiak	1 - 100	Albatross Banks	39	4	0.03	52	0	121
Chirikof	201 - 300	Chirikof Slope	8	1	0.03	4	0	15
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	1	0.01	3	0	8
Yakutat	201 - 300	Yakutat Slope	9	1	0.00	1	0	2

Southern rock sole (*Lepidopsetta bilineata*)

The southern rock sole population was primarily confined to water depths less than 100 m in the Shumagin, Chirikof, and Kodiak INPFC areas, with the highest concentrations in bays around Kodiak Island and around the Shumagin Islands (Table 10 and Fig. 8). Ninety percent of the southern rock sole biomass occurred in these areas even though they comprise only 33% of the total survey area (Table 9). The CPUEs ranged from zero to very small throughout the Yakutat and Southeastern areas except in the Southeastern Shallows off of Sitka where a relatively high abundance was found. A consistent length mode around 35 cm for males occurred in the shallowest depth zone of the Shumagin, Chirikof, and Kodiak INPFC areas (Fig. 9). The corresponding length mode for females in these areas was around 40 cm. The southern rock sole population in the survey area was dominated by females, which accounted for approximately 70% of the total estimated population.

Table 9. -- Number of survey hauls, number of hauls with southern rocksole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	121	18.140	74,899	58,158	91,640	0.618
	101 - 200	39	20	2.252	3,306	1,382	5,230	0.665
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	141	11.989	78,205	61,359	95,051
Chirikof	1 - 100	82	60	7.494	19,509	12,893	26,126	0.707
	101 - 200	69	11	0.355	846	0	1,735	0.745
	201 - 300	26	2	0.019	22	0	56	0.500
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	73	2.994	20,378	13,707	27,048
Kodiak	1 - 100	97	78	13.323	51,317	37,391	65,242	0.635
	101 - 200	127	29	0.668	2,895	1,113	4,676	0.727
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	107	5.342	54,211	40,177	68,245
Yakutat	1 - 100	11	1	0.001	2	0	7	0.032
	101 - 200	33	2	0.207	608	0	1,629	0.637
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	3	0.107	610	0	1,631
Southeastern	1 - 100	11	10	12.275	8,036	2,269	13,802	0.514
	101 - 200	22	3	0.160	177	0	414	0.381
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	13	2.929	8,213	2,441	13,985
All areas	1 - 100	334	270	11.915	153,762	130,642	176,883	0.627
	101 - 200	290	65	0.640	7,832	4,983	10,682	0.680
	201 - 300	107	2	0.006	22	0	56	0.500
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	337	5.050	161,617	138,325	184,909

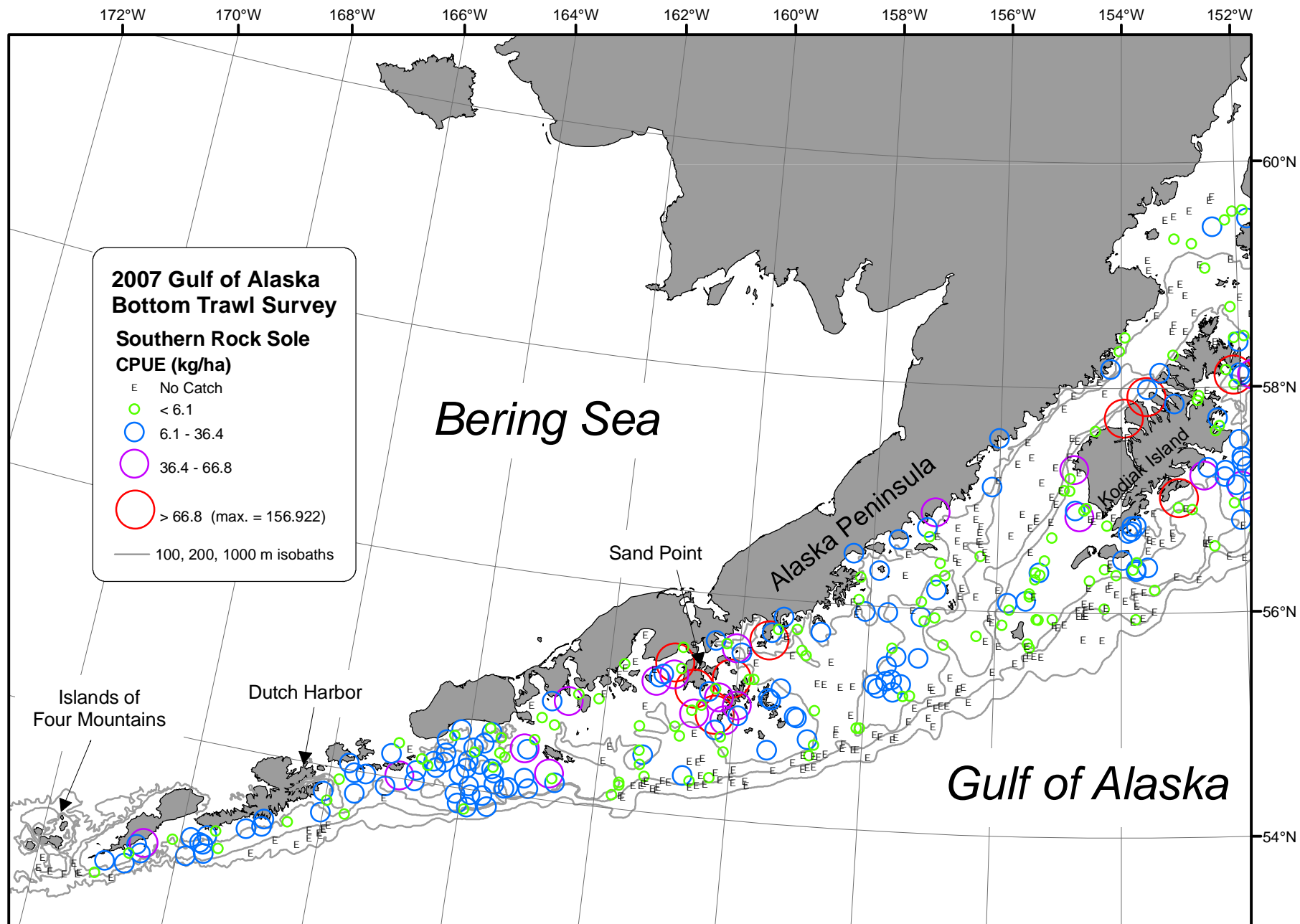


Figure 8. -- Distribution and relative abundance of southern rock sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

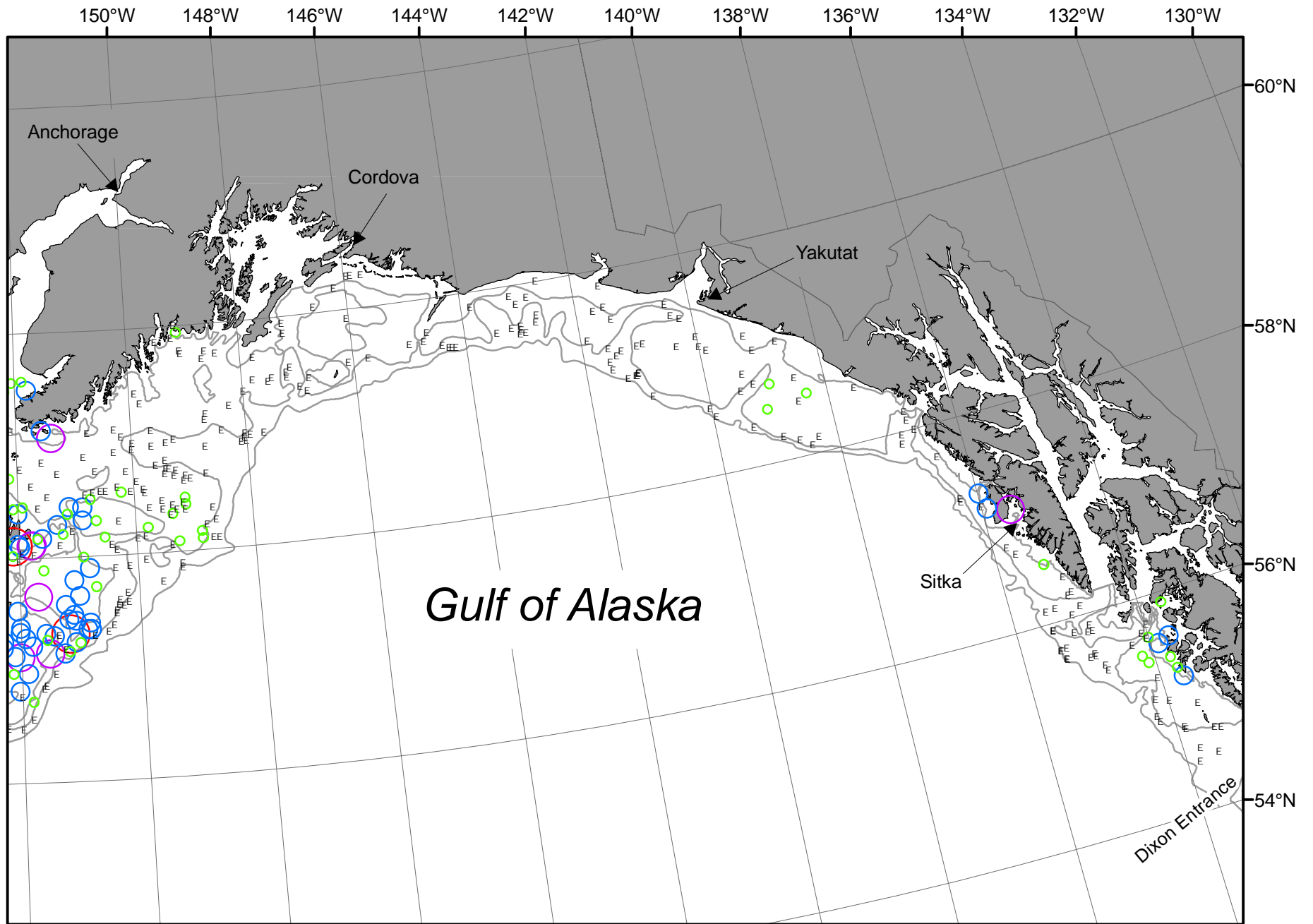


Figure 8. -- Continued (southern rock sole 2007).

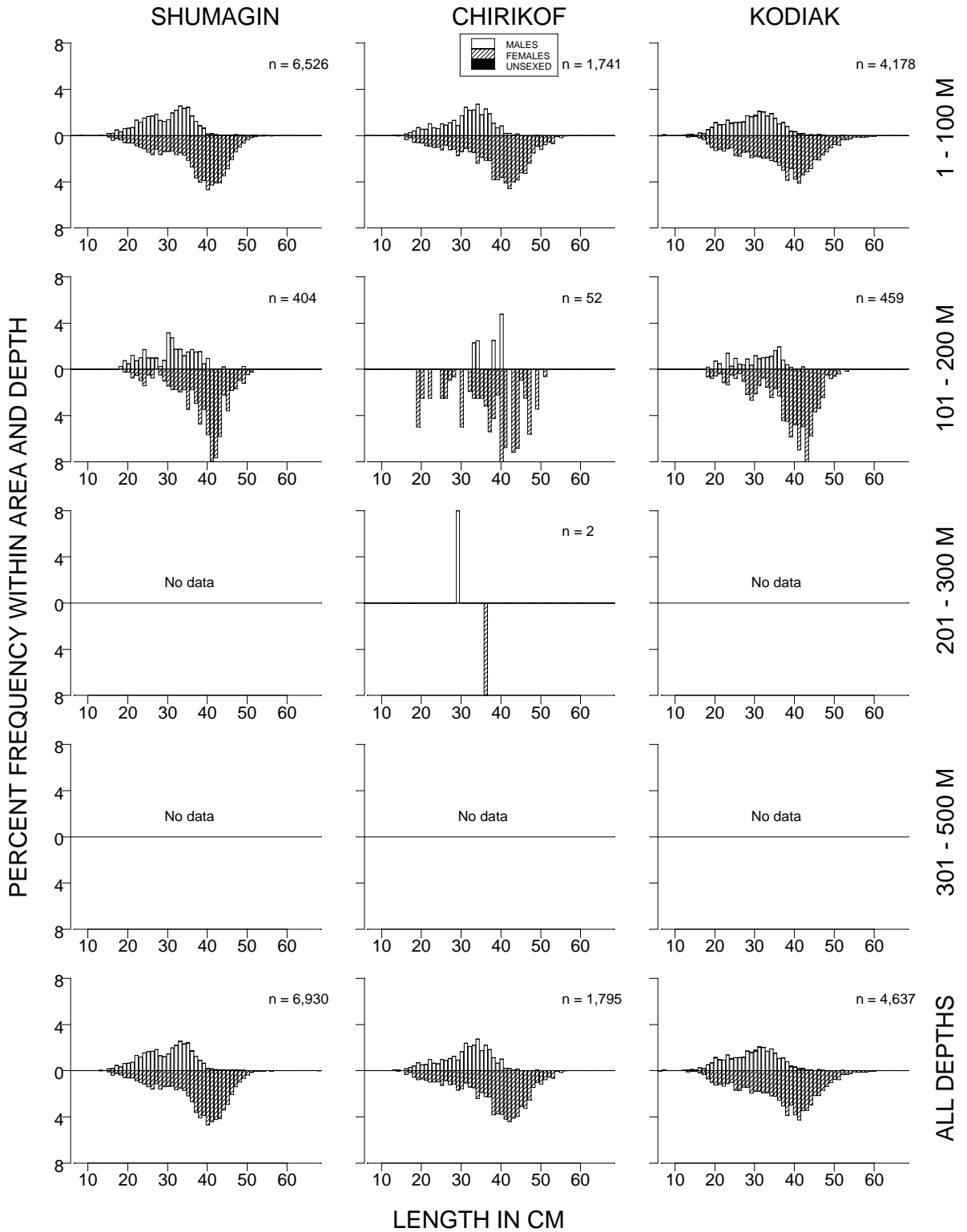


Figure 9. -- Size composition of southern rock sole from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

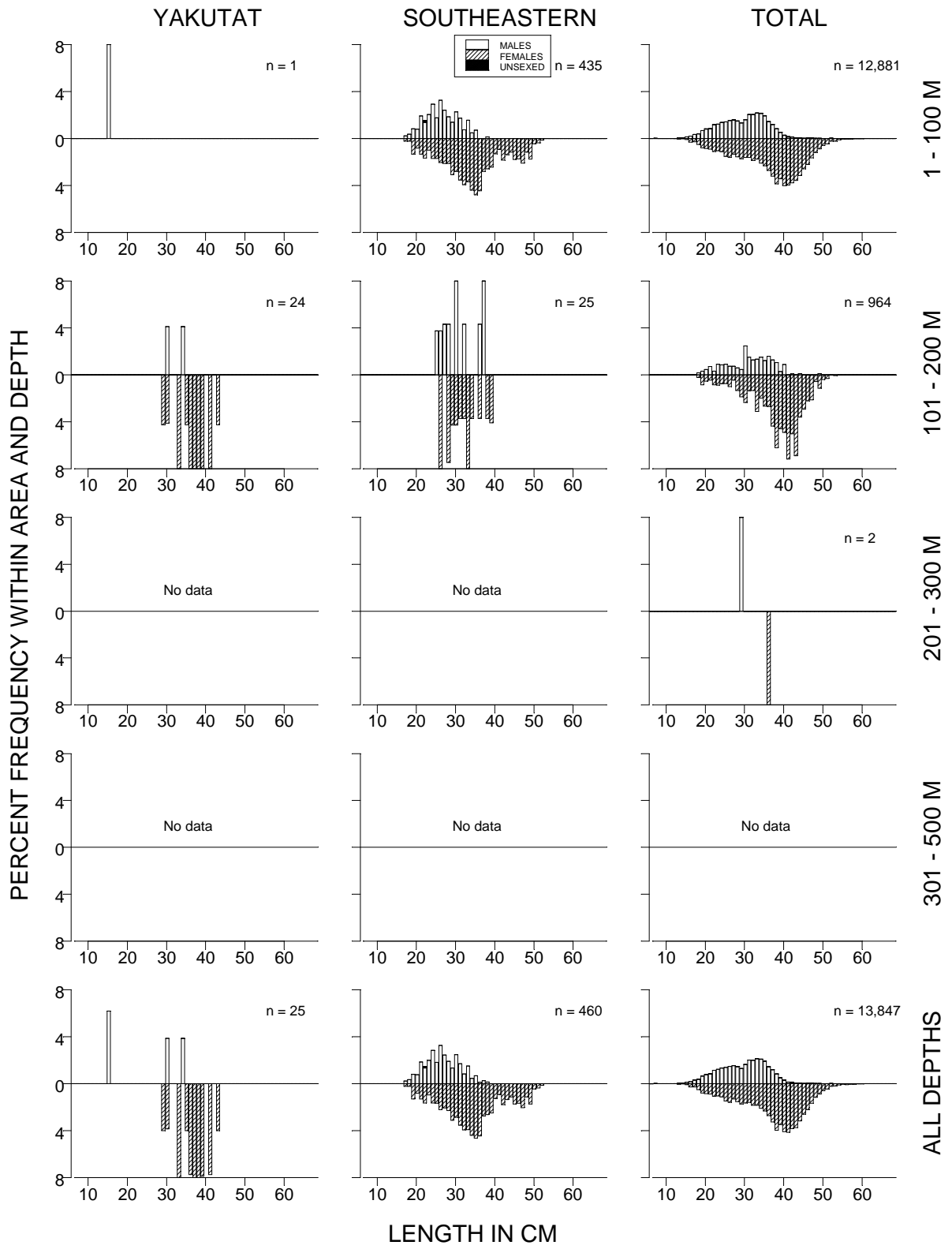


Figure 9. -- (continued).

Table 10. -- Catch per unit of effort by stratum for southern rock sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	1 - 100	Northern Kodiak Shallows	9	7	34.08	7,495	0	15,787
Shumagin	1 - 100	Shumagin Bank	36	35	25.87	32,080	18,389	45,770
Kodiak	1 - 100	Albatross Shallows	28	24	18.79	10,832	5,477	16,188
Kodiak	1 - 100	Albatross Banks	39	37	16.71	25,742	16,923	34,561
Shumagin	1 - 100	Lower Alaska Peninsula	28	18	16.22	11,153	3,359	18,947
Shumagin	1 - 100	Fox Islands	21	21	16.16	13,463	9,231	17,696
Shumagin	1 - 100	Davidson Bank	48	47	13.31	18,203	13,022	23,384
Southeastern	1 - 100	Southeastern Shallows	11	10	12.28	8,036	2,198	13,873
Chirikof	1 - 100	Upper Alaska Peninsula	19	13	8.48	6,730	2,635	10,825
Chirikof	1 - 100	Semidi Bank	23	20	8.36	6,101	3,839	8,363
Kodiak	1 - 100	Kenai Peninsula	7	3	7.87	4,138	0	11,047
Chirikof	1 - 100	Chirikof Bank	40	27	6.19	6,679	1,694	11,663
Kodiak	101 - 200	Kodiak Outer Shelf	28	14	4.77	2,398	639	4,157
Shumagin	101 - 200	Shumagin Outer Shelf	28	18	4.01	3,273	1,345	5,200
Kodiak	1 - 100	Lower Cook Inlet	14	7	3.15	3,110	0	6,249
Yakutat	101 - 200	Fairweather Shelf	8	2	0.79	608	0	1,655
Chirikof	101 - 200	East Shumagin Gully	17	5	0.63	699	0	1,574
Kodiak	101 - 200	Portlock Flats	35	6	0.37	273	8	538
Southeastern	101 - 200	Prince of Wales Shelf	14	3	0.26	177	0	416
Chirikof	101 - 200	Shelikof Edge	27	3	0.15	116	0	281
Kodiak	101 - 200	Barren Islands	18	3	0.14	150	0	348
Kodiak	101 - 200	Albatross Gullies	28	6	0.09	74	10	138
Chirikof	101 - 200	Chirikof Outer Shelf	25	3	0.06	32	0	81
Shumagin	101 - 200	Sanak Gully	7	1	0.06	27	0	94
Shumagin	101 - 200	West Shumagin Gully	4	1	0.03	7	0	27
Chirikof	201 - 300	Lower Shelikof Gully	18	2	0.02	22	0	56
Yakutat	1 - 100	Yakutat Shallows	6	1	0.00	2	0	8

Northern rock sole (*Lepidopsetta polyxystra*)

The Northern rock sole population was almost exclusively confined to depths less than 100 m in the Shumagin, Chirikof, and Kodiak INPFC areas, where approximately 93% of the total biomass was found (Tables 11-12 and Fig. 10). Northern rock sole were extremely rare east of 150°W (Fig. 10). Approximately 63% of the total biomass was concentrated in the shallowest depth zone of the Shumagin INPFC area, which comprises less than 13% of the total survey area. Northern rock sole occurred in approximately 94% of the tows in this area and depth range. A very distinct length mode around 30 cm for both males and females occurred at depths less than 100 m in the Shumagin INPFC area (Fig. 11). The length modes were less pronounced in the Chirikof and Kodiak areas for both males and females but occurred at approximately 35 cm for males and 40 cm for females. Females were considerably more abundant in the survey area and accounted for approximately 60% of the northern rock sole population.

Table 11. -- Number of survey hauls, number of hauls with northern rocksole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	125	15.544	64,180	45,391	82,969	0.389
	101 - 200	39	19	0.925	1,358	640	2,076	0.551
	201 - 300	17	1	0.042	12	0	36	0.875
	301 - 500	9	1	0.053	13	0	44	1.178
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	146	10.051	65,563	46,761	84,365
Chirikof	1 - 100	82	46	5.763	15,003	2,095	27,911	0.794
	101 - 200	69	12	0.497	1,185	0	3,238	0.521
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	58	2.379	16,188	3,131	29,245
Kodiak	1 - 100	97	73	5.297	20,403	12,578	28,228	0.535
	101 - 200	127	13	0.034	148	57	238	0.676
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	86	2.025	20,551	12,726	28,376
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	244	7.717	99,587	75,824	123,350	0.449
	101 - 200	290	44	0.220	2,691	524	4,857	0.543
	201 - 300	107	1	0.003	12	0	36	0.875
	301 - 500	49	1	0.010	13	0	44	1.178
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	290	3.197	102,303	78,451	126,154

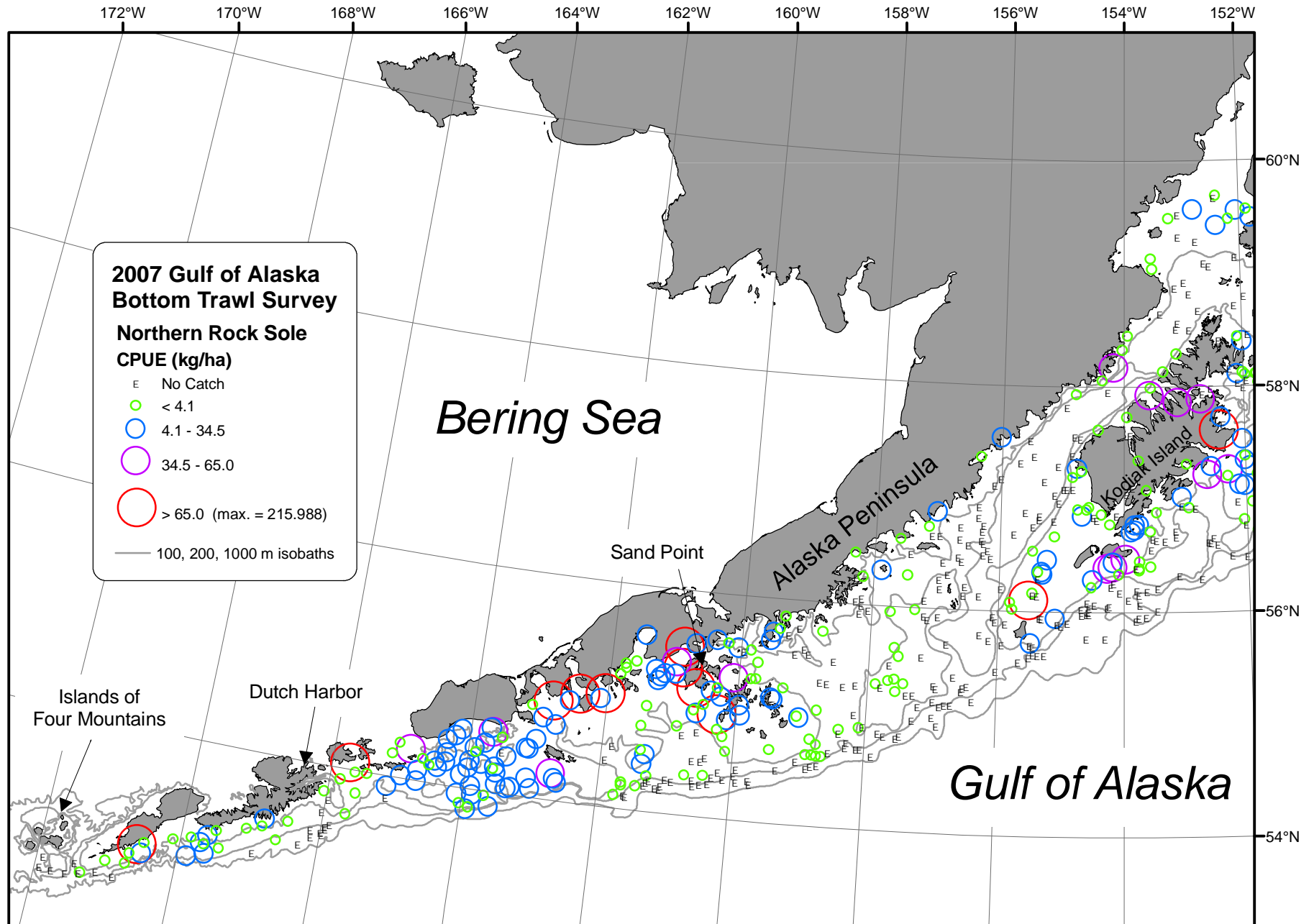


Figure 10. -- Distribution and relative abundance of northern rock sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.



Figure 10. -- Continued (northern rock sole 2007).

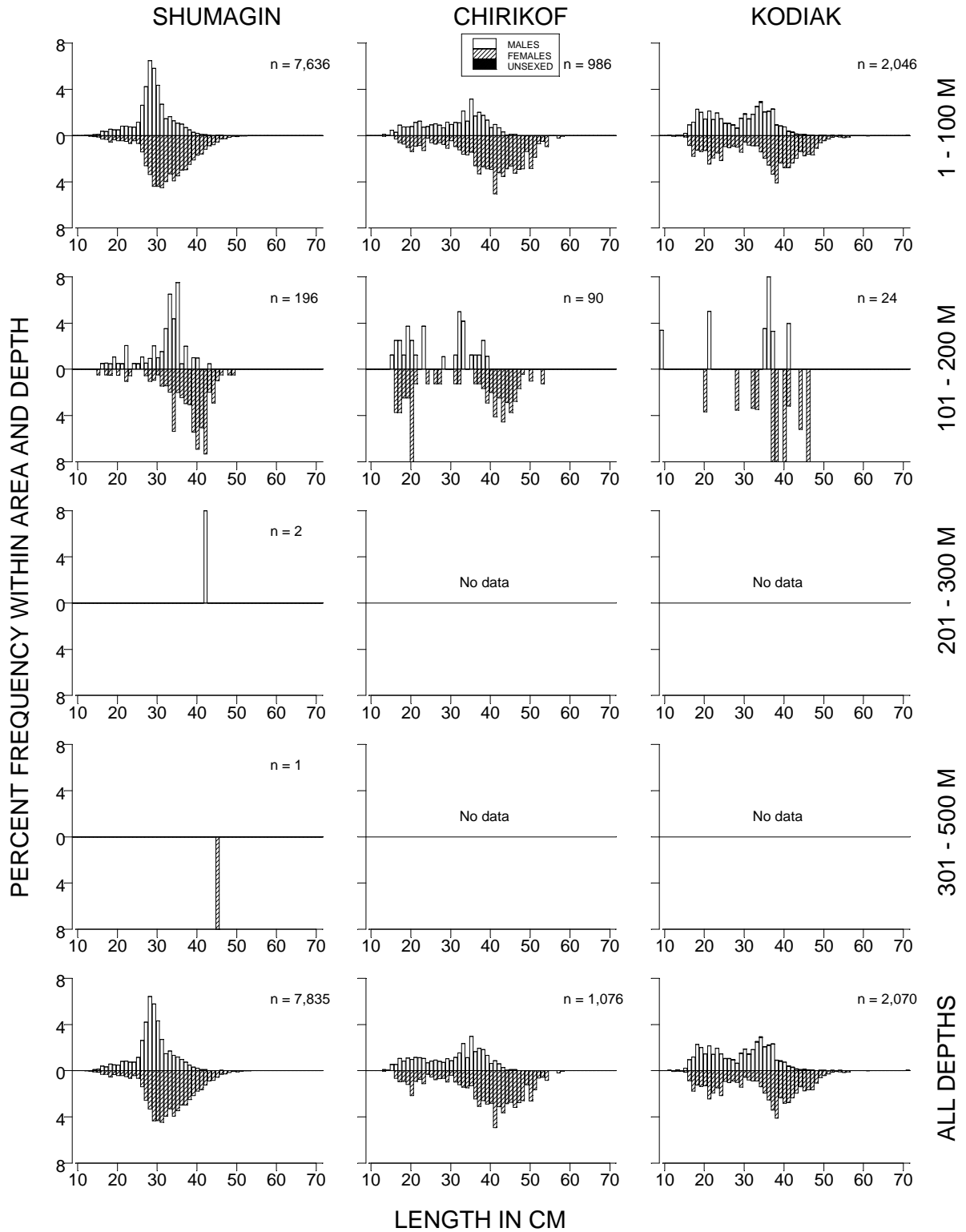


Figure 11. -- Size composition of northern rock sole from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

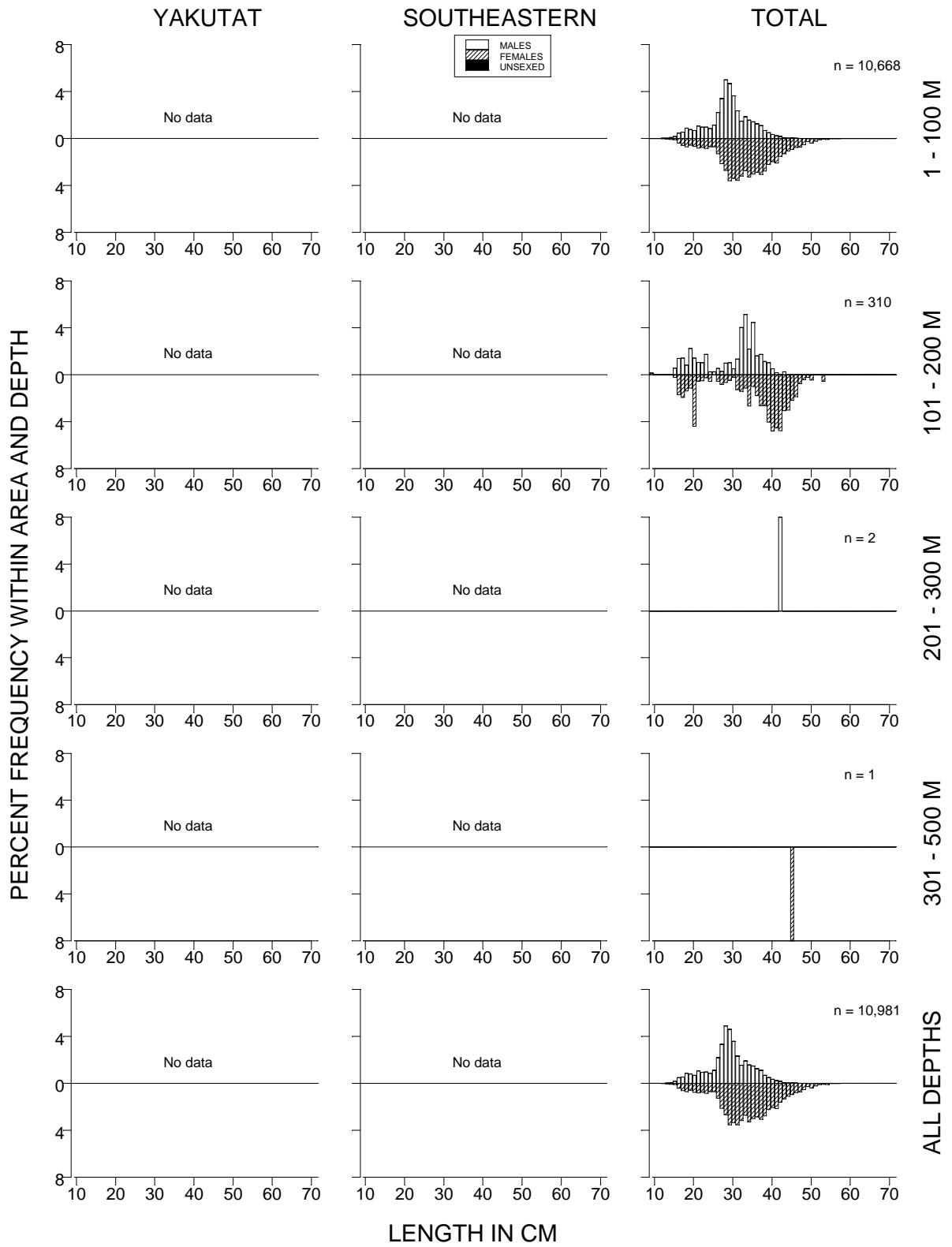


Figure 11. -- (continued).

Table 12. -- Catch per unit of effort by stratum for northern rock sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Shumagin	1 - 100	Lower Alaska Peninsula	28	22	23.25	15,987	5,833	26,141
Shumagin	1 - 100	Shumagin Bank	36	36	15.88	19,683	7,247	32,118
Shumagin	1 - 100	Davidson Bank	48	47	14.04	19,205	13,660	24,749
Shumagin	1 - 100	Fox Islands	21	20	11.17	9,306	176	18,435
Chirikof	1 - 100	Chirikof Bank	40	27	10.22	11,028	0	23,259
Kodiak	1 - 100	Albatross Shallows	28	20	9.44	5,441	1,487	9,396
Kodiak	1 - 100	Northern Kodiak Shallows	9	8	8.97	1,972	0	4,790
Kodiak	1 - 100	Albatross Banks	39	32	6.18	9,524	3,456	15,592
Chirikof	1 - 100	Upper Alaska Peninsula	19	10	4.84	3,846	0	8,503
Kodiak	1 - 100	Lower Cook Inlet	14	10	2.66	2,627	895	4,359
Shumagin	101 - 200	Shumagin Outer Shelf	28	16	1.62	1,318	600	2,035
Kodiak	1 - 100	Kenai Peninsula	7	3	1.60	839	0	2,200
Chirikof	101 - 200	East Shumagin Gully	17	6	0.94	1,042	0	3,100
Chirikof	101 - 200	Chirikof Outer Shelf	25	4	0.21	105	0	235
Chirikof	1 - 100	Semidi Bank	23	9	0.18	129	8	250
Shumagin	101 - 200	West Shumagin Gully	4	3	0.18	40	0	110
Kodiak	101 - 200	Kodiak Outer Shelf	28	6	0.16	81	13	150
Kodiak	101 - 200	Albatross Gullies	28	4	0.06	45	0	99
Shumagin	301 - 500	Shumagin Slope	9	1	0.05	13	0	44
Chirikof	101 - 200	Shelikof Edge	27	2	0.05	38	0	105
Shumagin	201 - 300	Shumagin Slope	17	1	0.04	12	0	37
Kodiak	101 - 200	Barren Islands	18	1	0.01	13	0	42
Kodiak	101 - 200	Portlock Flats	35	2	0.01	8	0	24

Rex sole (*Glyptocephalus zachirus*)

The rex sole population was widely distributed throughout the survey area, occurring in 51 of the 54 strata shallower than 700 m deep. No catches were recorded in the 701 to 1000 m strata (Fig. 12 and Tables 13-14). Although large catches of rex sole were rare, they were present in approximately 86% of the tows between 101 and 500 m (Table 13). The mean weight of rex sole was substantially greater in the three westernmost INPFC areas than in the Yakutat and Southeastern INPFC areas. Although the smallest fish were generally found in the shallowest depth zone, there was not a consistent trend of increasing fish size with increasing depth at deeper depths (Table 13). The length frequency data did not exhibit a consistent length mode for either males or females in the different INPFC areas or depth ranges. A much higher fraction of large fish (greater than 40 cm FL) of both sexes occurred in the Shumagin, Chirikof, and Kodiak INPFC areas than in the Yakutat and Southeastern INPFC areas. A distinct length mode around 20 cm FL occurred in the shallowest depth zone for both males and females in the Southeastern INPFC area, and at 30 cm FL in the 101 to 200 m depth range (Fig. 13). The sex ratio for rex sole was even with females comprising approximately 51% of the population.

Table 13. -- Number of survey hauls, number of hauls with rex sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	53	0.624	2,577	1,426	3,728	0.271
	101 - 200	39	30	4.318	6,338	3,191	9,485	0.363
	201 - 300	17	13	6.983	1,947	728	3,166	0.451
	301 - 500	9	7	2.973	752	105	1,400	0.570
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	103	1.781	11,614	8,043	15,185
Chirikof	1 - 100	82	31	0.897	2,336	334	4,337	0.373
	101 - 200	69	61	10.666	25,436	13,983	36,890	0.407
	201 - 300	26	26	6.544	7,556	1,445	13,668	0.416
	301 - 500	10	9	6.685	1,072	154	1,990	0.362
	501 - 700	7	4	0.345	67	0	137	0.438
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	131	5.359	36,468	23,511	49,424
Kodiak	1 - 100	97	23	0.557	2,145	837	3,453	0.180
	101 - 200	127	105	6.986	30,274	18,196	42,353	0.395
	201 - 300	30	29	5.061	5,815	956	10,675	0.319
	301 - 500	10	10	5.945	1,731	558	2,905	0.308
	501 - 700	6	4	0.323	56	0	130	0.282
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	171	3.943	40,022	26,983	53,061
Yakutat	1 - 100	11	7	0.825	1,375	0	3,135	0.121
	101 - 200	33	21	0.981	2,882	1,200	4,563	0.210
	201 - 300	17	16	2.382	1,232	596	1,868	0.197
	301 - 500	9	9	0.915	240	119	362	0.190
	501 - 700	3	3	1.263	186	0	569	0.238
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	56	1.034	5,914	3,525	8,303
Southeastern	1 - 100	11	6	0.989	647	0	1,593	0.052
	101 - 200	22	20	5.940	6,584	1,606	11,562	0.206
	201 - 300	17	17	3.599	1,818	383	3,254	0.195
	301 - 500	11	10	2.270	708	135	1,280	0.252
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	53	3.480	9,758	4,543	14,972
All areas	1 - 100	334	120	0.704	9,081	5,900	12,261	0.177
	101 - 200	290	237	5.846	71,514	53,971	89,058	0.354
	201 - 300	107	101	5.095	18,368	10,497	26,240	0.326
	301 - 500	49	45	3.521	4,504	2,918	6,090	0.322
	501 - 700	24	11	0.377	309	0	663	0.273
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	514	3.243	103,776	84,484	123,069

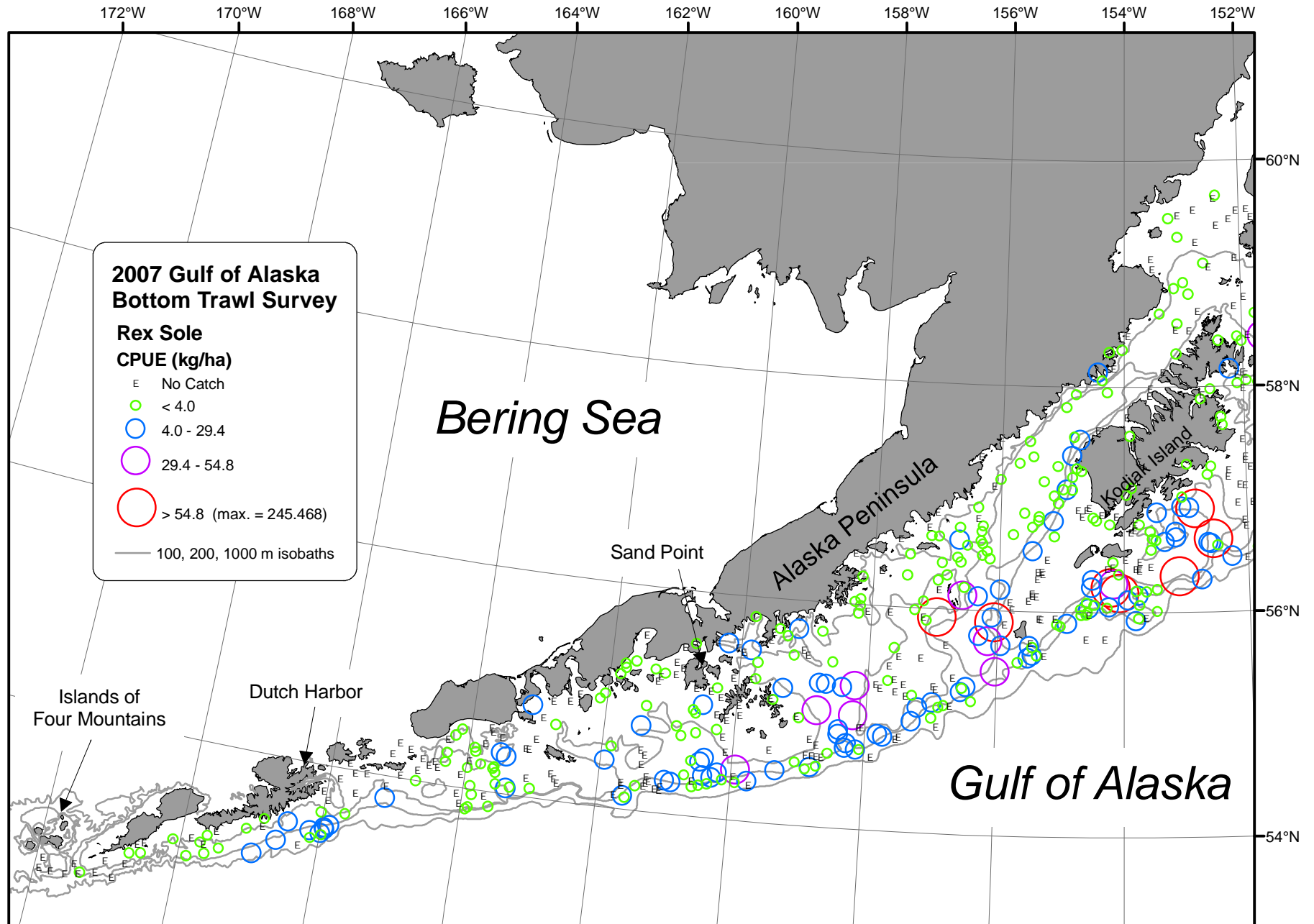


Figure 12. -- Distribution and relative abundance of rex sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

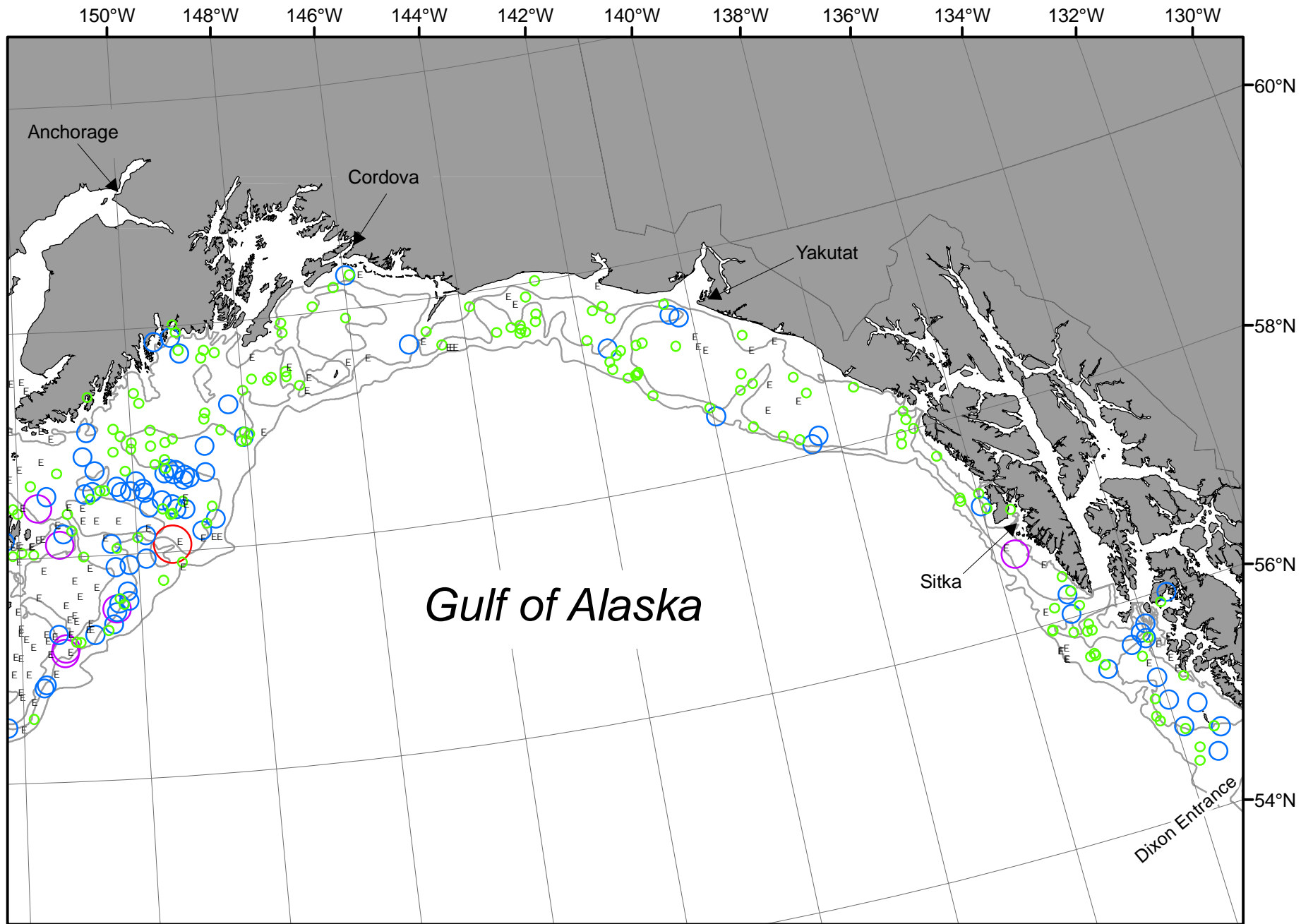


Figure 12. -- Continued (rex rock sole 2007).

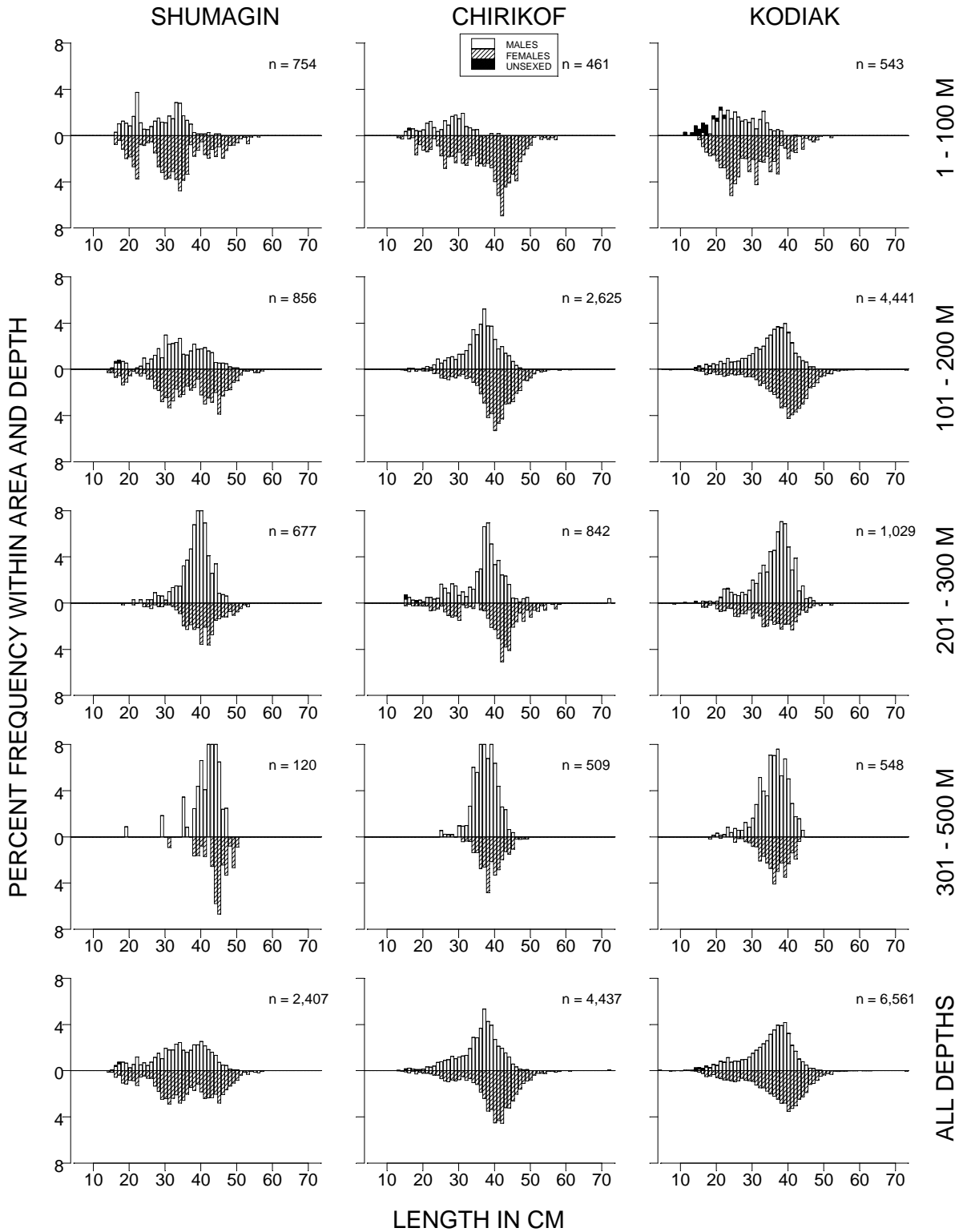


Figure 13. -- Size composition of rex sole from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

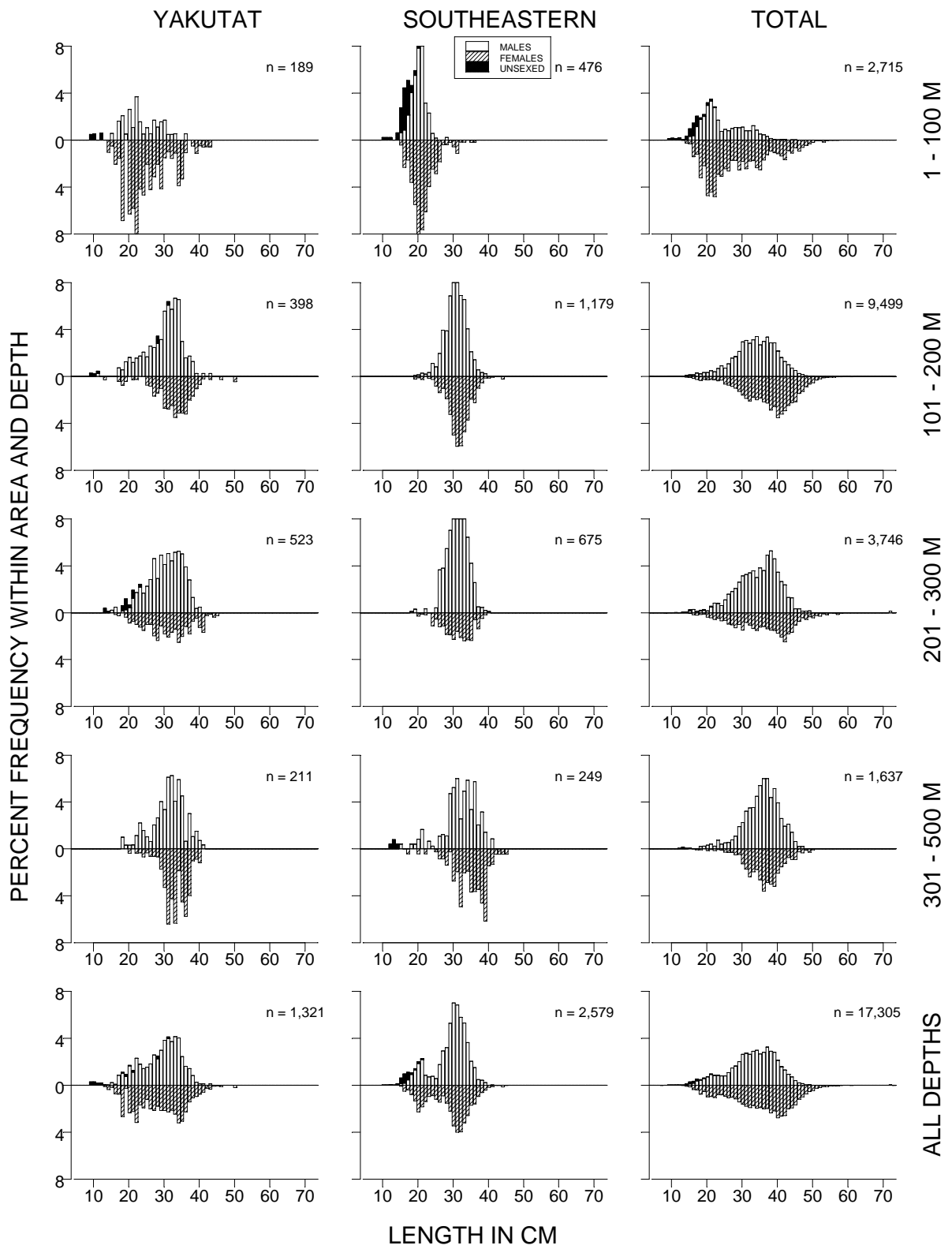


Figure 13. -- (continued).

Table 14. -- Catch per unit of effort by stratum for rex sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	101 - 200	Kodiak Outer Shelf	28	20	15.29	7,686	0	16,901
Kodiak	101 - 200	Albatross Gullies	28	26	14.01	11,082	4,329	17,835
Chirikof	101 - 200	Chirikof Outer Shelf	25	21	12.93	6,480	2,363	10,598
Chirikof	101 - 200	East Shumagin Gully	17	16	10.11	11,224	2,239	20,209
Chirikof	101 - 200	Shelikof Edge	27	24	10.00	7,732	1,667	13,798
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	7	9.17	3,849	0	8,822
Kodiak	101 - 200	Portlock Flats	35	32	7.94	5,828	4,042	7,614
Shumagin	201 - 300	Shumagin Slope	17	13	6.98	1,947	722	3,172
Chirikof	201 - 300	Lower Shelikof Gully	18	18	6.73	6,744	621	12,867
Chirikof	301 - 500	Chirikof Slope	10	9	6.69	1,072	141	2,004
Kodiak	201 - 300	Kodiak Slope	7	7	6.68	1,085	110	2,060
Kodiak	201 - 300	Kenai Gullies	19	18	6.56	4,366	0	9,165
Kodiak	301 - 500	Kodiak Slope	10	10	5.95	1,731	540	2,922
Shumagin	101 - 200	Sanak Gully	7	7	5.55	2,358	218	4,497
Chirikof	201 - 300	Chirikof Slope	8	8	5.31	812	336	1,288
Shumagin	101 - 200	West Shumagin Gully	4	4	4.71	1,074	67	2,081
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	14	4.47	1,754	309	3,198
Southeastern	101 - 200	Prince of Wales Shelf	14	13	3.97	2,735	807	4,664
Shumagin	101 - 200	Shumagin Outer Shelf	28	19	3.57	2,907	385	5,429
Kodiak	101 - 200	Barren Islands	18	10	3.30	3,622	0	8,037
Shumagin	301 - 500	Shumagin Slope	9	7	2.97	752	92	1,413
Yakutat	201 - 300	Yakutat Gullies	8	8	2.91	885	291	1,480
Kodiak	1 - 100	Kenai Peninsula	7	5	2.65	1,394	397	2,391
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	2.59	606	21	1,191
Yakutat	101 - 200	Middleton Shelf	9	5	1.85	1,356	0	2,755
Chirikof	1 - 100	Chirikof Bank	40	16	1.76	1,900	0	3,859
Kodiak	101 - 200	Kenai Flats	18	17	1.70	2,057	844	3,270
Yakutat	201 - 300	Yakutat Slope	9	8	1.63	346	35	658
Yakutat	101 - 200	Fairweather Shelf	8	6	1.53	1,185	0	2,391
Yakutat	1 - 100	Middleton Shallows	5	4	1.52	1,022	0	2,970
Yakutat	301 - 500	Yakutat Slope	7	7	1.39	211	86	337
Southeastern	301 - 500	Southeastern Slope	4	3	1.32	102	0	224
Yakutat	501 - 700	Yakutat Slope	3	3	1.26	186	0	704
Kodiak	1 - 100	Albatross Shallows	28	13	1.16	671	0	1,570
Kodiak	201 - 300	Upper Shelikof Gully	4	4	1.14	365	0	763
Southeastern	1 - 100	Southeastern Shallows	11	6	0.99	647	0	1,605
Shumagin	1 - 100	Shumagin Bank	36	13	0.82	1,017	134	1,900
Shumagin	1 - 100	Davidson Bank	48	22	0.81	1,102	471	1,734
Shumagin	1 - 100	Lower Alaska Peninsula	28	13	0.61	417	0	856
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	0.58	65	0	160
Chirikof	1 - 100	Upper Alaska Peninsula	19	8	0.46	362	0	875
Yakutat	101 - 200	Yakataga Shelf	8	6	0.37	195	0	407
Yakutat	1 - 100	Yakutat Shallows	6	3	0.36	353	0	761
Chirikof	501 - 700	Chirikof Slope	7	4	0.35	67	0	139
Kodiak	501 - 700	Kodiak Slope	6	4	0.32	56	0	134
Yakutat	301 - 500	Yakutat Gullies	2	2	0.26	29	0	180
Kodiak	1 - 100	Northern Kodiak Shallows	9	2	0.23	49	0	161
Yakutat	101 - 200	Yakutat Flats	8	4	0.16	146	0	306
Chirikof	1 - 100	Semidi Bank	23	7	0.10	74	16	132
Shumagin	1 - 100	Fox Islands	21	5	0.05	41	0	86
Kodiak	1 - 100	Lower Cook Inlet	14	3	0.03	30	0	81

Dover sole (*Microstomus pacificus*)

The Dover sole population was distributed throughout the survey area and depth range and was caught in relatively modest numbers in 57 of the 59 survey strata (Fig. 14 and Tables 15-16). Although large catches of Dover sole were rare, they were present in approximately 87% of the tows at depths greater than 200 m (Table 15). The highest mean CPUEs were generally recorded at depths between 200 and 700 m south and southwest of Kodiak Island as well as due south of the Kenai Peninsula, but the highest densities were recorded on the Baranof-Chichagof Slope and the Southeastern Deep Gullies, both in the Southeastern INPFC area. The mean weight of Dover sole generally decreased from west to east. Although the smallest fish were in the shallowest depth zone, there was not a consistent trend of increasing fish size with increasing depth at deeper depths (Fig. 15 and Table 15). Males were considerably more abundant in the survey area, especially at water depths between 301 and 500 m where they were predominant. Overall, males comprised approximately 58% of the population.

Table 15. -- Number of survey hauls, number of hauls with Dover sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	6	0.019	78	4	151	0.285
	101 - 200	39	10	0.276	405	35	775	0.989
	201 - 300	17	7	0.393	110	0	223	0.997
	301 - 500	9	5	1.850	468	53	884	1.213
	501 - 700	5	3	1.035	208	0	441	0.919
	701 - 1000	2	2	5.452	1,056	840	1,272	0.930
	All depths		205	33	0.356	2,325	1,748	2,902
Chirikof	1 - 100	82	17	0.271	705	0	1,509	0.597
	101 - 200	69	53	3.725	8,884	4,387	13,380	0.821
	201 - 300	26	21	2.677	3,090	170	6,011	1.266
	301 - 500	10	10	4.404	706	442	971	0.809
	501 - 700	7	7	7.304	1,427	767	2,087	0.758
	701 - 1000	5	5	1.722	528	17	1,039	0.987
	All depths		199	113	2.254	15,340	9,928	20,752
Kodiak	1 - 100	97	23	0.293	1,128	252	2,004	0.355
	101 - 200	127	95	3.123	13,533	10,125	16,941	0.922
	201 - 300	30	27	5.616	6,453	0	13,248	0.926
	301 - 500	10	10	12.812	3,731	1,952	5,510	0.811
	501 - 700	6	6	12.477	2,177	0	4,424	0.714
	701 - 1000	4	4	3.227	1,127	0	2,788	1.206
	All depths		274	165	2.774	28,150	20,127	36,172
Yakutat	1 - 100	11	5	0.480	800	0	2,559	0.379
	101 - 200	33	24	1.899	5,579	1,087	10,071	0.708
	201 - 300	17	16	7.993	4,133	1,320	6,945	0.873
	301 - 500	9	9	7.507	1,973	245	3,700	0.679
	501 - 700	3	3	7.787	1,144	0	2,544	0.732
	701 - 1000	3	2	0.329	62	0	199	0.810
	All depths		76	59	2.393	13,690	8,254	19,126
Southeastern	1 - 100	11	4	0.157	103	0	239	0.183
	101 - 200	22	19	1.180	1,309	153	2,464	0.486
	201 - 300	17	17	11.504	5,812	0	19,986	1.015
	301 - 500	11	11	14.299	4,457	2,044	6,869	0.617
	501 - 700	3	3	2.164	224	0	472	0.906
	701 - 1000	2	2	1.788	216	0	990	0.745
	All depths		66	56	4.322	12,120	0	24,900
All areas	1 - 100	334	55	0.218	2,814	769	4,859	0.385
	101 - 200	290	201	2.429	29,709	22,591	36,827	0.814
	201 - 300	107	88	5.437	19,598	7,725	31,470	0.981
	301 - 500	49	45	8.861	11,335	8,348	14,321	0.709
	501 - 700	24	22	6.311	5,179	2,812	7,546	0.743
	701 - 1000	16	15	2.579	2,989	1,296	4,683	1.006
	All depths		820	426	2.238	71,624	57,400	85,848

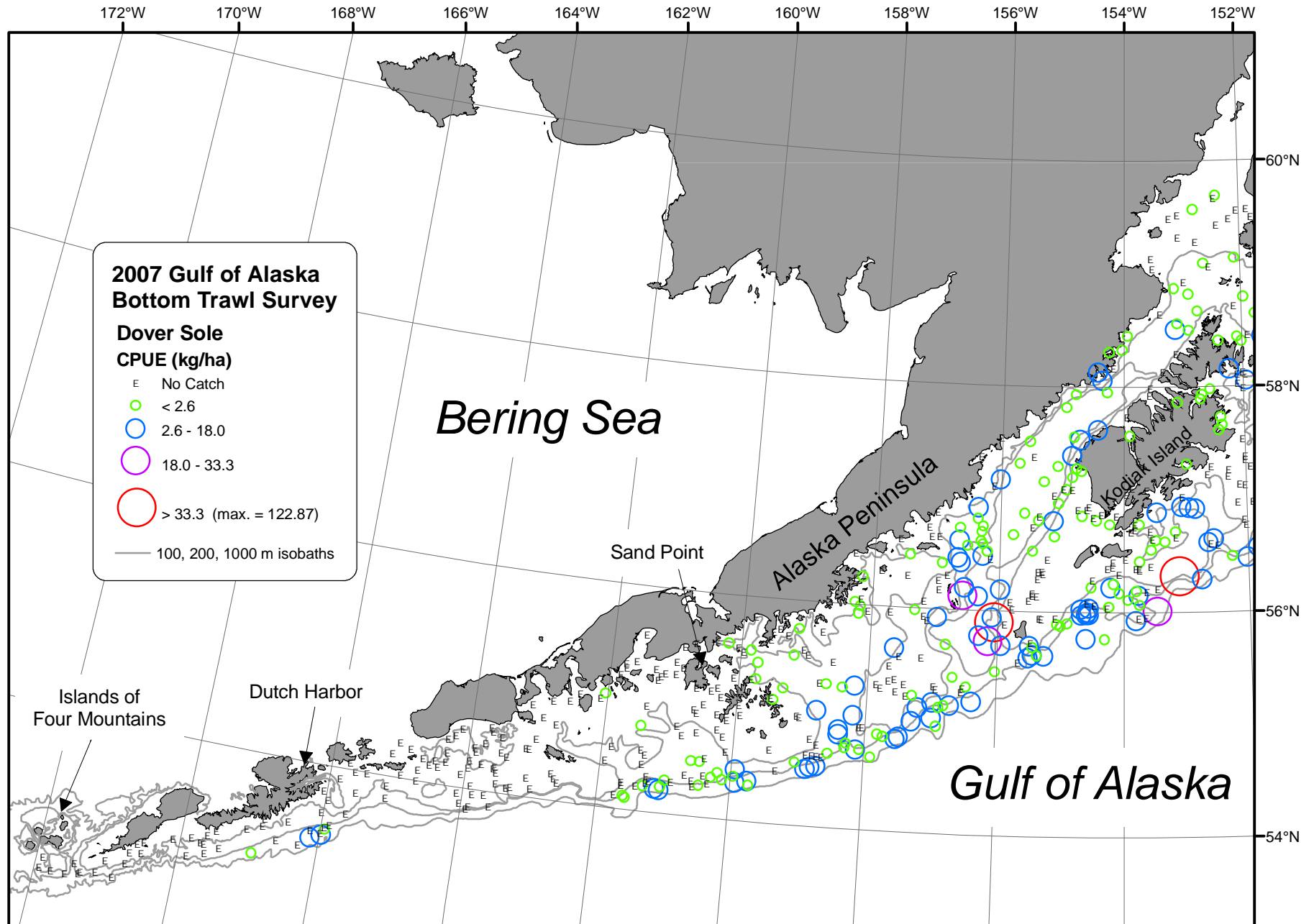


Figure 14. -- Distribution and relative abundance of Dover sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

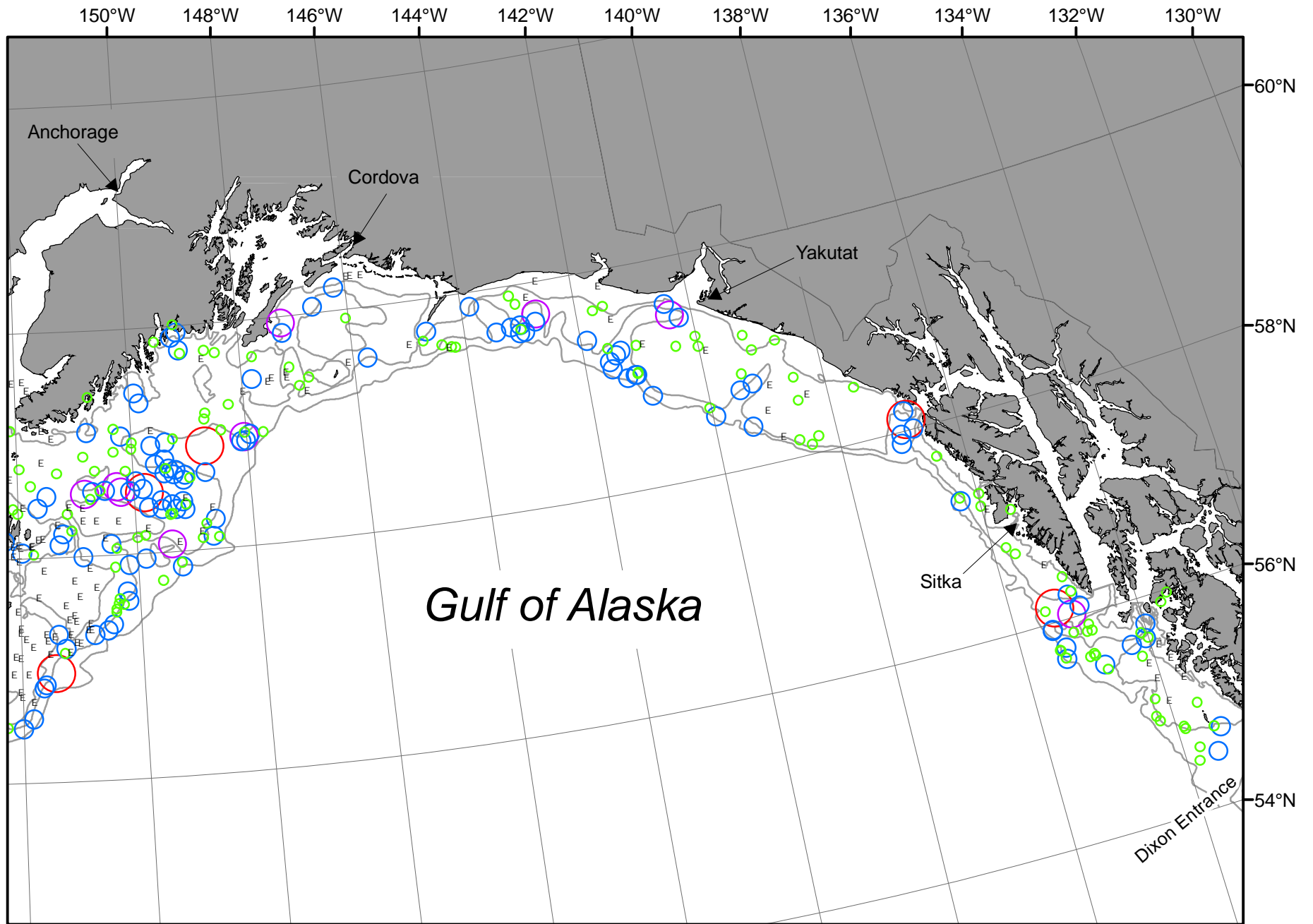


Figure 14. -- Continued (Dover sole 2007).

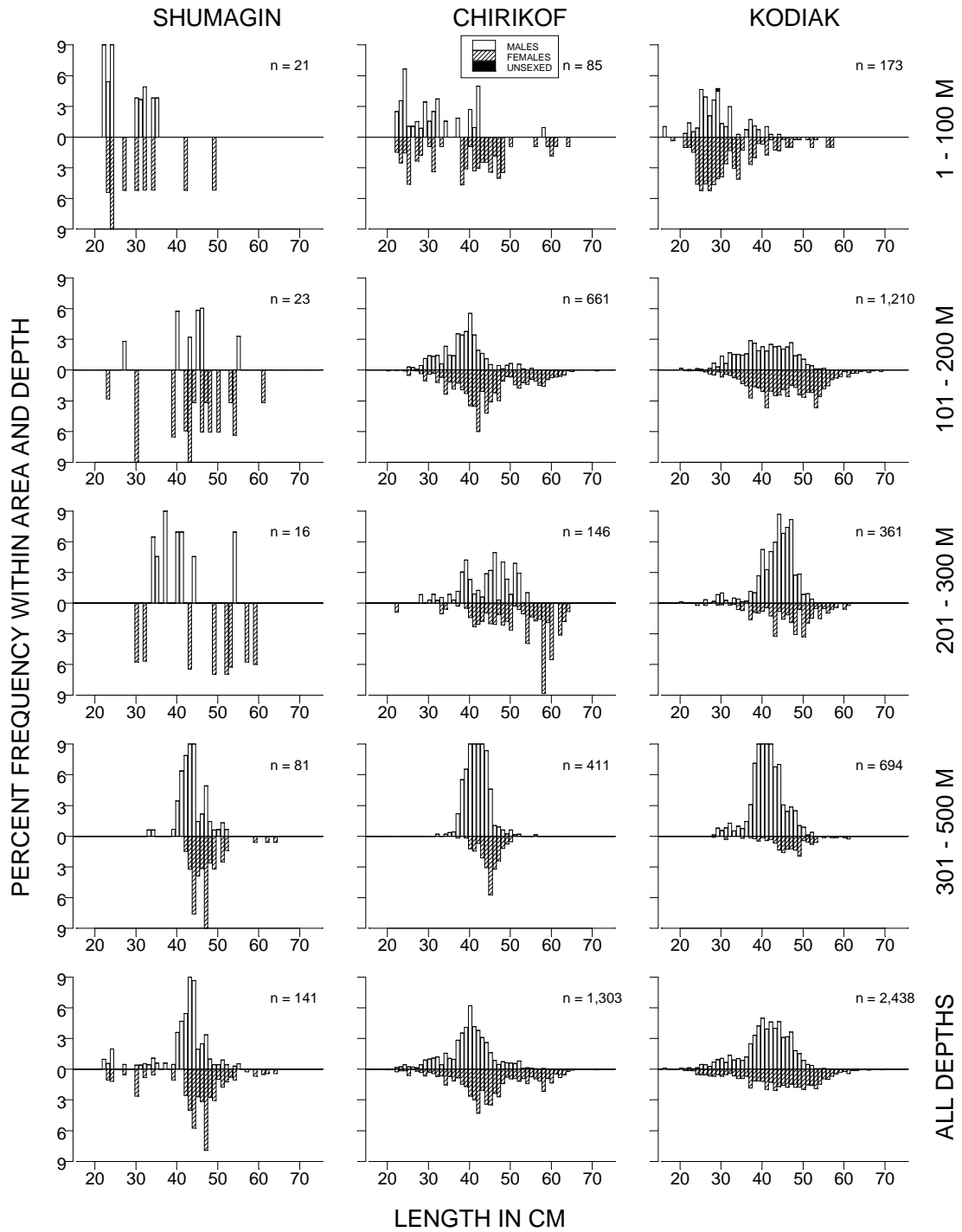


Figure 15. -- Size composition of Dover sole from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

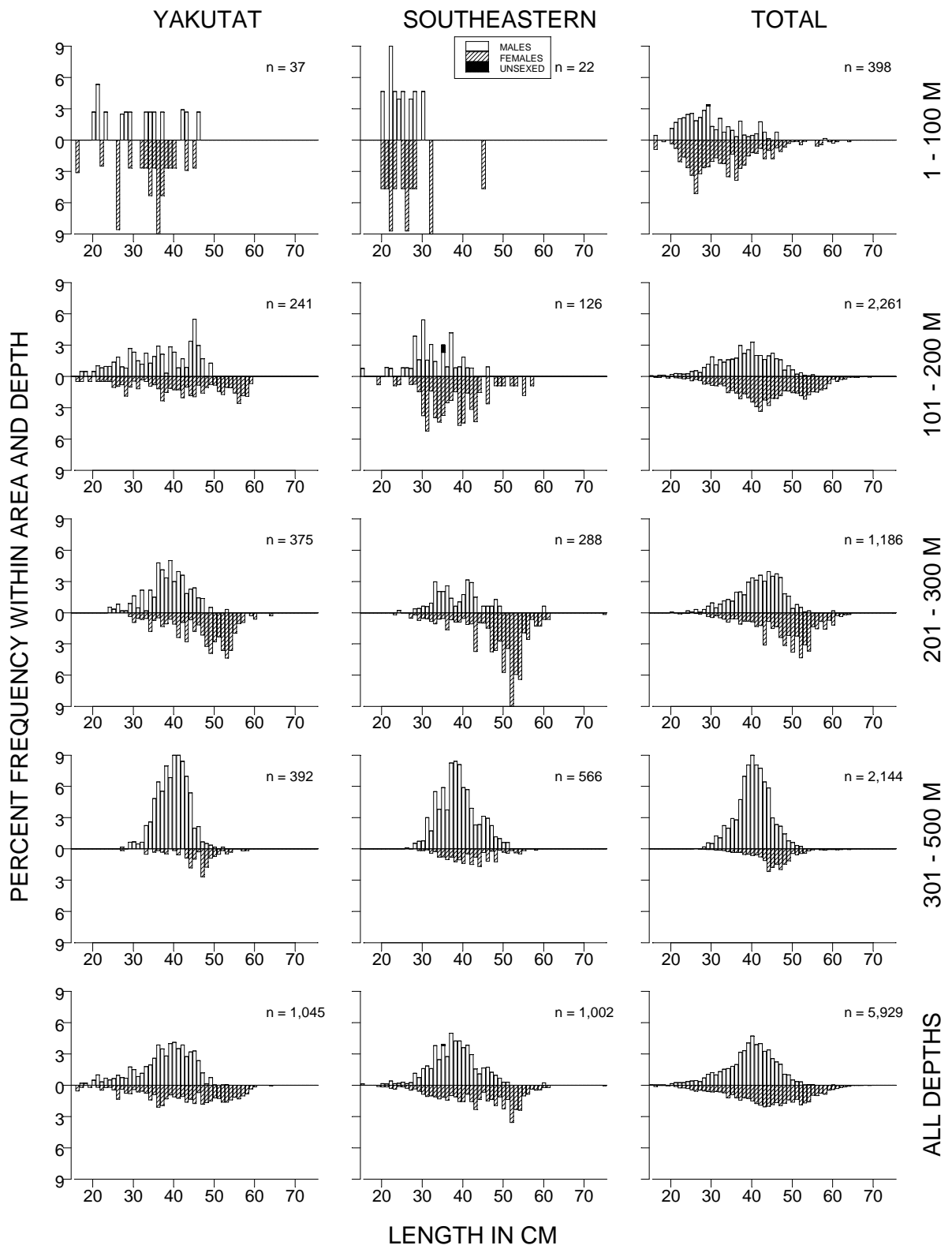


Figure 15. -- (continued).

Table 16. -- Catch per unit of effort by stratum for Dover sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	44.05	4,957	0	24,081
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	16.53	3,875	1,425	6,325
Kodiak	301 - 500	Kodiak Slope	10	10	12.81	3,731	1,925	5,537
Kodiak	501 - 700	Kodiak Slope	6	6	12.48	2,177	0	4,537
Yakutat	201 - 300	Yakutat Gullies	8	8	10.15	3,088	299	5,878
Kodiak	201 - 300	Kenai Gullies	19	16	8.81	5,864	0	12,682
Yakutat	301 - 500	Yakutat Slope	7	7	8.10	1,231	456	2,006
Yakutat	501 - 700	Yakutat Slope	3	3	7.79	1,144	0	3,037
Southeastern	301 - 500	Southeastern Slope	4	4	7.53	582	0	1,202
Kodiak	101 - 200	Portlock Flats	35	33	7.38	5,417	3,336	7,497
Chirikof	101 - 200	Shelikof Edge	27	25	7.34	5,675	1,367	9,983
Chirikof	501 - 700	Chirikof Slope	7	7	7.30	1,427	744	2,110
Yakutat	301 - 500	Yakutat Gullies	2	2	6.70	742	0	6,342
Shumagin	701 - 1000	Shumagin Slope	2	2	5.45	1,056	418	1,694
Yakutat	201 - 300	Yakutat Slope	9	8	4.91	1,044	328	1,760
Yakutat	101 - 200	Middleton Shelf	9	6	4.60	3,375	0	7,526
Chirikof	301 - 500	Chirikof Slope	10	10	4.40	706	438	975
Kodiak	101 - 200	Albatross Gullies	28	21	3.90	3,086	1,662	4,511
Kodiak	701 - 1000	Kodiak Slope	4	4	3.23	1,127	0	3,030
Yakutat	101 - 200	Yakataga Shelf	8	6	3.05	1,610	0	3,929
Chirikof	201 - 300	Lower Shelikof Gully	18	13	2.69	2,691	0	5,612
Kodiak	101 - 200	Kodiak Outer Shelf	28	13	2.62	1,316	0	3,326
Chirikof	201 - 300	Chirikof Slope	8	8	2.62	400	107	692
Kodiak	201 - 300	Kodiak Slope	7	7	2.61	424	248	600
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	14	2.18	855	209	1,502
Southeastern	501 - 700	Southeastern Slope	3	3	2.16	224	0	559
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	8	2.13	894	0	2,061
Chirikof	101 - 200	East Shumagin Gully	17	13	2.06	2,291	893	3,690
Shumagin	301 - 500	Shumagin Slope	9	5	1.85	468	45	892
Chirikof	101 - 200	Chirikof Outer Shelf	25	15	1.83	917	189	1,644
Southeastern	701 - 1000	Southeastern Slope	2	2	1.79	216	0	2,502
Chirikof	701 - 1000	Chirikof Slope	5	5	1.72	528	0	1,079
Kodiak	101 - 200	Kenai Flats	18	14	1.66	2,001	1,005	2,998
Kodiak	101 - 200	Barren Islands	18	14	1.56	1,713	768	2,658
Kodiak	1 - 100	Kenai Peninsula	7	5	1.23	647	0	1,472
Yakutat	1 - 100	Middleton Shallows	5	2	1.04	697	0	2,581
Shumagin	501 - 700	Shumagin Slope	5	3	1.04	208	0	460
Kodiak	1 - 100	Northern Kodiak Shallows	9	3	0.78	173	0	550
Southeastern	101 - 200	Prince of Wales Shelf	14	11	0.60	415	73	757
Yakutat	101 - 200	Fairweather Shelf	8	6	0.53	413	0	891
Kodiak	201 - 300	Upper Shelikof Gully	4	4	0.52	166	0	345
Shumagin	101 - 200	West Shumagin Gully	4	4	0.46	105	0	268
Shumagin	201 - 300	Shumagin Slope	17	7	0.39	110	0	224
Chirikof	1 - 100	Upper Alaska Peninsula	19	5	0.38	302	0	756
Kodiak	1 - 100	Albatross Shallows	28	12	0.36	207	54	361
Chirikof	1 - 100	Chirikof Bank	40	10	0.35	381	0	1,061
Yakutat	701 - 1000	Yakutat Slope	3	2	0.33	62	0	247
Shumagin	101 - 200	Sanak Gully	7	2	0.27	113	0	324
Shumagin	101 - 200	Shumagin Outer Shelf	28	4	0.23	187	0	497
Yakutat	101 - 200	Yakutat Flats	8	6	0.20	181	0	391
Southeastern	1 - 100	Southeastern Shallows	11	4	0.16	103	0	241
Yakutat	1 - 100	Yakutat Shallows	6	3	0.10	103	0	327
Kodiak	1 - 100	Lower Cook Inlet	14	2	0.098	97	0	299
Shumagin	1 - 100	Shumagin Bank	36	4	0.048	59	0	127
Chirikof	1 - 100	Semidi Bank	23	2	0.031	23	0	56
Shumagin	1 - 100	Lower Alaska Peninsula	28	2	0.027	18	0	51
Kodiak	1 - 100	Albatross Banks	39	1	0.003	5	0	14

Yellowfin sole (*Limanda aspera*)

Yellowfin sole were locally abundant in bays around Kodiak Island and the Alaska Peninsula near the Shumagin Islands, but were not widely distributed in the survey area. Yellowfin sole were caught in only nine of the 59 strata, all but one of which were near shore in the shallowest depth zone (Fig. 16 and Tables 17-18). The highest mean CPUEs were noted in the Northern Kodiak Shallows and on the lower Alaska Peninsula (Table 18). These two strata accounted for approximately 75% of the survey area's biomass estimate despite comprising only 2.8% of the survey area. The sex ratio for yellowfin sole was approximately even, with females comprising approximately 53% of the population.

Table 17. -- Number of survey hauls, number of hauls with yellowfin sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	24	5.192	21,437	3,995	38,879	0.456
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	24	3.286	21,437	3,995	38,879
Chirikof	1 - 100	82	9	0.713	1,857	60	3,655	0.500
	101 - 200	69	1	0.074	175	0	544	0.888
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	10	0.299	2,032	213	3,852
Kodiak	1 - 100	97	11	4.766	18,355	1,711	34,999	0.290
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	11	1.809	18,355	1,711	34,999
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	44	3.227	41,649	17,793	65,505	0.365
	101 - 200	290	1	0.014	175	0	544	0.888
	201 - 300	107	0	---	---	---	---	---
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	45	1.307	41,824	17,965	65,683

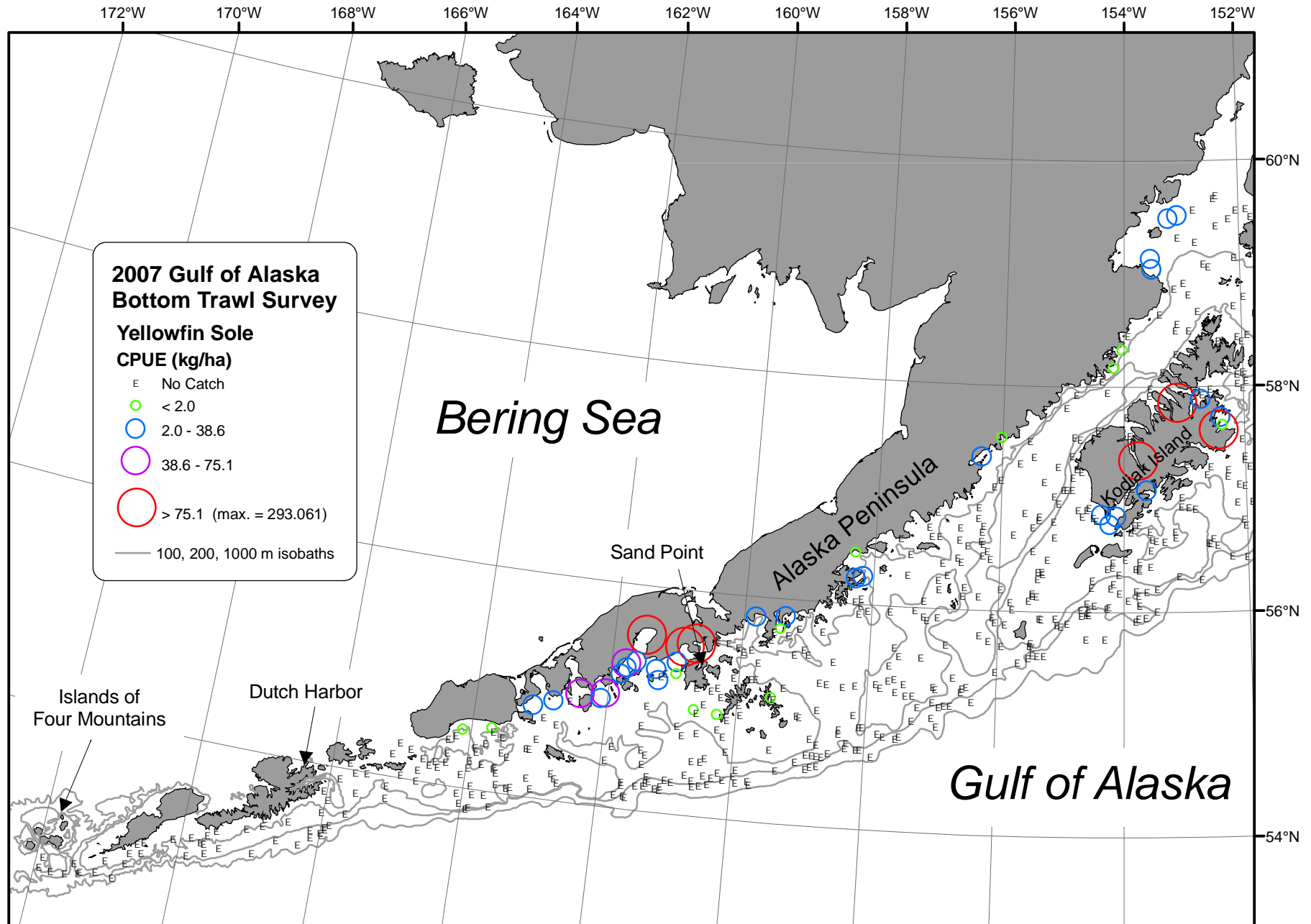


Figure 16. -- Distribution and relative abundance of yellowfin sole from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

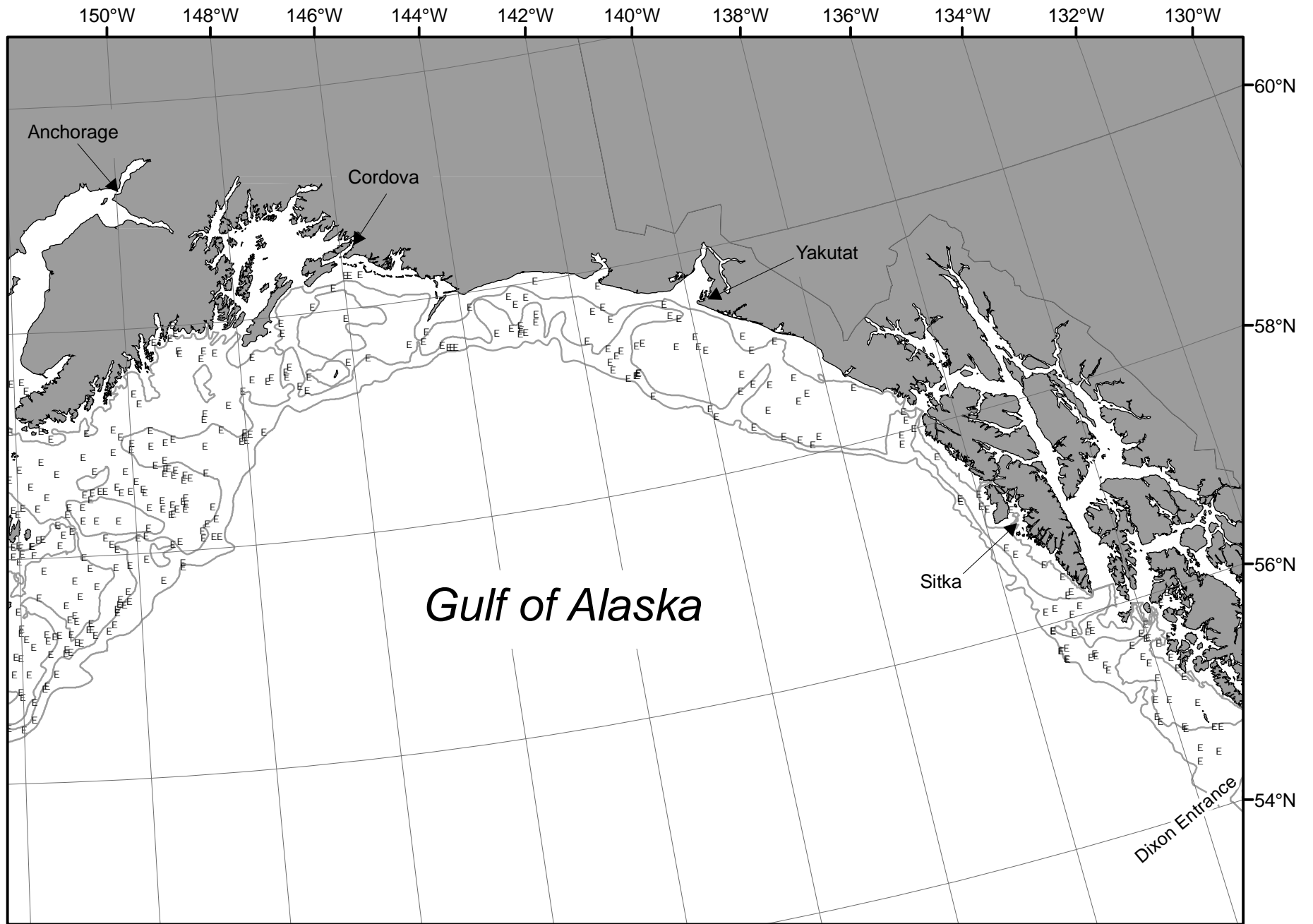


Figure 16. -- Continued (yellowfin sole 2007).

Table 18. -- Catch per unit of effort by stratum for yellowfin sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	1 - 100	Northern Kodiak Shallows	9	2	46.48	10,225	0	26,054
Shumagin	1 - 100	Lower Alaska Peninsula	28	17	30.89	21,241	3,767	38,716
Kodiak	1 - 100	Albatross Shallows	28	5	10.13	5,839	0	14,509
Kodiak	1 - 100	Lower Cook Inlet	14	4	2.32	2,291	51	4,532
Chirikof	1 - 100	Upper Alaska Peninsula	19	6	1.63	1,295	0	2,990
Chirikof	1 - 100	Chirikof Bank	40	3	0.52	562	0	1,233
Chirikof	101 - 200	East Shumagin Gully	17	1	0.16	175	0	546
Shumagin	1 - 100	Shumagin Bank	36	5	0.11	133	0	310
Shumagin	1 - 100	Davidson Bank	48	2	0.05	62	0	177

Other Flatfishes

Alaska plaice (*Pleuronectes quadrituberculatus*)

Approximately 80% of the estimated biomass of Alaska plaice in the survey area came from the shallowest depth zone of the Upper and Lower Alaska Peninsula strata, which together comprise only 4.6% of the total survey area (Tables 19-20). Modest densities were also recorded in the shallowest depth zone of the Northern Kodiak Shallows and the Albatross Shallows in the Kodiak area. No Alaska plaice were caught in the Yakutat or Southeastern INPFC areas.

Starry flounder (*Platichthys stellatus*)

Catches of starry flounder were almost exclusively confined to water depths less than 100 m in all INPFC areas except Southeastern (Table 21). The highest densities were recorded in the Middleton Shallows in the Yakutat area, along the Alaska Peninsula, and in Cook Inlet (Table 22).

English sole (*Parophrys vetulus*)

Approximately 60% of the estimated biomass of English sole in the survey area came from three strata (Middleton Shallows, East Shumagin Gully, and Southeastern Shallows) in three of the five INPFC areas (Yakutat, Chirikof, and Southeastern), which together comprise only 7.6% of the survey area (Table 24). Densities ranged from small to relatively modest everywhere where English sole were caught, and almost the entire population was confined to depths less than 200 m (Table 23). Mean weight generally increased with depth.

Butter sole (*Isopsetta isolepis*)

Approximately 53% of the estimated biomass of butter sole in the survey area came from the Lower Cook Inlet stratum (Table 26). Densities ranged from small to relatively modest everywhere where butter sole were caught, and almost the entire population was confined to depths less than 100 m (Table 25). Catches of butter sole were recorded in all INPFC areas except Southeastern.

Table 19. -- Number of survey hauls, number of hauls with Alaska plaice, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	23	0.827	3,415	1,194	5,637	1.346
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	23	0.523	3,415	1,194	5,637
Chirikof	1 - 100	82	11	2.676	6,969	0	15,234	1.378
	101 - 200	69	1	0.022	54	0	167	1.920
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	12	1.032	7,022	0	15,288
Kodiak	1 - 100	97	12	0.444	1,712	392	3,031	1.311
	101 - 200	127	1	0.007	30	0	94	1.174
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	13	0.172	1,742	421	3,062
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	46	0.937	12,095	3,469	20,722	1.359
	101 - 200	290	2	0.007	84	0	210	1.565
	201 - 300	107	0	---	---	---	---	---
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	48	0.381	12,179	3,551	20,807

Table 20. -- Catch per unit of effort by stratum for Alaska plaice sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	1 - 100	Upper Alaska Peninsula	19	6	8.21	6,521	0	14,797
Shumagin	1 - 100	Lower Alaska Peninsula	28	17	4.70	3,228	1,009	5,448
Kodiak	1 - 100	Northern Kodiak Shallows	9	3	2.75	606	0	1,604
Kodiak	1 - 100	Albatross Shallows	28	7	1.57	904	0	1,827
Chirikof	1 - 100	Chirikof Bank	40	5	0.41	447	0	1,027
Kodiak	1 - 100	Lower Cook Inlet	14	2	0.20	202	0	613
Shumagin	1 - 100	Davidson Bank	48	2	0.08	108	0	300
Shumagin	1 - 100	Shumagin Bank	36	4	0.06	78	0	158
Chirikof	101 - 200	East Shumagin Gully	17	1	0.05	54	0	167
Kodiak	101 - 200	Barren Islands	18	1	0.03	30	0	94

Table 21. -- Number of survey hauls, number of hauls with starry flounder, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	20	2.917	12,043	554	23,531	2.092
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	20	1.846	12,043	554	23,531
Chirikof	1 - 100	82	16	8.951	23,304	0	47,567	2.101
	101 - 200	69	1	0.016	38	0	119	1.360
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	17	3.430	23,342	0	47,605
Kodiak	1 - 100	97	25	5.498	21,175	6,191	36,158	2.469
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	1	0.060	69	0	261	2.194
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	26	2.093	21,244	6,260	36,227
Yakutat	1 - 100	11	4	9.850	16,411	0	51,954	1.817
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	4	2.869	16,411	0	51,954
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	65	5.651	72,932	27,748	118,115	2.117
	101 - 200	290	1	0.003	38	0	119	1.360
	201 - 300	107	1	0.019	69	0	261	2.194
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	67	2.282	73,039	27,855	118,223

Table 22. -- Catch per unit of effort by stratum for starry flounder sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Yakutat	1 - 100	Middleton Shallows	5	3	24.00	16,114	0	54,482
Chirikof	1 - 100	Upper Alaska Peninsula	19	9	17.29	13,731	0	34,805
Kodiak	1 - 100	Lower Cook Inlet	14	11	10.22	10,105	3,337	16,874
Chirikof	1 - 100	Chirikof Bank	40	7	8.87	9,573	0	22,579
Kodiak	1 - 100	Albatross Shallows	28	6	8.02	4,622	0	12,830
Shumagin	1 - 100	Lower Alaska Peninsula	28	16	5.61	3,856	422	7,291
Kodiak	1 - 100	Albatross Banks	39	2	3.60	5,547	0	16,723
Shumagin	1 - 100	Shumagin Bank	36	3	3.47	4,306	0	12,251
Shumagin	1 - 100	Davidson Bank	48	1	2.84	3,881	0	11,723
Kodiak	1 - 100	Northern Kodiak Shallows	9	5	1.52	335	0	732
Kodiak	1 - 100	Kenai Peninsula	7	1	1.07	565	0	1,947
Yakutat	1 - 100	Yakutat Shallows	6	1	0.30	298	0	1,062
Kodiak	201 - 300	Upper Shelikof Gully	4	1	0.22	69	0	289
Chirikof	101 - 200	East Shumagin Gully	17	1	0.03	38	0	119

Table 23. -- Number of survey hauls, number of hauls with English sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	10	0.149	615	0	1,490	0.437
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	1	0.018	5	0	16	0.750
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	11	0.095	620	0	1,495
Chirikof	1 - 100	82	10	0.141	366	0	745	0.272
	101 - 200	69	3	0.857	2,043	0	6,340	0.758
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	13	0.354	2,409	0	6,724
Kodiak	1 - 100	97	19	0.653	2,514	687	4,340	0.508
	101 - 200	127	6	0.019	84	0	172	0.788
	201 - 300	30	2	0.030	35	0	99	0.866
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	27	0.259	2,633	803	4,462
Yakutat	1 - 100	11	7	2.791	4,650	0	11,909	0.435
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	7	0.813	4,650	0	11,909
Southeastern	1 - 100	11	6	1.627	1,065	0	2,311	0.359
	101 - 200	22	5	0.818	907	0	2,177	0.445
	201 - 300	17	1	0.004	2	0	6	0.200
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	12	0.704	1,974	284	3,664
All areas	1 - 100	334	52	0.714	9,211	1,753	16,668	0.431
	101 - 200	290	14	0.248	3,034	0	7,491	0.627
	201 - 300	107	4	0.012	42	0	107	0.737
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	70	0.384	12,287	4,013	20,560

Table 24. -- Catch per unit of effort by stratum for English sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Yakutat	1 - 100	Middleton Shallows	5	4	6.42	4,310	0	12,123
Kodiak	1 - 100	Northern Kodiak Shallows	9	4	2.87	631	0	1,495
Chirikof	101 - 200	East Shumagin Gully	17	2	1.84	2,040	0	6,358
Southeastern	1 - 100	Southeastern Shallows	11	6	1.63	1,065	0	2,326
Kodiak	1 - 100	Albatross Shallows	28	10	1.58	914	0	1,971
Southeastern	101 - 200	Prince of Wales Shelf	14	5	1.32	907	0	2,186
Kodiak	1 - 100	Kenai Peninsula	7	2	1.09	574	0	1,835
Shumagin	1 - 100	Fox Islands	21	1	0.49	411	0	1,268
Kodiak	1 - 100	Lower Cook Inlet	14	3	0.40	396	0	1,118
Yakutat	1 - 100	Yakutat Shallows	6	3	0.34	340	0	910
Chirikof	1 - 100	Upper Alaska Peninsula	19	4	0.32	258	0	605
Shumagin	1 - 100	Lower Alaska Peninsula	28	6	0.16	111	0	265
Chirikof	1 - 100	Chirikof Bank	40	6	0.10	109	0	277
Shumagin	1 - 100	Shumagin Bank	36	2	0.07	92	0	228
Kodiak	201 - 300	Kenai Gullies	19	1	0.05	30	0	94
Kodiak	101 - 200	Barren Islands	18	1	0.03	36	0	112
Kodiak	101 - 200	Albatross Gullies	28	3	0.03	26	0	59
Kodiak	201 - 300	Kodiak Slope	7	1	0.03	5	0	16
Kodiak	101 - 200	Kodiak Outer Shelf	28	1	0.02	12	0	37
Shumagin	201 - 300	Shumagin Slope	17	1	0.02	5	0	16
Kodiak	101 - 200	Kenai Flats	18	1	0.01	10	0	31
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.01	3	0	9
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	1	0.01	2	0	6
Shumagin	1 - 100	Davidson Bank	48	1	0.00	1	0	4

Table 25. -- Number of survey hauls, number of hauls with butter sole, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	25	1.710	7,060	0	15,445	0.480
	101 - 200	39	1	0.005	8	0	30	0.340
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	26	1.084	7,068	0	15,453
Chirikof	1 - 100	82	21	1.201	3,125	0	8,000	0.326
	101 - 200	69	1	0.100	238	0	729	0.258
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	22	0.494	3,364	0	8,262
Kodiak	1 - 100	97	28	4.565	17,585	737	34,432	0.248
	101 - 200	127	4	0.034	149	0	347	0.477
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	32	1.747	17,733	885	34,582
Yakutat	1 - 100	11	4	1.207	2,010	48	3,971	0.308
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	4	0.351	2,010	48	3,971
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	78	2.308	29,779	10,493	49,065	0.292
	101 - 200	290	6	0.032	395	0	915	0.314
	201 - 300	107	0	---	---	---	---	---
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths	820	84	0.943	30,174	10,881	49,467	0.293

Table 26. -- Catch per unit of effort by stratum for butter sole sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	1 - 100	Lower Cook Inlet	14	12	16.09	15,909	0	32,806
Shumagin	1 - 100	Lower Alaska Peninsula	28	13	3.76	2,584	0	6,690
Shumagin	1 - 100	Shumagin Bank	36	9	3.59	4,451	0	11,873
Chirikof	1 - 100	Chirikof Bank	40	15	2.74	2,961	0	7,884
Yakutat	1 - 100	Middleton Shallows	5	3	2.41	1,615	0	3,759
Kodiak	1 - 100	Albatross Shallows	28	9	2.18	1,256	0	2,605
Kodiak	1 - 100	Northern Kodiak Shallows	9	3	0.51	112	0	246
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.48	238	0	730
Yakutat	1 - 100	Yakutat Shallows	6	1	0.40	395	0	1,409
Chirikof	1 - 100	Upper Alaska Peninsula	19	6	0.21	164	0	331
Kodiak	1 - 100	Albatross Banks	39	4	0.20	307	0	806
Kodiak	101 - 200	Albatross Gullies	28	2	0.17	134	0	331
Shumagin	101 - 200	West Shumagin Gully	4	1	0.04	8	0	33
Shumagin	1 - 100	Davidson Bank	48	3	0.02	25	0	54
Kodiak	101 - 200	Barren Islands	18	1	0.01	14	0	44
Kodiak	101 - 200	Kodiak Outer Shelf	28	1	0.00	1	0	3

ROUNDFISHES

Walleye pollock (*Theragra chalcogramma*)

Walleye pollock was the fifth most abundant species caught in the 2007 survey (Table 2). Pollock were caught throughout the survey area in 52 of the 59 survey strata and at all depths less than 700 m (Fig. 17, Table 27). They were most abundant at depths less than 300 m, where they occurred in 73% of the tows, including 92% of the tows at depths between 201 and 300 m (Table 27). The highest densities occurred in bays around Kodiak Island and the Alaska Peninsula, with particularly high CPUEs recorded in the Albatross Shallows (Table 28). Mean weight increased with depth to 500 m in three of the five INPFC areas (Shumagin, Yakutat, Southeastern), but there was no consistent trend in mean weight with depth in the Chirikof and Kodiak areas. A distinct length mode of juveniles (both males and females) occurred around 20 cm at depths less than 200 m in the Yakutat INPFC area and at approximately 15 cm in the Shumagin, Chirikof, and Kodiak INPFC areas. The corresponding mode in the Southeastern area was not as well-defined as in the other areas but occurred at approximately 20 cm (Fig. 18).

Other notable length modes occurred at approximately 40 to 45 cm (females at the higher end of the range) in the 201 to 300 m depth range of the Yakutat and Southeastern areas and at approximately 50 to 55 cm (again, with females at the higher end of the range) in the Shumagin area. There were no prominent length modes at this depth range the Chirikof and Kodiak INPFC areas. The sex ratio of the walleye pollock population in the survey area was relatively even, with females comprising approximately 54% of the total estimated population.

Table 27. -- Number of survey hauls, number of hauls with walleye pollock, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	97	13.304	54,933	20,435	89,430	0.470
	101 - 200	39	29	26.780	39,305	9,991	68,619	0.931
	201 - 300	17	15	11.844	3,302	1,263	5,341	1.113
	301 - 500	9	1	0.283	72	0	234	1.546
	501 - 700	5	1	0.075	15	0	54	0.974
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	143	14.967	97,627	52,703	142,551
Chirikof	1 - 100	82	51	20.339	52,953	6,696	99,209	0.863
	101 - 200	69	47	8.121	19,369	0	53,051	0.907
	201 - 300	26	24	15.639	18,056	10,119	25,994	0.457
	301 - 500	10	2	1.202	193	0	589	1.280
	501 - 700	7	1	0.044	9	0	29	1.000
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	125	13.310	90,580	33,668	147,491
Kodiak	1 - 100	97	53	13.891	53,502	14,860	92,143	0.262
	101 - 200	127	97	4.086	17,705	8,188	27,221	0.622
	201 - 300	30	29	8.553	9,828	6,365	13,291	0.503
	301 - 500	10	4	0.387	113	0	252	1.407
	501 - 700	6	1	0.029	5	0	17	0.240
	701 - 1000	4	1	0.101	35	0	134	1.603
	All depths		274	185	7.999	81,187	41,654	120,721
Yakutat	1 - 100	11	9	2.483	4,137	807	7,467	0.090
	101 - 200	33	31	2.928	8,603	4,730	12,476	0.274
	201 - 300	17	15	13.048	6,746	3,227	10,265	0.570
	301 - 500	9	5	1.057	278	0	706	0.914
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	60	3.455	19,763	13,850	25,677
Southeastern	1 - 100	11	7	24.526	16,055	0	48,791	0.336
	101 - 200	22	17	5.780	6,406	2,196	10,617	0.413
	201 - 300	17	15	5.477	2,767	883	4,652	0.616
	301 - 500	11	2	5.900	1,839	0	6,185	0.804
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	41	9.654	27,068	0	60,396
All areas	1 - 100	334	217	14.071	181,579	106,675	256,483	0.381
	101 - 200	290	221	7.471	91,388	46,184	136,592	0.657
	201 - 300	107	98	11.291	40,700	31,112	50,288	0.519
	301 - 500	49	14	1.950	2,494	0	6,872	0.870
	501 - 700	24	3	0.035	29	0	72	0.636
	701 - 1000	16	1	0.030	35	0	134	1.603
	All depths		820	554	9.882	316,225	229,522	402,927

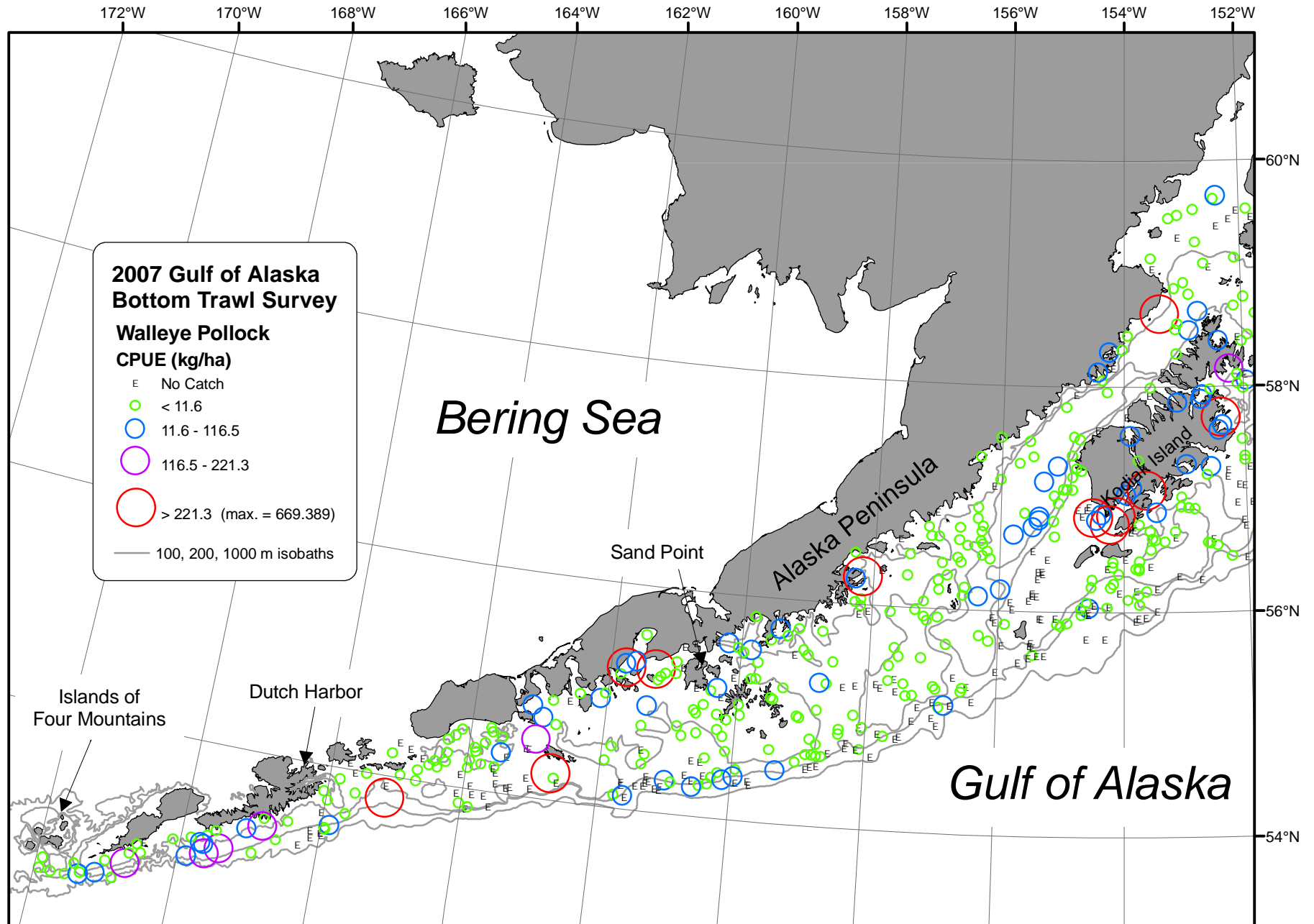


Figure 17. -- Distribution and relative abundance of walleye pollock from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

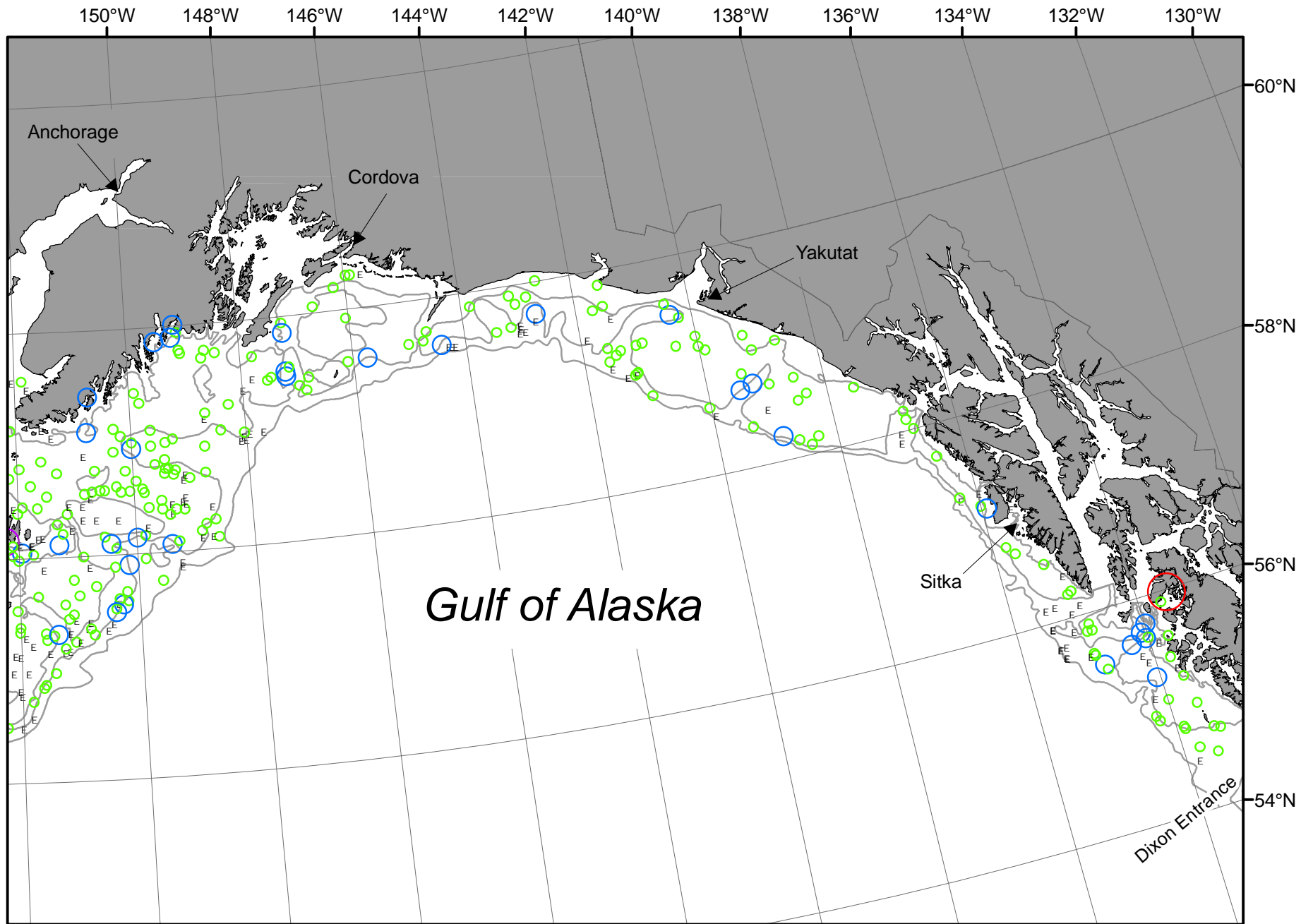


Figure 17. -- Continued (walleye pollock 2007).

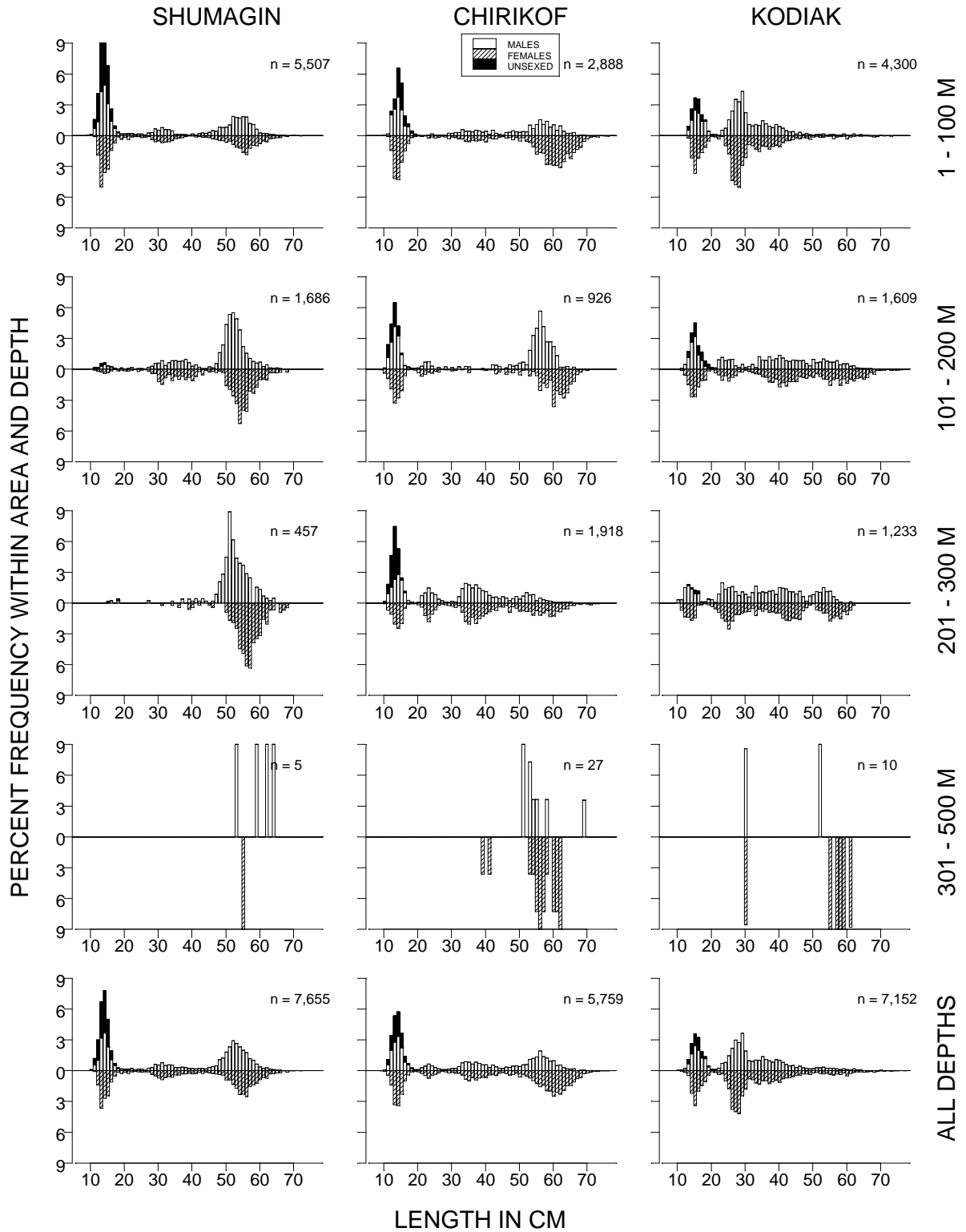


Figure 18. -- Size composition of walleye pollock from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

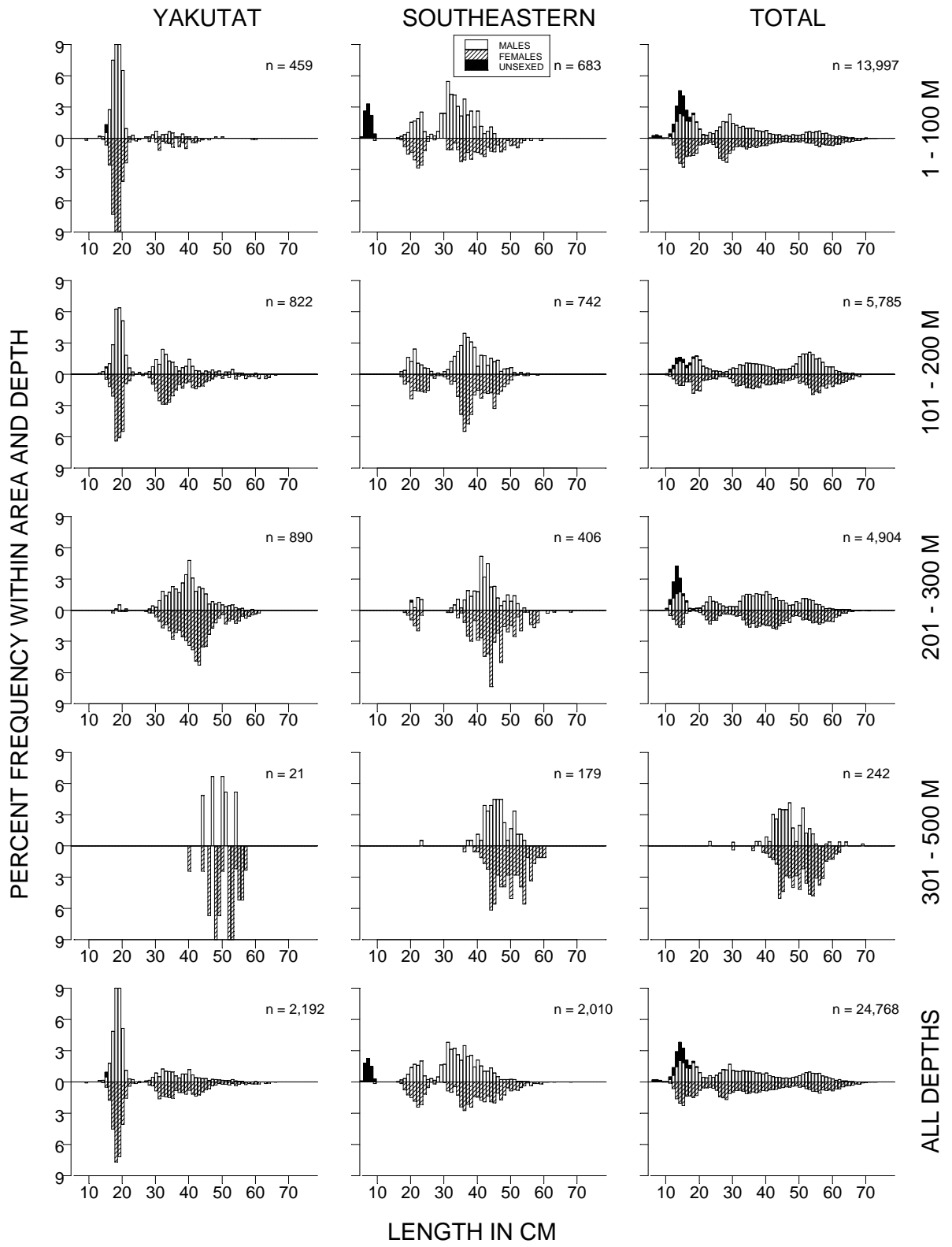


Figure 18. -- (continued).

Table 28. -- Catch per unit of effort by stratum for walleye pollock sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number	Hauls	CPUE (kg/ha)	Biomass (t)	Lower	Upper
			of hauls	with catch			CI biomass	CI biomass
Kodiak	1 - 100	Albatross Shallows	28	18	64.62	37,259	0	74,802
Shumagin	101 - 200	Shumagin Outer Shelf	28	21	39.31	32,055	3,546	60,564
Shumagin	1 - 100	Lower Alaska Peninsula	28	22	37.52	25,795	2,363	49,227
Chirikof	1 - 100	Chirikof Bank	40	19	31.65	34,154	0	70,846
Shumagin	101 - 200	West Shumagin Gully	4	3	29.45	6,708	0	18,162
Southeastern	1 - 100	Southeastern Shallows	11	7	24.53	16,055	0	49,192
Chirikof	1 - 100	Upper Alaska Peninsula	19	14	23.27	18,478	0	48,263
Kodiak	1 - 100	Kenai Peninsula	7	5	20.38	10,721	29	21,413
Chirikof	201 - 300	Lower Shelikof Gully	18	18	17.02	17,045	9,114	24,976
Chirikof	101 - 200	East Shumagin Gully	17	13	16.34	18,142	0	51,973
Yakutat	201 - 300	Yakutat Gullies	8	8	15.40	4,686	1,599	7,773
Shumagin	1 - 100	Davidson Bank	48	28	12.47	17,056	0	40,234
Shumagin	201 - 300	Shumagin Slope	17	15	11.84	3,302	1,254	5,351
Kodiak	201 - 300	Kodiak Slope	7	6	11.50	1,867	0	4,067
Shumagin	1 - 100	Fox Islands	21	16	10.35	8,625	0	20,487
Kodiak	201 - 300	Kenai Gullies	19	19	10.13	6,743	3,954	9,532
Yakutat	201 - 300	Yakutat Slope	9	7	9.68	2,060	0	4,189
Kodiak	101 - 200	Albatross Gullies	28	25	8.72	6,901	1,051	12,751
Southeastern	301 - 500	Southeastern Deep Gullies	7	2	7.84	1,839	0	6,336
Southeastern	101 - 200	Prince of Wales Shelf	14	10	6.96	4,796	714	8,879
Chirikof	201 - 300	Chirikof Slope	8	6	6.62	1,011	115	1,908
Kodiak	1 - 100	Northern Kodiak Shallows	9	5	6.40	1,407	0	3,502
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	12	6.39	2,510	613	4,406
Yakutat	101 - 200	Middleton Shelf	9	9	5.27	3,869	642	7,095
Kodiak	101 - 200	Barren Islands	18	17	4.88	5,358	0	12,121
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	7	3.84	1,610	165	3,054
Kodiak	201 - 300	Upper Shelikof Gully	4	4	3.80	1,218	0	2,861
Kodiak	101 - 200	Kenai Flats	18	15	3.59	4,336	532	8,140
Yakutat	101 - 200	Fairweather Shelf	8	8	3.44	2,658	179	5,137
Kodiak	1 - 100	Lower Cook Inlet	14	8	3.05	3,015	0	6,893
Shumagin	1 - 100	Shumagin Bank	36	31	2.79	3,458	0	7,139
Yakutat	1 - 100	Yakutat Shallows	6	5	2.74	2,727	0	6,081
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	2.29	258	125	390
Yakutat	1 - 100	Middleton Shallows	5	4	2.10	1,410	0	2,880
Yakutat	301 - 500	Yakutat Gullies	2	2	2.08	230	0	1,433
Yakutat	101 - 200	Yakutat Flats	8	8	1.92	1,733	205	3,262
Chirikof	101 - 200	Shelikof Edge	27	22	1.50	1,162	383	1,941
Kodiak	101 - 200	Portlock Flats	35	26	1.42	1,044	512	1,577
Shumagin	101 - 200	Sanak Gully	7	5	1.28	542	0	1,322
Chirikof	301 - 500	Chirikof Slope	10	2	1.20	193	0	595
Kodiak	1 - 100	Albatross Banks	39	17	0.71	1,099	117	2,081
Yakutat	101 - 200	Yakataga Shelf	8	6	0.65	343	76	610
Chirikof	1 - 100	Semidi Bank	23	18	0.44	320	13	627
Kodiak	301 - 500	Kodiak Slope	10	4	0.39	113	0	254
Yakutat	301 - 500	Yakutat Slope	7	3	0.31	48	0	123
Shumagin	301 - 500	Shumagin Slope	9	1	0.28	72	0	237
Kodiak	101 - 200	Kodiak Outer Shelf	28	14	0.13	66	6	126
Chirikof	101 - 200	Chirikof Outer Shelf	25	12	0.13	66	0	137
Kodiak	701 - 1000	Kodiak Slope	4	1	0.10	35	0	148
Shumagin	501 - 700	Shumagin Slope	5	1	0.08	15	0	57
Chirikof	501 - 700	Chirikof Slope	7	1	0.04	9	0	30
Kodiak	501 - 700	Kodiak Slope	6	1	0.03	5	0	18

Pacific cod (*Gadus macrocephalus*)

Pacific cod was the seventh most abundant species caught in the 2007 survey (Table 2). Cod were caught throughout the survey area in 40 of the 59 survey strata at depths less than 300 m, although CPUEs were low at depths greater than 200 m (Fig. 19, Table 30). Approximately 63% of the survey-wide biomass was estimated to be at depths less than 100 m. Cod occurred in about 74% of the tows at this depth range. Ninety-six percent of the total Pacific cod biomass was estimated to be in the central and western Gulf of Alaska with very low densities in the Yakutat and Southeastern INPFC areas (Table 29). The highest densities were recorded around the Shumagin Islands and near the western end of the Alaska Peninsula (Fig. 19). Mean weight generally increased with depth in all areas. Distinct length modes (both males and females) at depths less than 100 m occurred around 20 cm in the Kodiak area and at approximately 30 and 40 cm in the Southeastern and Shumagin areas, respectively (Fig. 20). The sex ratio of the Pacific cod population in the survey area was even with males and females each accounting for approximately 50% of the total estimated population.

Table 29. -- Number of survey hauls, number of hauls with Pacific cod, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	120	23.713	97,909	42,513	153,304	1.302
	101 - 200	39	35	10.895	15,991	8,007	23,975	2.889
	201 - 300	17	4	1.100	307	0	704	2.957
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	159	17.509	114,207	58,260	170,153
Chirikof	1 - 100	82	48	5.255	13,683	6,426	20,939	1.311
	101 - 200	69	48	5.607	13,372	7,523	19,220	2.201
	201 - 300	26	13	3.159	3,647	54	7,240	2.545
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	109	4.511	30,701	20,864	40,538
Kodiak	1 - 100	97	67	8.614	33,176	22,070	44,281	0.534
	101 - 200	127	93	10.082	43,687	14,754	72,620	1.961
	201 - 300	30	10	2.473	2,842	0	5,705	2.354
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	170	7.854	79,705	48,911	110,498
Yakutat	1 - 100	11	4	0.473	788	0	1,869	0.793
	101 - 200	33	4	0.298	876	0	1,912	3.246
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	8	0.291	1,664	247	3,082
Southeastern	1 - 100	11	8	1.226	803	0	2,205	0.327
	101 - 200	22	19	4.001	4,434	2,285	6,583	1.494
	201 - 300	17	9	3.515	1,776	0	3,684	1.871
	301 - 500	11	1	0.064	20	0	75	2.932
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	37	2.508	7,033	3,990	10,075
All areas	1 - 100	334	247	11.341	146,358	89,405	203,310	0.968
	101 - 200	290	199	6.406	78,361	48,035	108,686	2.111
	201 - 300	107	36	2.378	8,571	3,710	13,432	2.321
	301 - 500	49	1	0.016	20	0	75	2.932
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	483	7.291	233,310	168,611	298,008

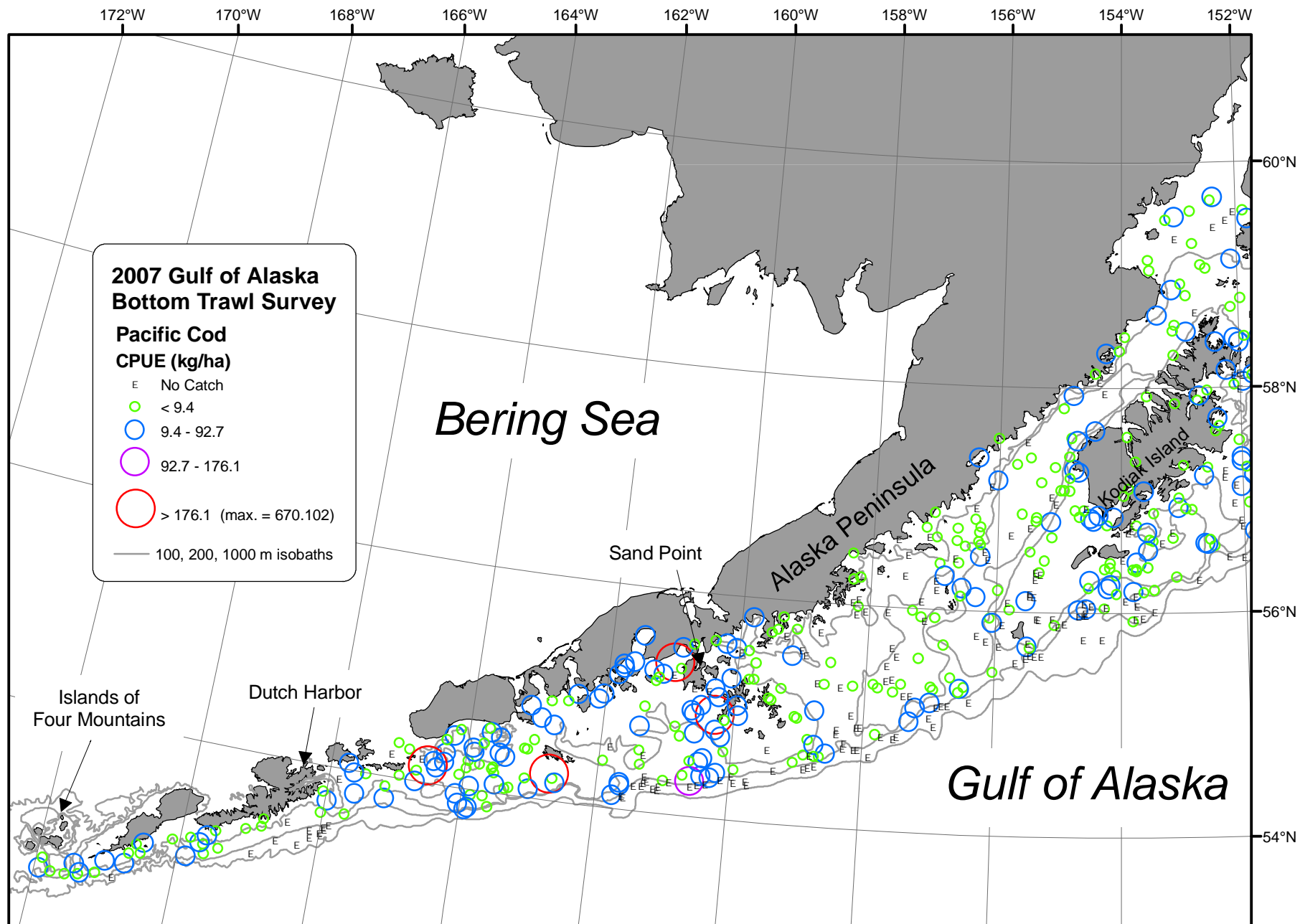


Figure 19. -- Distribution and relative abundance of Pacific cod from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

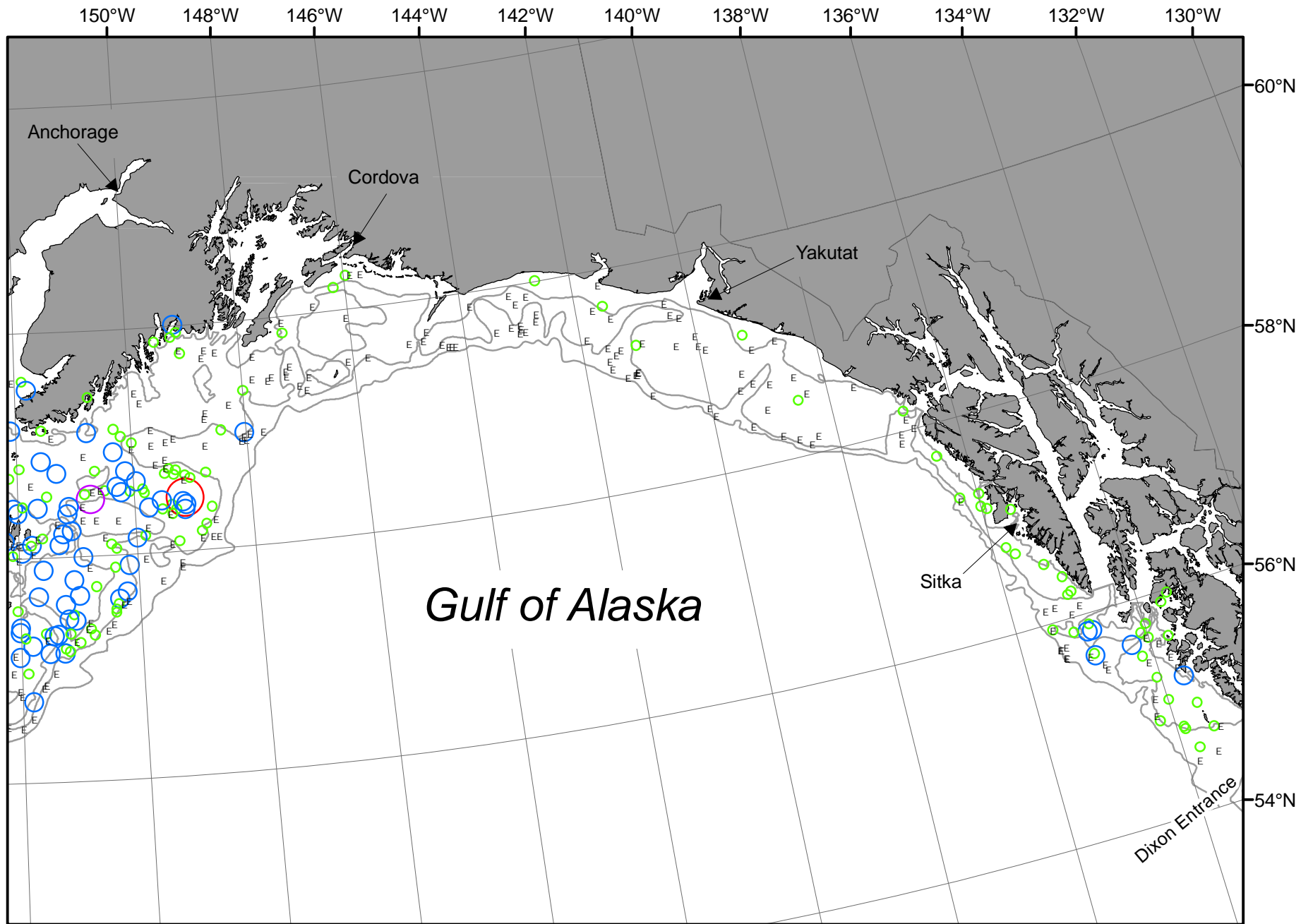


Figure 19. -- Continued (Pacific cod 2007).

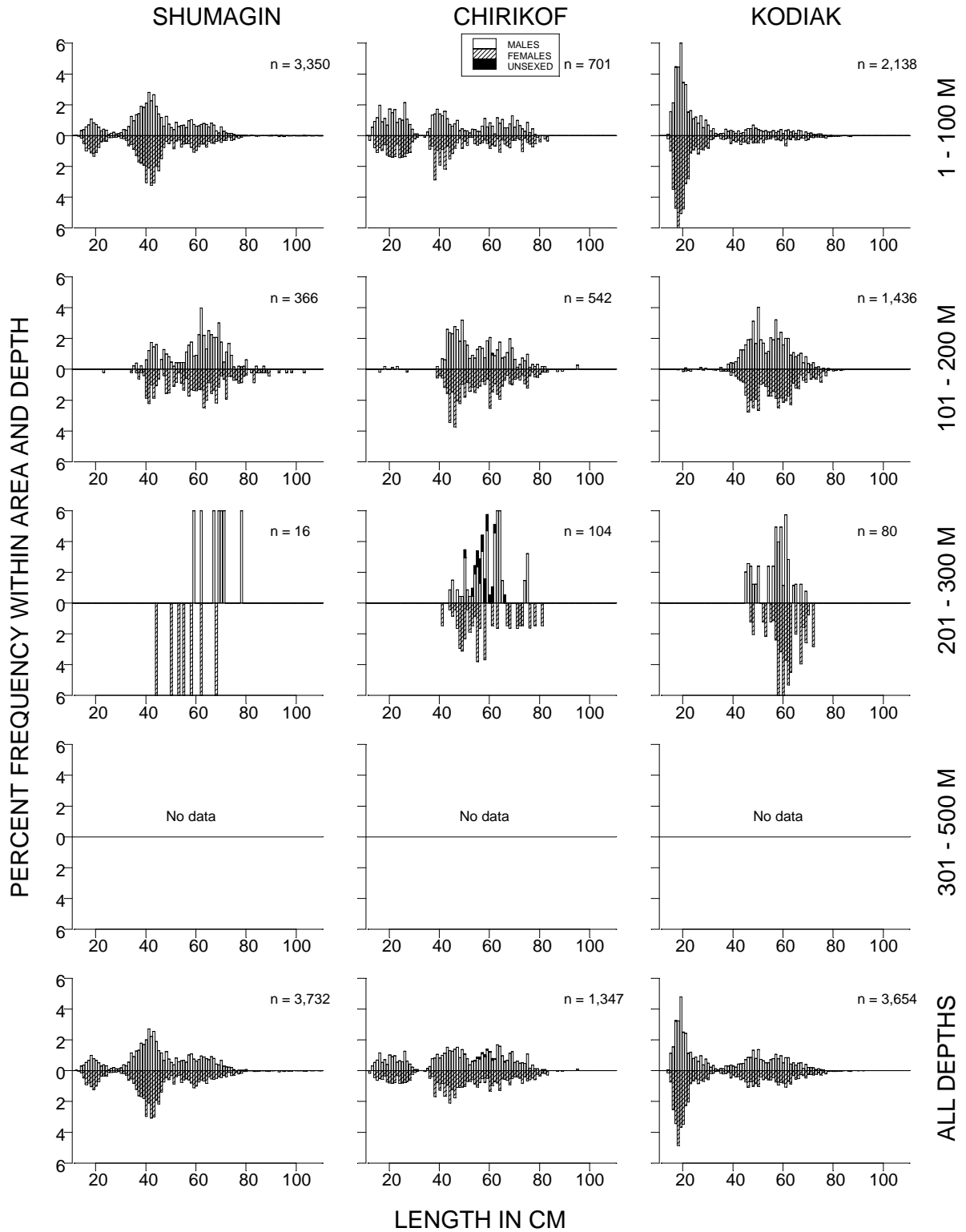


Figure 20. -- Size composition of Pacific cod from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

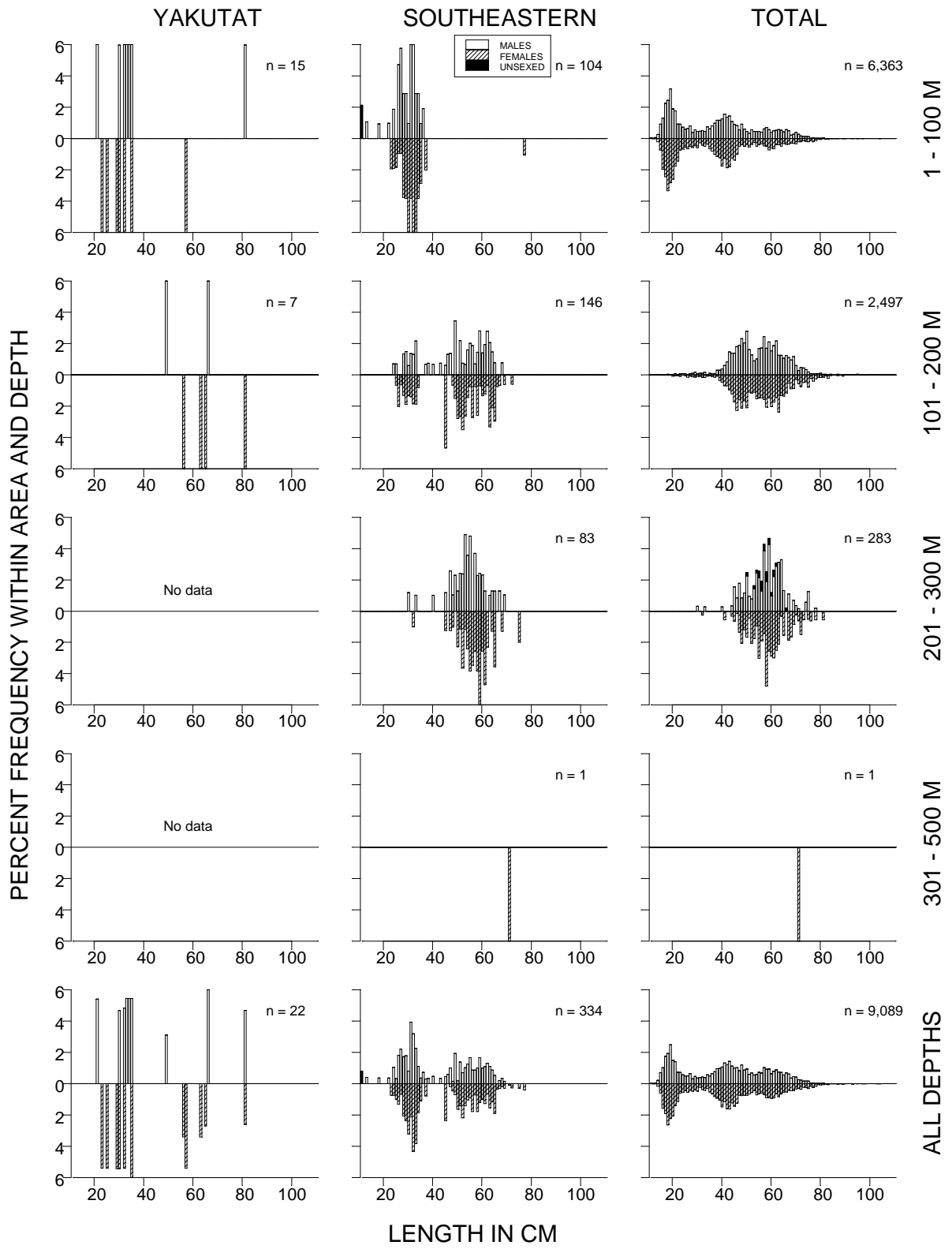


Figure 20. -- (continued).

Table 30. -- Catch per unit of effort by stratum for Pacific cod sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Shumagin	1 - 100	Lower Alaska Peninsula	28	23	33.08	22,747	0	52,279
Kodiak	101 - 200	Portlock Flats	35	29	29.53	21,665	0	50,294
Shumagin	1 - 100	Shumagin Bank	36	31	27.83	34,504	0	76,882
Shumagin	1 - 100	Davidson Bank	48	47	24.88	34,034	11,371	56,698
Shumagin	101 - 200	Shumagin Outer Shelf	28	25	13.03	10,622	3,263	17,982
Chirikof	101 - 200	Chirikof Outer Shelf	25	19	11.96	5,993	1,960	10,026
Kodiak	1 - 100	Albatross Shallows	28	20	11.67	6,732	2,818	10,645
Kodiak	1 - 100	Albatross Banks	39	25	10.61	16,349	7,757	24,940
Kodiak	101 - 200	Albatross Gullies	28	23	10.30	8,147	4,497	11,798
Shumagin	101 - 200	West Shumagin Gully	4	4	9.26	2,110	0	4,930
Kodiak	101 - 200	Kodiak Outer Shelf	28	20	8.33	4,189	1,717	6,660
Shumagin	1 - 100	Fox Islands	21	19	7.95	6,623	2,663	10,584
Shumagin	101 - 200	Sanak Gully	7	6	7.68	3,259	126	6,393
Kodiak	101 - 200	Barren Islands	18	16	7.48	8,217	4,449	11,984
Chirikof	101 - 200	Shelikof Edge	27	22	6.63	5,127	1,327	8,927
Kodiak	1 - 100	Lower Cook Inlet	14	10	6.48	6,408	792	12,024
Chirikof	1 - 100	Upper Alaska Peninsula	19	11	6.47	5,135	0	10,828
Chirikof	1 - 100	Chirikof Bank	40	27	5.73	6,187	2,926	9,448
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	8	5.06	2,124	804	3,443
Kodiak	1 - 100	Northern Kodiak Shallows	9	6	4.96	1,091	0	2,934
Kodiak	1 - 100	Kenai Peninsula	7	6	4.94	2,596	0	5,550
Chirikof	201 - 300	Chirikof Slope	8	2	4.33	662	0	1,687
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	8	4.30	1,690	0	3,603
Southeastern	101 - 200	Prince of Wales Shelf	14	11	3.36	2,311	432	4,189
Chirikof	1 - 100	Semidi Bank	23	10	3.23	2,360	0	5,954
Chirikof	201 - 300	Lower Shelikof Gully	18	11	2.98	2,985	0	6,476
Kodiak	201 - 300	Kenai Gullies	19	5	2.83	1,884	0	4,615
Chirikof	101 - 200	East Shumagin Gully	17	7	2.03	2,252	0	4,516
Kodiak	201 - 300	Kodiak Slope	7	3	1.99	323	0	792
Kodiak	201 - 300	Upper Shelikof Gully	4	2	1.98	635	0	2,018
Southeastern	1 - 100	Southeastern Shallows	11	8	1.23	803	0	2,223
Kodiak	101 - 200	Kenai Flats	18	5	1.22	1,470	0	3,066
Shumagin	201 - 300	Shumagin Slope	17	4	1.10	307	0	706
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	0.76	86	0	453
Yakutat	1 - 100	Middleton Shallows	5	1	0.62	417	0	1,575
Yakutat	101 - 200	Middleton Shelf	9	2	0.61	445	0	1,124
Yakutat	101 - 200	Yakutat Flats	8	1	0.42	379	0	1,276
Yakutat	1 - 100	Yakutat Shallows	6	3	0.37	371	0	972
Southeastern	301 - 500	Southeastern Slope	4	1	0.26	20	0	83
Yakutat	101 - 200	Fairweather Shelf	8	1	0.07	52	0	175

Atka mackerel (*Pleurogrammus monopterygius*)

Approximately 98% of the estimated Atka mackerel population was caught in the Shumagin INPFC area where local abundance was relatively high near the Islands of Four Mountains and around the western end of the Alaska Peninsula (Fig. 21 and Tables 31- 32). Almost the entire population was confined to depths less than 200 m with about 86% in waters less than 100 m. Atka mackerel were caught in about 23% of tows at depths less than 200 m in the Shumagin INPFC area. No Atka mackerel were caught east of the Kenai Peninsula. It appears that Atka mackerel segregated by depth with males dominant at depths less than 100 m and females dominant at depths between 101 and 200 m. Most of the fish captured were longer than 40 cm FL (Fig. 22). The sex ratio of the Atka mackerel population in the survey area was dominated by males, which comprised approximately 58% of the total estimated population.

Table 31. -- Number of survey hauls, number of hauls with Atka mackerel, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	29	16.891	69,741	0	142,328	1.325
	101 - 200	39	11	7.336	10,768	0	30,747	0.951
	201 - 300	17	2	0.138	38	0	105	1.000
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	42	12.348	80,546	5,383	155,710
Chirikof	1 - 100	82	6	0.354	922	0	2,532	1.247
	101 - 200	69	9	0.200	478	98	857	1.192
	201 - 300	26	3	0.141	163	0	375	1.156
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	18	0.230	1,563	0	3,214
Kodiak	1 - 100	97	4	0.009	35	0	73	0.458
	101 - 200	127	6	0.038	163	14	313	1.233
	201 - 300	30	1	0.018	20	0	69	1.096
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	11	0.022	219	61	377
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	39	5.478	70,697	0	143,301	1.323
	101 - 200	290	26	0.933	11,409	0	31,392	0.962
	201 - 300	107	6	0.062	222	0	448	1.120
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	71	2.573	82,328	7,147	157,509

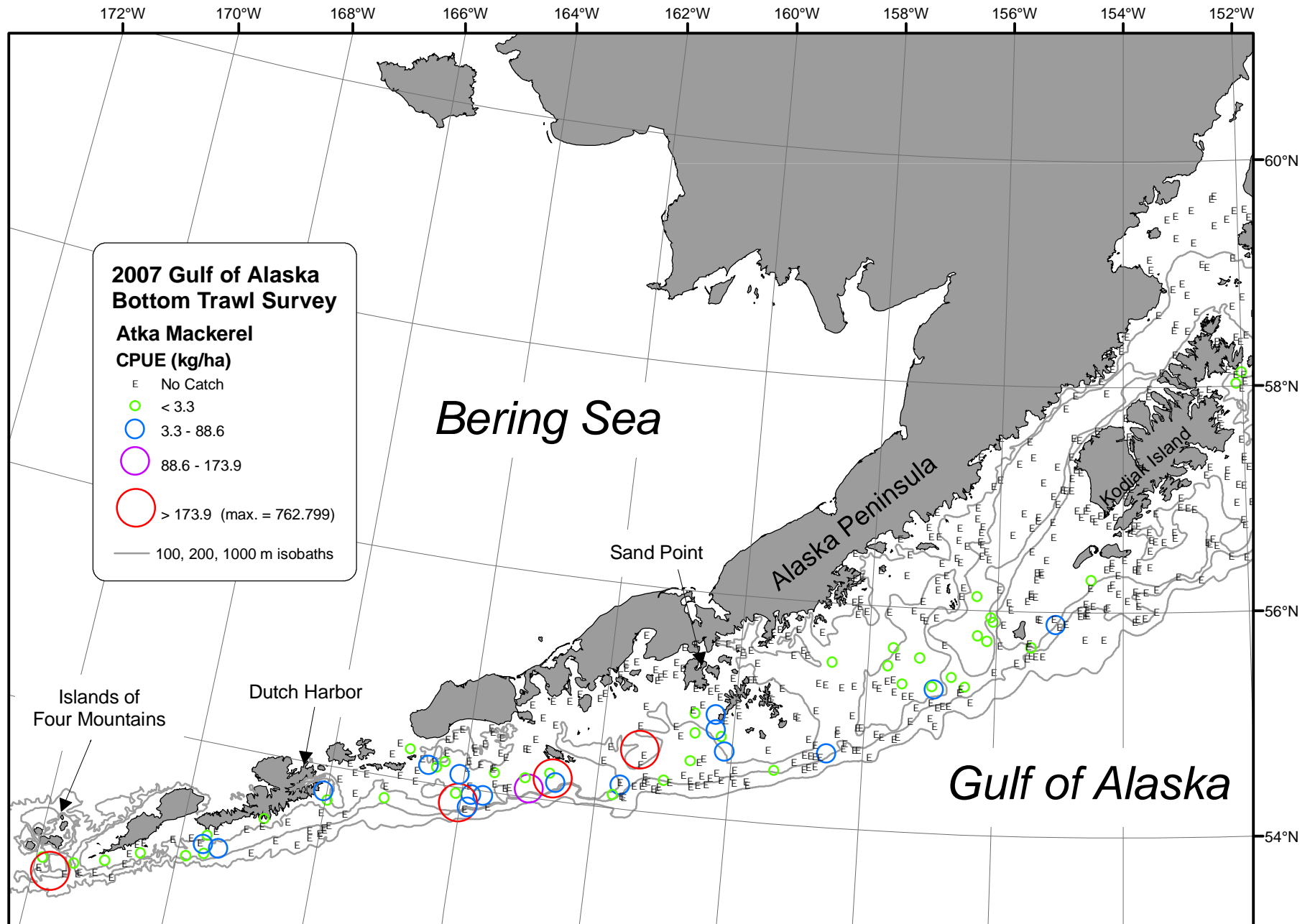


Figure 21. -- Distribution and relative abundance of Atka mackerel from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.



Figure 21. -- Continued (Atka mackerel 2007).

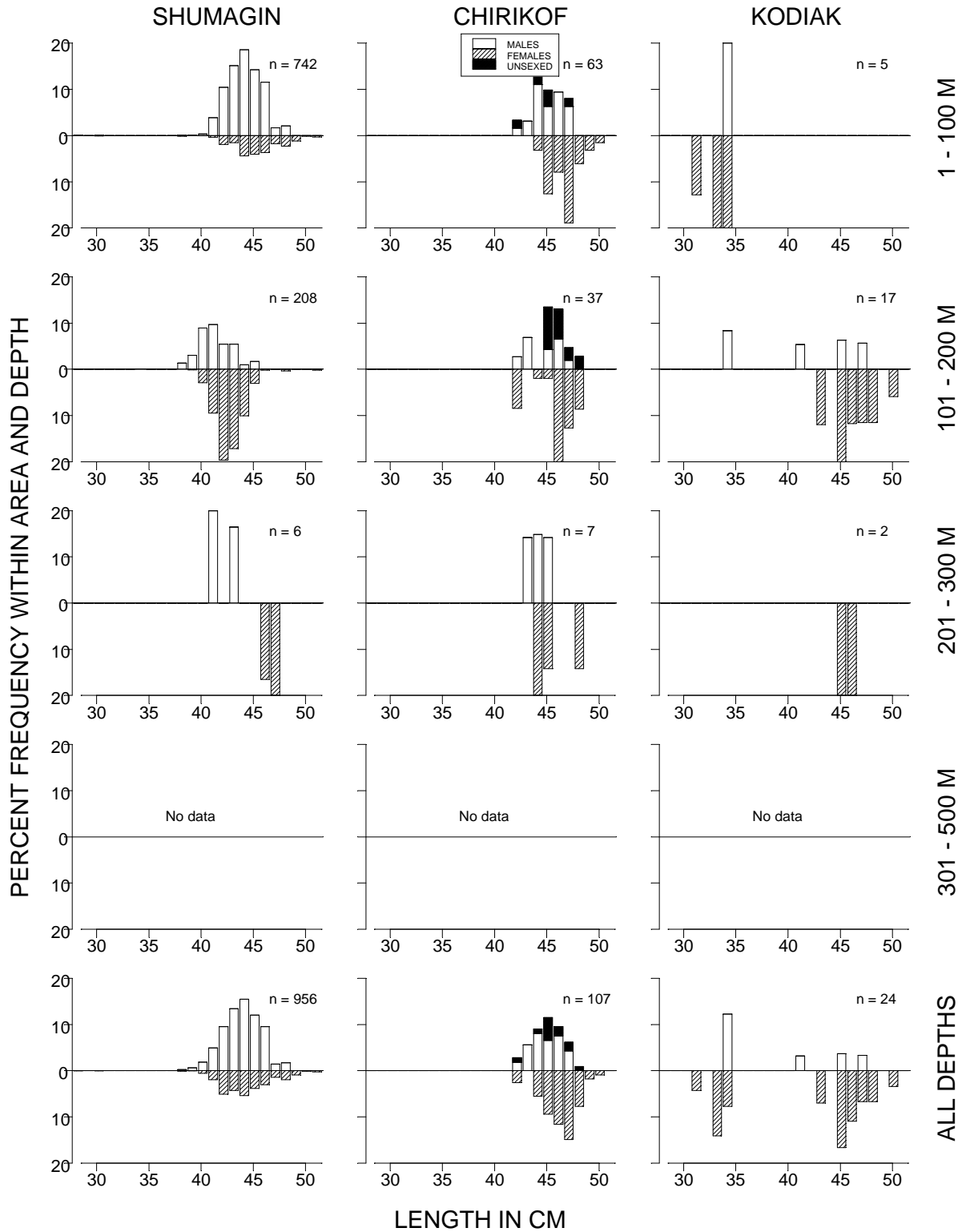


Figure 22. -- Size composition of Atka mackerel from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

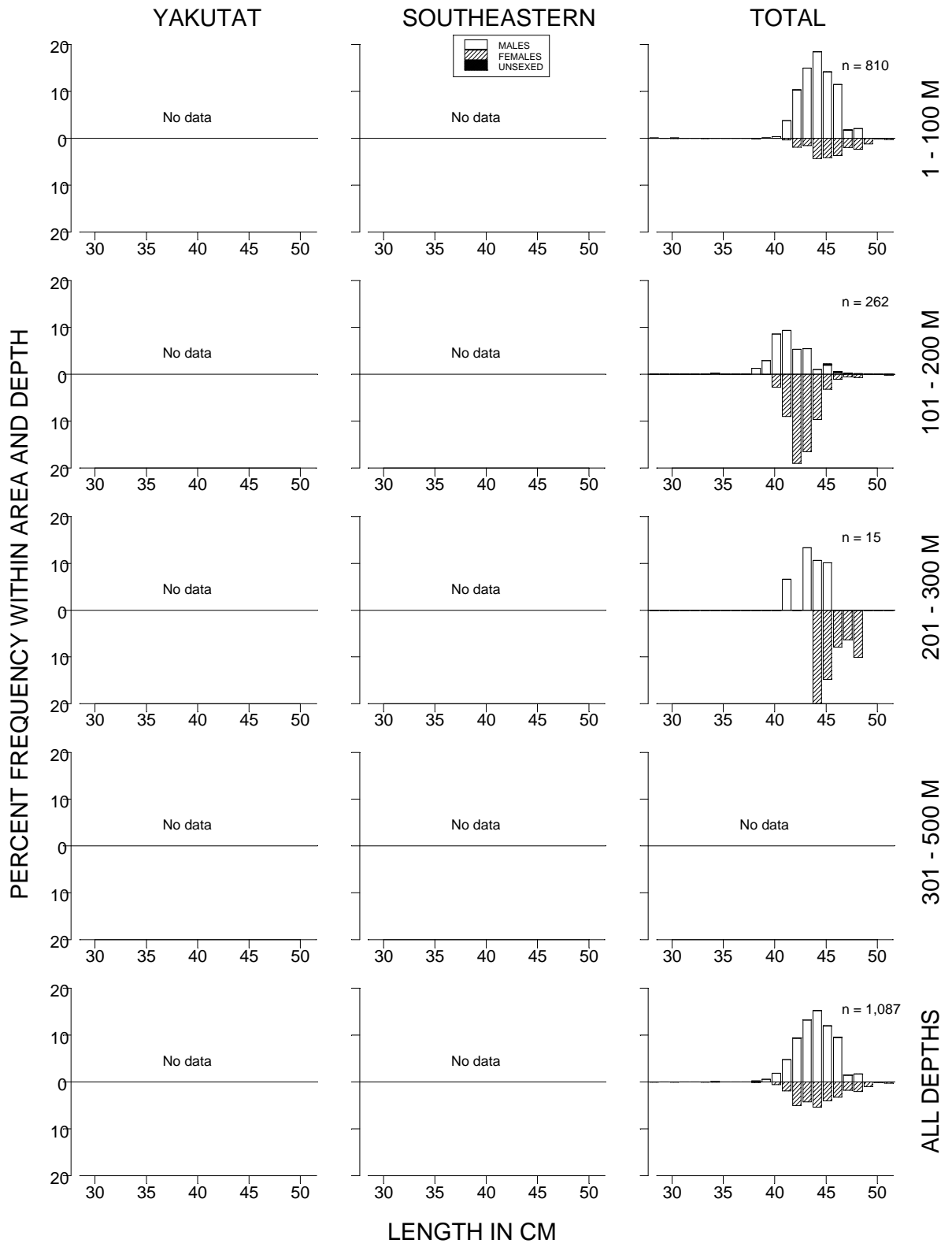


Figure 22. -- (continued).

Table 32. -- Catch per unit of effort by stratum for Atka mackerel sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Shumagin	1 - 100	Davidson Bank	48	17	30.95	42,344	0	92,980
Shumagin	1 - 100	Shumagin Bank	36	6	21.67	26,871	0	80,486
Shumagin	101 - 200	Shumagin Outer Shelf	28	9	13.05	10,644	0	30,661
Chirikof	1 - 100	Semidi Bank	23	5	1.25	909	0	2,523
Shumagin	1 - 100	Fox Islands	21	6	0.63	526	0	1,128
Chirikof	101 - 200	Chirikof Outer Shelf	25	4	0.50	248	0	526
Kodiak	101 - 200	Kodiak Outer Shelf	28	5	0.31	157	8	307
Shumagin	101 - 200	Sanak Gully	7	2	0.29	123	0	355
Chirikof	201 - 300	Lower Shelikof Gully	18	3	0.16	163	0	376
Shumagin	201 - 300	Shumagin Slope	17	2	0.14	38	0	106
Chirikof	101 - 200	Shelikof Edge	27	3	0.13	100	0	261
Kodiak	201 - 300	Kodiak Slope	7	1	0.13	20	0	71
Chirikof	101 - 200	East Shumagin Gully	17	2	0.12	130	0	345
Kodiak	1 - 100	Albatross Banks	39	3	0.02	31	0	69
Chirikof	1 - 100	Chirikof Bank	40	1	0.01	13	0	38
Kodiak	101 - 200	Albatross Gullies	28	1	0.01	6	0	18
Kodiak	1 - 100	Albatross Shallows	28	1	0.01	4	0	12

Sablefish (*Anoplopoma fimbria*)

Sablefish was the ninth most abundant species caught in the 2007 survey (Table 2). They were caught throughout the survey area in 54 of the 59 survey strata and at all depths. Sablefish occurred in 90% of tows in waters deeper than 200 m, including all tows deeper than 500 m, and 91% of the estimated biomass was recorded at depths deeper than 200 m (Fig. 23, Table 33). CPUEs were consistently highest in the slope strata of all INPFC areas (Table 34). Mean weight generally increased with depth in all areas to 500 m and then remained relatively constant between 501 and 1,000 m (Table 33). A distinct length mode occurred around 65 cm FL at depths greater than 300 m in the Chirikof, Kodiak, and Yakutat INPFC areas, whereas the corresponding length mode occurred at somewhat shorter lengths in the Shumagin and Southeastern areas (55-60 cm, Fig. 24). Small fish (less than 50 cm FL) were almost exclusively confined to depths less than 300 m in all areas. The sex ratio of the sablefish population in the survey area was dominated by males in all INPFC areas and depth ranges. Overall, males comprised approximately 64% of the total estimated population.

Table 33. -- Number of survey hauls, number of hauls with sablefish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	13	0.045	186	36	336	0.259
	101 - 200	39	2	0.072	105	0	365	0.809
	201 - 300	17	12	12.026	3,353	370	6,336	1.522
	301 - 500	9	9	21.569	5,459	462	10,457	2.015
	501 - 700	5	5	28.018	5,619	1,784	9,455	2.686
	701 - 1000	2	2	31.415	6,086	1,363	10,808	3.674
	All depths		205	43	3.190	20,808	13,996	27,620
Chirikof	1 - 100	82	6	0.047	122	1	243	0.410
	101 - 200	69	13	0.407	972	389	1,554	1.515
	201 - 300	26	26	10.630	12,274	7,348	17,200	2.228
	301 - 500	10	10	33.043	5,300	0	10,757	2.059
	501 - 700	7	7	72.876	14,234	8,100	20,368	3.306
	701 - 1000	5	5	28.657	8,785	2,949	14,622	3.308
	All depths		199	67	6.126	41,687	31,782	51,591
Kodiak	1 - 100	97	13	0.661	2,545	0	5,532	1.050
	101 - 200	127	65	2.498	10,823	6,544	15,101	1.763
	201 - 300	30	29	25.516	29,319	10,289	48,349	2.523
	301 - 500	10	10	66.064	19,236	7,069	31,403	3.046
	501 - 700	6	6	75.019	13,090	4,648	21,531	3.477
	701 - 1000	4	4	56.950	19,898	10,854	28,942	3.559
	All depths		274	127	9.352	94,910	70,651	119,169
Yakutat	1 - 100	11	4	0.363	606	0	1,498	0.536
	101 - 200	33	13	0.512	1,504	72	2,935	0.886
	201 - 300	17	12	4.015	2,076	852	3,299	2.133
	301 - 500	9	7	14.202	3,732	0	9,080	3.112
	501 - 700	3	3	31.260	4,593	382	8,804	3.292
	701 - 1000	3	3	83.966	15,848	12,125	19,571	3.293
	All depths		76	42	4.958	28,358	22,196	34,519
Southeastern	1 - 100	11	2	0.266	174	0	432	0.512
	101 - 200	22	5	0.272	302	3	600	1.657
	201 - 300	17	10	10.608	5,359	0	15,836	3.311
	301 - 500	11	11	23.079	7,194	0	14,492	3.028
	501 - 700	3	3	9.559	988	506	1,470	2.257
	701 - 1000	2	2	24.510	2,957	2,656	3,258	2.452
	All depths		66	33	6.053	16,973	6,750	27,196
All areas	1 - 100	334	38	0.282	3,633	720	6,545	0.740
	101 - 200	290	98	1.120	13,705	9,218	18,191	1.559
	201 - 300	107	89	14.531	52,380	31,740	73,021	2.389
	301 - 500	49	47	31.991	40,921	25,447	56,394	2.697
	501 - 700	24	24	46.944	38,524	28,440	48,609	3.212
	701 - 1000	16	16	46.222	53,573	43,443	63,703	3.365
	All depths		820	312	6.335	202,736	173,933	231,538

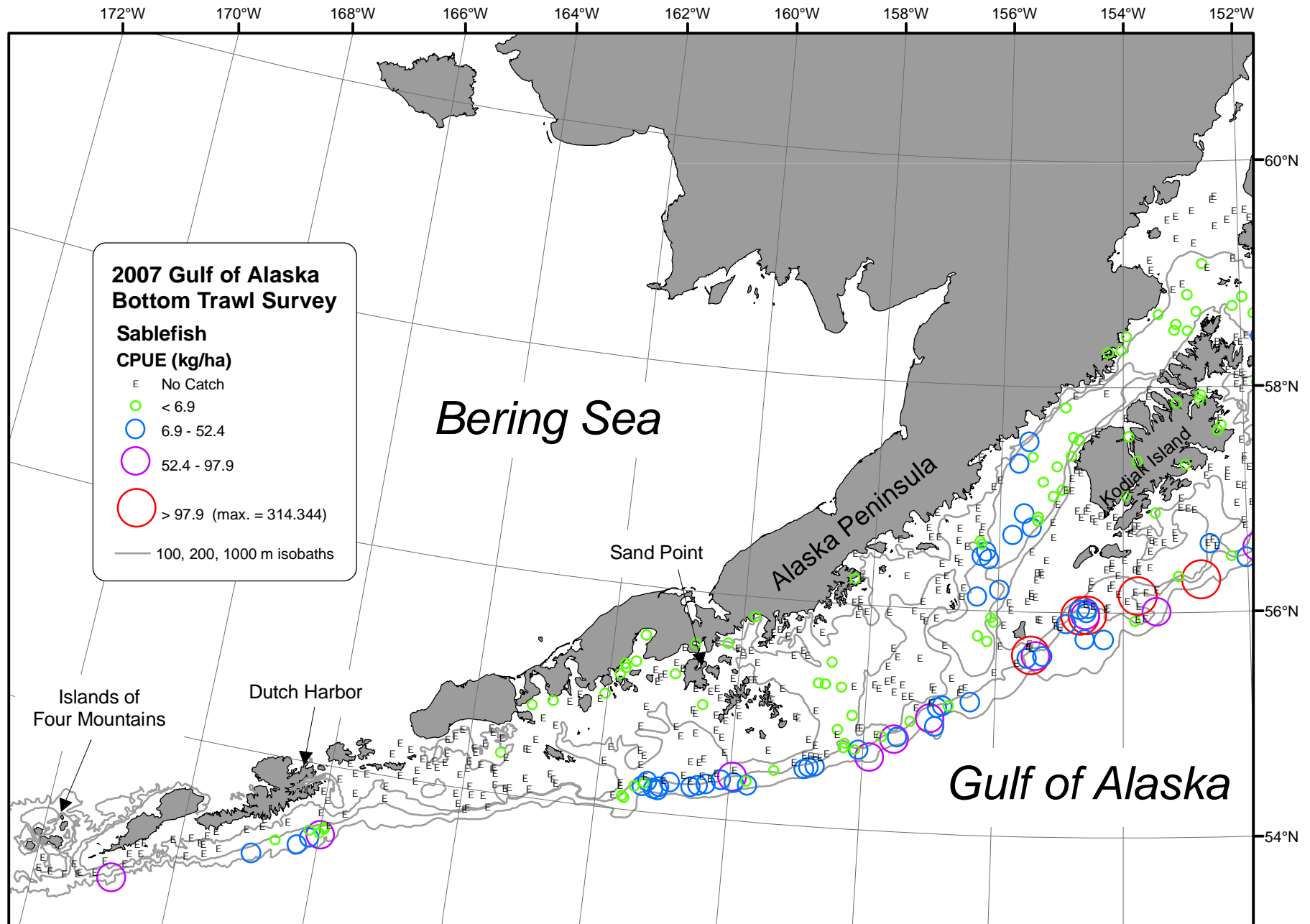


Figure 23. -- Distribution and relative abundance of sablefish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

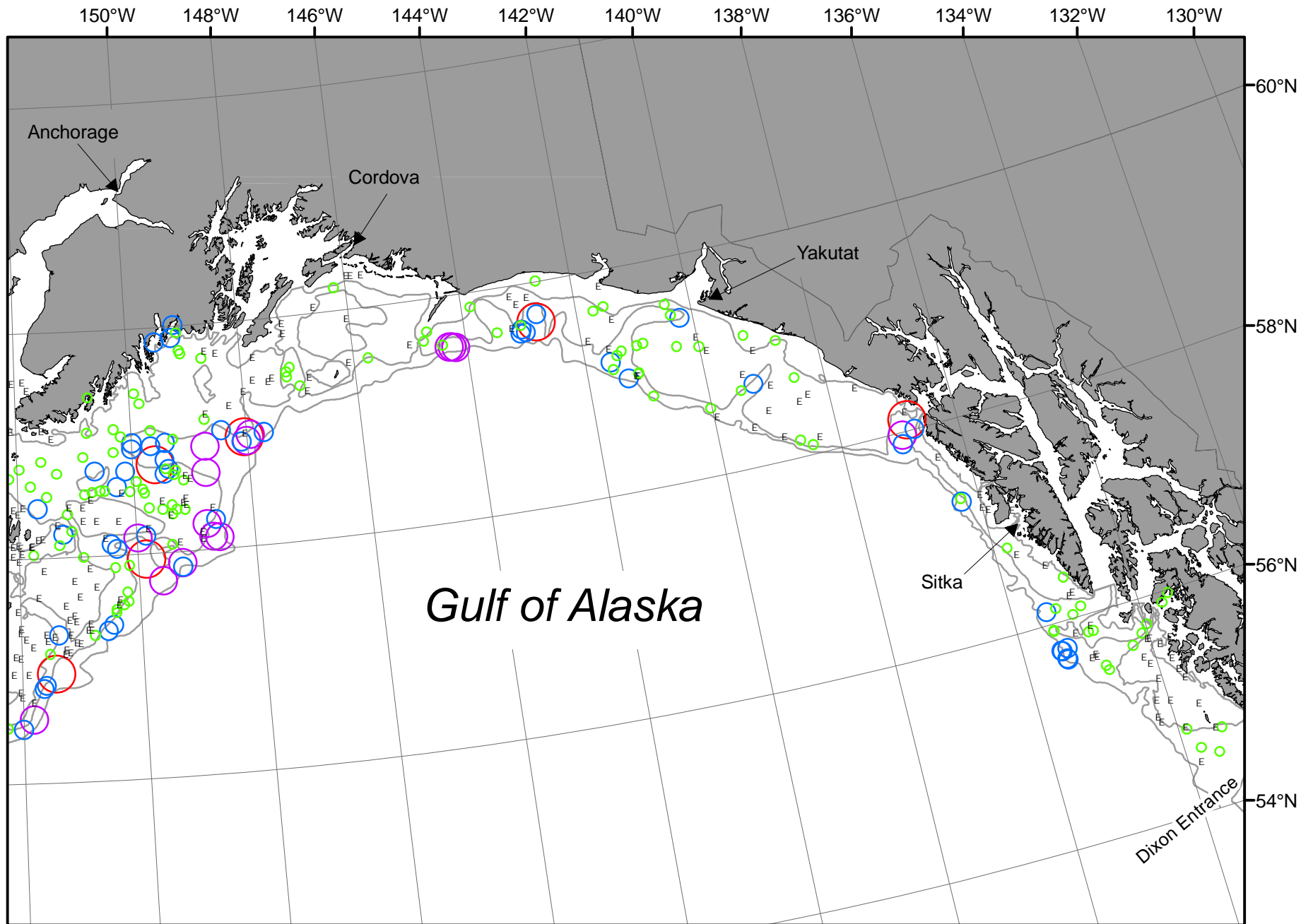


Figure 23. -- Continued (sablefish 2007).

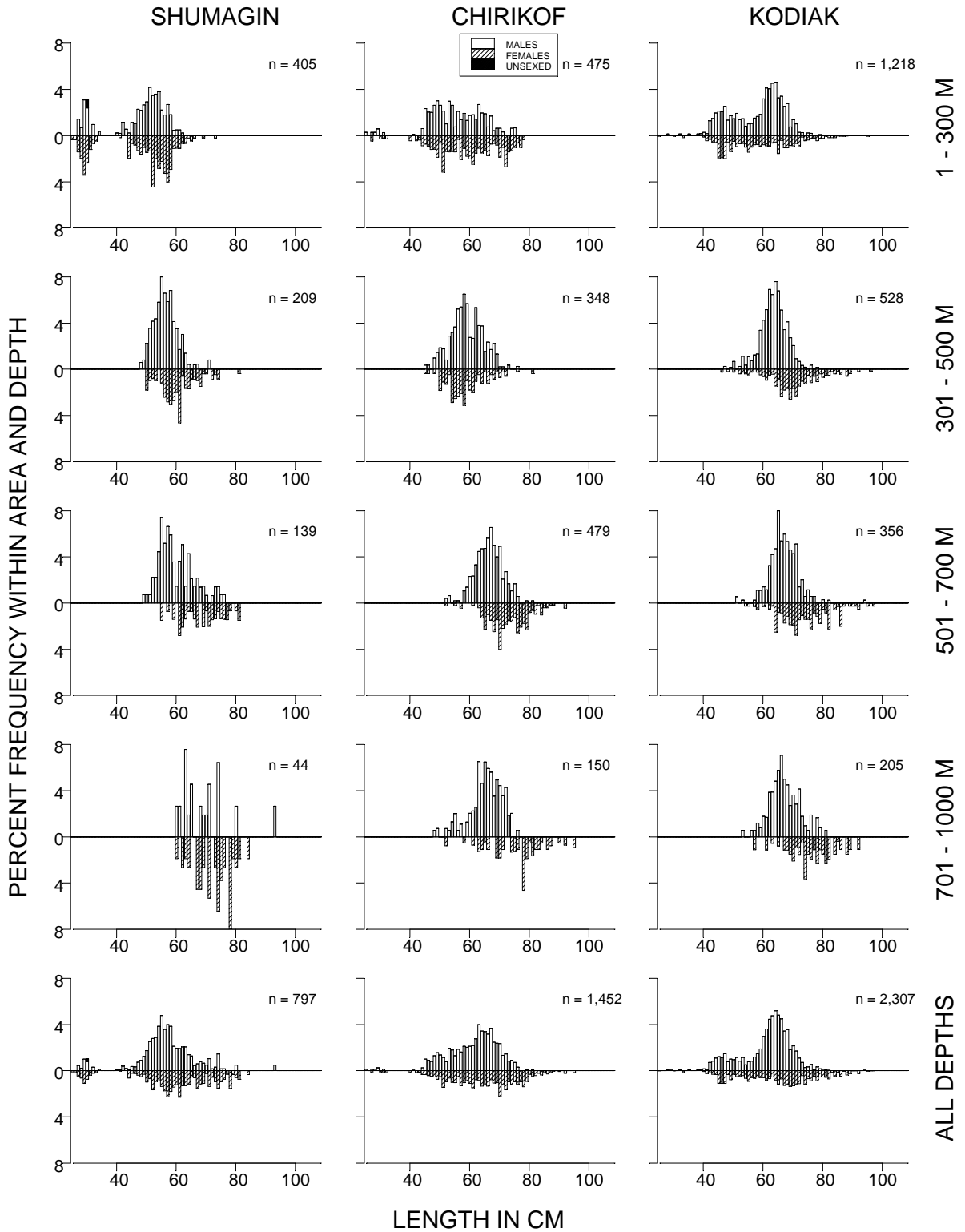


Figure 24. -- Size composition of sablefish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

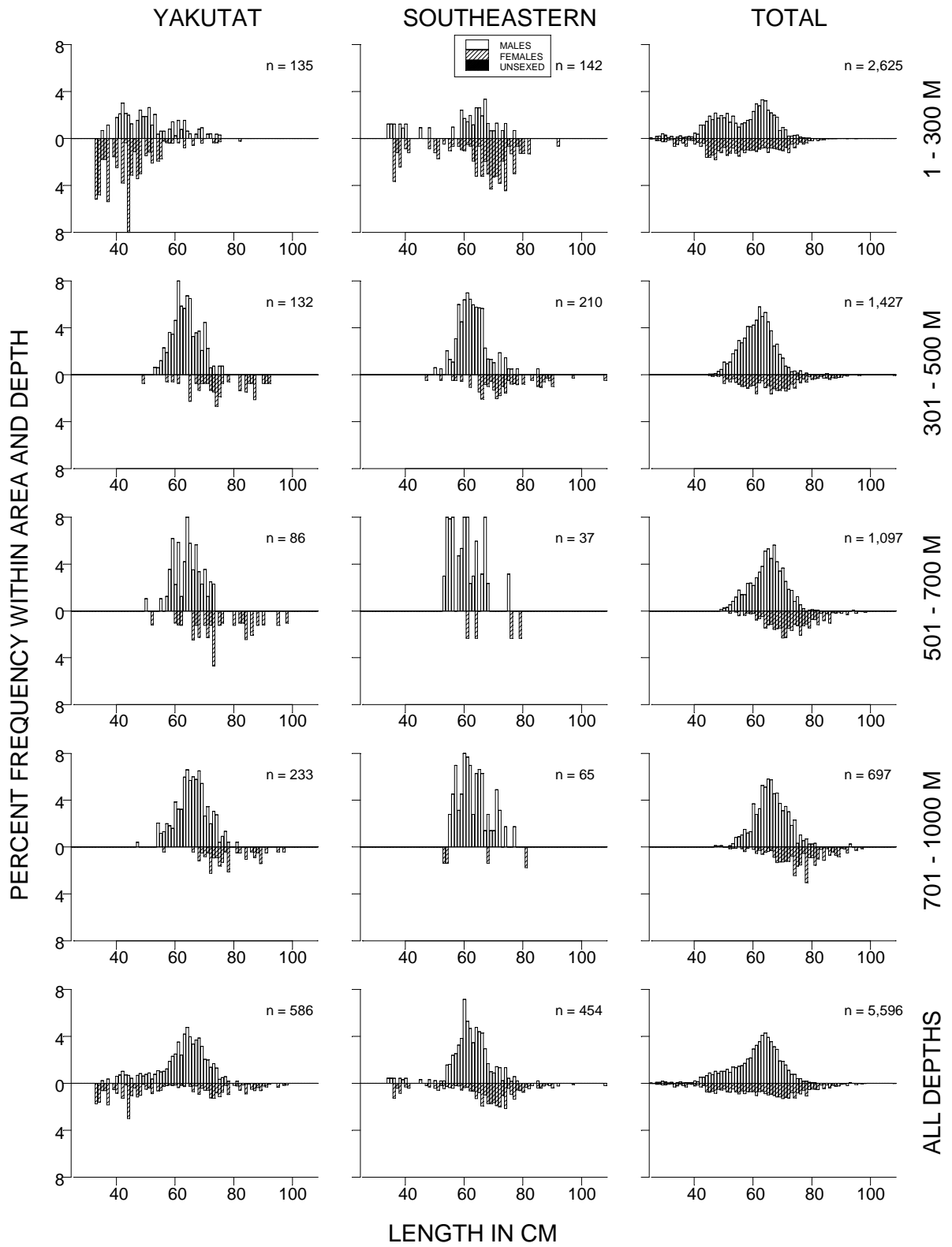


Figure 24. -- (continued).

Table 34. -- Catch per unit of effort by stratum for sablefish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number	Hauls	CPUE (kg/ha)	Biomass (t)	Lower	Upper
			of hauls	with catch			CI biomass	CI biomass
Yakutat	701 - 1000	Yakutat Slope	3	3	83.97	15,848	10,814	20,882
Kodiak	501 - 700	Kodiak Slope	6	6	75.02	13,090	4,221	21,959
Chirikof	501 - 700	Chirikof Slope	7	7	72.88	14,234	7,888	20,581
Kodiak	301 - 500	Kodiak Slope	10	10	66.06	19,236	6,884	31,589
Kodiak	701 - 1000	Kodiak Slope	4	4	56.95	19,898	9,531	30,264
Kodiak	201 - 300	Kodiak Slope	7	7	55.41	8,991	0	26,385
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	43.63	4,909	0	19,062
Chirikof	301 - 500	Chirikof Slope	10	10	33.04	5,300	0	10,841
Shumagin	701 - 1000	Shumagin Slope	2	2	31.42	6,086	0	20,030
Yakutat	501 - 700	Yakutat Slope	3	3	31.26	4,593	0	10,287
Chirikof	701 - 1000	Chirikof Slope	5	5	28.66	8,785	2,483	15,087
Shumagin	501 - 700	Shumagin Slope	5	5	28.02	5,619	1,478	9,761
Kodiak	201 - 300	Kenai Gullies	19	19	28.00	18,649	6,318	30,979
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	26.57	6,229	0	13,644
Southeastern	701 - 1000	Southeastern Slope	2	2	24.51	2,957	2,068	3,845
Shumagin	301 - 500	Shumagin Slope	9	9	21.57	5,459	365	10,554
Yakutat	301 - 500	Yakutat Slope	7	5	21.52	3,272	0	8,782
Chirikof	201 - 300	Chirikof Slope	8	8	17.34	2,650	684	4,617
Southeastern	301 - 500	Southeastern Slope	4	4	12.49	965	0	2,818
Shumagin	201 - 300	Shumagin Slope	17	12	12.03	3,353	356	6,350
Chirikof	201 - 300	Lower Shelikof Gully	18	18	9.61	9,623	4,998	14,249
Southeastern	501 - 700	Southeastern Slope	3	3	9.56	988	336	1,640
Yakutat	201 - 300	Yakutat Gullies	8	7	5.52	1,678	454	2,903
Kodiak	201 - 300	Upper Shelikof Gully	4	3	5.24	1,680	0	4,344
Kodiak	101 - 200	Albatross Gullies	28	12	5.12	4,050	880	7,220
Kodiak	1 - 100	Kenai Peninsula	7	5	4.62	2,430	0	5,515
Yakutat	301 - 500	Yakutat Gullies	2	2	4.16	460	0	3,140
Kodiak	101 - 200	Portlock Flats	35	25	2.94	2,159	922	3,396
Kodiak	101 - 200	Barren Islands	18	14	2.05	2,246	711	3,781
Yakutat	201 - 300	Yakutat Slope	9	5	1.87	397	36	759
Kodiak	101 - 200	Kenai Flats	18	9	1.73	2,092	0	4,383
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	7	1.15	450	121	779
Yakutat	101 - 200	Yakutat Flats	8	5	0.80	722	0	1,971
Yakutat	101 - 200	Fairweather Shelf	8	3	0.71	547	0	1,454
Chirikof	101 - 200	East Shumagin Gully	17	6	0.57	629	115	1,144
Yakutat	1 - 100	Yakutat Shallows	6	3	0.55	547	0	1,472
Kodiak	101 - 200	Kodiak Outer Shelf	28	5	0.55	277	0	560
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	2	0.44	186	0	478
Shumagin	101 - 200	West Shumagin Gully	4	1	0.41	93	0	389
Chirikof	101 - 200	Shelikof Edge	27	6	0.38	290	27	554
Yakutat	101 - 200	Yakataga Shelf	8	3	0.31	164	0	470
Southeastern	1 - 100	Southeastern Shallows	11	2	0.27	174	0	436
Southeastern	101 - 200	Prince of Wales Shelf	14	3	0.17	115	0	255
Shumagin	1 - 100	Lower Alaska Peninsula	28	10	0.16	113	16	210
Kodiak	1 - 100	Albatross Shallows	28	5	0.16	94	0	237
Chirikof	1 - 100	Upper Alaska Peninsula	19	5	0.14	114	0	235
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.10	52	0	159
Yakutat	101 - 200	Middleton Shelf	9	2	0.10	71	0	182
Kodiak	1 - 100	Northern Kodiak Shallows	9	3	0.10	21	0	60
Yakutat	1 - 100	Middleton Shallows	5	1	0.09	59	0	221
Shumagin	1 - 100	Shumagin Bank	36	2	0.05	59	0	173
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.02	12	0	36
Shumagin	1 - 100	Davidson Bank	48	1	0.011	15	0	44
Chirikof	1 - 100	Chirikof Bank	40	1	0.008	8	0	25

Giant grenadier (*Albatrossia pectoralis*)

Giant grenadier was the third most abundant species caught in the 2007 survey (Table 2). They were caught throughout the survey area, although almost exclusively in slope strata at depths exceeding 300 m (Fig. 25, Tables 35-36). Approximately 93% of the biomass was found in the Shumagin, Chirikof, and Kodiak INPFC areas with most of the remainder in the Yakutat INPFC area. Giant grenadier occurred in 70% of tows in waters deeper than 300 m, including all tows deeper than 500 m, and over 99% of the estimated biomass was recorded at depths deeper than 300 m (Table 35). Mean CPUEs were very high in most of the strata where giant grenadier occurred. Mean weight generally declined somewhat with depth as the smaller males made up a larger fraction of the total population at deeper depths (Fig. 26, Table 35). A relatively distinct length mode occurred around 25-30 cm (snout to anal fin insertion) at all depths and INPFC areas for females, whereas males exhibited no discernable length mode. The sex ratio of the sablefish population in the survey area was dominated by females who comprised approximately 86% of the total estimated population.

Table 35. -- Number of survey hauls, number of hauls with giant grenadier, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	2	13.753	3,834	0	10,965	3.192
	301 - 500	9	7	276.622	70,016	9,550	130,482	3.266
	501 - 700	5	5	319.515	64,082	4,480	123,684	2.736
	701 - 1000	2	2	210.171	40,715	12,256	69,174	2.626
	All depths		205	16	27.388	178,647	101,999	255,294
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	0	---	---	---	---	---
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	4	83.374	13,373	0	34,176	2.887
	501 - 700	7	7	345.557	67,495	44,240	90,749	2.639
	701 - 1000	5	5	208.389	63,883	0	175,317	2.760
	All depths		199	16	21.270	144,750	27,990	261,510
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	7	66.843	19,463	0	39,519	3.282
	501 - 700	6	6	430.973	75,198	10,773	139,623	2.775
	701 - 1000	4	4	102.446	35,793	19,334	52,253	2.193
	All depths		274	17	12.854	130,454	67,838	193,071
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	1	8.657	2,275	0	7,655	2.660
	501 - 700	3	3	148.193	21,773	0	60,157	2.938
	701 - 1000	3	3	38.008	7,174	2,928	11,419	2.183
	All depths		76	7	5.459	31,222	0	70,513
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	3	2.995	933	0	2,358	2.776
	501 - 700	3	3	4.473	462	135	789	2.458
	701 - 1000	2	2	12.587	1,518	0	4,764	1.130
	All depths		66	8	1.039	2,914	539	5,289
All areas	1 - 100	334	0	---	---	---	---	---
	101 - 200	290	0	---	---	---	---	---
	201 - 300	107	2	1.064	3,834	0	10,965	3.192
	301 - 500	49	22	82.914	106,060	41,116	171,004	3.195
	501 - 700	24	24	279.064	229,010	146,691	311,329	2.736
	701 - 1000	16	16	128.626	149,083	40,754	257,411	2.501
	All depths		820	64	15.249	487,987	346,802	629,173

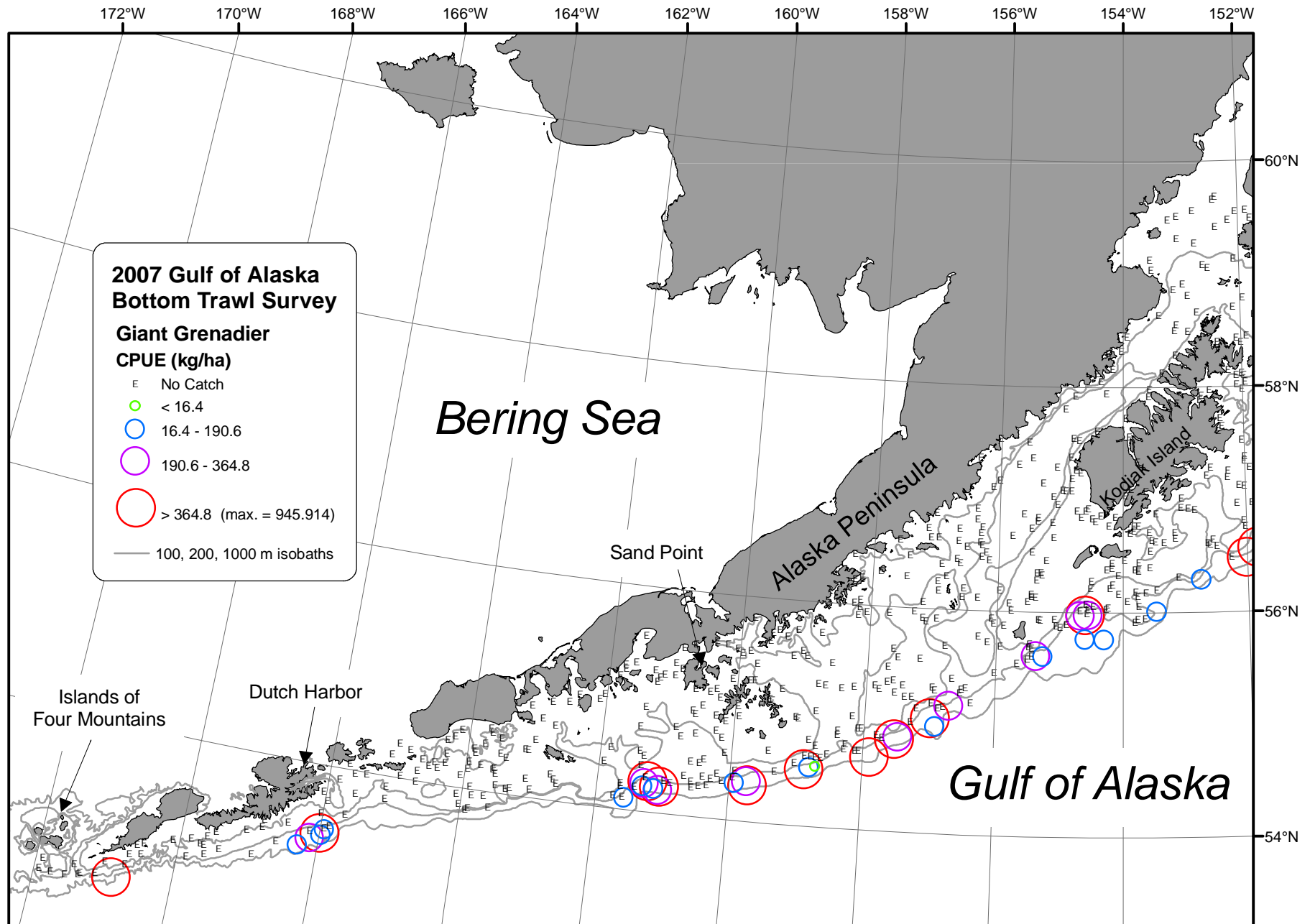


Figure 25. -- Distribution and relative abundance of giant grenadier from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

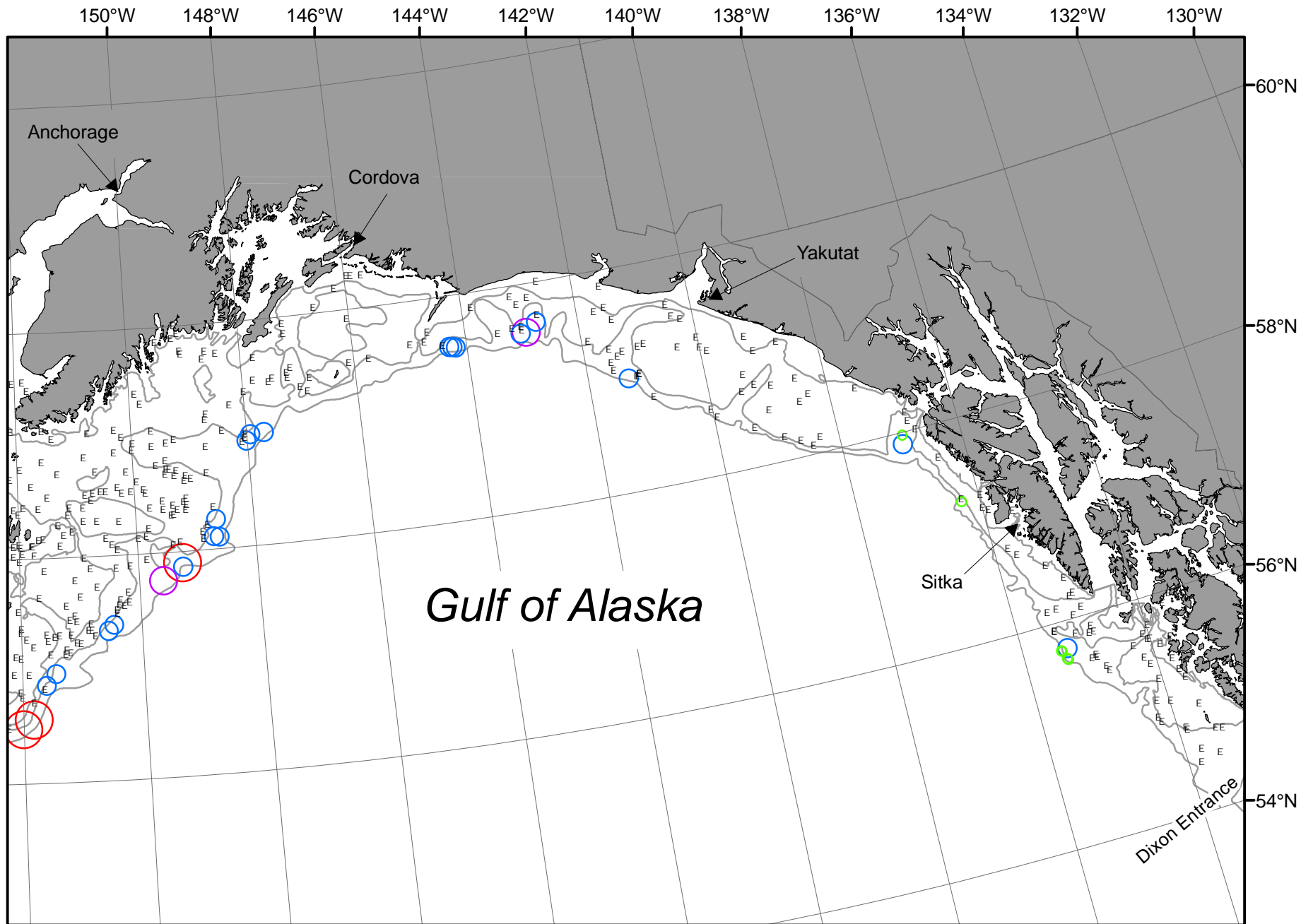


Figure 25. -- Continued (giant grenadier 2007).

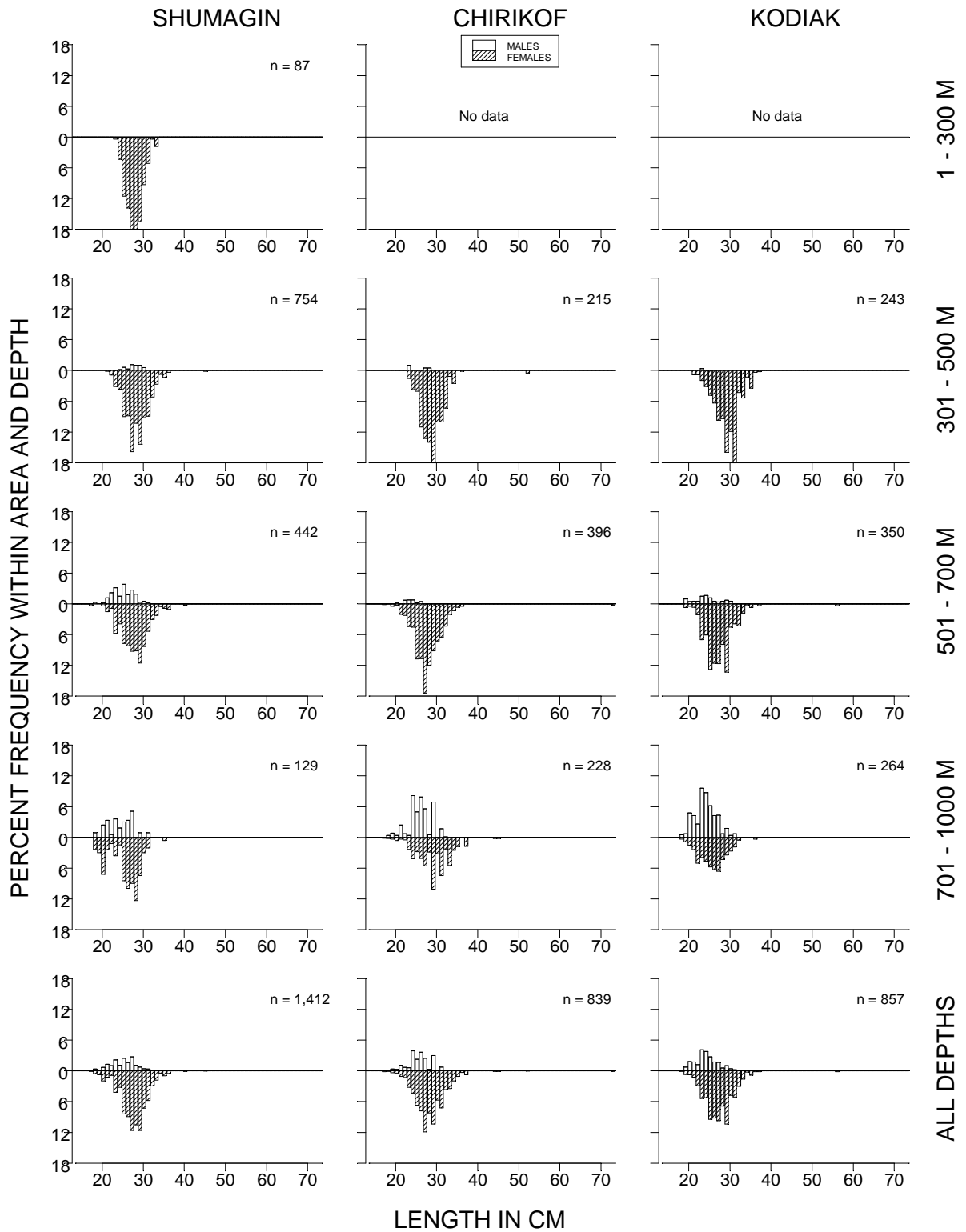


Figure 26. -- Size composition of giant grenadier from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals. Length measured from snout to anal fin insertion.

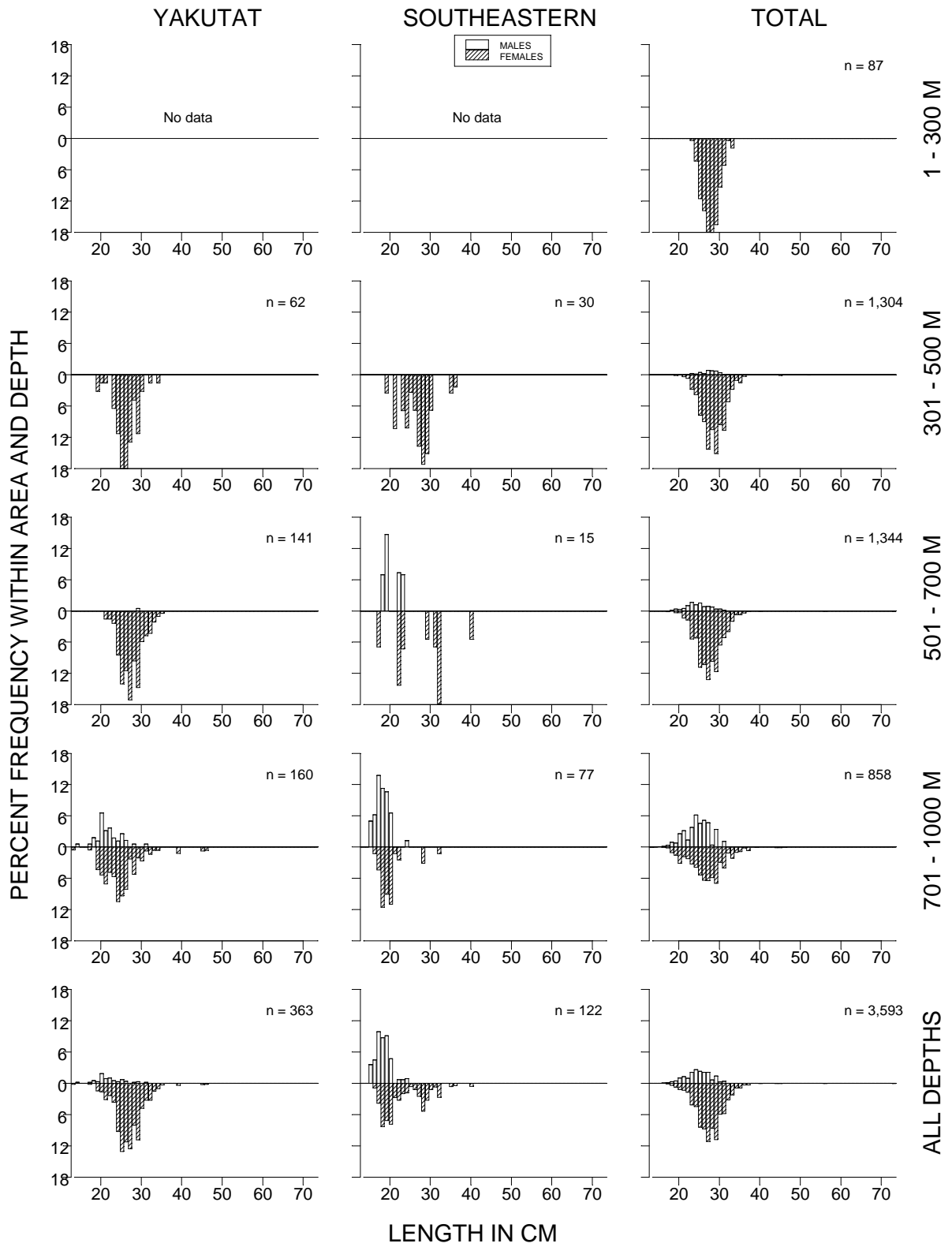


Figure 26. -- (continued).

Table 36. -- Catch per unit of effort by stratum for giant grenadier sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	501 - 700	Kodiak Slope	6	6	430.97	75,198	7,508	142,887
Chirikof	501 - 700	Chirikof Slope	7	7	345.56	67,495	43,434	91,555
Shumagin	501 - 700	Shumagin Slope	5	5	319.52	64,082	0	128,436
Shumagin	301 - 500	Shumagin Slope	9	7	276.62	70,016	8,374	131,658
Shumagin	701 - 1000	Shumagin Slope	2	2	210.17	40,715	0	124,749
Chirikof	701 - 1000	Chirikof Slope	5	5	208.39	63,883	0	184,202
Yakutat	501 - 700	Yakutat Slope	3	3	148.19	21,773	0	73,680
Kodiak	701 - 1000	Kodiak Slope	4	4	102.45	35,793	16,926	54,660
Chirikof	301 - 500	Chirikof Slope	10	4	83.37	13,373	0	34,494
Kodiak	301 - 500	Kodiak Slope	10	7	66.84	19,463	0	39,825
Yakutat	701 - 1000	Yakutat Slope	3	3	38.01	7,174	1,433	12,915
Yakutat	301 - 500	Yakutat Slope	7	1	14.96	2,275	0	7,841
Shumagin	201 - 300	Shumagin Slope	17	2	13.75	3,834	0	10,999
Southeastern	701 - 1000	Southeastern Slope	2	2	12.59	1,518	0	11,103
Southeastern	501 - 700	Southeastern Slope	3	3	4.47	462	20	905
Southeastern	301 - 500	Southeastern Deep Gullies	7	2	3.57	837	0	2,292
Southeastern	301 - 500	Southeastern Slope	4	1	1.24	96	0	402

ROCKFISHES

Pacific ocean perch (*Sebastes alutus*)

Pacific ocean perch was the second most abundant species caught in the 2007 survey, and was by far the most abundant and widely distributed rockfish species encountered in the survey (Table 2). They were caught throughout the survey area, in 42 of the 59 survey strata at all depths to 500 m, with the highest concentrations on the Shumagin and Chirikof slopes (Fig. 27, Table 38). The CPUEs were by far highest in the 201-300 m depth range in all INPFC areas except the Yakutat area where the densities were higher in the 301-500 m depth range (Table 37). Approximately 53% of the estimated population biomass was recorded in the 201-300 m depth range and over 99% in the 101-500 m range. Mean weight generally increased with depth. The proportion of fish smaller than 30 cm was extremely small at depths greater than 200 m in the Shumagin, Chirikof, and Kodiak INPC areas and at depths greater than 300 m in the Yakutat and Southeastern INPFC areas (Fig. 28, Table 37). The sex ratio of the Pacific ocean perch population in the survey area was very close to even with males comprising approximately 51% of the total estimated population.

Table 37. -- Number of survey hauls, number of hauls with Pacific ocean perch, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	26	0.442	1,826	0	3,984	0.214
	101 - 200	39	13	11.307	16,596	0	33,374	0.415
	201 - 300	17	17	498.780	139,057	0	284,995	0.588
	301 - 500	9	4	2.421	613	0	1,839	0.815
	501 - 700	5	1	0.041	8	0	29	0.577
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	61	24.238	158,100	12,793	303,407
Chirikof	1 - 100	82	15	0.101	263	0	538	0.113
	101 - 200	69	31	3.434	8,191	0	17,681	0.429
	201 - 300	26	14	57.781	66,714	0	144,058	0.656
	301 - 500	10	6	11.435	1,834	0	5,391	0.731
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	66	11.315	77,002	323	153,680
Kodiak	1 - 100	97	5	0.488	1,878	0	6,180	0.585
	101 - 200	127	68	43.685	189,294	71,623	306,966	0.668
	201 - 300	30	25	94.372	108,436	17,434	199,438	0.687
	301 - 500	10	6	7.224	2,104	0	5,622	0.712
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	104	29.729	301,712	156,123	447,301
Yakutat	1 - 100	11	1	0.042	70	0	241	0.202
	101 - 200	33	20	1.921	5,645	0	12,087	0.198
	201 - 300	17	17	37.597	19,438	9,832	29,044	0.432
	301 - 500	9	8	104.332	27,416	0	57,308	0.700
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	46	9.191	52,569	24,132	81,005
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	14	51.630	57,227	0	142,246	0.659
	201 - 300	17	17	63.131	31,896	3,182	60,609	0.661
	301 - 500	11	8	31.038	9,675	3,635	15,714	0.783
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	39	35.235	98,798	9,801	187,794
All areas	1 - 100	334	47	0.313	4,036	0	8,604	0.280
	101 - 200	290	146	22.641	276,953	136,262	417,644	0.605
	201 - 300	107	90	101.408	365,541	184,637	546,445	0.620
	301 - 500	49	32	32.553	41,641	11,957	71,325	0.721
	501 - 700	24	1	0.010	8	0	29	0.577
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	316	21.505	688,180	459,835	916,524

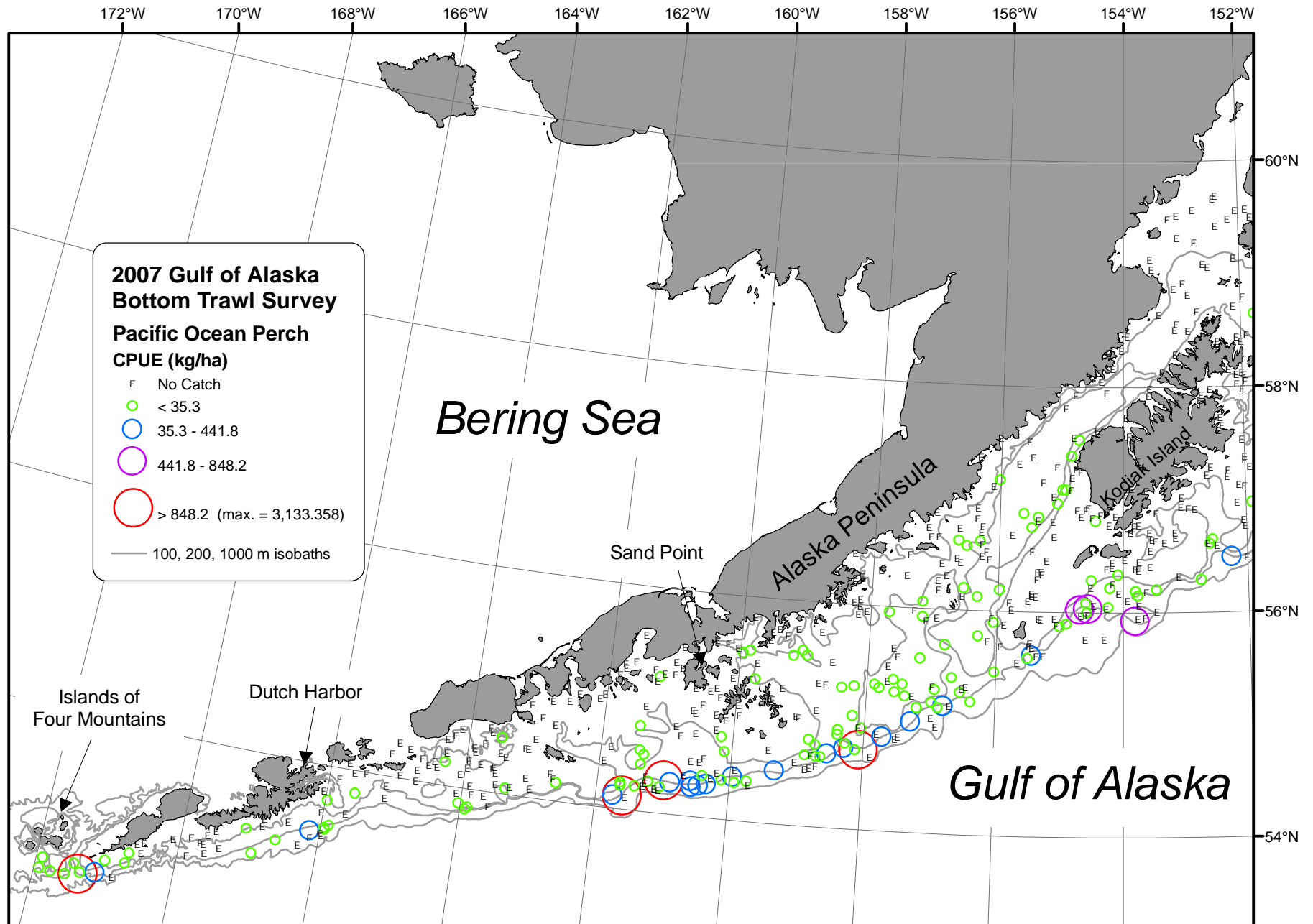


Figure 27. -- Distribution and relative abundance of Pacific ocean perch from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

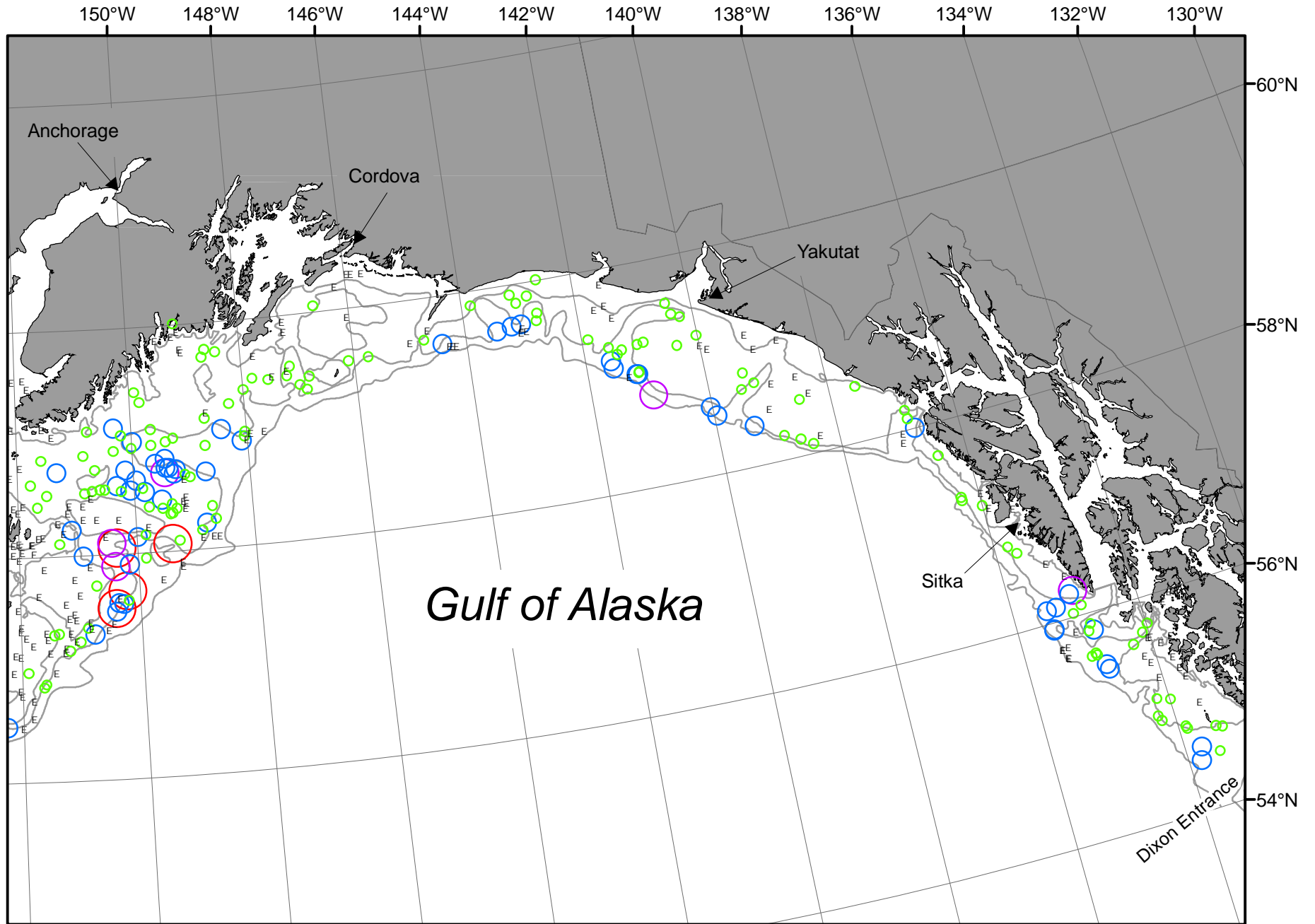


Figure 27. -- Continued (Pacific ocean perch 2007).

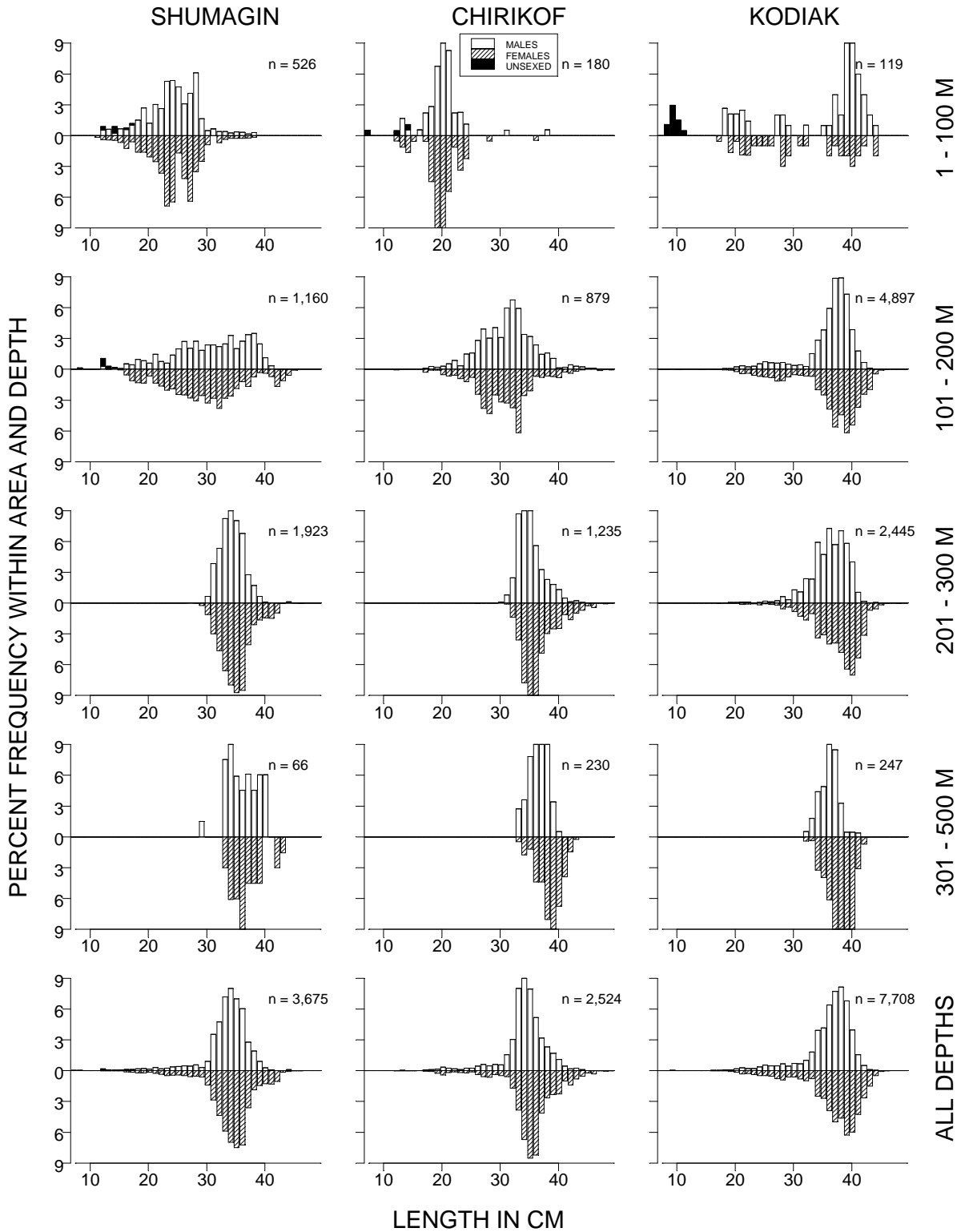


Figure 28. -- Size composition of Pacific ocean perch from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

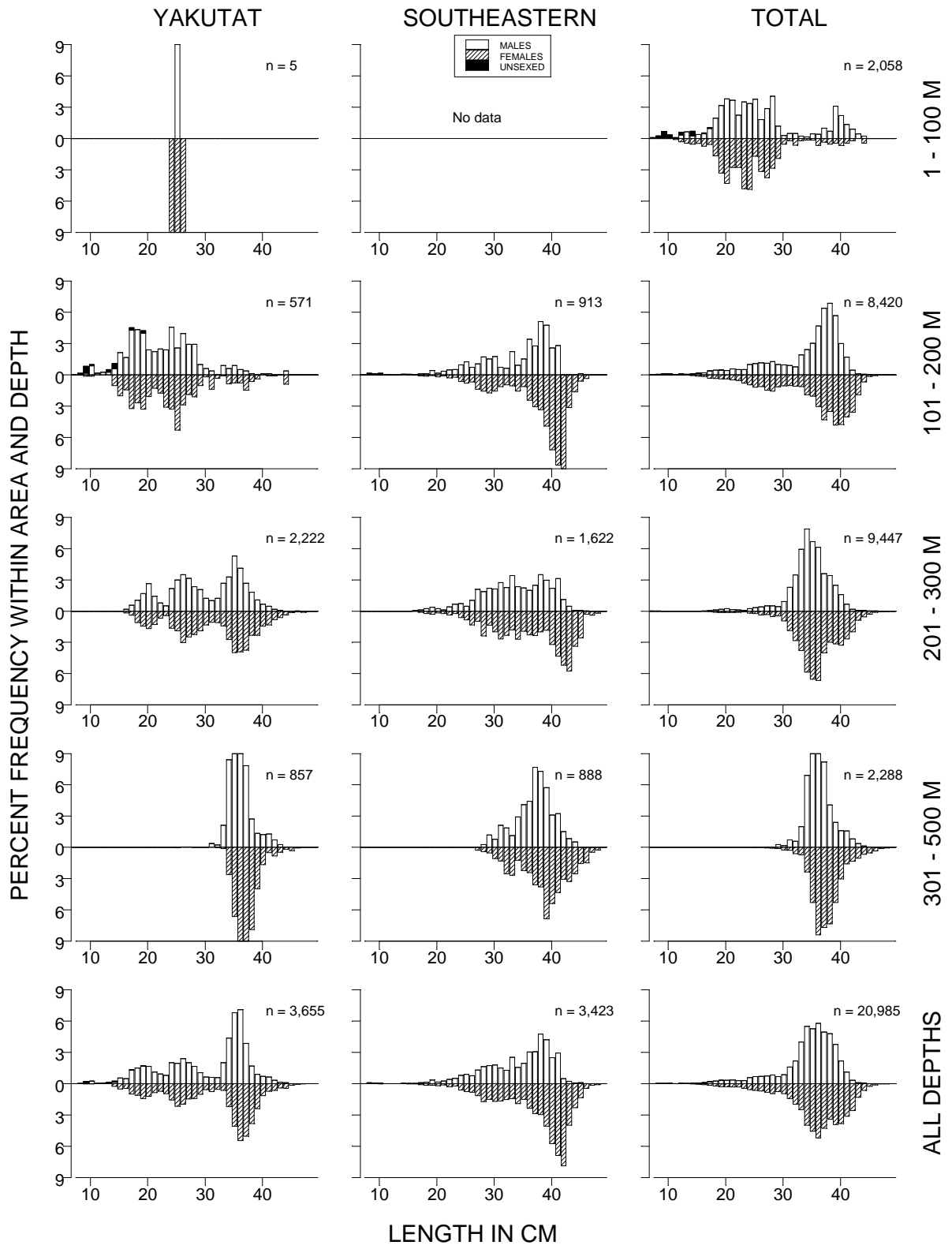


Figure 28. -- (continued).

Table 38. -- Catch per unit of effort by stratum for Pacific ocean perch sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Shumagin	201 - 300	Shumagin Slope	17	17	498.78	139,057	0	285,686
Chirikof	201 - 300	Chirikof Slope	8	8	435.97	66,630	0	145,952
Yakutat	301 - 500	Yakutat Slope	7	6	178.08	27,079	0	58,005
Kodiak	201 - 300	Kodiak Slope	7	7	177.51	28,804	0	71,567
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	7	127.58	53,538	0	140,495
Kodiak	201 - 300	Kenai Gullies	19	18	119.58	79,632	0	163,613
Kodiak	101 - 200	Albatross Gullies	28	10	114.79	90,819	0	193,626
Kodiak	101 - 200	Kodiak Outer Shelf	28	12	89.28	44,872	0	95,130
Southeastern	301 - 500	Southeastern Slope	4	4	71.25	5,505	0	11,407
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	14	68.01	26,708	0	54,331
Yakutat	201 - 300	Yakutat Slope	9	9	57.51	12,234	6,554	17,915
Kodiak	101 - 200	Portlock Flats	35	29	46.25	33,929	9,128	58,730
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	46.10	5,188	0	23,448
Yakutat	201 - 300	Yakutat Gullies	8	8	23.67	7,203	0	15,723
Shumagin	101 - 200	Shumagin Outer Shelf	28	11	20.30	16,556	0	33,366
Southeastern	301 - 500	Southeastern Deep Gullies	7	4	17.79	4,170	0	8,869
Chirikof	101 - 200	Chirikof Outer Shelf	25	13	13.85	6,941	0	16,461
Chirikof	301 - 500	Chirikof Slope	10	6	11.44	1,834	0	5,445
Kodiak	101 - 200	Kenai Flats	18	12	11.38	13,749	0	35,704
Kodiak	301 - 500	Kodiak Slope	10	6	7.22	2,104	0	5,676
Kodiak	101 - 200	Barren Islands	18	5	5.40	5,926	0	16,337
Southeastern	101 - 200	Prince of Wales Shelf	14	7	5.36	3,690	0	9,557
Yakutat	101 - 200	Fairweather Shelf	8	4	4.53	3,499	0	9,881
Kodiak	1 - 100	Kenai Peninsula	7	2	3.49	1,833	0	6,284
Yakutat	301 - 500	Yakutat Gullies	2	2	3.05	337	0	2,117
Shumagin	301 - 500	Shumagin Slope	9	4	2.42	613	0	1,863
Yakutat	101 - 200	Yakataga Shelf	8	6	2.04	1,078	0	2,864
Yakutat	101 - 200	Middleton Shelf	9	5	1.21	885	0	2,039
Shumagin	1 - 100	Shumagin Bank	36	10	1.00	1,238	0	3,274
Chirikof	101 - 200	East Shumagin Gully	17	5	0.71	784	0	1,833
Chirikof	101 - 200	Shelikof Edge	27	13	0.60	466	0	1,061
Shumagin	1 - 100	Davidson Bank	48	8	0.38	516	0	1,286
Chirikof	1 - 100	Semidi Bank	23	12	0.35	254	0	529
Yakutat	101 - 200	Yakutat Flats	8	5	0.20	182	0	411
Shumagin	101 - 200	West Shumagin Gully	4	2	0.18	41	0	147
Chirikof	201 - 300	Lower Shelikof Gully	18	6	0.09	85	15	155
Yakutat	1 - 100	Yakutat Shallows	6	1	0.07	70	0	249
Shumagin	1 - 100	Lower Alaska Peninsula	28	3	0.05	36	0	80
Shumagin	1 - 100	Fox Islands	21	5	0.04	36	0	91
Shumagin	501 - 700	Shumagin Slope	5	1	0.04	8	0	31
Kodiak	1 - 100	Albatross Banks	39	3	0.03	45	0	107
Chirikof	1 - 100	Chirikof Bank	40	3	0.01	9	0	23

Northern rockfish (*Sebastes polyspinis*)

Northern rockfish was the eighth most abundant species overall and the second most abundant rockfish species caught in the 2007 survey (Table 2). Northern rockfish were found primarily in the western and central Gulf of Alaska with about 91% of the estimated biomass in the Shumagin and Chirikof INPFC areas and almost all of the remainder in the Kodiak area (Fig. 29, Table 39). They were primarily found shallower than 200 m, with less than 1% deeper than 200 m (Table 39). The highest CPUEs of northern rockfish were in the 101-200 m depth range on the Shelikof Edge and the Shumagin Outer Shelf (Table 40). The length distribution of northern rockfish caught during the survey was confined to a relatively narrow range between approximately 30 and 45 cm in all areas and depth ranges with a mode around 35 to 40 cm for both sexes in the three westernmost INPFC areas (Fig. 30). The sex ratio of the northern rockfish population in the survey area was relatively close to even with females comprising approximately 53% of the total estimated population.

Table 39. -- Number of survey hauls, number of hauls with northern rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	18	11.775	48,618	0	98,708	0.943
	101 - 200	39	13	44.223	64,908	0	168,261	0.864
	201 - 300	17	11	2.279	635	0	1,419	0.621
	301 - 500	9	1	0.239	60	0	197	1.053
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	43	17.511	114,222	360	228,084
Chirikof	1 - 100	82	11	4.031	10,494	0	26,975	0.918
	101 - 200	69	21	34.272	81,737	0	209,680	0.798
	201 - 300	26	3	0.016	18	0	45	0.490
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	35	13.555	92,250	0	221,041
Kodiak	1 - 100	97	5	0.016	60	0	139	0.551
	101 - 200	127	41	4.549	19,710	0	45,146	0.873
	201 - 300	30	12	0.687	789	136	1,442	0.646
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	58	2.026	20,559	0	46,003
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	2	0.011	31	0	78	0.546
	201 - 300	17	1	0.012	6	0	20	0.644
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	3	0.007	38	0	86
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	34	4.585	59,172	6,598	111,747	0.938
	101 - 200	290	77	13.602	166,387	2,006	330,768	0.831
	201 - 300	107	27	0.402	1,449	466	2,433	0.632
	301 - 500	49	1	0.047	60	0	197	1.053
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	139	7.096	227,069	56,108	398,029

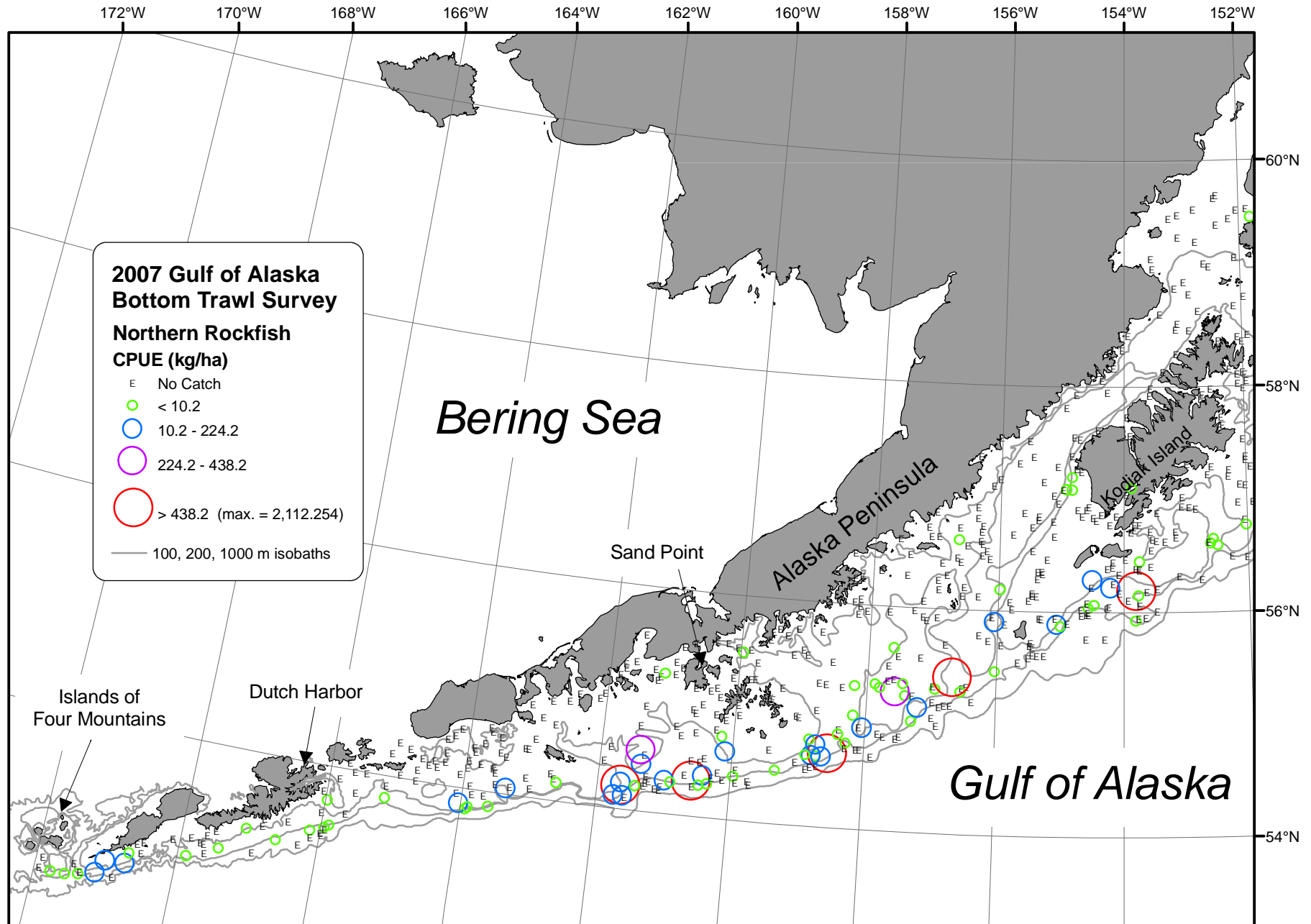


Figure 29. -- Distribution and relative abundance of northern rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

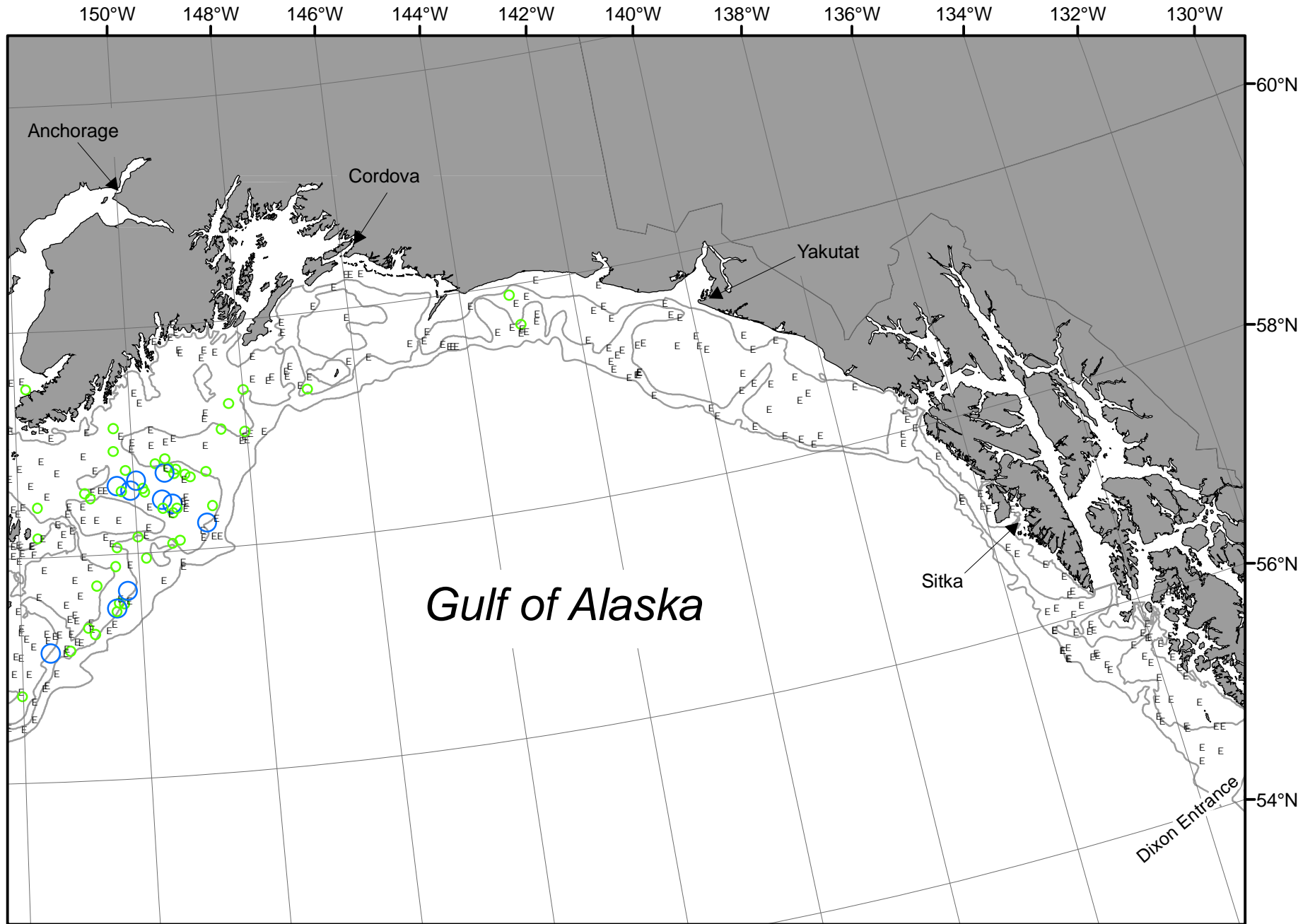


Figure 29. -- Continued (northern rockfish 2007).

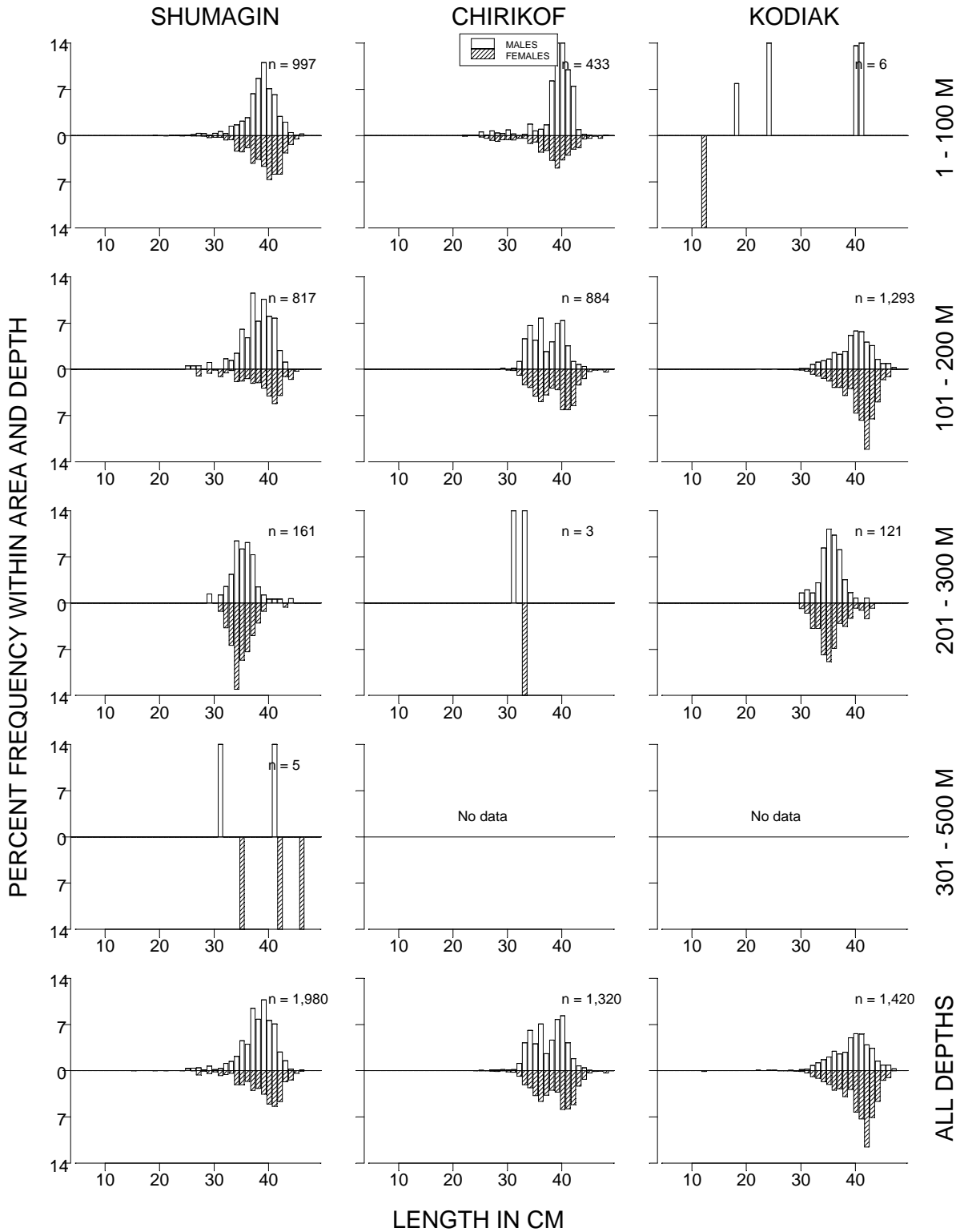


Figure 30. -- Size composition of northern rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

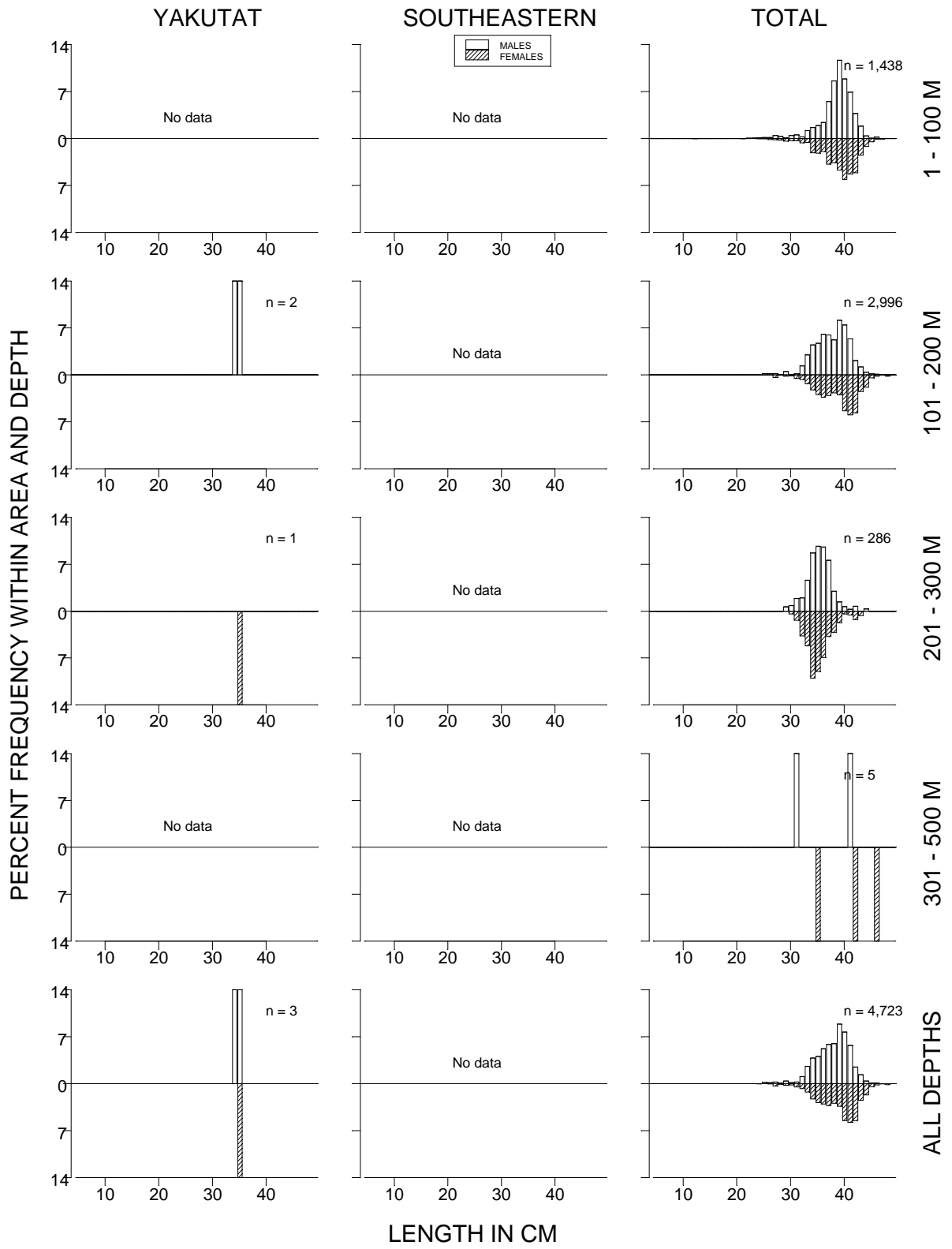


Figure 30. -- (continued).

Table 40. -- Catch per unit of effort by stratum for northern rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	101 - 200	Shelikof Edge	27	4	80.89	62,569	0	186,883
Shumagin	101 - 200	Shumagin Outer Shelf	28	13	79.61	64,908	0	168,463
Chirikof	101 - 200	Chirikof Outer Shelf	25	13	36.89	18,482	0	51,628
Kodiak	101 - 200	Kodiak Outer Shelf	28	11	29.48	14,815	0	40,180
Shumagin	1 - 100	Davidson Bank	48	6	20.74	28,378	0	71,494
Shumagin	1 - 100	Shumagin Bank	36	7	15.71	19,475	0	46,233
Chirikof	1 - 100	Semidi Bank	23	7	13.08	9,554	0	26,043
Kodiak	101 - 200	Portlock Flats	35	22	6.01	4,408	1,640	7,177
Kodiak	201 - 300	Kodiak Slope	7	5	3.75	609	0	1,324
Shumagin	201 - 300	Shumagin Slope	17	11	2.28	635	0	1,422
Chirikof	1 - 100	Chirikof Bank	40	4	0.87	940	0	2,458
Shumagin	1 - 100	Fox Islands	21	4	0.83	690	0	1,987
Chirikof	101 - 200	East Shumagin Gully	17	4	0.62	687	0	1,953
Kodiak	101 - 200	Albatross Gullies	28	4	0.43	340	0	867
Kodiak	201 - 300	Kenai Gullies	19	7	0.27	181	0	375
Shumagin	301 - 500	Shumagin Slope	9	1	0.24	60	0	200
Shumagin	1 - 100	Lower Alaska Peninsula	28	1	0.11	75	0	230
Kodiak	101 - 200	Kenai Flats	18	3	0.105	127	0	276
Chirikof	201 - 300	Chirikof Slope	8	2	0.041	6	0	16
Kodiak	1 - 100	Albatross Banks	39	3	0.038	59	0	138
Yakutat	101 - 200	Yakataga Shelf	8	1	0.03	16	0	53
Yakutat	201 - 300	Yakutat Slope	9	1	0.029	6	0	21
Yakutat	101 - 200	Middleton Shelf	9	1	0.021	16	0	52
Kodiak	101 - 200	Barren Islands	18	1	0.018	20	0	61
Chirikof	201 - 300	Lower Shelikof Gully	18	1	0.012	12	0	37
Kodiak	1 - 100	Albatross Shallows	28	1	0.001	1	0	2
Kodiak	1 - 100	Lower Cook Inlet	14	1	0.001	1	0	2

Rougheye rockfish (*Sebastes aleutianus*)

Rougheye rockfish were found throughout the survey area primarily on the upper continental slope and in the deeper gullies in the 201-500 m depth range, where approximately 74% of its biomass was estimated to be (Fig. 31, Tables 41-42). The highest CPUEs were generally recorded in the 301-500 m range where rougheye rockfish were caught in approximately 78% of the tows (Table 41). Fish size generally increased with depth (Fig. 32, Table 41). The length mode for fish captured between 101 and 200 m was approximately 22 cm FL, while the mode for fish captured between 301 and 500 m was approximately 48 cm. The sex ratio of the rougheye rockfish population in the survey area was relatively close to even with females comprising approximately 52% of the total estimated population.

Table 41. -- Number of survey hauls, number of hauls with roughey rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	1	0.004	15	0	46	0.478
	101 - 200	39	5	0.064	94	0	194	0.344
	201 - 300	17	5	1.191	332	0	892	1.719
	301 - 500	9	4	0.616	156	0	345	1.232
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	15	0.091	597	17	1,176
Chirikof	1 - 100	82	5	0.048	125	0	280	0.337
	101 - 200	69	21	0.645	1,539	456	2,621	0.713
	201 - 300	26	15	0.808	933	419	1,447	1.400
	301 - 500	10	6	1.907	306	61	550	1.683
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	47	0.426	2,902	1,692	4,111
Kodiak	1 - 100	97	4	0.162	625	0	1,445	0.463
	101 - 200	127	28	0.756	3,276	1,534	5,018	0.502
	201 - 300	30	19	4.042	4,644	244	9,044	0.788
	301 - 500	10	8	16.040	4,671	0	10,063	1.430
	501 - 700	6	1	0.065	11	0	39	1.066
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	60	1.303	13,227	6,493	19,960
Yakutat	1 - 100	11	1	0.012	21	0	74	0.066
	101 - 200	33	14	0.269	791	251	1,331	0.231
	201 - 300	17	10	3.322	1,718	0	3,874	0.639
	301 - 500	9	9	4.127	1,084	664	1,505	0.907
	501 - 700	3	2	0.386	57	0	148	1.771
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	36	0.642	3,671	1,574	5,767
Southeastern	1 - 100	11	1	0.490	321	0	1,026	0.211
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	4	4.111	2,077	0	6,658	1.919
	301 - 500	11	11	12.081	3,766	0	7,849	1.629
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	16	2.198	6,163	1,260	11,066
All areas	1 - 100	334	12	0.086	1,106	93	2,118	0.309
	101 - 200	290	68	0.466	5,699	3,614	7,785	0.460
	201 - 300	107	53	2.692	9,703	4,085	15,322	0.922
	301 - 500	49	38	7.804	9,982	3,656	16,308	1.410
	501 - 700	24	3	0.083	68	0	154	1.595
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	174	0.830	26,559	18,263	34,855

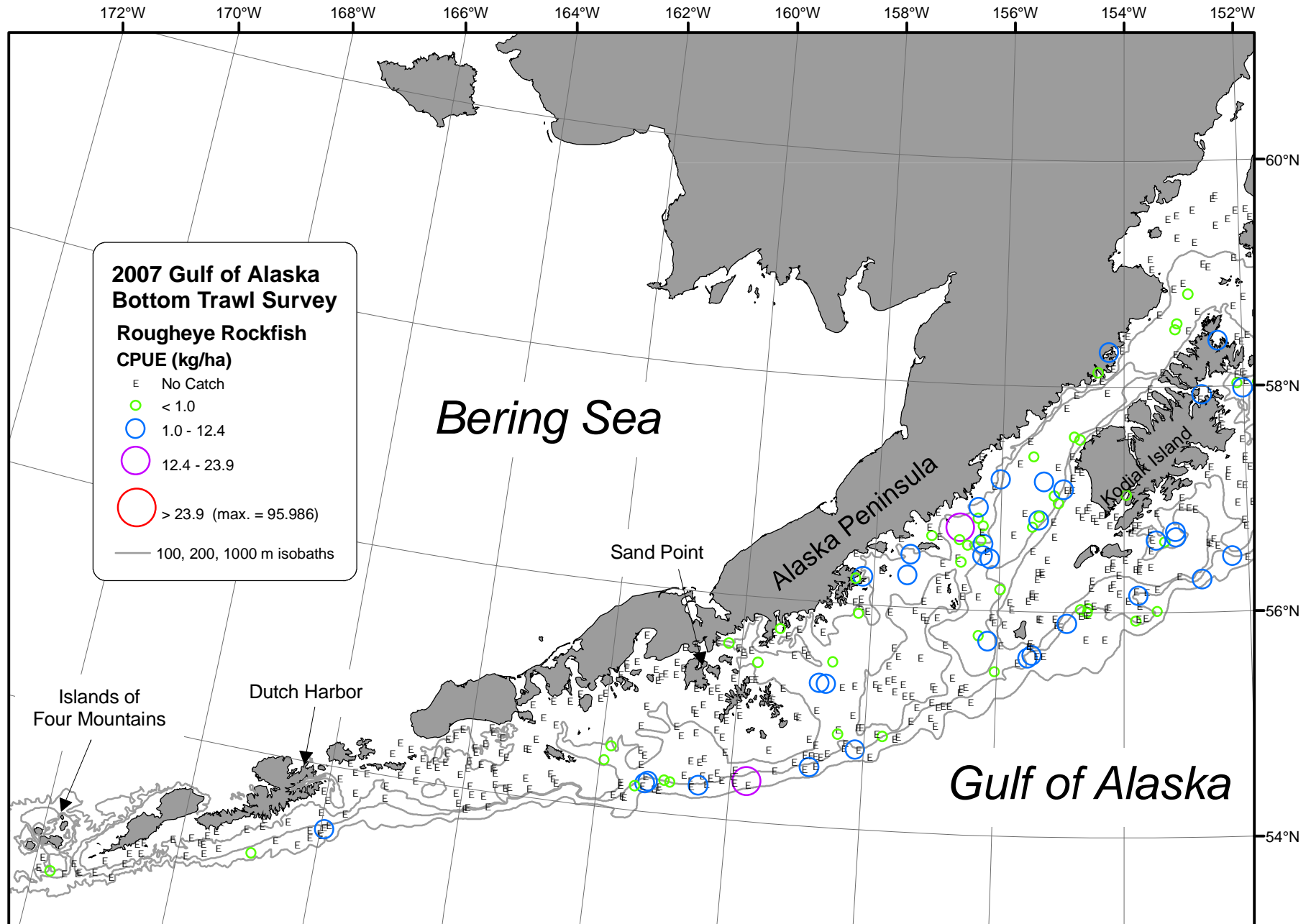


Figure 31. -- Distribution and relative abundance of rougheye rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

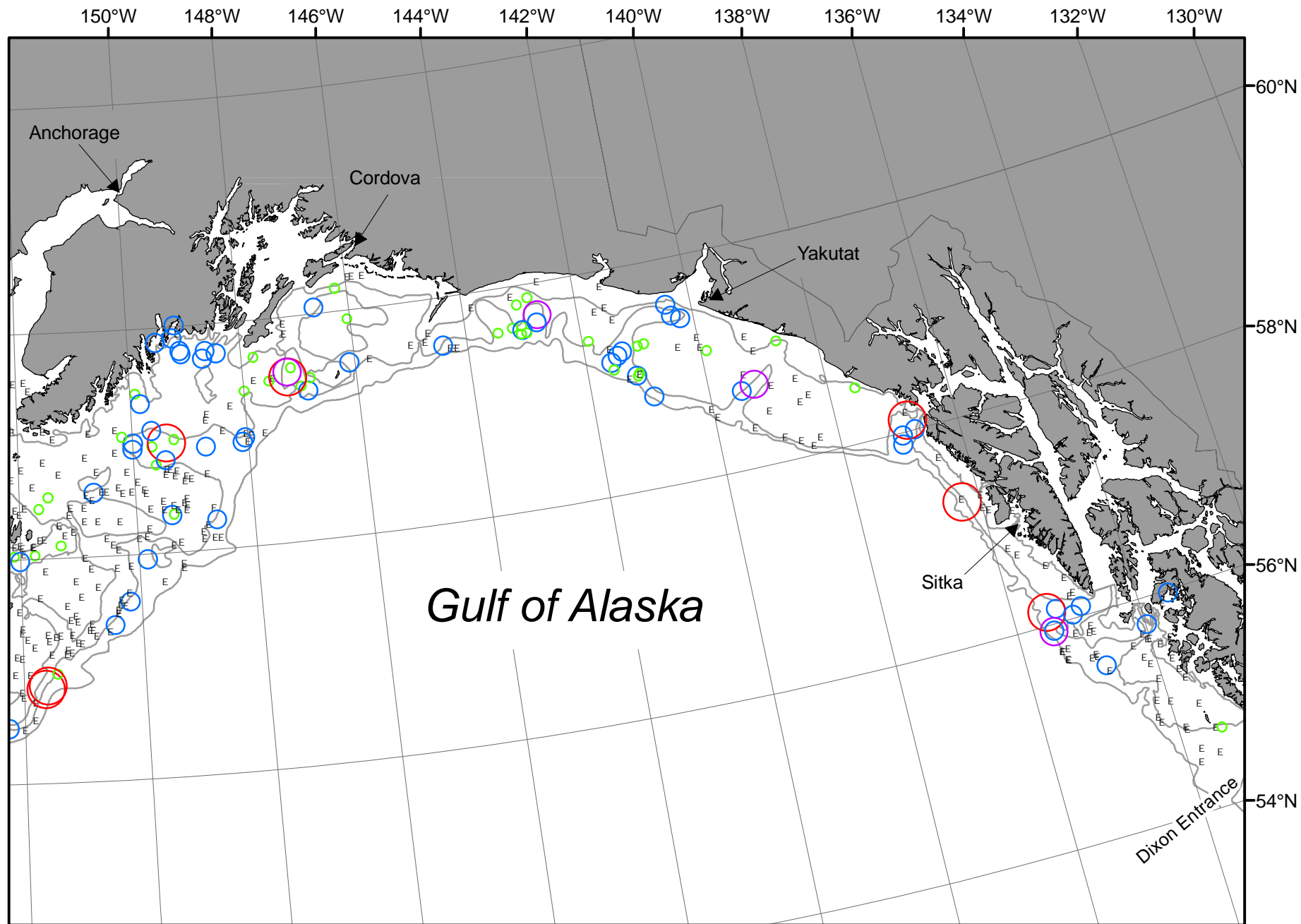


Figure 31. -- Continued (rougheye rockfish 2007).

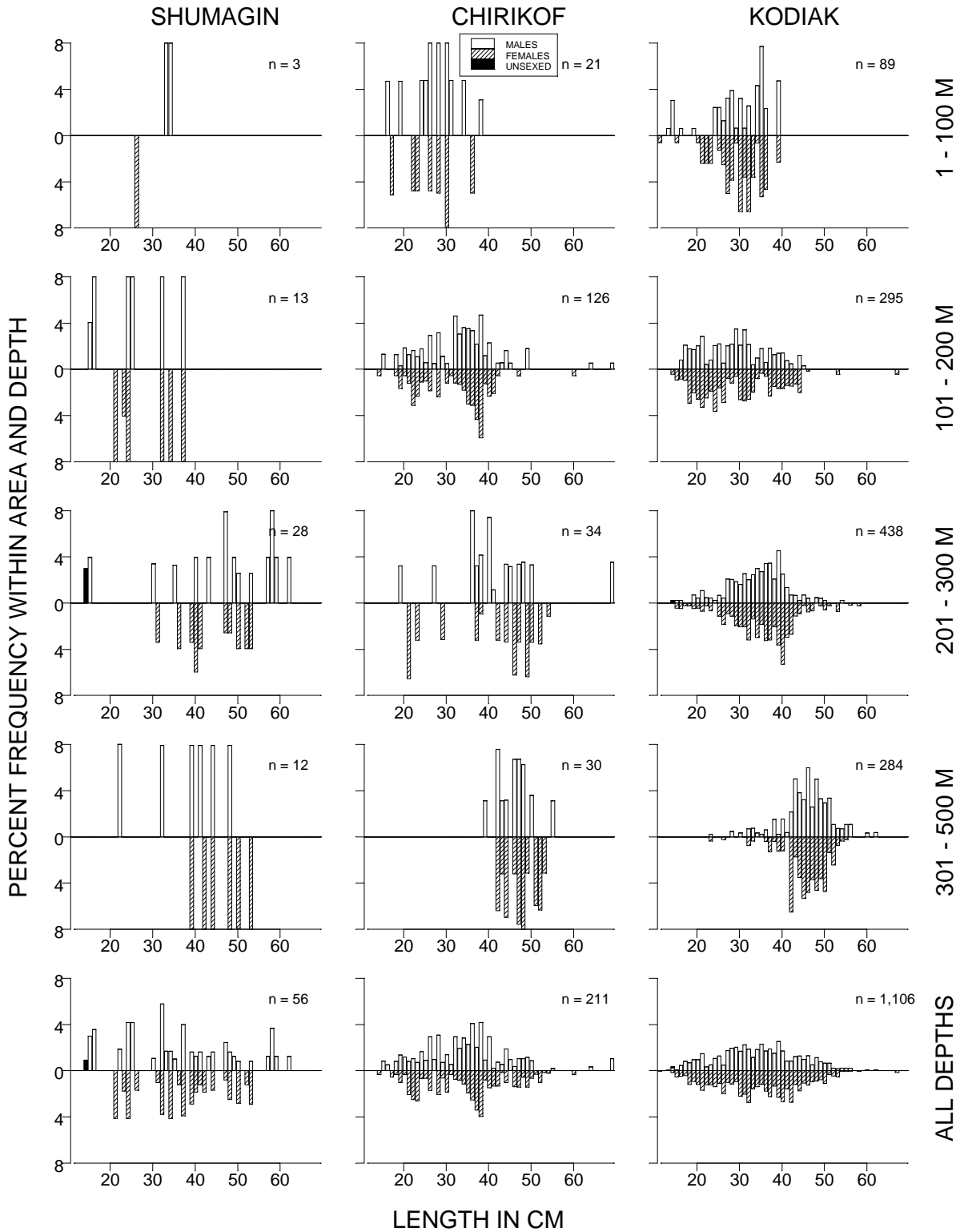


Figure 32. -- Size composition of rougheye rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

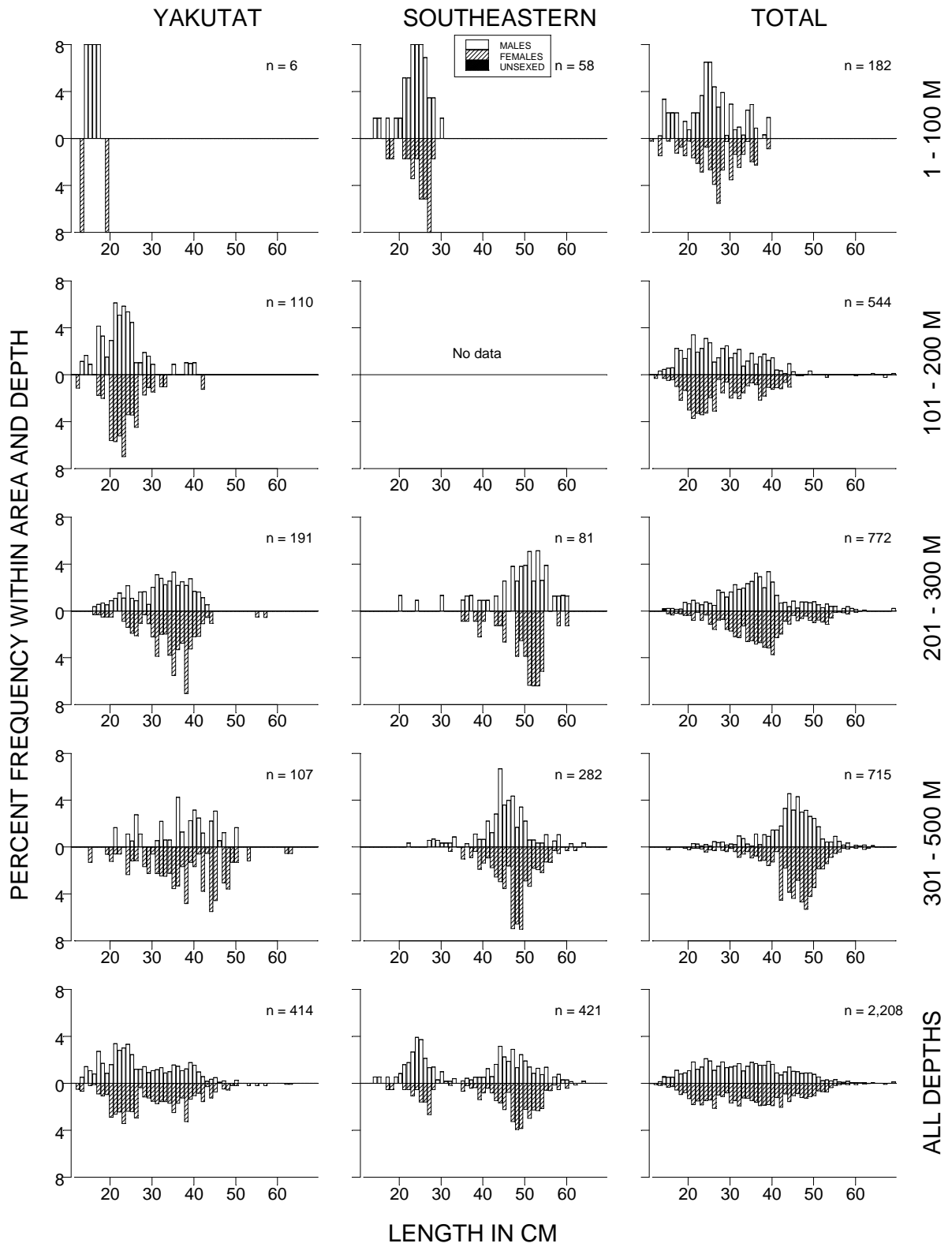


Figure 32. -- (continued).

Table 42. -- Catch per unit of effort by stratum for roughey rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	301 - 500	Southeastern Slope	4	4	36.86	2,848	0	7,863
Southeastern	201 - 300	Baranof-Chichagof Slope	3	2	17.74	1,997	0	8,184
Kodiak	301 - 500	Kodiak Slope	10	8	16.04	4,671	0	10,145
Kodiak	201 - 300	Kenai Gullies	19	14	6.45	4,296	0	8,697
Yakutat	301 - 500	Yakutat Gullies	2	2	6.16	682	0	2,024
Yakutat	201 - 300	Yakutat Gullies	8	7	5.48	1,666	0	3,876
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	3.92	918	438	1,398
Yakutat	301 - 500	Yakutat Slope	7	7	2.65	403	71	735
Kodiak	101 - 200	Kenai Flats	18	12	1.94	2,347	725	3,970
Chirikof	301 - 500	Chirikof Slope	10	6	1.91	306	58	554
Kodiak	201 - 300	Kodiak Slope	7	4	1.68	272	0	667
Shumagin	201 - 300	Shumagin Slope	17	5	1.19	332	0	895
Chirikof	101 - 200	Shelikof Edge	27	12	0.93	719	0	1,548
Kodiak	101 - 200	Albatross Gullies	28	8	0.89	705	66	1,345
Chirikof	201 - 300	Lower Shelikof Gully	18	12	0.89	892	378	1,407
Kodiak	1 - 100	Kenai Peninsula	7	2	0.80	421	0	1,171
Chirikof	101 - 200	East Shumagin Gully	17	8	0.73	806	78	1,535
Yakutat	101 - 200	Middleton Shelf	9	5	0.69	503	0	1,019
Shumagin	301 - 500	Shumagin Slope	9	4	0.62	156	0	348
Southeastern	1 - 100	Southeastern Shallows	11	1	0.49	321	0	1,035
Yakutat	501 - 700	Yakutat Slope	3	2	0.39	57	0	180
Kodiak	1 - 100	Albatross Shallows	28	2	0.35	204	0	576
Yakutat	101 - 200	Yakataga Shelf	8	4	0.29	154	0	350
Chirikof	201 - 300	Chirikof Slope	8	3	0.26	40	0	88
Yakutat	201 - 300	Yakutat Slope	9	3	0.24	52	0	134
Kodiak	201 - 300	Upper Shelikof Gully	4	1	0.24	76	0	316
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	2	0.20	80	0	241
Chirikof	1 - 100	Upper Alaska Peninsula	19	4	0.14	114	0	269
Shumagin	101 - 200	West Shumagin Gully	4	2	0.14	32	0	93
Shumagin	101 - 200	Sanak Gully	7	2	0.14	58	0	156
Kodiak	101 - 200	Portlock Flats	35	3	0.14	99	0	252
Kodiak	101 - 200	Barren Islands	18	5	0.11	124	2	247
Yakutat	101 - 200	Yakutat Flats	8	4	0.09	83	0	214
Yakutat	101 - 200	Fairweather Shelf	8	1	0.07	51	0	172
Kodiak	501 - 700	Kodiak Slope	6	1	0.07	11	0	41
Yakutat	1 - 100	Middleton Shallows	5	1	0.03	21	0	78
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.03	14	0	42
Shumagin	1 - 100	Lower Alaska Peninsula	28	1	0.02	15	0	46
Chirikof	1 - 100	Chirikof Bank	40	1	0.01	10	0	31
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.00	4	0	11

Blackspotted rockfish (*Sebastes melanostictus*)

Blackspotted rockfish were found throughout the survey area primarily on the upper continental slope and in the deeper gullies in the 201-500 m depth range, where approximately 97% of its biomass was estimated to be (Fig. 33, Tables 43-44). The highest CPUEs were recorded in the 301-500 m range in all INPFC areas where blackspotted rockfish were caught in approximately 82% of the tows (Table 43). Fish size increased with depth (Fig. 34, Table 43). The length mode for fish captured between 301 and 500 m was approximately 44 cm FL, whereas the length modes for fish captured at other depths was difficult to discern due to small sample sizes. The sex ratio of the rougheye rockfish population in the survey area was relatively close to even with females comprising approximately 52% of the total estimated population.

Table 43. -- Number of survey hauls, number of hauls with blackspotted rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	5	0.189	277	0	647	0.412
	201 - 300	17	10	2.371	661	77	1,245	1.028
	301 - 500	9	9	8.841	2,238	168	4,307	1.391
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	24	0.487	3,176	1,075	5,277
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	4	0.042	100	0	222	0.785
	201 - 300	26	11	0.301	348	123	572	1.033
	301 - 500	10	9	12.321	1,976	437	3,516	1.505
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	24	0.356	2,423	975	3,872
Kodiak	1 - 100	97	3	0.009	35	0	79	0.247
	101 - 200	127	21	0.148	642	64	1,219	0.511
	201 - 300	30	15	1.053	1,211	410	2,011	0.706
	301 - 500	10	9	65.153	18,971	0	38,838	1.204
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	48	2.055	20,858	964	40,753
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	1	0.001	2	0	5	0.048
	201 - 300	17	3	0.477	247	0	769	0.261
	301 - 500	9	6	4.824	1,268	0	2,810	0.956
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	10	0.265	1,516	25	3,007
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	1	0.007	8	0	25	0.360
	201 - 300	17	3	0.063	32	0	71	0.954
	301 - 500	11	7	17.031	5,308	0	13,584	1.548
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	11	1.907	5,348	0	13,624
All areas	1 - 100	334	3	0.003	35	0	79	0.247
	101 - 200	290	32	0.084	1,028	341	1,715	0.488
	201 - 300	107	42	0.693	2,497	1,405	3,589	0.680
	301 - 500	49	40	23.266	29,761	8,865	50,658	1.270
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	117	1.041	33,321	12,379	54,264

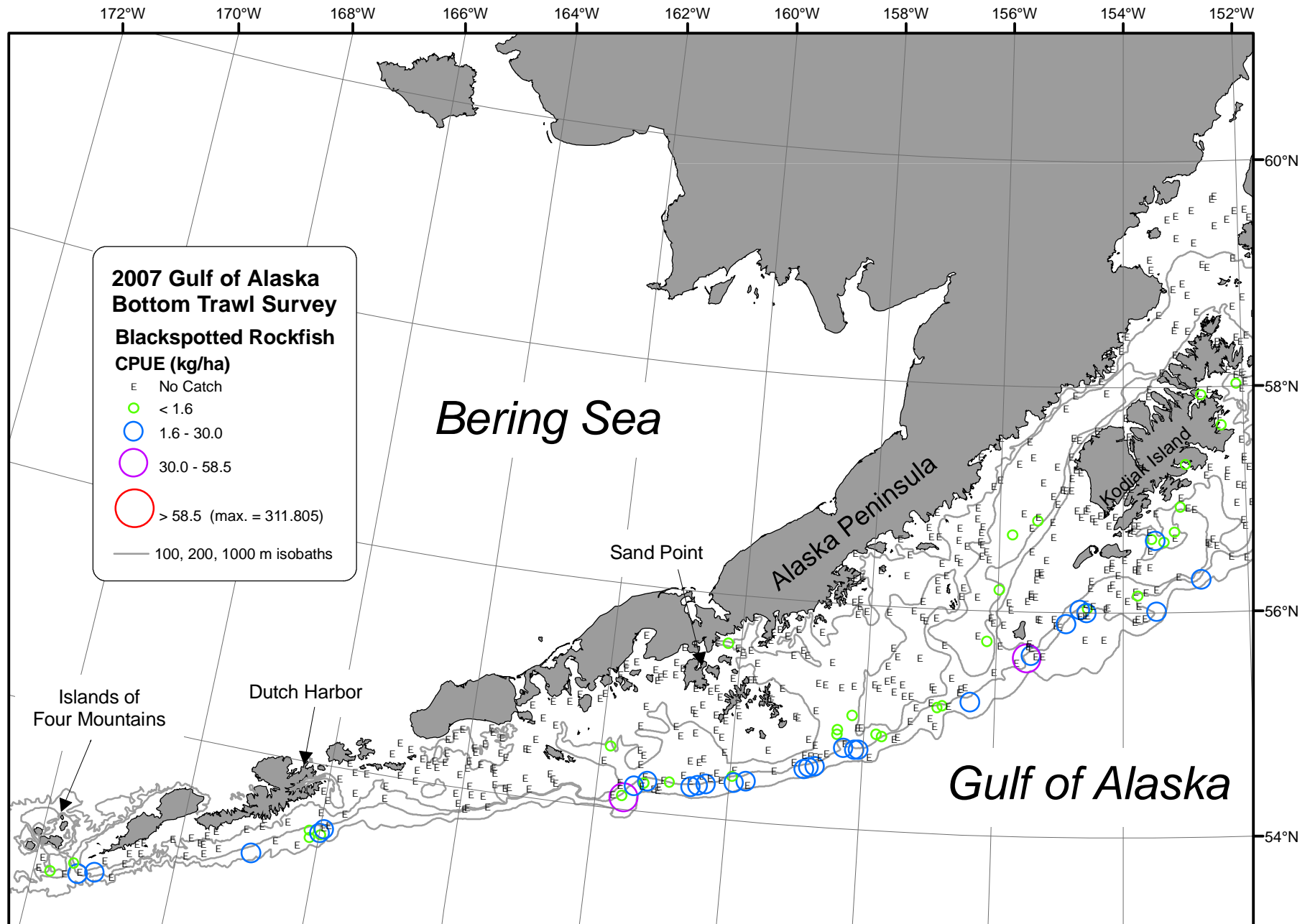


Figure 33. -- Distribution and relative abundance of blackspotted rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

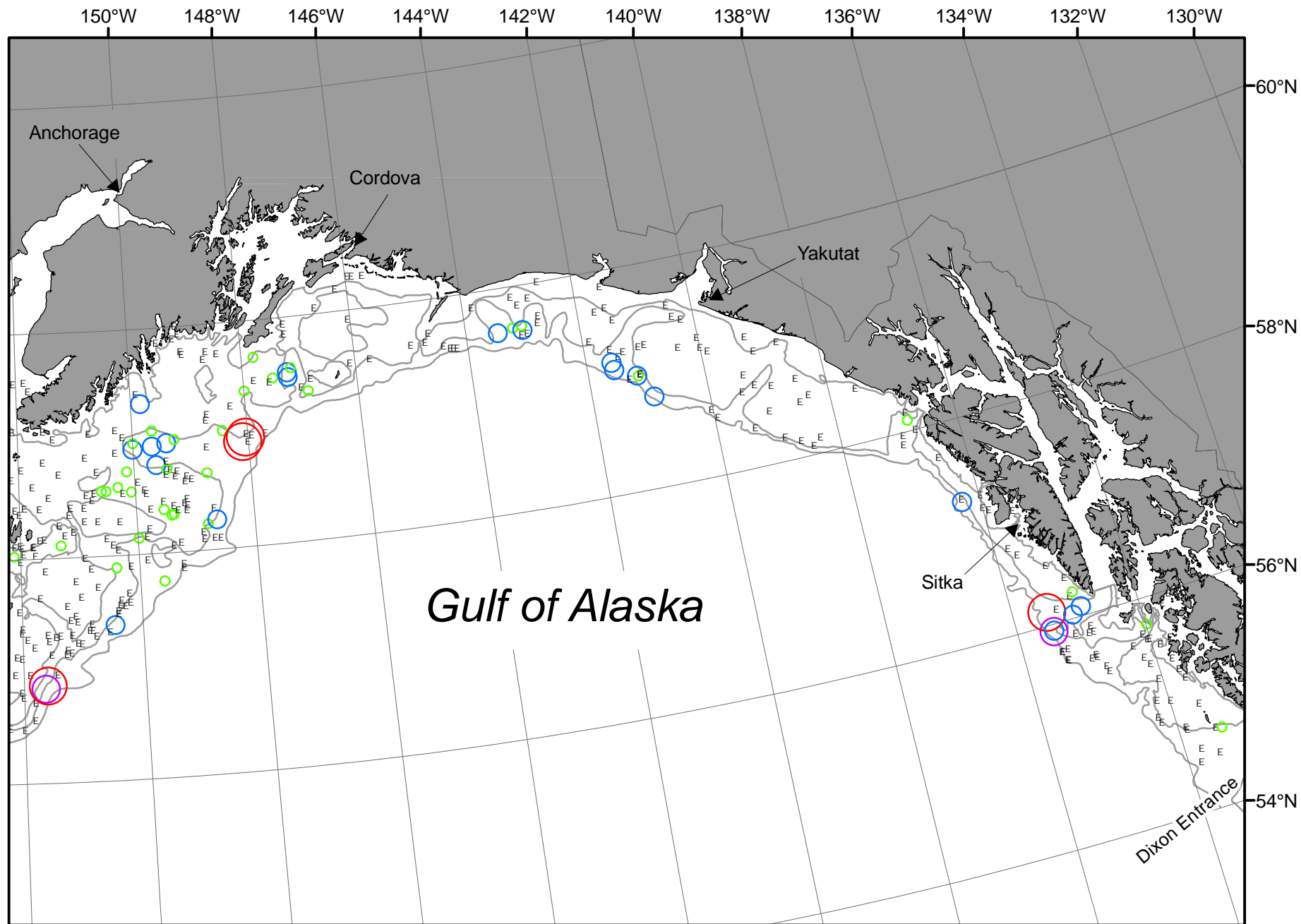


Figure 33. -- Continued (blackspotted rockfish 2007).

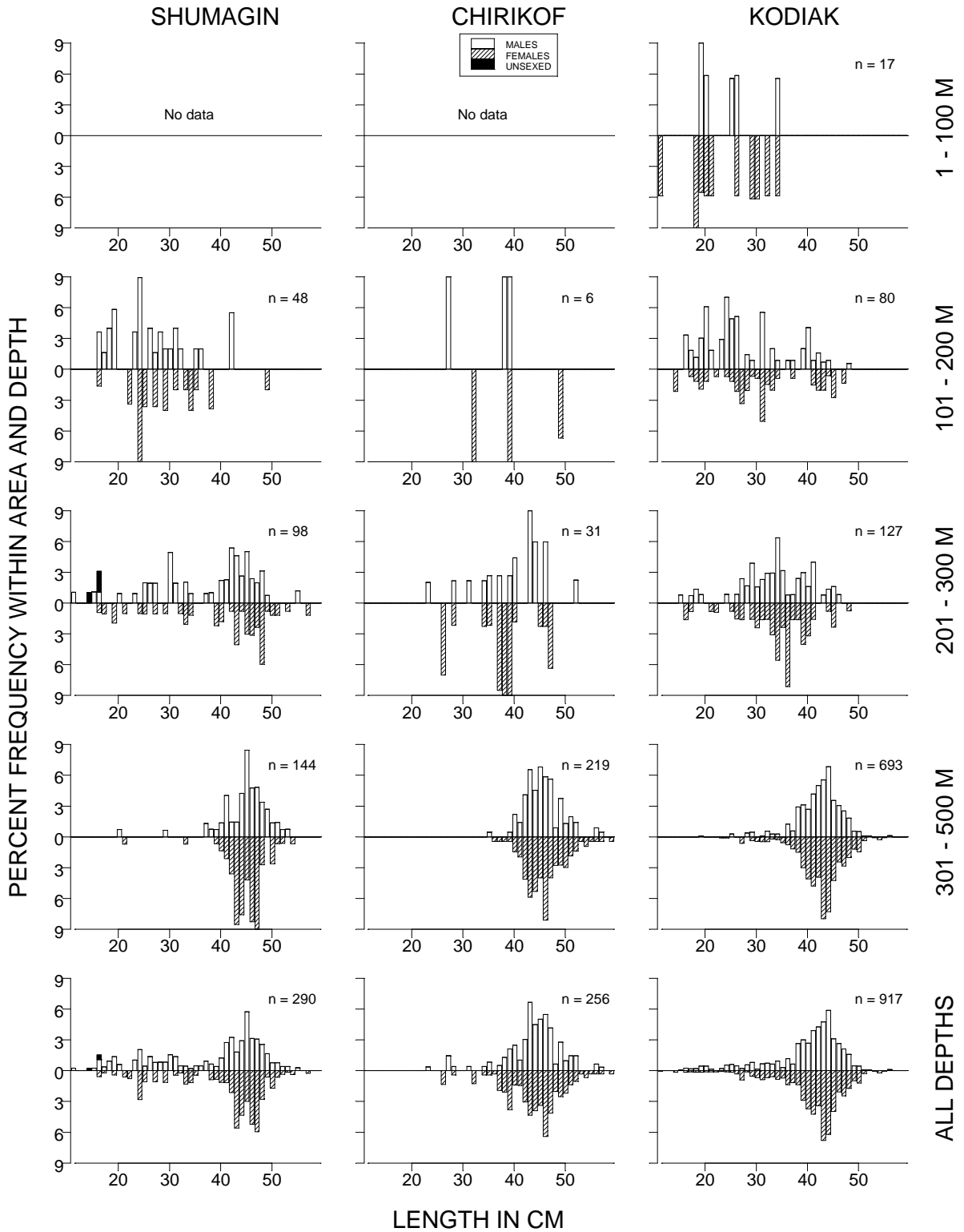


Figure 34. -- Size composition of blackspotted rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

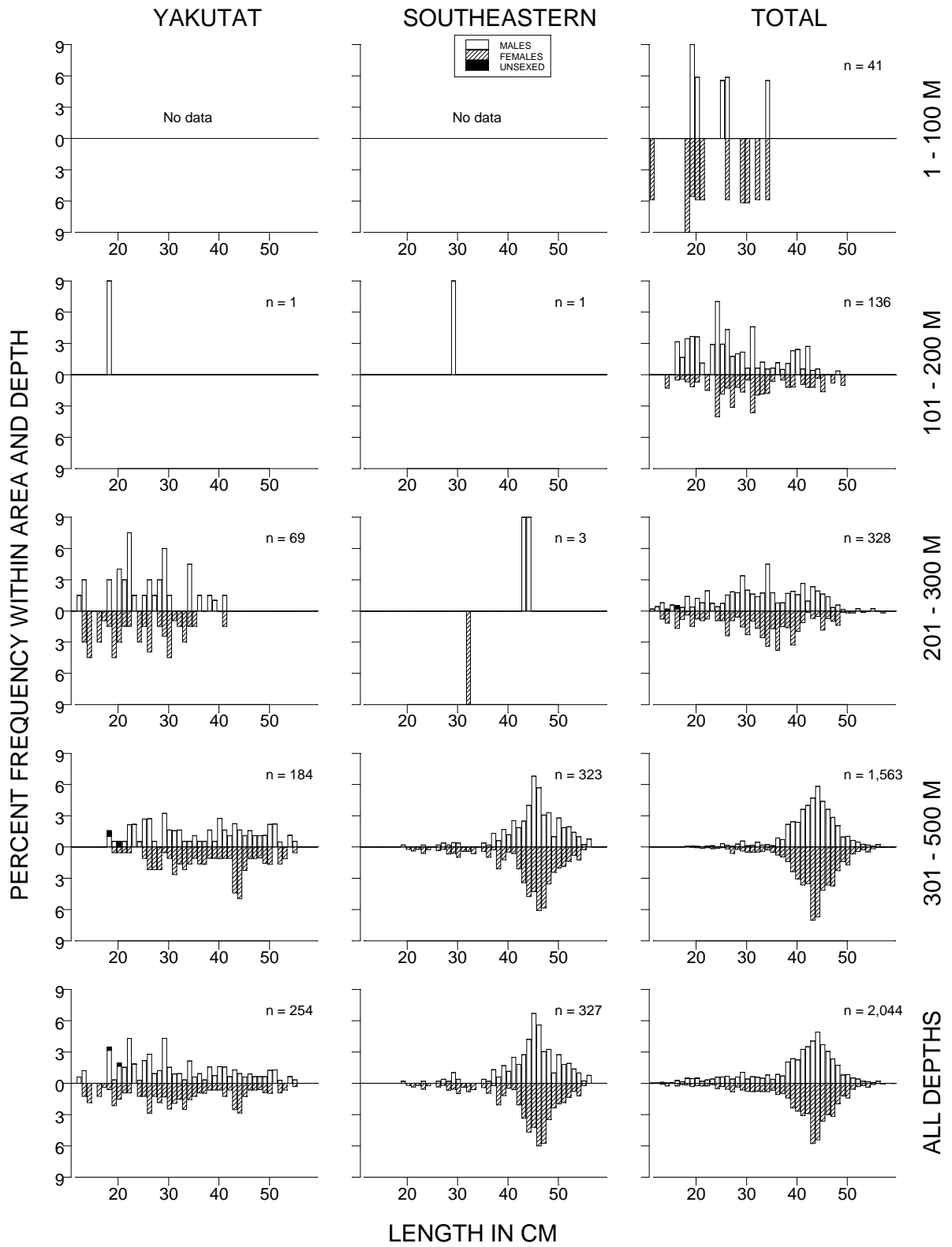


Figure 34. -- (continued).

Table 44. -- Catch per unit of effort by stratum for blackspotted rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	301 - 500	Kodiak Slope	10	9	65.15	18,971	0	39,141
Southeastern	301 - 500	Southeastern Slope	4	4	64.47	4,981	0	14,452
Chirikof	301 - 500	Chirikof Slope	10	9	12.32	1,976	413	3,539
Shumagin	301 - 500	Shumagin Slope	9	9	8.84	2,238	128	4,347
Yakutat	301 - 500	Yakutat Slope	7	6	8.34	1,268	0	2,863
Shumagin	201 - 300	Shumagin Slope	17	10	2.37	661	75	1,248
Kodiak	201 - 300	Kenai Gullies	19	13	1.78	1,183	382	1,985
Southeastern	301 - 500	Southeastern Deep Gullies	7	3	1.40	328	0	745
Chirikof	201 - 300	Chirikof Slope	8	7	1.08	164	27	302
Yakutat	201 - 300	Yakutat Gullies	8	1	0.74	226	0	761
Kodiak	101 - 200	Albatross Gullies	28	8	0.28	223	3	444
Shumagin	101 - 200	Shumagin Outer Shelf	28	3	0.26	212	0	571
Kodiak	101 - 200	Kenai Flats	18	4	0.25	297	0	827
Chirikof	201 - 300	Lower Shelikof Gully	18	4	0.18	183	0	374
Kodiak	201 - 300	Kodiak Slope	7	2	0.17	27	0	90
Kodiak	101 - 200	Portlock Flats	35	9	0.17	121	33	210
Shumagin	101 - 200	West Shumagin Gully	4	1	0.12	27	0	112
Yakutat	201 - 300	Yakutat Slope	9	2	0.10	20	0	51
Shumagin	101 - 200	Sanak Gully	7	1	0.09	39	0	133
Chirikof	101 - 200	East Shumagin Gully	17	3	0.08	84	0	203
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	2	0.07	25	0	63
Kodiak	1 - 100	Albatross Shallows	28	3	0.06	35	0	79
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	0.06	6	0	34
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.03	16	0	48
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	1	0.02	8	0	26
Yakutat	101 - 200	Middleton Shelf	9	1	0.00	2	0	6

Dusky rockfish (*Sebastes variabilis*)

Dusky rockfish was the fourth most abundant rockfish species caught in the 2007 survey (Table 2). Dusky rockfish were found throughout the survey area, almost exclusively in water depths less than 300 m, with approximately 82% of its estimated biomass in the 101 to 200 m depth range (Fig. 35, Table 45). The highest CPUEs were recorded on the Shelikof Edge and the Portlock Flats which, combined, accounted for over 62% of the estimated biomass even though these two strata comprise less than 5% of the survey area (Table 46). There was no general trend in size with depth although fish smaller than about 40 cm FL were almost exclusively confined to depths less than 100 m (Fig. 36). The sex ratio of the dusky rockfish population in the survey area was relatively even with females comprising approximately 55% of the total estimated population.

Table 45. -- Number of survey hauls, number of hauls with dusky rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	10	0.581	2,398	0	4,895	1.183
	101 - 200	39	9	1.408	2,067	0	4,560	1.630
	201 - 300	17	6	1.862	519	0	1,155	1.417
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	25	0.764	4,985	1,464	8,505
Chirikof	1 - 100	82	2	0.070	182	0	523	0.638
	101 - 200	69	15	15.997	38,152	0	105,683	1.405
	201 - 300	26	2	0.014	16	0	39	1.144
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	19	5.635	38,350	0	105,881
Kodiak	1 - 100	97	8	1.373	5,287	0	15,946	1.067
	101 - 200	127	37	2.985	12,934	0	27,855	1.716
	201 - 300	30	12	1.098	1,261	327	2,196	1.573
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	57	1.920	19,482	1,290	37,674
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	9	1.112	3,269	0	6,562	1.782
	201 - 300	17	7	4.452	2,302	0	6,455	2.097
	301 - 500	9	1	0.035	9	0	31	1.245
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	17	0.975	5,579	568	10,591
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	5	3.366	3,731	0	11,456	1.510
	201 - 300	17	3	0.215	109	0	246	1.366
	301 - 500	11	1	0.056	17	0	58	1.480
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	9	1.375	3,857	0	11,584
All areas	1 - 100	334	20	0.610	7,867	0	18,786	1.083
	101 - 200	290	75	4.917	60,153	0	129,444	1.494
	201 - 300	107	30	1.167	4,206	14	8,399	1.783
	301 - 500	49	2	0.021	27	0	72	1.389
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	127	2.258	72,253	2,071	142,434

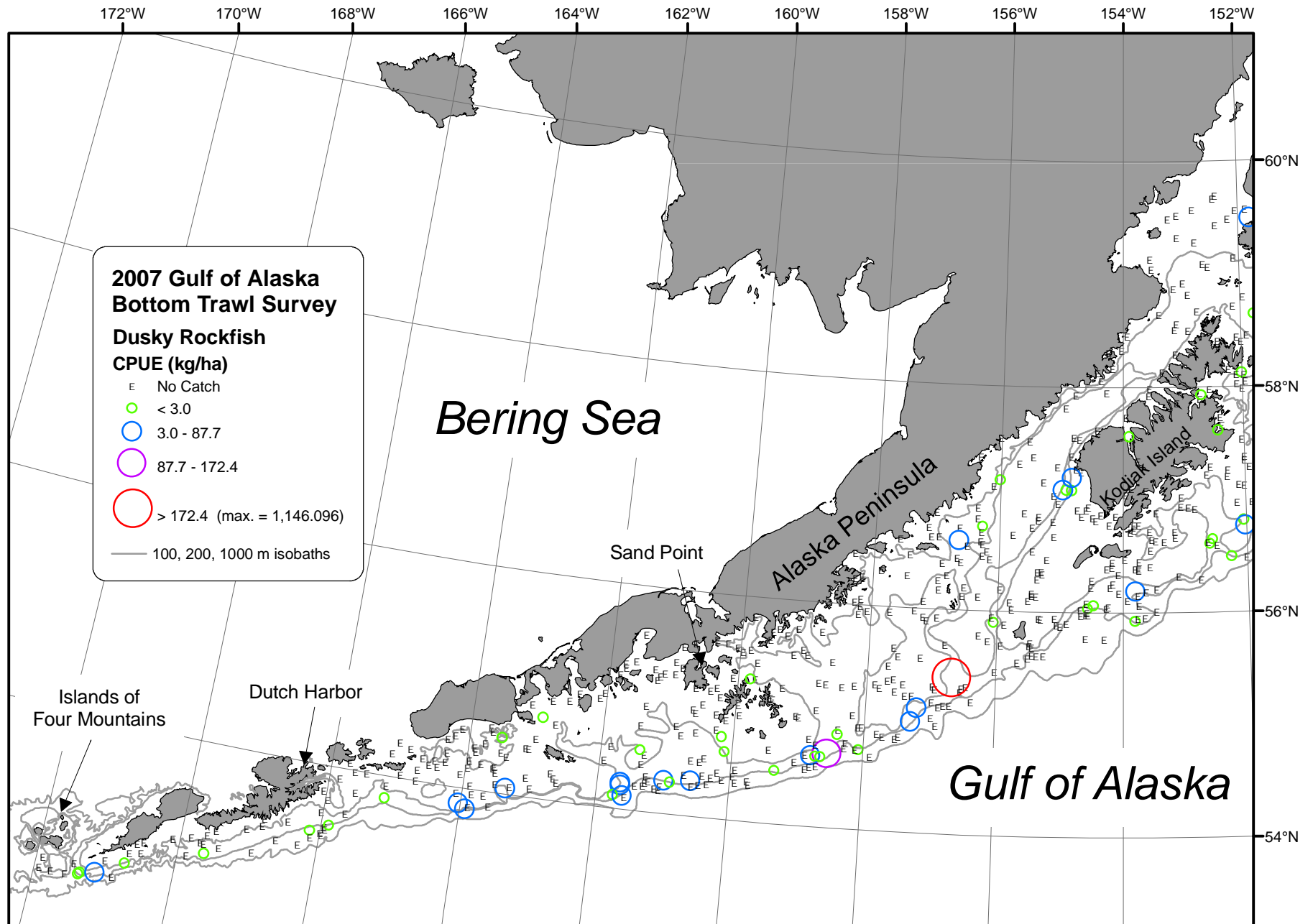


Figure 35. -- Distribution and relative abundance of dusky rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

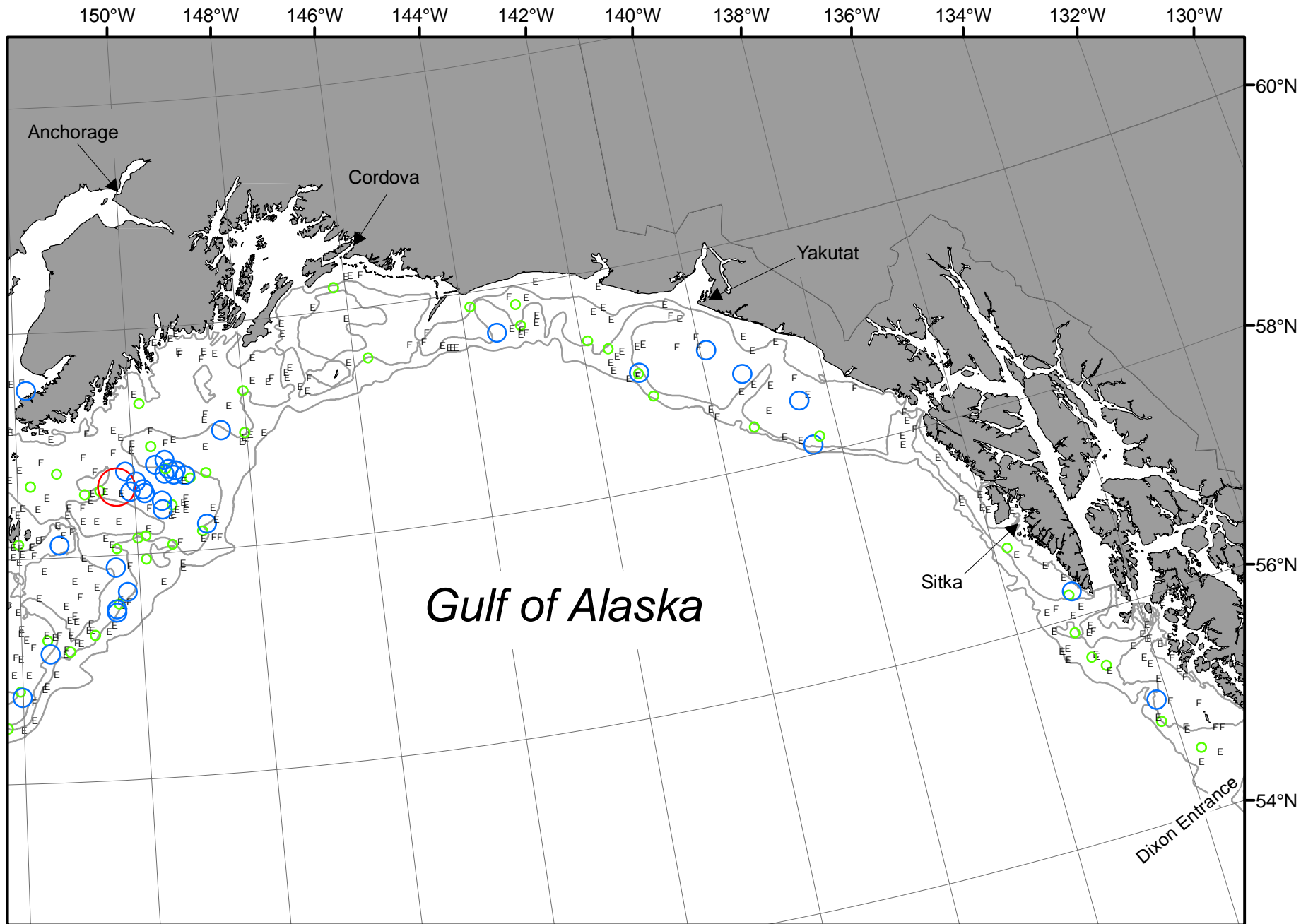


Figure 35. -- Continued (dusky rockfish 2007).

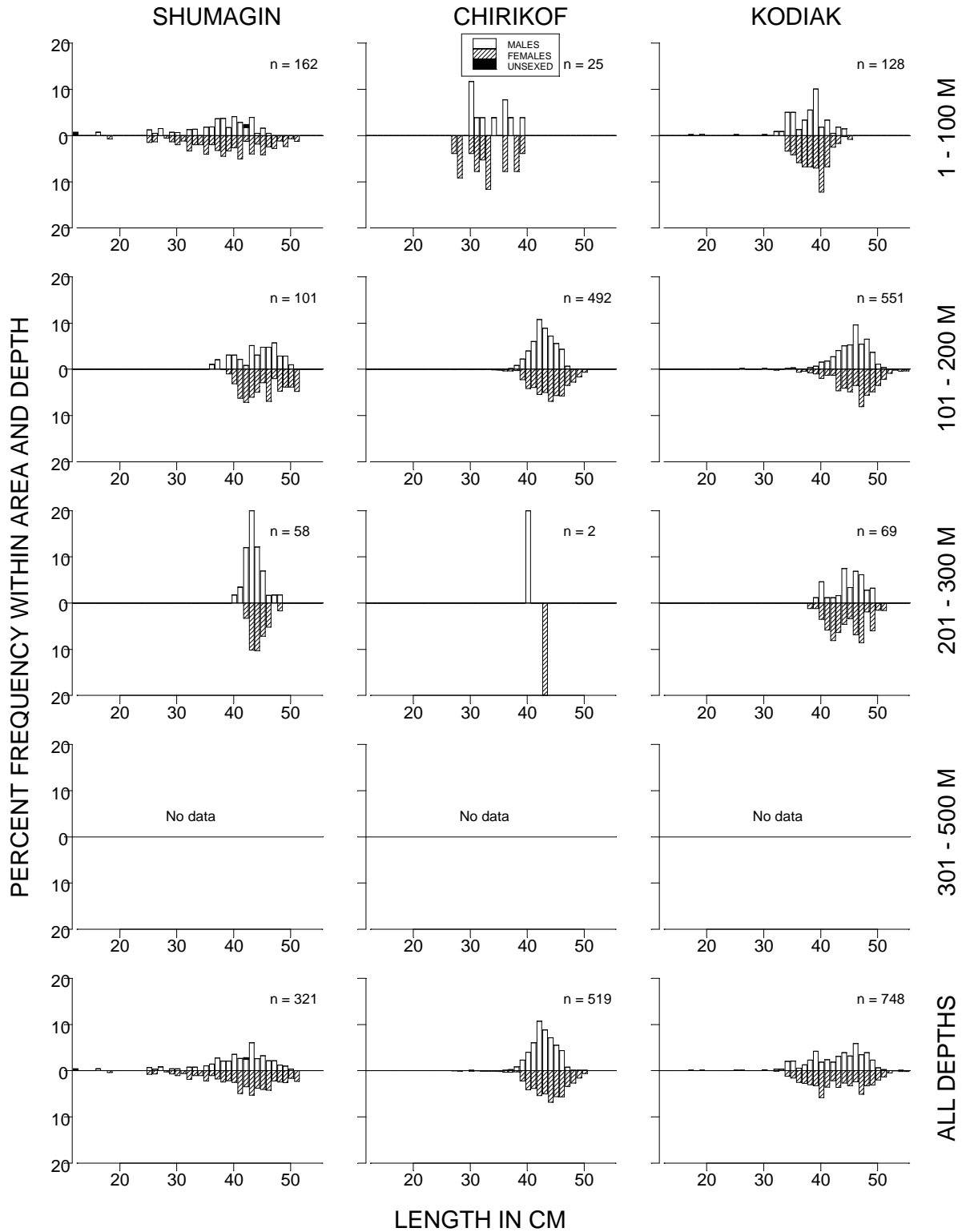


Figure 36. -- Size composition of dusky rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

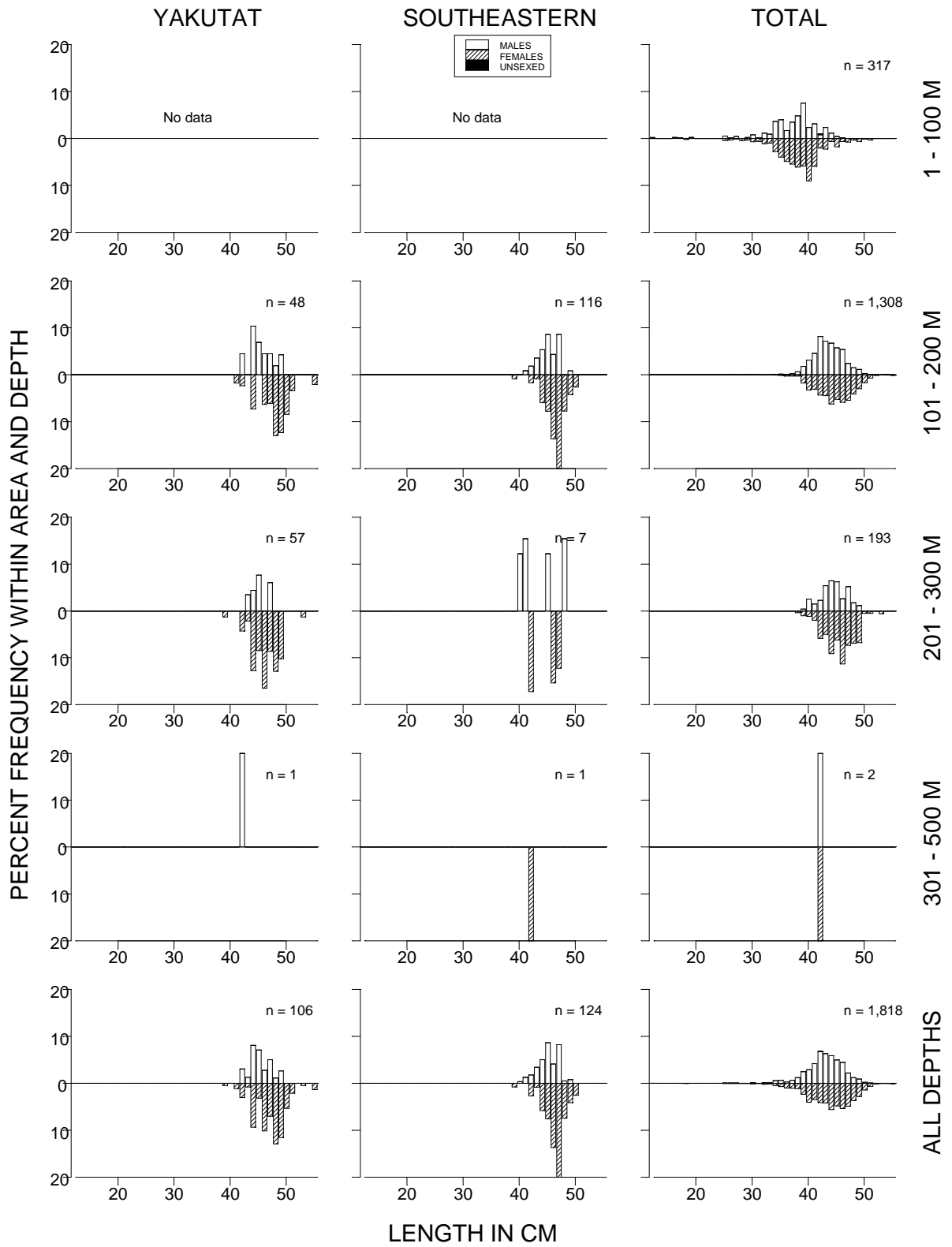


Figure 36. -- (continued).

Table 46. -- Catch per unit of effort by stratum for dusky rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	101 - 200	Shelikof Edge	27	7	44.22	34,200	0	101,624
Kodiak	101 - 200	Portlock Flats	35	18	14.76	10,829	0	25,590
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	3	8.47	3,555	0	11,469
Chirikof	101 - 200	Chirikof Outer Shelf	25	7	7.79	3,903	0	9,600
Yakutat	201 - 300	Yakutat Gullies	8	3	7.20	2,189	0	6,447
Kodiak	1 - 100	Lower Cook Inlet	14	1	5.02	4,963	0	15,682
Shumagin	101 - 200	Shumagin Outer Shelf	28	9	2.54	2,067	0	4,565
Kodiak	201 - 300	Kodiak Slope	7	4	2.39	388	0	921
Yakutat	101 - 200	Yakutat Flats	8	2	2.18	1,965	0	5,088
Shumagin	201 - 300	Shumagin Slope	17	6	1.86	519	0	1,158
Shumagin	1 - 100	Davidson Bank	48	5	1.65	2,252	0	4,744
Kodiak	101 - 200	Albatross Gullies	28	6	1.56	1,236	0	3,342
Yakutat	101 - 200	Fairweather Shelf	8	3	1.44	1,110	0	2,837
Kodiak	201 - 300	Kenai Gullies	19	8	1.31	874	48	1,699
Kodiak	101 - 200	Kodiak Outer Shelf	28	9	1.23	620	95	1,144
Yakutat	201 - 300	Yakutat Slope	9	4	0.53	113	0	249
Yakutat	101 - 200	Yakataga Shelf	8	3	0.30	157	0	359
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	3	0.28	109	0	247
Southeastern	101 - 200	Prince of Wales Shelf	14	2	0.26	176	0	512
Kodiak	1 - 100	Albatross Banks	39	3	0.18	283	0	819
Chirikof	1 - 100	Chirikof Bank	40	2	0.17	182	0	526
Kodiak	101 - 200	Kenai Flats	18	2	0.16	187	0	516
Chirikof	201 - 300	Chirikof Slope	8	2	0.10	16	0	40
Shumagin	1 - 100	Shumagin Bank	36	4	0.10	126	0	281
Kodiak	1 - 100	Northern Kodiak Shallows	9	1	0.09	19	0	64
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.07	17	0	60
Yakutat	301 - 500	Yakutat Slope	7	1	0.06	9	0	32
Kodiak	101 - 200	Barren Islands	18	2	0.06	62	0	165
Yakutat	101 - 200	Middleton Shelf	9	1	0.05	37	0	122
Chirikof	101 - 200	East Shumagin Gully	17	1	0.05	50	0	155
Kodiak	1 - 100	Albatross Shallows	28	3	0.04	22	0	55
Shumagin	1 - 100	Lower Alaska Peninsula	28	1	0.03	20	0	61

Dark rockfish (*Sebastes ciliatus*)

Dark rockfish were rarely caught over the course of the survey (Fig. 37, Table 47). Modest CPUEs were recorded along the Alaska Peninsula and near Kodiak Island at depths less than 200 m but no catches were recorded in the Yakutat and Southeastern INPFC areas. Eighty-eight percent of the estimated biomass was found in the Albatross Banks and Shumagin Bank strata, which combined comprise less than 9% of the survey area (Table 48). This estimate was based on only six hauls out of the 75 conducted in these two strata. The small amount of length data make make it difficult to discern a clear mode in the length distribution.

Table 47. -- Number of survey hauls, number of hauls with dark rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	5	0.055	229	7	451	1.076
	101 - 200	39	1	0.007	11	0	34	0.867
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	6	0.037	240	17	463
Chirikof	1 - 100	82	1	0.017	44	0	134	0.911
	101 - 200	69	1	0.006	16	0	48	1.429
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	2	0.009	60	0	155
Kodiak	1 - 100	97	3	0.237	912	0	2,613	1.227
	101 - 200	127	2	0.006	27	0	71	1.183
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	5	0.092	938	0	2,641
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	9	0.092	1,185	0	2,886	1.180
	101 - 200	290	4	0.004	53	0	111	1.156
	201 - 300	107	0	---	---	---	---	---
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	13	0.039	1,238	0	2,940

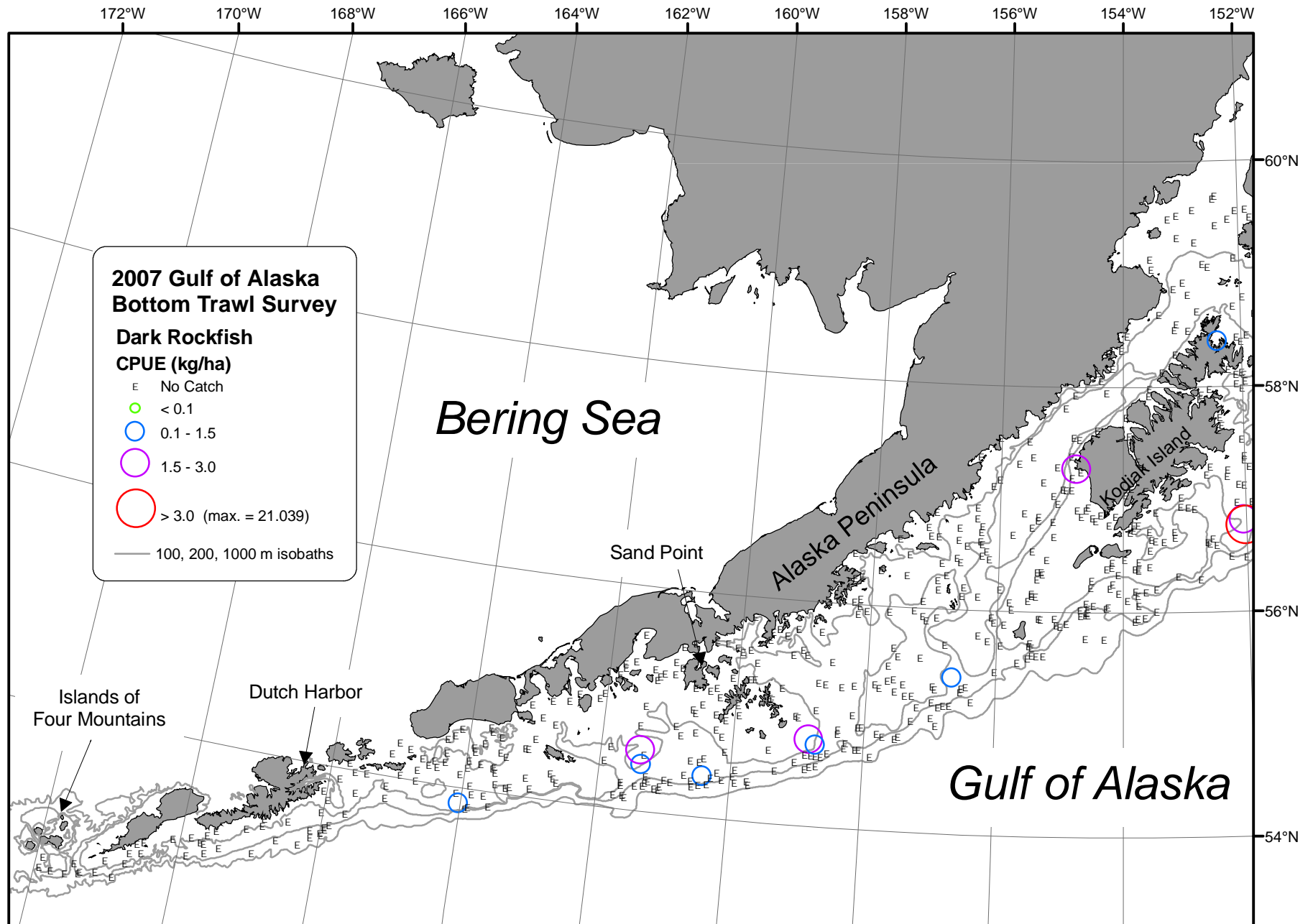


Figure 37. -- Distribution and relative abundance of dark rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.



Figure 37. -- Continued (dark rockfish 2007).

Table 48. -- Catch per unit of effort by stratum for dark rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	1 - 100	Albatross Banks	39	2	0.59	905	0	2,607
Shumagin	1 - 100	Shumagin Bank	36	4	0.15	189	0	397
Chirikof	1 - 100	Chirikof Bank	40	1	0.04	44	0	135
Shumagin	1 - 100	Davidson Bank	48	1	0.03	40	0	121
Kodiak	101 - 200	Albatross Gullies	28	1	0.03	21	0	64
Chirikof	101 - 200	Shelikof Edge	27	1	0.02	16	0	48
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.01	11	0	34
Kodiak	1 - 100	Albatross Shallows	28	1	0.01	6	0	19
Kodiak	101 - 200	Kodiak Outer Shelf	28	1	0.01	6	0	18

Sharpchin rockfish (*Sebastes zacentrus*)

Sharpchin rockfish were rarely captured west of Kodiak Island (Fig. 38). Over 99% of its biomass estimate occurred in the Kodiak, Yakutat, and Southeastern INPFC areas (Table 49). The highest CPUEs were recorded in the Kodiak Slope, Baranof-Chichagof Slope, and Prince of Wales Slopes/Gullies strata, which accounted for approximately 62% of the total biomass estimate even though they only comprise about 2% of the survey area (Table 50). Sharpchin rockfish were most abundant at depths between 201 and 300 m with approximately 73% of the estimated biomass in this depth range and most of the remainder between 101 and 200 m (Table 49). Overall, the size composition of female sharpchin rockfish was both broader and larger than that of males throughout the survey area (Fig. 39). The sex ratio of the sharpchin rockfish population in the survey area was even at 50:50.

Table 49. -- Number of survey hauls, number of hauls with sharpchin rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	3	0.188	53	0	118	0.428
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	3	0.008	53	0	118
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	3	0.029	68	0	172	0.371
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	3	0.010	68	0	172
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	8	0.065	280	0	642	0.270
	201 - 300	30	5	3.219	3,699	0	11,364	0.327
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	13	0.392	3,979	0	11,655
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	5	0.773	2,272	0	5,809	0.147
	201 - 300	17	11	2.988	1,545	141	2,948	0.238
	301 - 500	9	3	0.034	9	0	19	0.424
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	19	0.669	3,826	0	7,681
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	13	2.287	2,535	0	5,866	0.219
	201 - 300	17	8	16.960	8,569	0	19,333	0.235
	301 - 500	11	1	0.024	7	0	25	0.152
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	22	3.963	11,111	173	22,049
All areas	1 - 100	334	0	---	---	---	---	---
	101 - 200	290	29	0.421	5,155	511	9,799	0.183
	201 - 300	107	27	3.846	13,865	1,204	26,527	0.255
	301 - 500	49	4	0.013	16	0	36	0.234
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	60	0.595	19,037	5,792	32,282

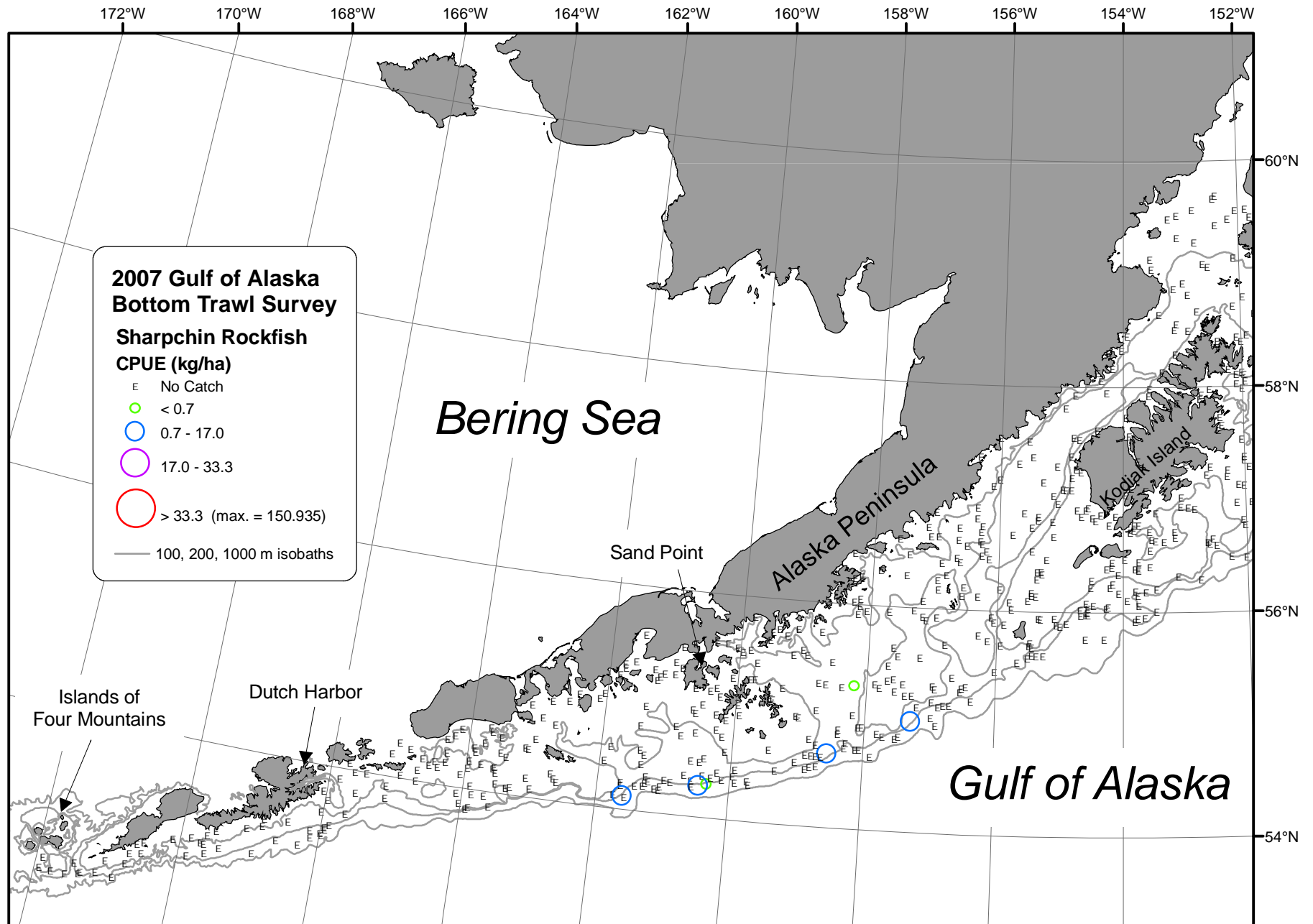


Figure 38. -- Distribution and relative abundance of sharpchin rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

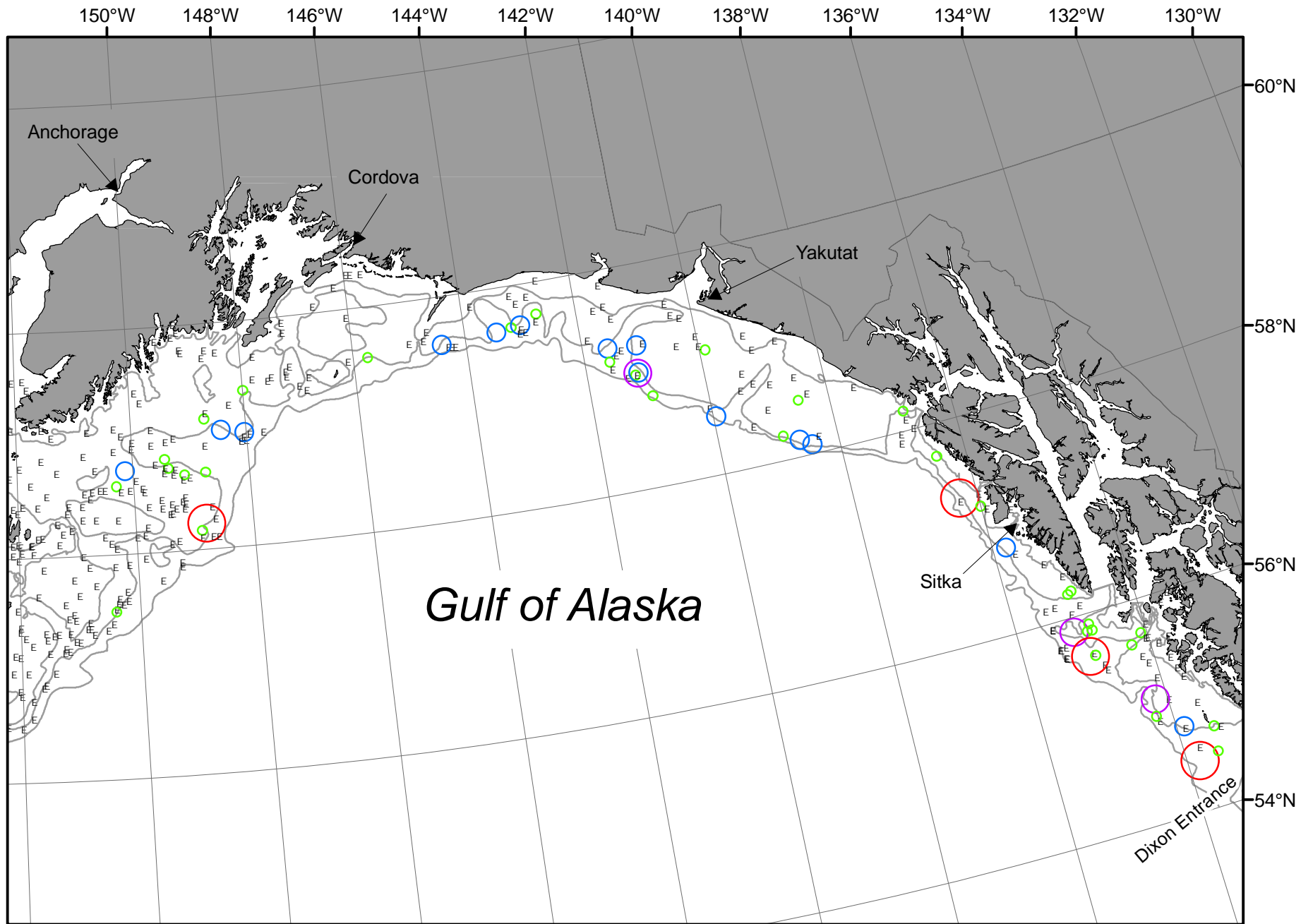


Figure 38. -- Continued (sharpchin rockfish 2007).

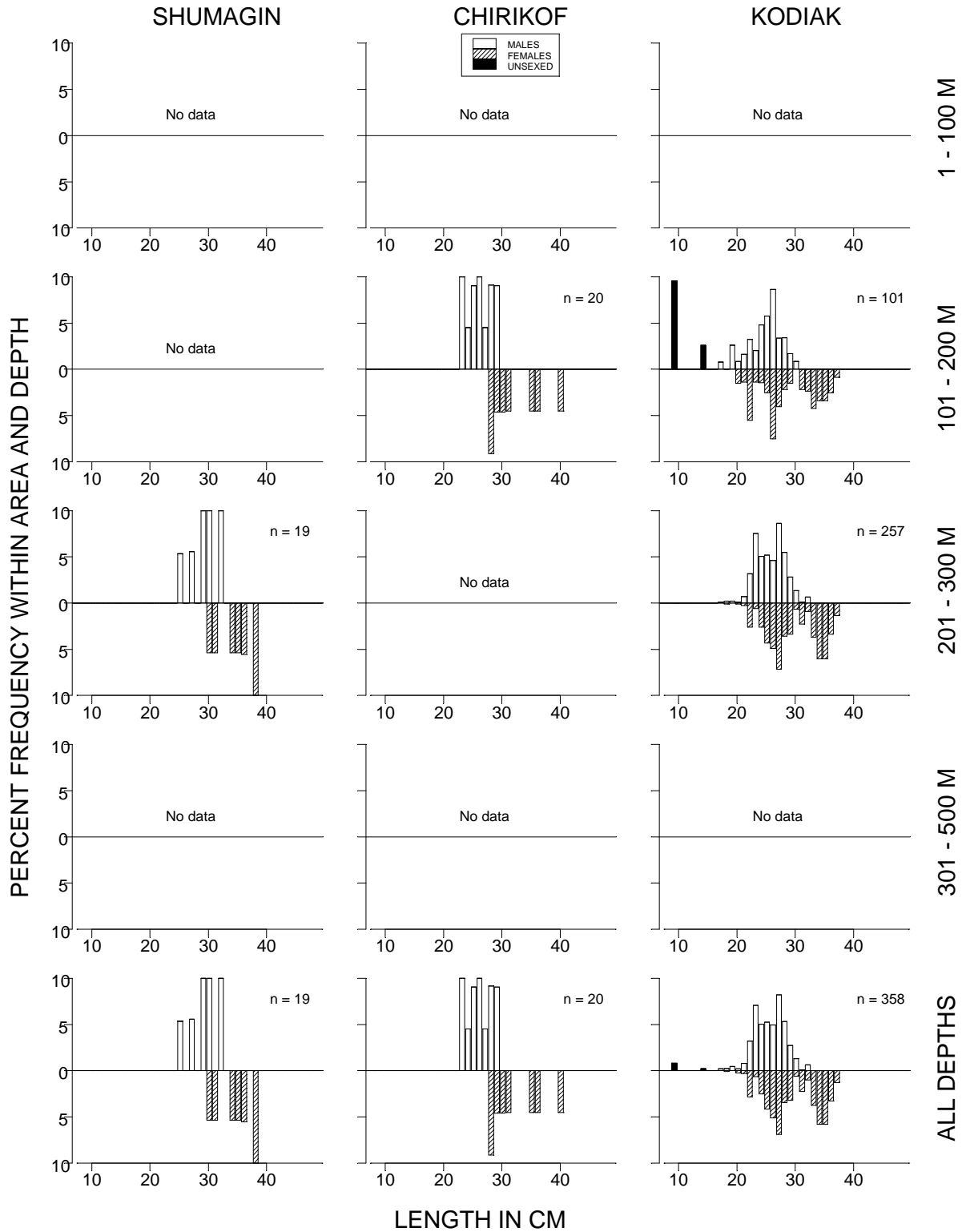


Figure 39. -- Size composition of sharpchin rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

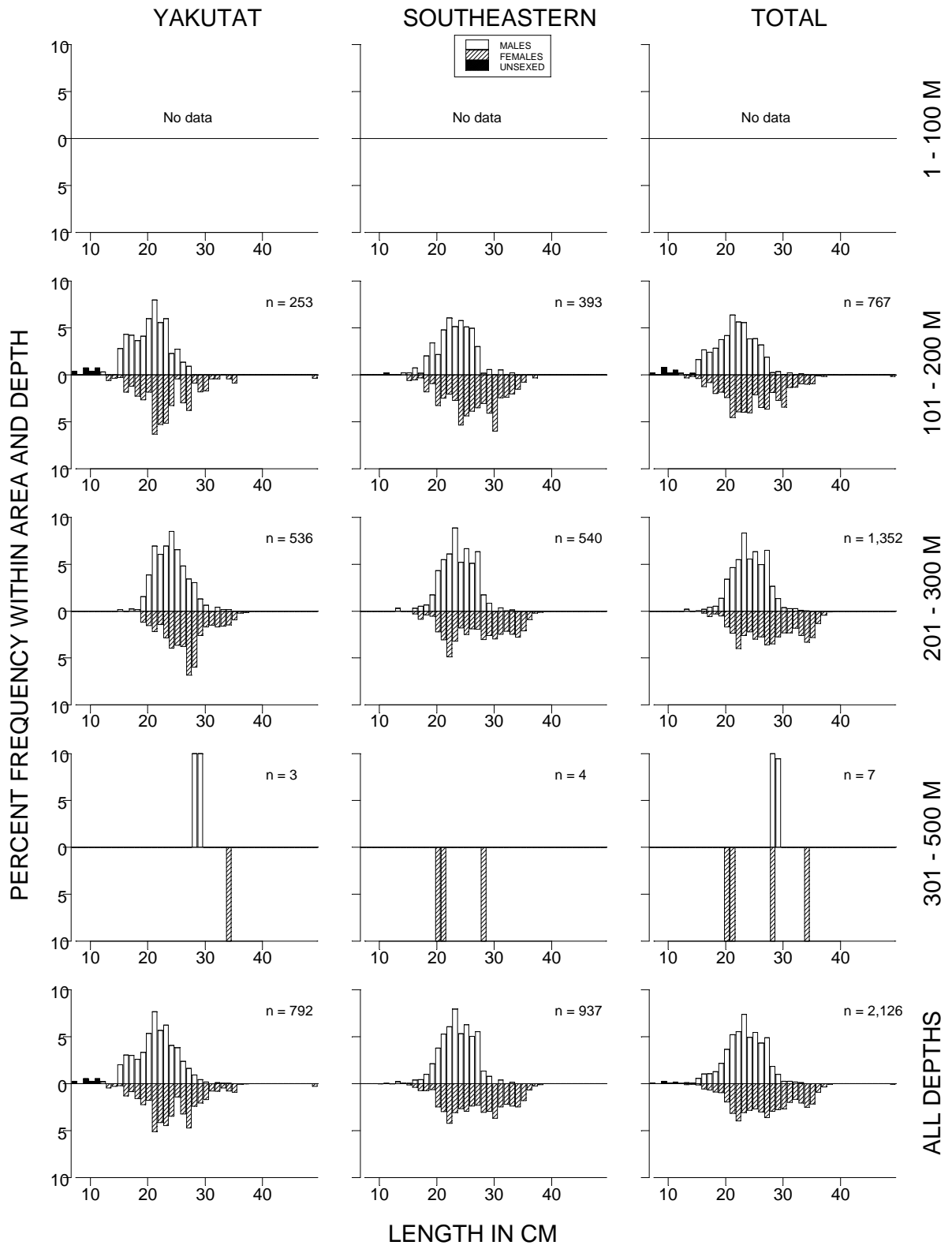


Figure 39. -- (continued).

Table 50. -- Catch per unit of effort by stratum for sharpchin rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	201 - 300	Kodiak Slope	7	2	20.37	3,305	0	11,383
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	18.99	2,137	0	11,334
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	7	16.38	6,431	0	16,380
Yakutat	201 - 300	Yakutat Slope	9	7	5.16	1,099	0	2,430
Southeastern	101 - 200	Prince of Wales Shelf	14	7	3.52	2,427	0	5,779
Yakutat	101 - 200	Fairweather Shelf	8	3	2.79	2,159	0	5,778
Yakutat	201 - 300	Yakutat Gullies	8	4	1.47	446	0	1,227
Kodiak	201 - 300	Kenai Gullies	19	3	0.59	394	0	1,206
Kodiak	101 - 200	Portlock Flats	35	4	0.26	190	0	537
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	6	0.26	108	0	221
Shumagin	201 - 300	Shumagin Slope	17	3	0.19	53	0	119
Chirikof	101 - 200	Chirikof Outer Shelf	25	2	0.13	64	0	168
Yakutat	101 - 200	Yakutat Flats	8	2	0.124	112	0	373
Kodiak	101 - 200	Kodiak Outer Shelf	28	2	0.105	53	0	154
Yakutat	301 - 500	Yakutat Slope	7	3	0.059	9	0	20
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.032	7	0	26
Kodiak	101 - 200	Kenai Flats	18	2	0.031	37	0	99
Chirikof	101 - 200	East Shumagin Gully	17	1	0.004	5	0	14

Shortraker rockfish (*Sebastes borealis*)

Shortraker rockfish were found throughout the survey area although almost exclusively on the continental slope in the 200 to 700 m depth range (Fig. 40, Table 51). The highest CPUEs were consistently recorded in the 301 and 500 m depth range, which accounted for approximately 62% of the total biomass (Table 51). In this depth range, shortraker rockfish were caught in about 88% of the tows. Shortraker rockfish were considerably more abundant in the central and eastern Gulf of Alaska than in the western Gulf of Alaska. Approximately 87% of the estimated biomass was found in the Kodiak, Yakutat, and Southeastern INPFC areas. The highest concentrations of shortraker rockfish were in the Southeastern Slope and Baranof-Chichagof Slope strata, which accounted for 35% of its survey biomass estimate, even though their combined area comprises less than 1% of the survey area (Table 52). Mean weight and length generally increased from west to east (Fig. 41, Table 51). The sex ratio of the shortraker rockfish population in the survey area was relatively even with females comprising approximately 53% of the total estimated population.

Table 51. -- Number of survey hauls, number of hauls with shorttraker rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	2	0.942	263	0	752	3.909
	301 - 500	9	8	8.542	2,162	240	4,084	2.282
	501 - 700	5	3	0.337	68	0	150	1.553
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	13	0.382	2,492	529	4,456
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	0	---	---	---	---	---
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	8	11.201	1,797	569	3,024	2.421
	501 - 700	7	3	0.584	114	0	245	2.272
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	11	0.281	1,911	677	3,145
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	6	1.844	2,119	0	5,077	4.802
	301 - 500	10	9	19.936	5,805	1,859	9,751	3.510
	501 - 700	6	2	2.013	351	0	1,059	5.162
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	17	0.815	8,275	3,599	12,951
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	1	0.044	130	0	425	3.933
	201 - 300	17	6	5.676	2,935	0	6,348	4.701
	301 - 500	9	8	15.275	4,014	247	7,781	4.675
	501 - 700	3	2	7.609	1,118	0	4,149	4.131
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	17	1.433	8,197	3,148	13,246
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	3	12.564	6,348	0	22,769	5.332
	301 - 500	11	10	25.353	7,902	0	21,492	4.668
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	13	5.082	14,250	0	33,243
All areas	1 - 100	334	0	---	---	---	---	---
	101 - 200	290	1	0.011	130	0	425	3.933
	201 - 300	107	17	3.236	11,664	0	25,354	5.021
	301 - 500	49	43	16.949	21,680	8,968	34,392	3.678
	501 - 700	24	10	2.012	1,651	0	4,420	3.818
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	71	1.098	35,125	17,296	52,954

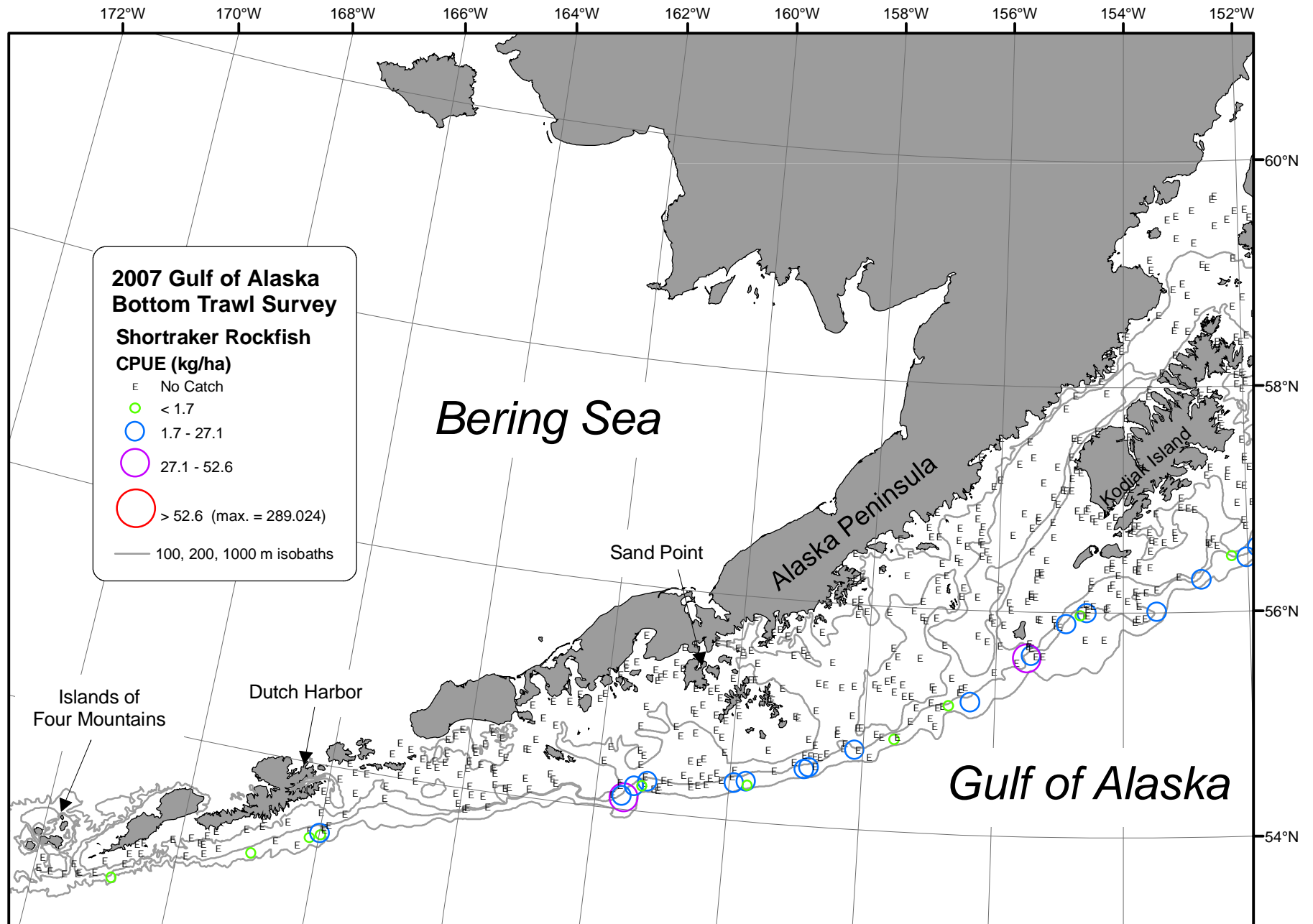


Figure 40. -- Distribution and relative abundance of shorttraker rockfish from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

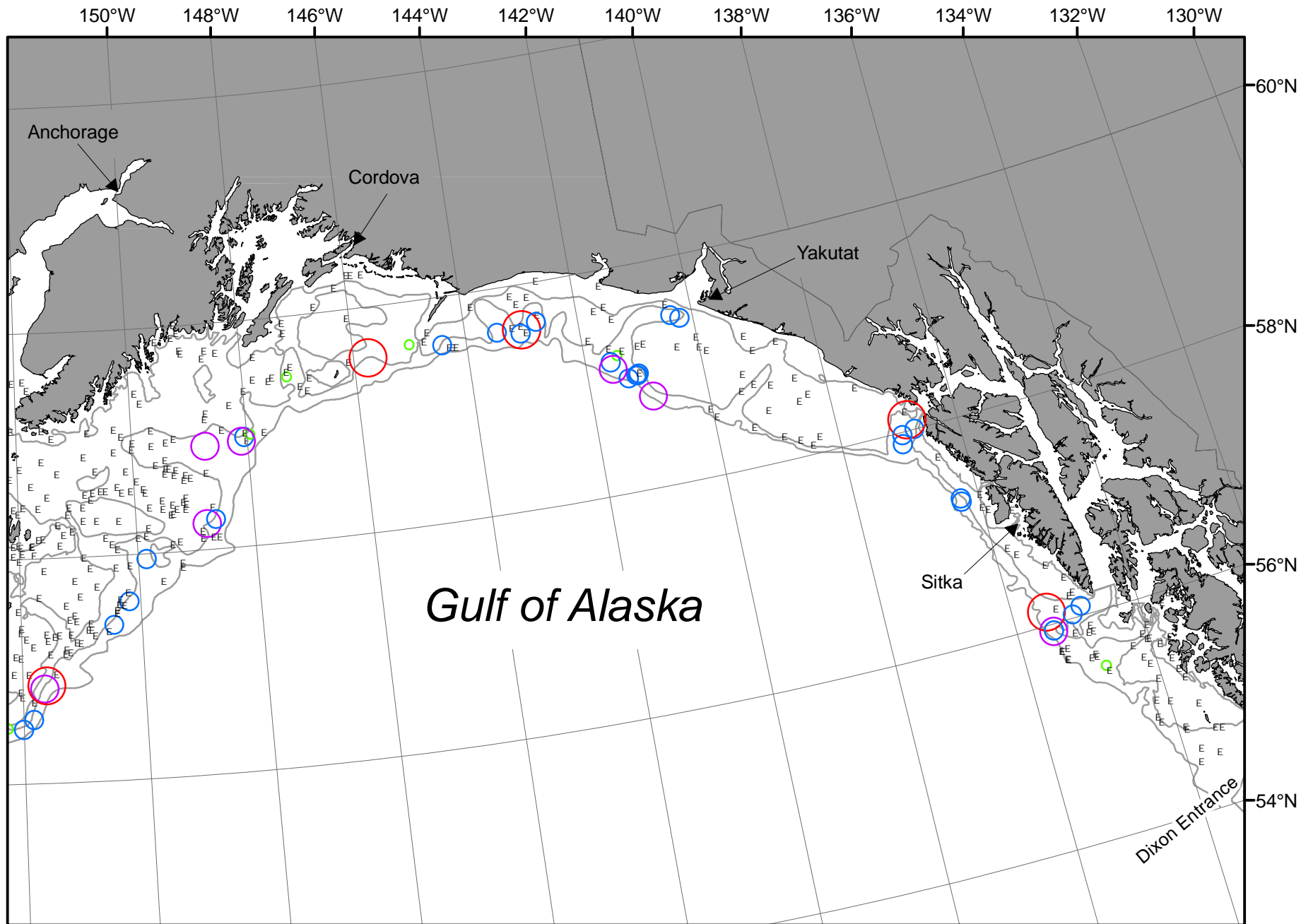


Figure 40. -- Continued (shorttraker rockfish 2007).

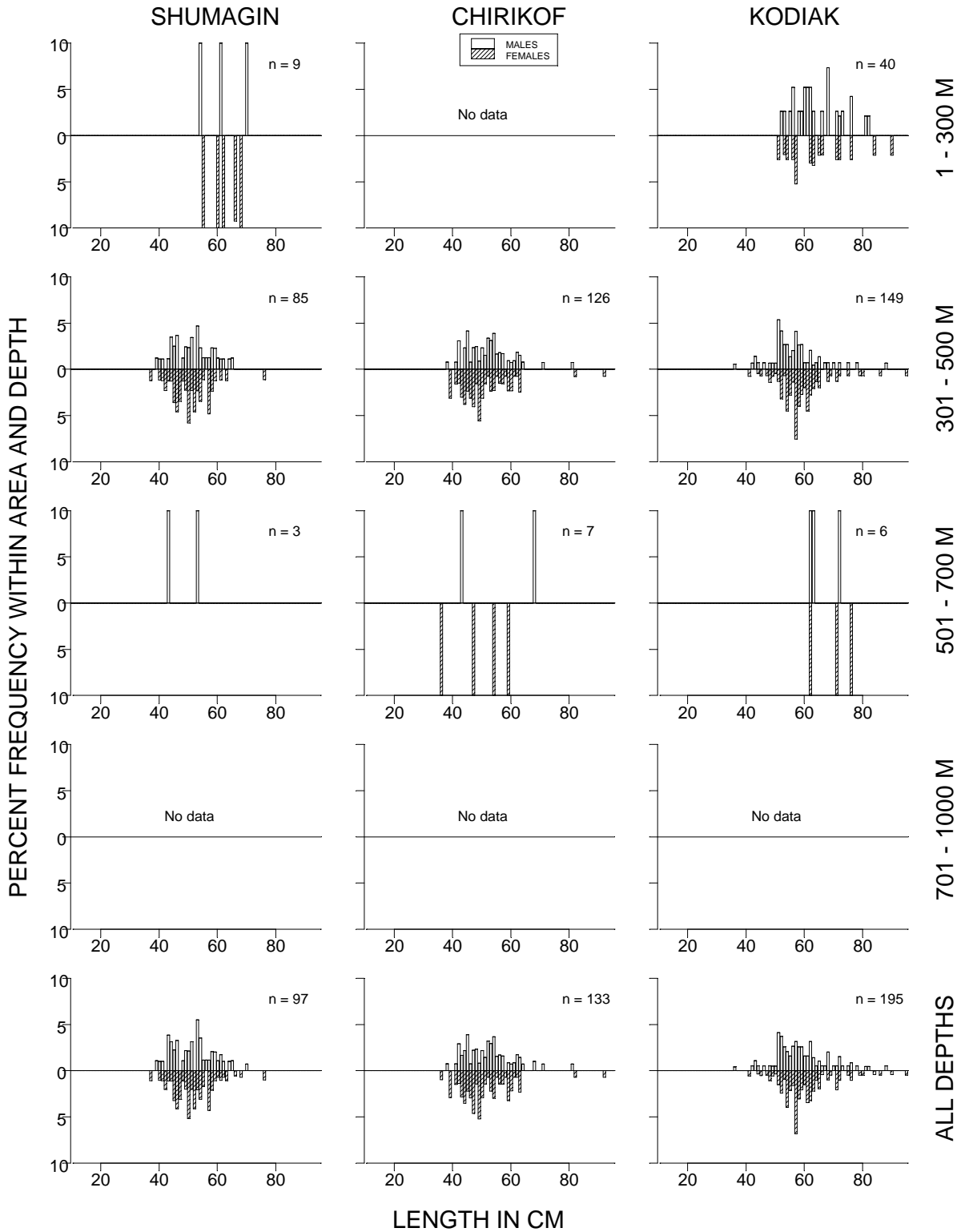


Figure 41. -- Size composition of shorttraker rockfish from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

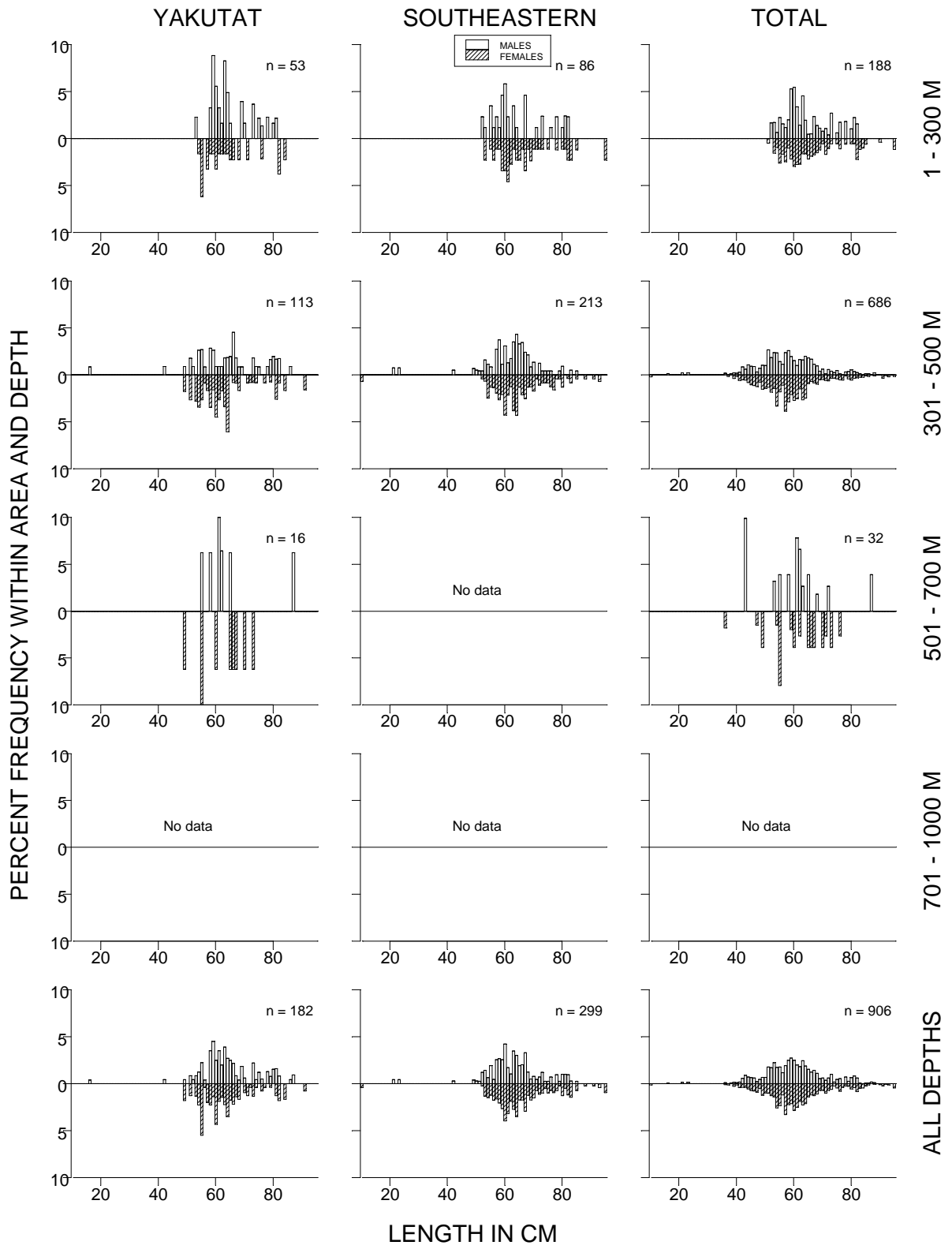


Figure 41. -- (continued).

Table 52. -- Catch per unit of effort by stratum for shorttraker rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	301 - 500	Southeastern Slope	4	4	86.08	6,651	0	23,324
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	56.41	6,348	0	28,554
Yakutat	301 - 500	Yakutat Slope	7	7	25.94	3,945	51	7,839
Kodiak	301 - 500	Kodiak Slope	10	9	19.94	5,805	1,798	9,811
Chirikof	301 - 500	Chirikof Slope	10	8	11.20	1,797	550	3,043
Shumagin	301 - 500	Shumagin Slope	9	8	8.54	2,162	203	4,122
Yakutat	501 - 700	Yakutat Slope	3	2	7.61	1,118	0	5,217
Yakutat	201 - 300	Yakutat Slope	9	3	7.46	1,587	0	4,941
Southeastern	301 - 500	Southeastern Deep Gullies	7	6	5.34	1,251	0	2,949
Kodiak	201 - 300	Kodiak Slope	7	3	4.57	741	0	2,371
Yakutat	201 - 300	Yakutat Gullies	8	3	4.43	1,348	0	2,981
Kodiak	201 - 300	Kenai Gullies	19	3	2.07	1,378	0	4,018
Kodiak	501 - 700	Kodiak Slope	6	2	2.013	351	0	1,095
Shumagin	201 - 300	Shumagin Slope	17	2	0.942	263	0	755
Yakutat	301 - 500	Yakutat Gullies	2	1	0.624	69	0	948
Chirikof	501 - 700	Chirikof Slope	7	3	0.584	114	0	249
Shumagin	501 - 700	Shumagin Slope	5	3	0.337	68	0	156
Yakutat	101 - 200	Middleton Shelf	9	1	0.177	130	0	431

Shortspine thornyhead (*Sebastolobus alascanus*)

Shortspine thornyhead was the third most abundant rockfish species caught in the 2007 survey (Table 2). Shortspine thornyhead were found throughout the survey area at all depths, including all tows greater than 300 m (Fig. 42, Table 53). The highest CPUEs were generally recorded on the continental slope and deeper gullies in the 301 and 700 m depth range, which accounted for approximately 53% of its total biomass (Tables 53 and 54). Population length distributions were similar in all areas and at all depths, with both males and females exhibiting length modes between approximately 24 and 32 cm FL (Fig. 43). The sex ratio of the shortspine thornyhead population in the survey area was about even with males comprising approximately 51% of the total estimated population.

Table 53. -- Number of survey hauls, number of hauls with shortspine thornyhead, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	2	0.005	7	0	17	0.300
	201 - 300	17	14	10.438	2,910	1,587	4,234	0.228
	301 - 500	9	9	18.578	4,702	2,755	6,650	0.262
	501 - 700	5	5	12.913	2,590	1,624	3,556	0.229
	701 - 1000	2	2	10.029	1,943	1,140	2,746	0.293
	All depths		205	32	1.863	12,152	9,771	14,534
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	3	0.250	597	0	1,854	0.369
	201 - 300	26	11	0.901	1,040	143	1,937	0.249
	301 - 500	10	10	23.423	3,757	2,830	4,684	0.308
	501 - 700	7	7	25.224	4,927	1,433	8,421	0.358
	701 - 1000	5	5	9.634	2,953	1,505	4,401	0.445
	All depths		199	36	1.951	13,274	9,613	16,936
Kodiak	1 - 100	97	1	0.034	131	0	439	0.346
	101 - 200	127	12	0.200	867	0	1,799	0.251
	201 - 300	30	26	6.223	7,150	4,949	9,351	0.290
	301 - 500	10	10	25.303	7,368	4,606	10,129	0.221
	501 - 700	6	6	23.124	4,035	2,703	5,367	0.185
	701 - 1000	4	4	13.688	4,782	2,097	7,468	0.355
	All depths		274	59	2.398	24,332	20,181	28,484
Yakutat	1 - 100	11	2	0.049	81	0	236	0.130
	101 - 200	33	15	0.982	2,885	796	4,973	0.269
	201 - 300	17	16	13.058	6,751	2,340	11,161	0.201
	301 - 500	9	9	19.005	4,994	3,120	6,868	0.197
	501 - 700	3	3	27.913	4,101	1,002	7,200	0.286
	701 - 1000	3	3	19.664	3,711	1,225	6,198	0.372
	All depths		76	48	3.938	22,523	17,000	28,046
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	6	0.348	386	0	863	0.231
	201 - 300	17	14	6.886	3,479	1,328	5,630	0.215
	301 - 500	11	11	23.237	7,243	4,595	9,891	0.241
	501 - 700	3	3	8.270	855	431	1,279	0.595
	701 - 1000	2	2	4.393	530	0	1,417	0.689
	All depths		66	36	4.455	12,493	9,357	15,629
All areas	1 - 100	334	3	0.016	212	0	525	0.211
	101 - 200	290	38	0.388	4,742	2,202	7,283	0.271
	201 - 300	107	81	5.917	21,330	16,062	26,598	0.233
	301 - 500	49	49	21.939	28,064	23,813	32,314	0.236
	501 - 700	24	24	20.115	16,507	12,417	20,598	0.263
	701 - 1000	16	16	12.010	13,920	10,707	17,132	0.371
	All depths		820	211	2.649	84,774	76,232	93,317

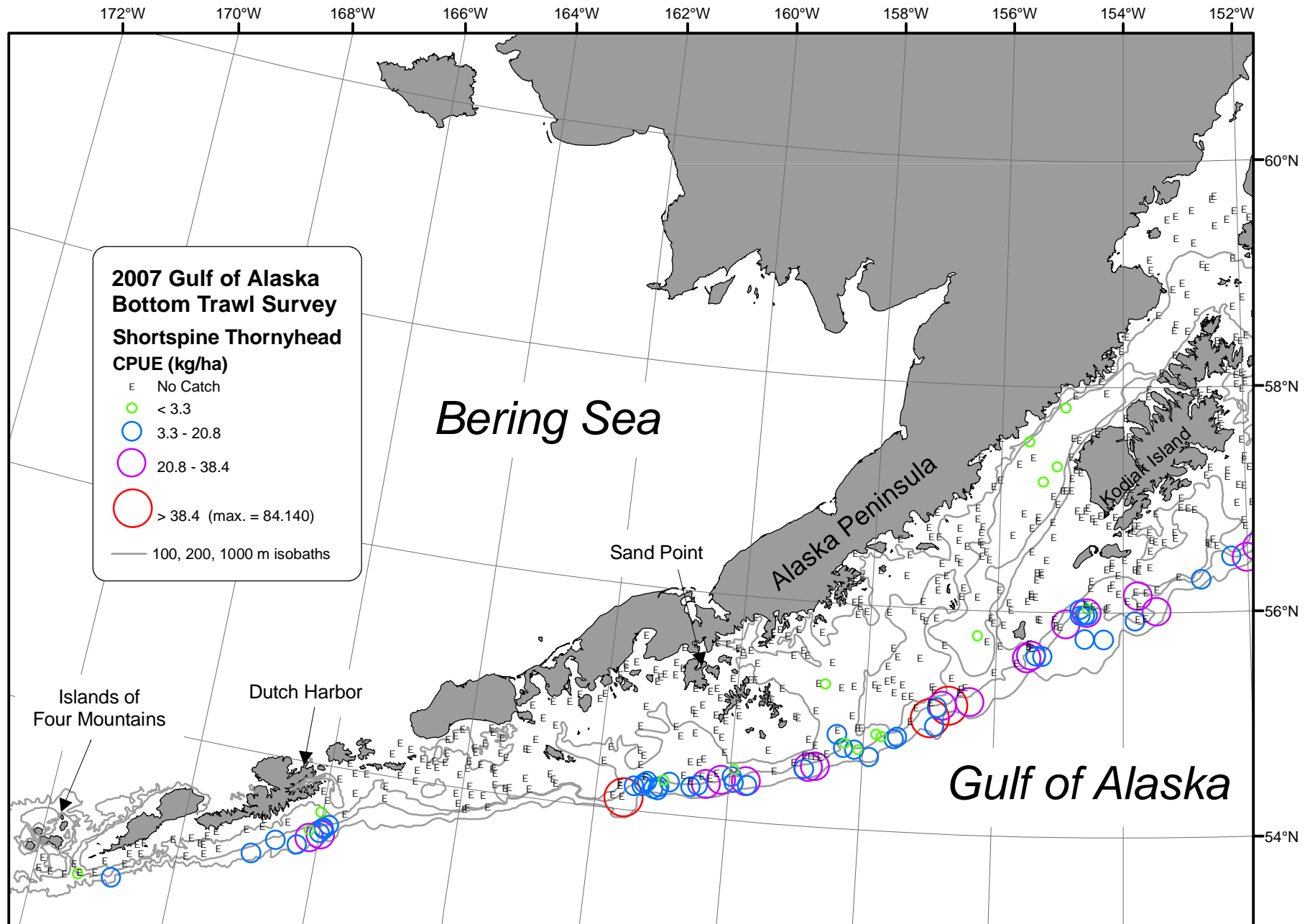


Figure 42. -- Distribution and relative abundance of shortspine thornyhead from the 2007 Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between the mean CPUE and two standard deviations above the mean, between two and four standard deviations above the mean, and greater than four standard deviations above the mean.

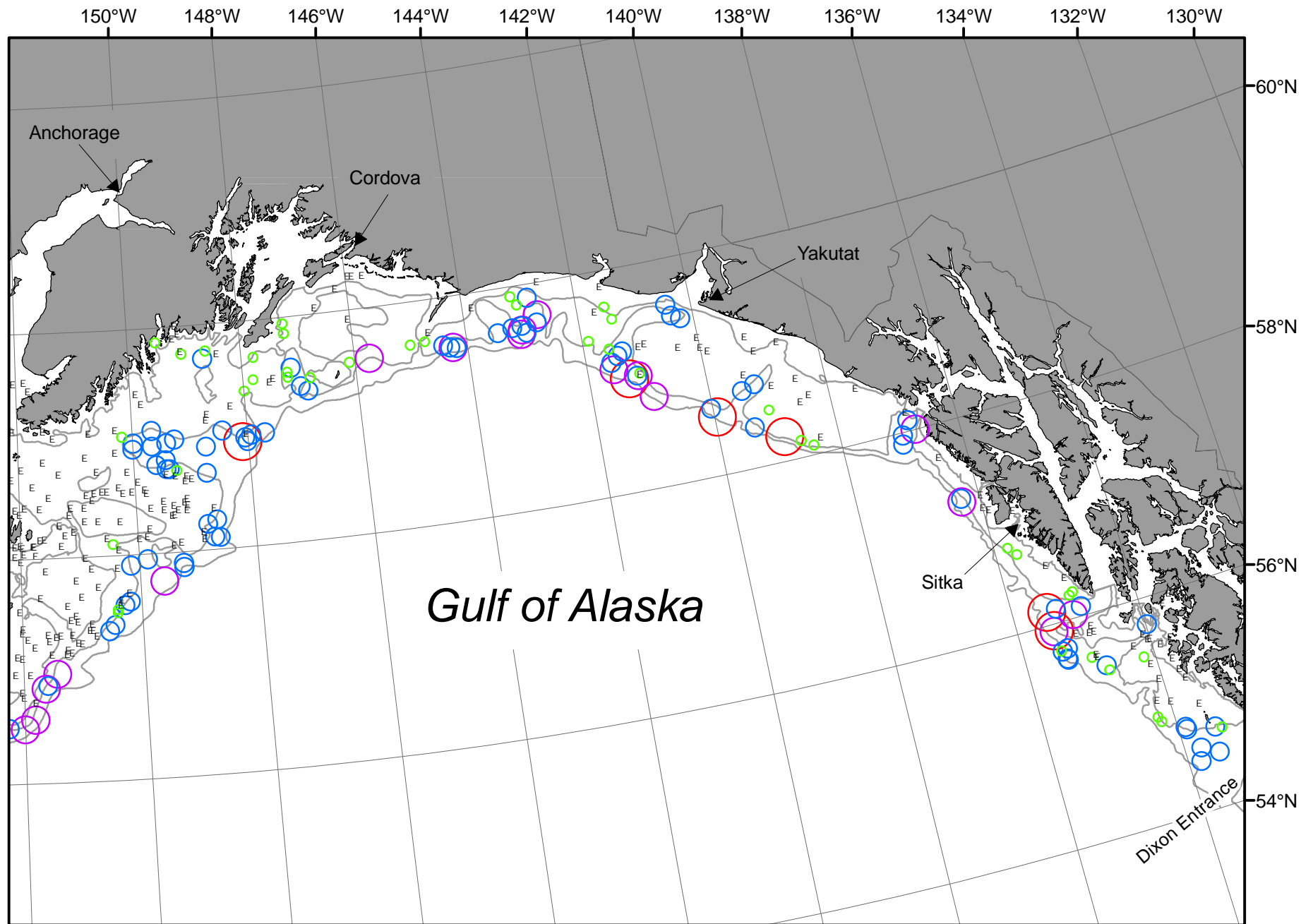


Figure 42. -- Continued (shortspine thornyhead 2007).

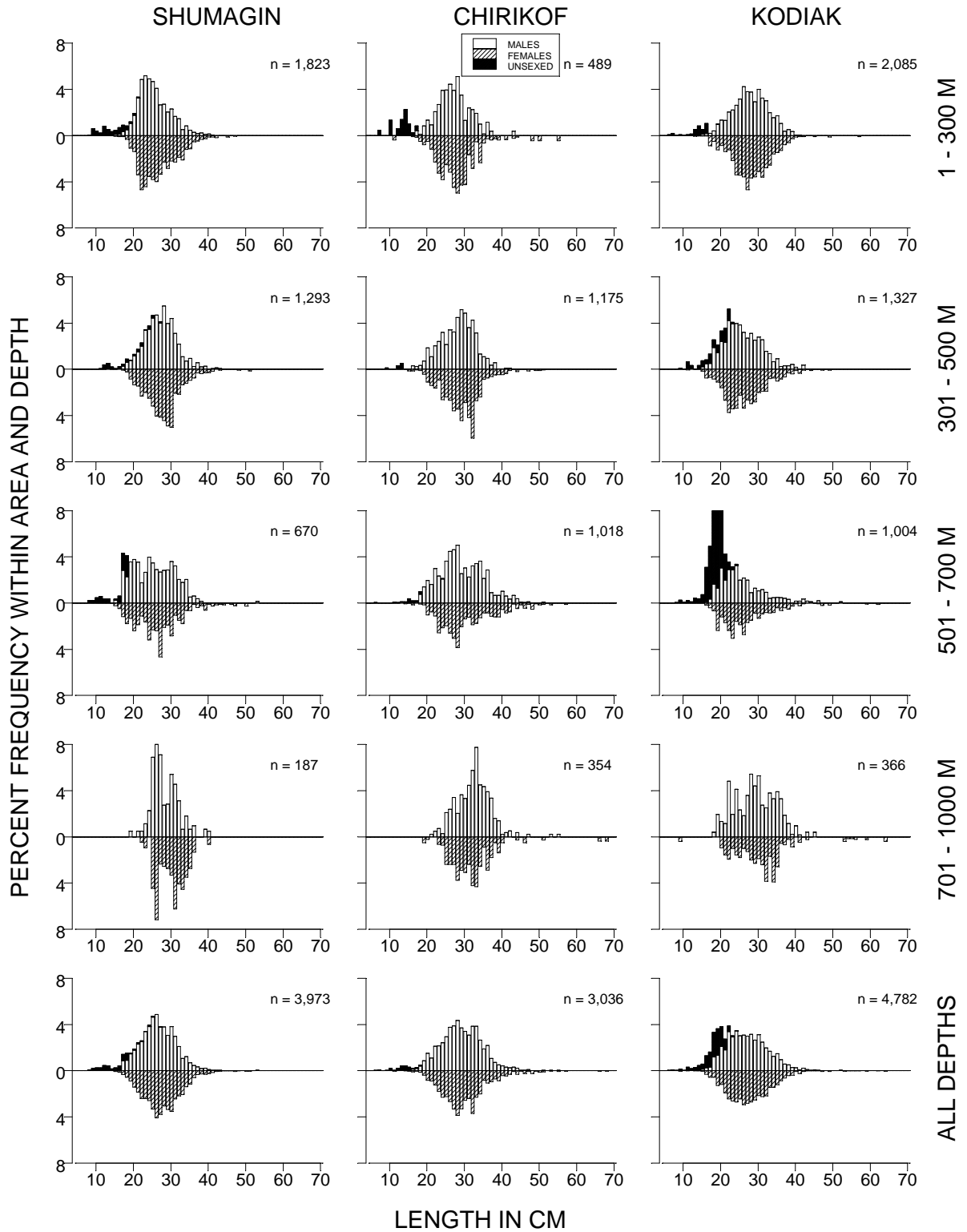


Figure 43. -- Size composition of shortspine thornyhead from the 2007 Gulf of Alaska bottom trawl survey by International North Pacific Fisheries Commission statistical areas and depth intervals.

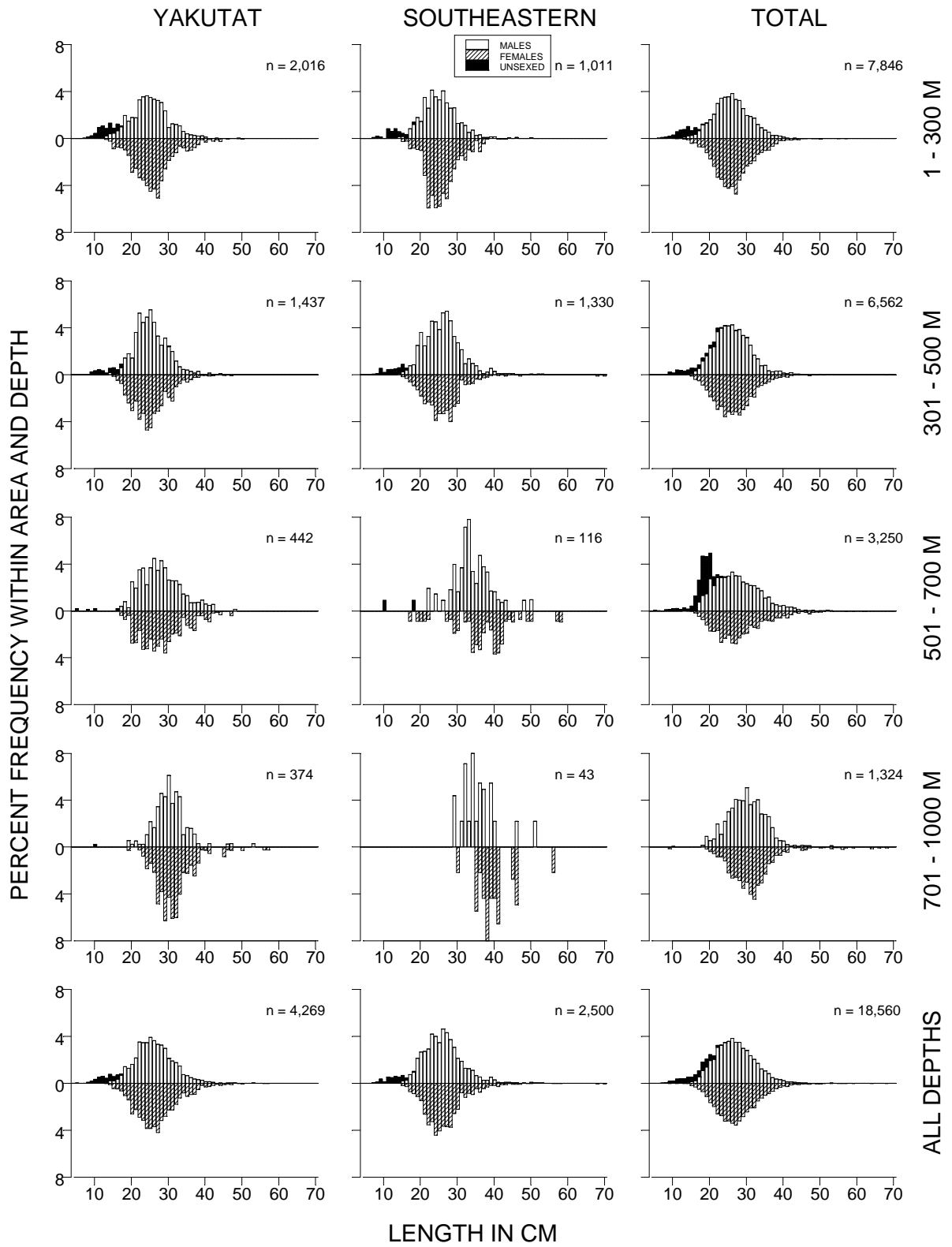


Figure 43. -- (continued).

Table 54. -- Catch per unit of effort by stratum for shortspine thornyhead sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	301 - 500	Southeastern Slope	4	4	48.00	3,709	737	6,680
Yakutat	501 - 700	Yakutat Slope	3	3	27.91	4,101	0	8,291
Kodiak	301 - 500	Kodiak Slope	10	10	25.30	7,368	4,564	10,172
Chirikof	501 - 700	Chirikof Slope	7	7	25.22	4,927	1,312	8,542
Chirikof	301 - 500	Chirikof Slope	10	10	23.42	3,757	2,816	4,698
Kodiak	501 - 700	Kodiak Slope	6	6	23.12	4,035	2,635	5,435
Yakutat	301 - 500	Yakutat Slope	7	7	21.12	3,212	2,140	4,285
Yakutat	201 - 300	Yakutat Slope	9	8	20.92	4,451	182	8,719
Yakutat	701 - 1000	Yakutat Slope	3	3	19.66	3,711	349	7,074
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	19.08	2,147	0	5,593
Shumagin	301 - 500	Shumagin Slope	9	9	18.58	4,702	2,717	6,688
Yakutat	301 - 500	Yakutat Gullies	2	2	16.10	1,782	0	8,307
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	15.08	3,534	1,735	5,333
Kodiak	701 - 1000	Kodiak Slope	4	4	13.69	4,782	1,704	7,860
Shumagin	501 - 700	Shumagin Slope	5	5	12.91	2,590	1,547	3,633
Kodiak	201 - 300	Kodiak Slope	7	7	10.80	1,752	142	3,363
Shumagin	201 - 300	Shumagin Slope	17	14	10.44	2,910	1,580	4,240
Shumagin	701 - 1000	Shumagin Slope	2	2	10.03	1,943	0	4,314
Chirikof	701 - 1000	Chirikof Slope	5	5	9.63	2,953	1,390	4,517
Southeastern	501 - 700	Southeastern Slope	3	3	8.27	855	282	1,428
Kodiak	201 - 300	Kenai Gullies	19	17	7.98	5,317	3,564	7,069
Yakutat	201 - 300	Yakutat Gullies	8	8	7.56	2,300	55	4,545
Chirikof	201 - 300	Chirikof Slope	8	8	6.39	977	10	1,945
Southeastern	701 - 1000	Southeastern Slope	2	2	4.39	530	0	3,150
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	11	3.39	1,332	550	2,115
Yakutat	101 - 200	Yakataga Shelf	8	6	2.54	1,341	0	3,320
Yakutat	101 - 200	Middleton Shelf	9	7	2.01	1,476	288	2,664
Chirikof	101 - 200	East Shumagin Gully	17	2	0.54	596	0	1,859
Kodiak	101 - 200	Portlock Flats	35	3	0.51	374	0	990
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	4	0.43	181	0	441
Kodiak	101 - 200	Kenai Flats	18	7	0.40	487	0	1,195
Southeastern	101 - 200	Prince of Wales Shelf	14	2	0.30	205	0	636
Kodiak	201 - 300	Upper Shelikof Gully	4	2	0.25	81	0	261
Kodiak	1 - 100	Kenai Peninsula	7	1	0.25	131	0	450
Yakutat	101 - 200	Fairweather Shelf	8	2	0.09	68	0	225
Yakutat	1 - 100	Yakutat Shallows	6	2	0.08	81	0	244
Chirikof	201 - 300	Lower Shelikof Gully	18	3	0.06	63	0	159
Shumagin	101 - 200	Shumagin Outer Shelf	28	2	0.01	7	0	17
Kodiak	101 - 200	Kodiak Outer Shelf	28	1	0.01	4	0	13
Kodiak	101 - 200	Albatross Gullies	28	1	0.00	2	0	7
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.00	1	0	4

Other Rockfishes

Redstripe rockfish (*Sebastes proriger*)

Redstripe rockfish were rare outside the Southeastern INPFC area and were not captured in the Yakutat INPFC area (Table 55). Approximately 94% of the total survey area biomass was estimated to be in the Southeastern INPFC area with most of the remainder in the Kodiak INPFC area. Three tows in the 101 to 200 m depth range of the Prince of Wales Shelf stratum accounted for almost 82% of the total biomass estimate even though this stratum only comprises a little over 2% of the entire survey area (Table 56).

Silvergray rockfish (*Sebastes brevispinis*)

Silvergray rockfish were rare outside the Yakutat and Southeastern INPFC areas and were not captured in the Shumagin INPFC area (Table 57). Silvergray rockfish was the sixth most abundant groundfish species in the Southeastern INPFC area (Table 2). The highest mean CPUEs were recorded in the Prince of Wales Shelf and Prince of Wales Slope and Gullies strata, which accounted for 66% of the total survey biomass estimate (Table 58). These two strata comprise just over 3% of the total survey area. Silvergray rockfish were almost exclusively caught in the 101 to 300 m depth range, which accounted for over 99% of its total estimated biomass. No fish were caught deeper than 500 m. Mean fish size generally increased with depth.

Harlequin rockfish (*Sebastes variegatus*)

Harlequin rockfish were caught infrequently and in modest numbers throughout the survey area, primarily in the 101 to 200 m depth range, which accounted for approximately 93% of its total biomass estimate (Table 59). The highest mean CPUEs were recorded in the Chirikof Outer Shelf, Prince of Wales Shelf, and Shumagin Outer Shelf strata, which accounted for approximately 84% of the estimated biomass. The combined area of these strata comprises just over 6% of the total survey area (Table 60).

Redbanded rockfish (*Sebastes babcocki*)

Redbanded rockfish were caught infrequently and in modest numbers in the Shumagin, Chirikof, and the western part of the Kodiak INPFC areas (Table 61). Approximately 83% of the total estimated biomass was in the Yakutat and Southeastern INPFC areas, with the highest mean CPUEs recorded in the 201 to 300 m depth range, which accounted for approximately 64% of its total biomass. Most of the remaining biomass was estimated to be in the 101 to 200 m depth range. No redbanded rockfish were caught deeper than 500 m. The highest mean CPUEs were noted in the Prince of Wales Slope/Gullies and the Yakutat Gullies strata, which accounted for about 44% of the total biomass (Table 62).

Yelloweye rockfish (*Sebastes ruberrimus*)

Yelloweye rockfish were caught very infrequently and in very modest numbers throughout the survey area (Table 63). Approximately 47% of the total biomass estimate was attributed to two hauls in the Prince of Wales Shelf stratum whose area comprises just over 2% of the survey

area (Table 64). No yelloweye rockfish were caught deeper than 300 m. The highest mean CPUEs were consistently recorded in the 101 to 200 m depth range of all INPFC areas, which accounted for over 95% of its total biomass.

Rosethorn rockfish (*Sebastes helvomaculatus*)

Except for a single haul with an extremely low CPUE in the Shumagin INPFC area, rosethorn rockfish were caught only in the Yakutat and Southeastern INPFC areas (Table 65). Mean CPUEs were modest in all strata where rosethorn rockfish were caught, with the highest values recorded in the Prince of Wales Slope/Gullies, Yakutat Gullies, and Fairweather Shelf strata (Table 66). Rosethorn rockfish were almost exclusively captured in the 101 to 300 m depth range, which accounted for more than 99% of its estimated biomass.

Table 55. -- Number of survey hauls, number of hauls with redstripe rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	1	0.007	10	0	31	0.800
	201 - 300	17	1	0.018	5	0	16	0.818
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	2	0.002	15	0	38
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	1	0.002	4	0	13	0.529
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	1	0.001	4	0	13
Kodiak	1 - 100	97	1	0.043	168	0	564	1.309
	101 - 200	127	3	0.109	475	0	1,190	0.555
	201 - 300	30	1	0.008	9	0	30	1.000
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	5	0.064	651	0	1,460
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	1	0.015	10	0	32	0.205
	101 - 200	22	6	9.217	10,217	0	25,214	0.512
	201 - 300	17	8	1.193	603	0	1,249	0.495
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	15	3.862	10,830	0	25,840
All areas	1 - 100	334	2	0.014	178	0	574	1.01
	101 - 200	290	11	0.875	10,706	0	25,722	0.51
	201 - 300	107	10	0.171	617	0	1,263	0.50
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	23	0.359	11,501	0	26,535

Table 56. -- Catch per unit of effort by stratum for redstripe rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	101 - 200	Prince of Wales Shelf	14	3	13.63	9,390	0	24,451
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	3	1.97	827	0	2,037
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	7	1.49	585	0	1,234
Kodiak	101 - 200	Kodiak Outer Shelf	28	2	0.68	341	0	1,013
Kodiak	1 - 100	Kenai Peninsula	7	1	0.32	168	0	577
Kodiak	101 - 200	Portlock Flats	35	1	0.18	134	0	407
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	0.16	18	0	96
Kodiak	201 - 300	Kodiak Slope	7	1	0.06	9	0	31
Shumagin	201 - 300	Shumagin Slope	17	1	0.02	5	0	16
Southeastern	1 - 100	Southeastern Shallows	11	1	0.02	10	0	33
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.01	10	0	31
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.01	4	0	13

Table 57. -- Number of survey hauls, number of hauls with silvergray rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	0	---	---	---	---
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	1	0.032	76	0	233	0.762
	201 - 300	26	1	0.009	10	0	33	1.347
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	2	0.013	86	0	244
Kodiak	1 - 100	97	2	0.018	69	0	211	0.717
	101 - 200	127	5	0.022	94	0	197	0.841
	201 - 300	30	2	0.095	110	0	288	1.430
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	9	0.027	273	34	511
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	8	2.084	6,122	0	16,386	1.809
	201 - 300	17	7	5.091	2,632	0	7,552	1.805
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	15	1.530	8,754	0	19,919
Southeastern	1 - 100	11	1	0.148	97	0	311	1.358
	101 - 200	22	13	12.968	14,375	2,248	26,501	1.649
	201 - 300	17	13	12.146	6,137	1,834	10,439	1.797
	301 - 500	11	1	0.244	76	0	256	2.167
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	28	7.377	20,685	7,899	33,470
All areas	1 - 100	334	3	0.013	167	0	408	0.989
	101 - 200	290	27	1.689	20,667	5,548	35,785	1.678
	201 - 300	107	23	2.466	8,888	2,777	14,999	1.793
	301 - 500	49	1	0.060	76	0	256	2.167
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	54	0.931	29,798	13,588	46,007

Table 58. -- Catch per unit of effort by stratum for silvergray rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	101 - 200	Prince of Wales Shelf	14	9	19.79	13,631	1,455	25,806
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	12	15.32	6,015	1,691	10,340
Yakutat	101 - 200	Fairweather Shelf	8	4	7.70	5,949	0	16,474
Yakutat	201 - 300	Yakutat Gullies	8	1	6.98	2,123	0	7,143
Yakutat	201 - 300	Yakutat Slope	9	6	2.39	509	7	1,012
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	4	1.77	744	0	1,762
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	1.08	121	0	644
Kodiak	201 - 300	Kodiak Slope	7	1	0.49	80	0	274
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.33	76	0	263
Southeastern	1 - 100	Southeastern Shallows	11	1	0.15	97	0	314
Kodiak	1 - 100	Kenai Peninsula	7	2	0.13	69	0	216
Yakutat	101 - 200	Middleton Shelf	9	2	0.12	87	0	225
Chirikof	101 - 200	Shelikof Edge	27	1	0.10	76	0	233
Yakutat	101 - 200	Yakataga Shelf	8	1	0.08	42	0	142
Kodiak	101 - 200	Portlock Flats	35	4	0.07	53	0	113
Chirikof	201 - 300	Chirikof Slope	8	1	0.07	10	0	34
Yakutat	101 - 200	Yakutat Flats	8	1	0.05	44	0	148
Kodiak	201 - 300	Kenai Gullies	19	1	0.05	30	0	93
Kodiak	101 - 200	Kenai Flats	18	1	0.03	40	0	125

Table 59. -- Number of survey hauls, number of hauls with harlequin rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	3	0.563	826	0	2,474	0.648
	201 - 300	17	2	0.029	8	0	20	0.426
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	5	0.128	834	0	2,482
Chirikof	1 - 100	82	1	0.000	1	0	2	0.059
	101 - 200	69	5	0.757	1,805	0	4,770	0.485
	201 - 300	26	3	0.007	8	0	18	0.390
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	9	0.267	1,814	0	4,779
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	8	0.018	77	0	161	0.256
	201 - 300	30	3	0.010	12	0	29	0.424
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	11	0.009	89	4	174
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	4	0.087	256	0	602	0.138
	201 - 300	17	5	0.099	51	2	100	0.317
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	9	0.054	307	0	657
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	6	0.742	823	0	2,480	0.196
	201 - 300	17	5	0.366	185	0	562	0.148
	301 - 500	11	2	0.020	6	0	16	0.160
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	13	0.361	1,014	0	2,714
All areas	1 - 100	334	1	0.000	1	0	2	0.059
	101 - 200	290	26	0.310	3,786	130	7,442	0.334
	201 - 300	107	18	0.073	265	0	645	0.179
	301 - 500	49	2	0.005	6	0	16	0.160
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	47	0.127	4,057	384	7,730

Table 60. -- Catch per unit of effort by stratum for harlequin rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	101 - 200	Chirikof Outer Shelf	25	4	3.57	1,790	0	4,761
Southeastern	101 - 200	Prince of Wales Shelf	14	4	1.17	805	0	2,474
Shumagin	101 - 200	Shumagin Outer Shelf	28	3	1.01	826	0	2,477
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	5	0.47	185	0	565
Yakutat	101 - 200	Fairweather Shelf	8	3	0.31	241	0	595
Yakutat	201 - 300	Yakutat Gullies	8	3	0.14	41	0	89
Kodiak	201 - 300	Kodiak Slope	7	3	0.07	12	0	30
Kodiak	101 - 200	Portlock Flats	35	4	0.07	49	0	125
Kodiak	101 - 200	Kodiak Outer Shelf	28	4	0.06	28	0	66
Chirikof	201 - 300	Chirikof Slope	8	3	0.06	8	0	18
Yakutat	201 - 300	Yakutat Slope	9	2	0.05	10	0	27
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	2	0.04	18	0	52
Shumagin	201 - 300	Shumagin Slope	17	2	0.029	8	0	21
Yakutat	101 - 200	Yakataga Shelf	8	1	0.028	15	0	50
Southeastern	301 - 500	Southeastern Deep Gullies	7	2	0.026	6	0	16
Chirikof	101 - 200	East Shumagin Gully	17	1	0.014	15	0	47
Chirikof	1 - 100	Semidi Bank	23	1	0.001	1	0	2

Table 61. -- Number of survey hauls, number of hauls with redbanded rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	6	0.186	52	3	101	0.674
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	6	0.008	52	3	101
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	4	0.033	79	0	169	0.938
	201 - 300	26	7	0.162	186	40	333	1.213
	301 - 500	10	1	0.183	29	0	95	2.316
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	12	0.043	294	113	475
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	5	0.012	52	0	103	0.401
	201 - 300	30	13	0.708	814	61	1,566	0.849
	301 - 500	10	2	0.017	5	0	13	0.145
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	20	0.086	870	117	1,623
Yakutat	1 - 100	11	1	0.059	98	0	338	1.571
	101 - 200	33	3	0.382	1,122	0	3,495	0.970
	201 - 300	17	13	2.795	1,445	0	3,794	0.726
	301 - 500	9	7	0.405	106	11	202	0.485
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	24	0.485	2,772	0	5,967
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	8	0.707	783	0	1,684	1.050
	201 - 300	17	14	4.162	2,103	128	4,078	1.198
	301 - 500	11	7	1.041	324	17	631	0.829
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	29	1.145	3,211	1,115	5,307
All areas	1 - 100	334	1	0.008	98	0	338	1.571
	101 - 200	290	20	0.166	2,035	0	4,534	0.962
	201 - 300	107	53	1.276	4,600	1,649	7,551	0.932
	301 - 500	49	17	0.364	465	144	786	0.707
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	91	0.225	7,198	3,315	11,081

Table 62. -- Catch per unit of effort by stratum for redbanded rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	11	5.08	1,996	8	3,983
Yakutat	201 - 300	Yakutat Gullies	8	5	3.83	1,165	0	3,566
Southeastern	301 - 500	Southeastern Slope	4	4	2.63	203	0	565
Kodiak	201 - 300	Kodiak Slope	7	4	2.36	382	0	1,098
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	4	1.52	637	0	1,561
Yakutat	101 - 200	Fairweather Shelf	8	2	1.36	1,049	0	3,477
Yakutat	201 - 300	Yakutat Slope	9	8	1.32	281	100	462
Chirikof	201 - 300	Chirikof Slope	8	6	1.08	165	4	325
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	0.95	107	0	272
Kodiak	201 - 300	Kenai Gullies	19	8	0.63	421	0	883
Yakutat	301 - 500	Yakutat Slope	7	5	0.58	89	0	188
Southeastern	301 - 500	Southeastern Deep Gullies	7	3	0.52	122	0	319
Southeastern	101 - 200	Prince of Wales Shelf	14	4	0.213	147	0	311
Shumagin	201 - 300	Shumagin Slope	17	6	0.186	52	3	101
Chirikof	301 - 500	Chirikof Slope	10	1	0.183	29	0	96
Yakutat	301 - 500	Yakutat Gullies	2	2	0.162	18	0	105
Yakutat	101 - 200	Yakataga Shelf	8	1	0.138	73	0	245
Yakutat	1 - 100	Yakutat Shallows	6	1	0.099	98	0	350
Chirikof	101 - 200	East Shumagin Gully	17	3	0.062	69	0	158
Kodiak	101 - 200	Portlock Flats	35	3	0.035	26	0	62
Kodiak	201 - 300	Upper Shelikof Gully	4	1	0.032	10	0	43
Chirikof	201 - 300	Lower Shelikof Gully	18	1	0.022	22	0	68
Kodiak	101 - 200	Albatross Gullies	28	1	0.019	15	0	45
Kodiak	301 - 500	Kodiak Slope	10	2	0.017	5	0	13
Chirikof	101 - 200	Shelikof Edge	27	1	0.013	10	0	31
Kodiak	101 - 200	Kenai Flats	18	1	0.009	11	0	34

Table 63. -- Number of survey hauls, number of hauls with yelloweye rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	3	0.022	92	0	208	1.813
	101 - 200	39	3	0.159	234	0	613	3.827
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	6	0.050	326	0	722
Chirikof	1 - 100	82	1	0.010	25	0	76	1.889
	101 - 200	69	5	0.122	291	0	609	2.109
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	6	0.046	316	0	637
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	4	0.078	339	0	756	2.255
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	4	0.033	339	0	756
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	4	0.265	779	0	1,770	3.450
	201 - 300	17	1	0.051	26	0	86	2.480
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	5	0.141	806	0	1,798
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	6	2.161	2,396	0	6,366	3.167
	201 - 300	17	1	0.094	48	0	150	3.457
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	7	0.871	2,444	0	6,414
All areas	1 - 100	334	4	0.009	116	0	243	1.829
	101 - 200	290	22	0.330	4,039	5	8,073	3.032
	201 - 300	107	2	0.021	74	0	189	3.031
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	28	0.132	4,230	192	8,267

Table 64. -- Catch per unit of effort by stratum for yelloweye rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	101 - 200	Prince of Wales Shelf	14	2	2.87	1,974	0	5,948
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	4	1.01	422	0	898
Yakutat	101 - 200	Fairweather Shelf	8	3	0.55	422	0	1,126
Chirikof	101 - 200	Chirikof Outer Shelf	25	3	0.42	209	0	500
Yakutat	101 - 200	Yakutat Flats	8	1	0.40	357	0	1,202
Shumagin	101 - 200	Shumagin Outer Shelf	28	3	0.29	234	0	613
Kodiak	101 - 200	Kenai Flats	18	2	0.21	256	0	642
Yakutat	201 - 300	Yakutat Slope	9	1	0.12	26	0	87
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	1	0.12	48	0	151
Kodiak	101 - 200	Portlock Flats	35	2	0.11	83	0	245
Chirikof	101 - 200	Shelikof Edge	27	1	0.09	69	0	210
Shumagin	1 - 100	Davidson Bank	48	1	0.04	50	0	151
Shumagin	1 - 100	Shumagin Bank	36	2	0.034	42	0	104
Chirikof	1 - 100	Semidi Bank	23	1	0.034	25	0	76
Chirikof	101 - 200	East Shumagin Gully	17	1	0.012	14	0	42

Table 65. -- Number of survey hauls, number of hauls with rosethorn rockfish, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	1	0.006	2	0	5	0.261
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	1	0.000	2	0	5
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	0	---	---	---	---	---
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	0	---	---	---	---
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	0	---	---	---	---
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	2	0.108	318	0	798	0.246
	201 - 300	17	4	0.408	211	0	554	0.247
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	6	0.092	529	0	1,111
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	5	0.196	218	0	460	0.198
	201 - 300	17	6	0.443	224	0	468	0.223
	301 - 500	11	1	0.017	5	0	20	0.394
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	12	0.159	447	115	780
All areas	1 - 100	334	0	---	---	---	---	---
	101 - 200	290	7	0.044	536	8	1,063	0.224
	201 - 300	107	11	0.121	436	38	835	0.234
	301 - 500	49	1	0.004	5	0	20	0.394
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	19	0.031	978	316	1,639

Table 66. -- Catch per unit of effort by stratum for rosethorn rockfish sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	5	0.55	216	0	461
Yakutat	201 - 300	Yakutat Gullies	8	1	0.48	146	0	491
Yakutat	101 - 200	Fairweather Shelf	8	2	0.41	318	0	810
Southeastern	101 - 200	Prince of Wales Shelf	14	5	0.32	218	0	462
Yakutat	201 - 300	Yakutat Slope	9	3	0.30	65	0	160
Southeastern	201 - 300	Baranof-Chichagof Slope	3	1	0.07	8	0	44
Southeastern	301 - 500	Southeastern Slope	4	1	0.07	5	0	22
Shumagin	201 - 300	Shumagin Slope	17	1	0.01	2	0	5

SKATES

Alaska skate (*Bathyraja parmifera*)

Alaska skate were caught infrequently and in modest numbers in the three westernmost INPFC areas in only 9 out of the 59 survey strata (Tables 67 and 68). No Alaska skate were caught in the Yakutat and Southeastern INPFC areas. CPUEs generally increased with depth to 300 m, but no fish were caught deeper than 300 m. Mean fish weight generally decreased with depth.

Aleutian skate (*Bathyraja aleutica*)

Aleutian skate were caught in approximately 12% of all survey hauls and in moderate numbers in the three westernmost INPFC areas (Table 69). Besides a small catch in one tow in the Southeastern INPFC area, no catches of Aleutian skates were recorded east of Prince William Sound. The highest mean CPUE was recorded in the Lower Shelikof Gully stratum, which accounted for approximately 53% of the total estimated biomass even though it comprises only 3% of the total survey area (Table 70). Aleutian skate were caught in all depths to 500 m, but the highest CPUEs were recorded in the 101 to 300 m depth range. No fish were caught deeper than 500 m. Mean fish weight generally decreased with depth.

Bering skate (*Bathyraja interrupta*)

Bering skate were caught in relatively modest numbers in approximately 13% of all survey hauls outside the Shumagin INPFC area, where no catches were recorded (Table 71). The highest CPUEs were recorded in the gullies of the Chirikof and Kodiak INPFC areas (Table 72). Bering skate were caught in all depths to 500 m but the highest CPUEs were generally recorded in the 101 to 300 m depth range. No fish were caught deeper than 500 m.

Big skate (*Raja binoculata*)

Big skate were caught in relatively modest numbers in approximately 7% of all survey hauls in all five of the INPFC areas (Table 73). The highest CPUEs were recorded in several of the shallowest strata of the survey area in waters less than 100 m (Table 74). Approximately 87% of its estimated biomass was located shallower than 100 m, with all of the remainder in waters between 101 and 200 m deep.

Longnose skate (*Raja rhina*)

Longnose skate were caught in relatively modest numbers in almost 20% of all survey hauls in all five of the INPFC areas (Table 75). Just over 50% of the estimated biomass was located in the Kodiak INPFC area. Longnose skate were caught in all depths to 500 m, with the highest densities recorded in the 101 to 500 m depth range. The highest CPUEs were recorded in the Yakutat Gullies and Kenai Flats strata (Table 76).

Table 67. -- Number of survey hauls, number of hauls with Alaska skate, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	2	0.043	177	0	441	6.378
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	2	0.027	177	0	441
Chirikof	1 - 100	82	1	0.077	201	0	615	16.176
	101 - 200	69	8	0.176	419	90	748	3.167
	201 - 300	26	4	0.532	614	0	1,255	3.929
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	13	0.181	1,233	417	2,049
Kodiak	1 - 100	97	2	0.018	70	0	183	4.172
	101 - 200	127	3	0.032	139	0	315	3.321
	201 - 300	30	2	0.153	175	0	644	2.668
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	7	0.038	384	0	867
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	0	---	---	---	---
All areas	1 - 100	334	5	0.035	448	0	942	7.866
	101 - 200	290	11	0.046	558	189	927	3.204
	201 - 300	107	6	0.219	789	66	1,512	3.556
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	22	0.056	1,795	858	2,731

Table 68. -- Catch per unit of effort by stratum for Alaska skate sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	201 - 300	Lower Shelikof Gully	18	4	0.61	614	0	1,258
Kodiak	201 - 300	Upper Shelikof Gully	4	2	0.55	175	0	712
Chirikof	101 - 200	Shelikof Edge	27	7	0.45	347	50	644
Chirikof	1 - 100	Semidi Bank	23	1	0.28	201	0	616
Kodiak	101 - 200	Albatross Gullies	28	3	0.18	139	0	315
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.14	72	0	220
Shumagin	1 - 100	Fox Islands	21	1	0.13	110	0	339
Kodiak	1 - 100	Albatross Shallows	28	2	0.12	70	0	184
Shumagin	1 - 100	Lower Alaska Peninsula	28	1	0.10	67	0	206

Table 69. -- Number of survey hauls, number of hauls with Aleutian skate, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	8	0.266	1,098	310	1,886	8.908
	101 - 200	39	7	1.456	2,137	0	4,339	10.268
	201 - 300	17	1	0.220	61	0	191	10.000
	301 - 500	9	3	0.146	37	0	79	0.834
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	19	0.511	3,333	1,084	5,582
Chirikof	1 - 100	82	6	0.398	1,036	205	1,866	11.792
	101 - 200	69	11	0.881	2,101	468	3,734	9.563
	201 - 300	26	17	11.714	13,525	7,646	19,405	9.257
	301 - 500	10	1	0.010	2	0	5	0.233
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	35	2.449	16,663	10,549	22,778
Kodiak	1 - 100	97	3	0.208	803	0	1,742	15.788
	101 - 200	127	16	0.679	2,941	1,187	4,694	9.480
	201 - 300	30	5	1.198	1,376	0	3,081	7.022
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	24	0.504	5,120	2,780	7,460
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	0	---	---	---	---
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	1	0.274	138	0	434	11.355
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	1	0.049	138	0	434
All areas	1 - 100	334	17	0.228	2,937	1,469	4,405	11.210
	101 - 200	290	34	0.587	7,178	4,101	10,255	9.727
	201 - 300	107	24	4.189	15,101	9,097	21,106	9.013
	301 - 500	49	4	0.030	39	0	81	0.753
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	79	0.789	25,255	18,430	32,079

Table 70. -- Catch per unit of effort by stratum for Aleutian skate sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	201 - 300	Lower Shelikof Gully	18	14	13.44	13,463	7,559	19,366
Kodiak	201 - 300	Upper Shelikof Gully	4	3	4.23	1,358	0	3,311
Shumagin	101 - 200	West Shumagin Gully	4	2	3.56	810	0	2,475
Shumagin	101 - 200	Sanak Gully	7	2	2.30	977	0	2,972
Chirikof	101 - 200	Shelikof Edge	27	7	1.77	1,367	171	2,562
Kodiak	101 - 200	Albatross Gullies	28	5	1.37	1,081	0	2,385
Kodiak	101 - 200	Barren Islands	18	4	0.94	1,028	7	2,050
Kodiak	101 - 200	Kodiak Outer Shelf	28	4	0.85	428	0	929
Chirikof	1 - 100	Semidi Bank	23	3	0.74	540	0	1,161
Shumagin	1 - 100	Davidson Bank	48	6	0.64	872	146	1,597
Chirikof	101 - 200	East Shumagin Gully	17	2	0.63	698	0	1,857
Kodiak	1 - 100	Albatross Banks	39	3	0.52	803	0	1,742
Shumagin	101 - 200	Shumagin Outer Shelf	28	3	0.43	351	0	751
Chirikof	201 - 300	Chirikof Slope	8	3	0.41	63	0	194
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	1	0.35	138	0	436
Kodiak	101 - 200	Portlock Flats	35	2	0.32	237	0	575
Chirikof	1 - 100	Chirikof Bank	40	2	0.28	299	0	726
Chirikof	1 - 100	Upper Alaska Peninsula	19	1	0.25	197	0	611
Shumagin	201 - 300	Shumagin Slope	17	1	0.22	61	0	191
Shumagin	1 - 100	Fox Islands	21	1	0.15	128	0	396
Shumagin	301 - 500	Shumagin Slope	9	3	0.15	37	0	80
Shumagin	1 - 100	Lower Alaska Peninsula	28	1	0.14	98	0	300
Kodiak	101 - 200	Kenai Flats	18	1	0.14	166	0	517
Kodiak	201 - 300	Kodiak Slope	7	1	0.07	12	0	40
Chirikof	101 - 200	Chirikof Outer Shelf	25	2	0.07	36	0	108
Kodiak	201 - 300	Kenai Gullies	19	1	0.01	7	0	20
Chirikof	301 - 500	Chirikof Slope	10	1	0.01	2	0	5

Table 71. -- Number of survey hauls, number of hauls with Bering skate, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	0	---	---	---	---
Chirikof	1 - 100	82	4	0.110	287	0	622	3.831
	101 - 200	69	17	0.276	658	284	1,032	1.793
	201 - 300	26	8	0.579	668	116	1,221	2.391
	301 - 500	10	1	0.005	1	0	2	0.143
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	30	0.237	1,614	888	2,341
Kodiak	1 - 100	97	6	0.065	249	0	517	2.072
	101 - 200	127	25	0.270	1,170	629	1,711	1.757
	201 - 300	30	10	0.503	578	169	986	2.001
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	41	0.197	1,996	1,286	2,707
Yakutat	1 - 100	11	1	0.056	94	0	336	1.667
	101 - 200	33	2	0.051	150	0	387	1.722
	201 - 300	17	1	0.029	15	0	49	1.651
	301 - 500	9	1	0.003	1	0	3	0.128
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	5	0.046	260	0	586
Southeastern	1 - 100	11	0	---	---	---	---	---
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	2	0.031	16	0	40	0.800
	301 - 500	11	2	0.189	59	0	183	1.318
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	4	0.027	75	0	198
All areas	1 - 100	334	11	0.049	630	161	1,099	2.505
	101 - 200	290	44	0.162	1,978	1,292	2,663	1.766
	201 - 300	107	21	0.354	1,277	605	1,948	2.139
	301 - 500	49	4	0.047	61	0	184	1.055
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	80	0.123	3,946	2,893	4,998

Table 72. -- Catch per unit of effort by stratum for Bering skate sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	201 - 300	Lower Shelikof Gully	18	7	0.67	667	112	1,222
Kodiak	201 - 300	Upper Shelikof Gully	4	2	0.62	199	0	578
Kodiak	201 - 300	Kenai Gullies	19	8	0.57	379	61	697
Kodiak	101 - 200	Barren Islands	18	7	0.50	549	110	989
Chirikof	101 - 200	Shelikof Edge	27	12	0.46	358	149	568
Kodiak	1 - 100	Kenai Peninsula	7	2	0.26	138	0	387
Kodiak	101 - 200	Albatross Gullies	28	4	0.25	195	0	416
Chirikof	101 - 200	East Shumagin Gully	17	3	0.24	267	0	579
Kodiak	101 - 200	Portlock Flats	35	8	0.22	164	0	328
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.22	52	0	179
Kodiak	101 - 200	Kenai Flats	18	6	0.22	262	65	459
Yakutat	101 - 200	Yakataga Shelf	8	1	0.19	98	0	330
Chirikof	1 - 100	Semidi Bank	23	1	0.18	133	0	410
Chirikof	1 - 100	Upper Alaska Peninsula	19	2	0.16	130	0	331
Yakutat	1 - 100	Middleton Shallows	5	1	0.14	94	0	355
Southeastern	301 - 500	Southeastern Slope	4	1	0.09	7	0	30
Kodiak	1 - 100	Lower Cook Inlet	14	1	0.07	73	0	230
Yakutat	101 - 200	Middleton Shelf	9	1	0.07	52	0	173
Yakutat	201 - 300	Yakutat Slope	9	1	0.07	15	0	50
Kodiak	1 - 100	Albatross Shallows	28	3	0.07	38	0	91
Chirikof	101 - 200	Chirikof Outer Shelf	25	2	0.07	33	0	80
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	2	0.04	16	0	41
Chirikof	1 - 100	Chirikof Bank	40	1	0.02	24	0	73
Chirikof	201 - 300	Chirikof Slope	8	1	0.01	1	0	5
Yakutat	301 - 500	Yakutat Slope	7	1	0.01	1	0	3
Chirikof	301 - 500	Chirikof Slope	10	1	0.01	1	0	2

Table 73. -- Number of survey hauls, number of hauls with big skate, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	10	1.264	5,221	132	10,310	15.680
	101 - 200	39	1	0.443	651	0	1,983	25.742
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	11	0.900	5,872	615	11,128
Chirikof	1 - 100	82	14	4.051	10,547	3,389	17,705	16.405
	101 - 200	69	4	0.596	1,421	0	3,421	7.022
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	18	1.759	11,968	4,635	19,301
Kodiak	1 - 100	97	16	2.884	11,106	1,047	21,165	13.152
	101 - 200	127	2	0.041	175	0	543	4.993
	201 - 300	30	0	---	---	---	---	---
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	18	1.112	11,281	1,215	21,347
Yakutat	1 - 100	11	4	3.348	5,579	0	11,636	4.595
	101 - 200	33	3	0.887	2,606	0	6,898	25.703
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	7	1.431	8,185	1,342	15,027
Southeastern	1 - 100	11	3	1.761	1,153	0	2,824	11.740
	101 - 200	22	0	---	---	---	---	---
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	3	0.411	1,153	0	2,824
All areas	1 - 100	334	47	2.604	33,606	19,529	47,683	10.728
	101 - 200	290	10	0.397	4,853	134	9,571	13.325
	201 - 300	107	0	---	---	---	---	---
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	57	1.202	38,458	23,818	53,099

Table 74. -- Catch per unit of effort by stratum for big skate sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Yakutat	1 - 100	Middleton Shallows	5	3	7.89	5,301	0	11,794
Kodiak	1 - 100	Lower Cook Inlet	14	5	7.18	7,100	0	16,762
Chirikof	1 - 100	Upper Alaska Peninsula	19	8	6.44	5,110	1,315	8,905
Chirikof	1 - 100	Chirikof Bank	40	6	5.04	5,437	0	11,658
Yakutat	101 - 200	Middleton Shelf	9	3	3.55	2,606	0	6,982
Shumagin	1 - 100	Shumagin Bank	36	5	3.25	4,028	0	8,929
Kodiak	1 - 100	Albatross Shallows	28	6	2.34	1,352	0	2,710
Kodiak	1 - 100	Kenai Peninsula	7	1	2.30	1,212	0	4,177
Southeastern	1 - 100	Southeastern Shallows	11	3	1.76	1,153	0	2,844
Chirikof	101 - 200	East Shumagin Gully	17	2	0.99	1,103	0	3,053
Kodiak	1 - 100	Albatross Banks	39	4	0.94	1,443	0	3,021
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.80	651	0	1,986
Shumagin	1 - 100	Davidson Bank	48	3	0.66	897	0	2,371
Shumagin	1 - 100	Lower Alaska Peninsula	28	2	0.43	297	0	748
Chirikof	101 - 200	Chirikof Outer Shelf	25	1	0.38	191	0	586
Yakutat	1 - 100	Yakutat Shallows	6	1	0.28	279	0	995
Chirikof	101 - 200	Shelikof Edge	27	1	0.16	127	0	387
Kodiak	101 - 200	Kenai Flats	18	1	0.15	175	0	544
Kodiak	101 - 200	Albatross Gullies	28	1	0.00	0	0	1

Table 75. -- Number of survey hauls, number of hauls with longnose skate, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
.	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	3	0.298	437	0	1,043	7.154
	201 - 300	17	3	0.686	191	0	461	7.538
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	6	0.096	628	0	1,302
Chirikof	1 - 100	82	10	1.052	2,738	822	4,654	12.584
	101 - 200	69	23	1.648	3,931	1,836	6,025	8.115
	201 - 300	26	5	1.740	2,008	0	4,284	8.833
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	38	1.275	8,677	5,140	12,214
Kodiak	1 - 100	97	16	1.000	3,852	1,625	6,079	10.503
	101 - 200	127	51	2.820	12,219	7,374	17,063	9.231
	201 - 300	30	9	1.058	1,216	302	2,129	5.339
	301 - 500	10	1	0.243	71	0	229	6.568
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	77	1.710	17,357	11,998	22,716
Yakutat	1 - 100	11	2	0.580	967	0	2,584	6.993
	101 - 200	33	8	1.071	3,145	0	6,702	7.970
	201 - 300	17	8	2.047	1,059	245	1,872	8.456
	301 - 500	9	4	2.723	716	459	972	7.025
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	22	1.029	5,886	2,092	9,680
Southeastern	1 - 100	11	1	0.055	36	0	115	0.688
	101 - 200	22	5	0.593	657	54	1,260	6.334
	201 - 300	17	8	1.487	751	94	1,408	5.602
	301 - 500	11	4	1.376	429	2	855	6.876
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	18	0.668	1,873	939	2,807
All areas	1 - 100	334	29	0.588	7,593	4,374	10,811	9.798
	101 - 200	290	90	1.667	20,388	14,152	26,623	8.612
	201 - 300	107	33	1.450	5,225	2,578	7,872	7.063
	301 - 500	49	9	0.950	1,215	724	1,707	6.944
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	161	1.076	34,421	27,053	41,788

Table 76. -- Catch per unit of effort by stratum for longnose skate sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Yakutat	301 - 500	Yakutat Gullies	2	2	5.00	553	257	849
Kodiak	101 - 200	Kenai Flats	18	11	4.18	5,046	1,044	9,047
Kodiak	101 - 200	Barren Islands	18	8	2.92	3,206	993	5,420
Yakutat	201 - 300	Yakutat Slope	9	4	2.79	593	0	1,306
Kodiak	1 - 100	Kenai Peninsula	7	3	2.79	1,467	0	3,376
Yakutat	101 - 200	Middleton Shelf	9	2	2.54	1,862	0	5,448
Kodiak	101 - 200	Albatross Gullies	28	8	2.53	2,001	202	3,800
Chirikof	101 - 200	Shelikof Edge	27	11	2.53	1,956	142	3,770
Southeastern	201 - 300	Baranof-Chichagof Slope	3	2	2.45	275	0	1,287
Kodiak	1 - 100	Albatross Shallows	28	6	2.29	1,321	228	2,414
Kodiak	1 - 100	Northern Kodiak Shallows	9	4	2.25	494	0	1,074
Chirikof	201 - 300	Lower Shelikof Gully	18	5	2.01	2,008	0	4,293
Kodiak	101 - 200	Portlock Flats	35	18	1.90	1,393	744	2,042
Southeastern	301 - 500	Southeastern Deep Gullies	7	4	1.83	429	0	870
Kodiak	201 - 300	Kenai Gullies	19	9	1.83	1,216	299	2,133
Chirikof	1 - 100	Upper Alaska Peninsula	19	3	1.68	1,336	0	2,994
Yakutat	201 - 300	Yakutat Gullies	8	4	1.53	465	0	1,004
Chirikof	101 - 200	East Shumagin Gully	17	7	1.31	1,459	447	2,472
Chirikof	1 - 100	Semidi Bank	23	5	1.25	911	142	1,681
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	6	1.21	476	59	892
Yakutat	101 - 200	Yakutat Flats	8	4	1.16	1,052	8	2,095
Kodiak	101 - 200	Kodiak Outer Shelf	28	6	1.14	573	65	1,080
Yakutat	301 - 500	Yakutat Slope	7	2	1.07	162	0	428
Chirikof	101 - 200	Chirikof Outer Shelf	25	5	1.03	515	0	1,051
Yakutat	1 - 100	Yakutat Shallows	6	2	0.97	967	0	2,666
Shumagin	101 - 200	Sanak Gully	7	2	0.88	373	0	998
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	2	0.79	333	0	865
Shumagin	201 - 300	Shumagin Slope	17	3	0.69	191	0	462
Southeastern	101 - 200	Prince of Wales Shelf	14	3	0.47	324	0	713
Chirikof	1 - 100	Chirikof Bank	40	2	0.45	490	0	1,197
Kodiak	1 - 100	Albatross Banks	39	3	0.37	570	0	1,238
Yakutat	101 - 200	Fairweather Shelf	8	1	0.29	227	0	763
Kodiak	301 - 500	Kodiak Slope	10	1	0.24	71	0	231
Shumagin	101 - 200	Shumagin Outer Shelf	28	1	0.08	63	0	193
Southeastern	1 - 100	Southeastern Shallows	11	1	0.06	36	0	116
Yakutat	101 - 200	Yakataga Shelf	8	1	0.01	5	0	16

MISCELLANEOUS SPECIES

Capelin (*Mallotus villosus*)

Capelin were caught in modest numbers in approximately 24% of hauls less than 100 m deep and in about 8% of hauls in the 101 to 300 m depth range. No capelin were caught deeper than 300 m (Table 77). The highest CPUEs were recorded in the Albatross Shallows and Albatross Banks strata, which accounted for approximately 61% of its estimated biomass even though these strata comprise less than 7% of the survey area (Table 78). Mean fish weight generally increased with depth.

Eulachon (*Thaleichthys pacificus*)

Eulachon were caught in moderate numbers in approximately 31% of hauls less than 300 m deep and in about 9% of hauls deeper than 300 m. No catches were recorded in the 700 to 1,000 m depth range (Table 79). The biomass was primarily confined to the Chirikof and Kodiak INPFC areas, which accounted for approximately 80% of its biomass estimate. The highest CPUEs were recorded in the Shelikof Edge, the Lower Shelikof Gully, and East Shumagin Gully strata, which accounted for approximately 51% of the biomass estimate even though these strata comprise only about 9% of the survey area (Table 80).

Pacific hake (*Merluccius productus*)

Pacific hake were predominantly caught in the Yakutat and Southeastern INPFC areas, which accounted for about 97% of the estimated biomass (Table 81). Single small catches were recorded in the Shumagin and Chirikof INPFC areas and 10 tows in the Kodiak INPFC area contained Pacific hake. The highest CPUEs were recorded in the Slope and Gully strata of the Southeastern and Yakutat INPC areas (Table 82). Ninety-eight percent of the biomass was estimated to be in the 101 to 500 m depth range. No fish were caught deeper than 700 m.

Table 77. -- Number of survey hauls, number of hauls with capelin, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	26	0.007	28	9	47	0.004
	101 - 200	39	1	0.000	0	0	1	0.018
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	27	0.005	29	10	48
Chirikof	1 - 100	82	25	0.048	125	0	269	0.001
	101 - 200	69	5	0.002	4	0	8	0.007
	201 - 300	26	2	0.001	1	0	2	0.015
	301 - 500	10	0	---	---	---	---	---
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	32	0.019	129	0	273
Kodiak	1 - 100	97	20	0.126	487	0	1,126	0.006
	101 - 200	127	9	0.002	7	0	15	0.007
	201 - 300	30	2	0.006	7	0	21	0.012
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	31	0.049	502	0	1,140
Yakutat	1 - 100	11	8	0.059	99	0	262	0.006
	101 - 200	33	10	0.009	26	0	63	0.011
	201 - 300	17	0	---	---	---	---	---
	301 - 500	9	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	18	0.022	124	0	287
Southeastern	1 - 100	11	1	0.001	1	0	3	0.003
	101 - 200	22	1	0.000	0	0	1	0.017
	201 - 300	17	0	---	---	---	---	---
	301 - 500	11	0	---	---	---	---	---
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	2	0.000	1	0	3
All areas	1 - 100	334	80	0.057	739	71	1,408	0.004
	101 - 200	290	26	0.003	37	0	75	0.009
	201 - 300	107	4	0.002	8	0	22	0.012
	301 - 500	49	0	---	---	---	---	---
	501 - 700	24	0	---	---	---	---	---
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	110	0.025	785	115	1,454

Table 78. -- Catch per unit of effort by stratum for capelin sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Kodiak	1 - 100	Albatross Shallows	28	4	0.27	154	0	451
Kodiak	1 - 100	Albatross Banks	39	11	0.21	326	0	898
Chirikof	1 - 100	Chirikof Bank	40	19	0.11	114	0	259
Yakutat	1 - 100	Yakutat Shallows	6	4	0.08	80	0	249
Yakutat	1 - 100	Middleton Shallows	5	4	0.03	19	0	46
Kodiak	1 - 100	Northern Kodiak Shallows	9	2	0.03	6	0	17
Yakutat	101 - 200	Yakutat Flats	8	4	0.02	21	0	59
Kodiak	201 - 300	Upper Shelikof Gully	4	2	0.02	7	0	23
Shumagin	1 - 100	Lower Alaska Peninsula	28	12	0.02	10	0	21
Shumagin	1 - 100	Shumagin Bank	36	8	0.01	17	1	33
Chirikof	1 - 100	Upper Alaska Peninsula	19	4	0.01	11	0	26
Kodiak	101 - 200	Portlock Flats	35	2	0.01	4	0	11
Yakutat	101 - 200	Yakataga Shelf	8	3	0.01	3	0	7
Kodiak	101 - 200	Kenai Flats	18	4	0.00	3	0	7
Chirikof	101 - 200	East Shumagin Gully	17	3	0.00	2	0	6
Kodiak	1 - 100	Lower Cook Inlet	14	2	0.00	2	0	5
Yakutat	101 - 200	Middleton Shelf	9	2	0.00	1	0	4
Chirikof	101 - 200	Shelikof Edge	27	2	0.00	1	0	4
Chirikof	201 - 300	Lower Shelikof Gully	18	2	0.00	1	0	2
Yakutat	101 - 200	Fairweather Shelf	8	1	0.00	1	0	3
Shumagin	1 - 100	Davidson Bank	48	5	0.00	1	0	2
Southeastern	1 - 100	Southeastern Shallows	11	1	0.00	1	0	3
Kodiak	1 - 100	Kenai Peninsula	7	1	0.00	1	0	2
Kodiak	101 - 200	Albatross Gullies	28	3	0.00	1	0	1
Shumagin	101 - 200	Sanak Gully	7	1	0.00	0	0	2
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	1	0.00	0	0	1
Shumagin	1 - 100	Fox Islands	21	1	0.00	0	0	1
Chirikof	1 - 100	Semidi Bank	23	2	0.00	0	0	0

Table 79. -- Number of survey hauls, number of hauls with eulachon, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	16	0.009	38	5	71	0.038
	101 - 200	39	5	0.736	1,081	0	2,658	0.026
	201 - 300	17	1	0.001	0	0	1	0.040
	301 - 500	9	2	0.011	3	0	7	0.027
	501 - 700	5	1	0.023	5	0	16	0.023
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	25	0.173	1,126	0	2,705
Chirikof	1 - 100	82	19	0.152	395	0	1,074	0.031
	101 - 200	69	25	6.968	16,618	1,105	32,130	0.019
	201 - 300	26	19	8.632	9,967	182	19,751	0.023
	301 - 500	10	1	0.001	0	0	1	0.027
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	64	3.965	26,980	9,093	44,866
Kodiak	1 - 100	97	20	0.161	621	0	1,505	0.034
	101 - 200	127	50	2.047	8,870	4,953	12,787	0.026
	201 - 300	30	19	4.103	4,714	2,382	7,046	0.030
	301 - 500	10	0	---	---	---	---	---
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	89	1.400	14,205	9,651	18,759
Yakutat	1 - 100	11	7	1.418	2,363	0	6,813	0.034
	101 - 200	33	31	2.234	6,564	4,336	8,792	0.029
	201 - 300	17	10	0.278	144	0	347	0.030
	301 - 500	9	3	0.017	4	0	16	0.052
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	3	0	---	---	---	---	---
	All depths		76	51	1.587	9,074	4,380	13,769
Southeastern	1 - 100	11	2	0.528	346	0	921	0.032
	101 - 200	22	2	0.021	23	0	62	0.047
	201 - 300	17	3	0.083	42	0	117	0.041
	301 - 500	11	1	0.002	1	0	3	0.029
	501 - 700	3	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	8	0.147	411	0	993
All areas	1 - 100	334	64	0.292	3,763	0	8,247	0.033
	101 - 200	290	113	2.710	33,155	17,069	49,240	0.022
	201 - 300	107	52	4.124	14,866	4,842	24,890	0.025
	301 - 500	49	7	0.006	8	0	16	0.037
	501 - 700	24	1	0.006	5	0	16	0.023
	701 - 1000	16	0	---	---	---	---	---
	All depths		820	237	1.619	51,796	32,811	70,782

Table 80. -- Catch per unit of effort by stratum for eulachon sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Chirikof	101 - 200	Shelikof Edge	27	19	11.08	8,569	1,964	15,174
Chirikof	201 - 300	Lower Shelikof Gully	18	18	9.95	9,966	140	19,792
Chirikof	101 - 200	East Shumagin Gully	17	6	7.25	8,049	0	22,208
Kodiak	101 - 200	Portlock Flats	35	17	5.01	3,677	844	6,510
Kodiak	201 - 300	Upper Shelikof Gully	4	4	5.01	1,606	0	3,524
Shumagin	101 - 200	West Shumagin Gully	4	3	4.69	1,068	0	2,876
Kodiak	201 - 300	Kenai Gullies	19	15	4.67	3,108	1,139	5,076
Yakutat	1 - 100	Middleton Shallows	5	3	2.89	1,938	0	6,700
Yakutat	101 - 200	Middleton Shelf	9	9	2.67	1,963	687	3,239
Yakutat	101 - 200	Yakutat Flats	8	8	2.25	2,036	1,101	2,970
Kodiak	101 - 200	Barren Islands	18	7	2.25	2,467	197	4,738
Yakutat	101 - 200	Fairweather Shelf	8	6	2.17	1,674	0	3,522
Kodiak	101 - 200	Kenai Flats	18	14	1.84	2,221	645	3,797
Yakutat	101 - 200	Yakataga Shelf	8	8	1.69	891	276	1,507
Kodiak	1 - 100	Albatross Shallows	28	6	0.77	441	0	1,316
Kodiak	101 - 200	Albatross Gullies	28	11	0.64	505	0	1,203
Southeastern	1 - 100	Southeastern Shallows	11	2	0.53	346	0	929
Chirikof	1 - 100	Upper Alaska Peninsula	19	9	0.46	368	0	1,049
Yakutat	201 - 300	Yakutat Gullies	8	6	0.43	130	0	336
Yakutat	1 - 100	Yakutat Shallows	6	4	0.43	425	0	1,020
Kodiak	1 - 100	Kenai Peninsula	7	5	0.26	134	0	317
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	3	0.11	42	0	118
Yakutat	201 - 300	Yakutat Slope	9	4	0.06	14	0	42
Kodiak	1 - 100	Lower Cook Inlet	14	6	0.04	38	7	69
Yakutat	301 - 500	Yakutat Gullies	2	2	0.03	4	0	38
Southeastern	101 - 200	Prince of Wales Shelf	14	2	0.03	23	0	62
Kodiak	1 - 100	Northern Kodiak Shallows	9	2	0.03	7	0	20
Shumagin	1 - 100	Lower Alaska Peninsula	28	9	0.03	22	1	42
Shumagin	101 - 200	Sanak Gully	7	2	0.03	13	0	42
Chirikof	1 - 100	Chirikof Bank	40	9	0.03	27	0	54
Shumagin	501 - 700	Shumagin Slope	5	1	0.02	5	0	17
Shumagin	1 - 100	Shumagin Bank	36	7	0.01	17	0	43
Shumagin	301 - 500	Shumagin Slope	9	2	0.01	3	0	7
Yakutat	301 - 500	Yakutat Slope	7	1	0.00	1	0	2
Southeastern	301 - 500	Southeastern Deep Gullies	7	1	0.00	1	0	3
Chirikof	1 - 100	Semidi Bank	23	1	0.00	1	0	2
Shumagin	201 - 300	Shumagin Slope	17	1	0.00	0	0	1
Chirikof	301 - 500	Chirikof Slope	10	1	0.00	0	0	1
Chirikof	201 - 300	Chirikof Slope	8	1	0.00	0	0	1
Kodiak	1 - 100	Albatross Banks	39	1	0.00	1	0	2
Kodiak	101 - 200	Kodiak Outer Shelf	28	1	0.00	0	0	1

Table 81. -- Number of survey hauls, number of hauls with Pacific hake, mean CPUE, biomass, and mean weight based on the 2007 Gulf of Alaska biennial bottom trawl survey, by International North Pacific Fisheries Commission statistical areas and depth intervals.

INPFC area	Depth (m)	Number of hauls	Hauls with catch	Mean CPUE (kg/ha)	Estimated biomass (t)	Lower 95% biomass CI (t)	Upper 95% biomass CI (t)	Mean weight (kg)
Shumagin	1 - 100	133	0	---	---	---	---	---
	101 - 200	39	0	---	---	---	---	---
	201 - 300	17	1	0.039	11	0	34	1.444
	301 - 500	9	0	---	---	---	---	---
	501 - 700	5	0	---	---	---	---	---
	701 - 1000	2	0	---	---	---	---	---
	All depths		205	1	0.002	11	0	34
Chirikof	1 - 100	82	0	---	---	---	---	---
	101 - 200	69	0	---	---	---	---	---
	201 - 300	26	0	---	---	---	---	---
	301 - 500	10	1	0.022	4	0	12	0.688
	501 - 700	7	0	---	---	---	---	---
	701 - 1000	5	0	---	---	---	---	---
	All depths		199	1	0.001	4	0	12
Kodiak	1 - 100	97	0	---	---	---	---	---
	101 - 200	127	0	---	---	---	---	---
	201 - 300	30	5	0.162	186	0	391	0.888
	301 - 500	10	5	2.059	600	0	1,301	0.850
	501 - 700	6	0	---	---	---	---	---
	701 - 1000	4	0	---	---	---	---	---
	All depths		274	10	0.077	785	86	1,485
Yakutat	1 - 100	11	0	---	---	---	---	---
	101 - 200	33	1	0.024	70	0	233	1.291
	201 - 300	17	8	10.339	5,346	0	11,036	0.828
	301 - 500	9	9	3.317	872	0	1,780	0.810
	501 - 700	3	3	0.287	42	10	75	0.864
	701 - 1000	3	1	0.069	13	0	54	0.657
	All depths		76	22	1.109	6,343	592	12,093
Southeastern	1 - 100	11	2	0.604	396	0	1,228	0.270
	101 - 200	22	9	2.987	3,311	0	6,801	0.801
	201 - 300	17	11	13.781	6,963	2,217	11,708	0.775
	301 - 500	11	11	28.866	8,998	3,270	14,725	0.825
	501 - 700	3	2	0.312	32	0	101	0.889
	701 - 1000	2	0	---	---	---	---	---
	All depths		66	35	7.025	19,699	12,285	27,113
All areas	1 - 100	334	2	0.031	396	0	1,228	0.270
	101 - 200	290	10	0.276	3,381	0	6,875	0.808
	201 - 300	107	25	3.469	12,505	5,432	19,577	0.799
	301 - 500	49	26	8.187	10,472	4,771	16,173	0.825
	501 - 700	24	5	0.091	75	13	136	0.875
	701 - 1000	16	1	0.011	13	0	54	0.657
	All depths		820	69	0.839	26,841	17,614	36,069

Table 82. -- Catch per unit of effort by stratum for Pacific hake sorted by descending CPUE for the 2007 Gulf of Alaska bottom trawl survey.

INPFC area	Depth range	Stratum name	Number of hauls	Hauls with catch	CPUE (kg/ha)	Biomass (t)	Lower CI biomass	Upper CI biomass
Southeastern	201 - 300	Baranof-Chichagof Slope	3	3	37.90	4,265	0	11,904
Southeastern	301 - 500	Southeastern Deep Gullies	7	7	32.26	7,562	1,947	13,177
Southeastern	301 - 500	Southeastern Slope	4	4	18.57	1,435	0	3,899
Yakutat	201 - 300	Yakutat Slope	9	3	10.99	2,339	0	6,829
Yakutat	201 - 300	Yakutat Gullies	8	5	9.88	3,007	0	7,327
Southeastern	201 - 300	Prince of Wales Slope/Gullies	14	8	6.87	2,698	55	5,340
Yakutat	301 - 500	Yakutat Slope	7	7	4.95	752	0	1,689
Southeastern	101 - 200	Baranof-Chichagof Shelf	8	6	4.39	1,844	0	3,933
Southeastern	101 - 200	Prince of Wales Shelf	14	3	2.13	1,467	0	4,536
Kodiak	301 - 500	Kodiak Slope	10	5	2.06	600	0	1,312
Yakutat	301 - 500	Yakutat Gullies	2	2	1.08	119	0	526
Southeastern	1 - 100	Southeastern Shallows	11	2	0.60	396	0	1,239
Southeastern	501 - 700	Southeastern Slope	3	2	0.31	32	0	125
Yakutat	501 - 700	Yakutat Slope	3	3	0.29	42	0	86
Kodiak	201 - 300	Kenai Gullies	19	4	0.25	167	0	370
Yakutat	101 - 200	Yakataga Shelf	8	1	0.13	70	0	237
Kodiak	201 - 300	Kodiak Slope	7	1	0.11	19	0	64
Yakutat	701 - 1000	Yakutat Slope	3	1	0.07	13	0	69
Shumagin	201 - 300	Shumagin Slope	17	1	0.04	11	0	34
Chirikof	301 - 500	Chirikof Slope	10	1	0.02	4	0	12

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APPENDIX A

Strata Specifications and Locations

Appendix table A-1 presents the survey strata definitions for the 2007 Gulf of Alaska biennial bottom trawl survey including depth range, stratum name, and the area in square nautical miles and square kilometers. Appendix Table A-2 presents the summary strata code definitions. Appendix Figures A-1 through A-5 are charts showing the locations and extent of the strata as defined.

Appendix Table A-1. -- Survey strata used for the 2007 Gulf of Alaska biennial survey including depth, stratum code, name and area in square nautical miles (nmi²) and square kilometers (km²).

Depth Range (m)	Stratum Code	Stratum Name	Area (nmi ²)	Area (km ²)
1 - 100	10	Fox Islands	2.430	8.333
	11	Davidson Bank	3.989	13.681
	12	Lower Alaska Peninsula	2.005	6.876
	13	Shumagin Bank	3.615	12.399
	20	Upper Alaska Peninsula	2.315	7.941
	21	Semidi Bank	2.129	7.302
	22	Chirikof Bank	3.147	10.792
	30	Albatross Shallows	1.681	5.766
	31	Albatross Banks	4.491	15.403
	32	Lower Cook Inlet	2.883	9.887
	33	Kenai Peninsula	1.534	5.260
	35	Northern Kodiak Shallows	641	2.200
	40	Yakutat Shallows	2.900	9.947
	41	Middleton Shallows	1.958	6.714
	50	Southeastern Shallows	1.909	6.546
		991	subtotal	37,628
101 - 200	110	Sanak Gully	1.238	4.245
	111	Shumagin Outer Shelf	2.377	8.154
	112	West Shumagin Gully	664	2.278
	120	East Shumagin Gully	3.238	11.104
	121	Shelikof Edge	2.255	7.735
	122	Chirikof Outer Shelf	1.461	5.011
	130	Albatross Gullies	2.307	7.912
	131	Portlock Flats	2.139	7.336
	132	Barren Islands	3.202	10.981
	133	Kenai Flats	3.521	12.077
	134	Kodiak Outer Shelf	1.465	5.026
	140	Middleton Shelf	2.142	7.346
	141	Yakataga Shelf	1.539	5.277
	142	Yakutat Flats	2.634	9.032
	143	Fairweather Shelf	2.253	7.728
	150	Baranof-Chichagof Shelf	1.224	4.196
151	Prince of Wales Shelf	2.008	6.888	
	992	subtotal	35,668	122,324

Appendix Table A-1. - Continued

Depth Range (m)	Stratum Code	Stratum Name	Area (nmi ²)	Area (km ²)
201 - 300	210	Shumagin Slope	813	2,788
	220	Lower Shelikof Gully	2,921	10,018
	221	Chirikof Slope	446	1,528
	230	Kenai Gullies	1,942	6,659
	231	Kodiak Slope	473	1,623
	232	Upper Shelikof Gully	935	3,208
	240	Yakutat Gullies	887	3,043
	241	Yakutat Slope	620	2,127
	250	Baranof-Chichagof Slope	328	1,125
	251	Prince of Wales Slope/Gullies	1,145	3,927
	993	subtotal	10,511	36,047
301 - 500	310	Shumagin Slope	738	2,531
	320	Chirikof Slope	468	1,604
	330	Kodiak Slope	849	2,912
	340	Yakutat Gullies	323	1,107
	341	Yakutat Slope	443	1,521
	350	Southeastern Deep Gullies	684	2,344
	351	Southeastern Slope	225	773
	994	subtotal	3,730	12,792
501 - 700	410	Shumagin Slope	585	2,006
	420	Chirikof Slope	570	1,953
	430	Kodiak Slope	509	1,745
	440	Yakutat Slope	428	1,469
	450	Southeastern Slope	301	1,033
	995	subtotal	2,393	8,206
701 - 1000	510	Shumagin Slope	565	1,937
	520	Chirikof Slope	894	3,066
	530	Kodiak Slope	1,019	3,494
	540	Yakutat Slope	550	1,887
	550	Southeastern Slope	352	1,206
	996	subtotal	3,380	11,590
1 - 1000	999	GRAND TOTAL	93,309	320,006

Appendix Table A-2. -- Summary codes used for the 2007 Gulf of Alaska biennial bottom trawl survey including depth range, International North Pacific Fisheries Commission statistical areas and square area, and strata included in the summary area.

Summary Code Number	Depth Range (m)	INPFC area	Area (nmi²)	Area (km²)	Strata included
911	1 - 100	Shumagin	12,039	41,289	10 -13
912	101 - 200		4,280	14,677	110 - 112
913	201 - 300		813	2,788	210
914	301 - 500		738	2,531	310
915	501 - 700		585	2,006	410
916	701 – 1,000		565	1,937	510
919	1 -1,000		19,020	65,228	
921	1 - 100	Chirikof	7,591	26,035	20-22
922	101 - 200		6,954	23,850	120-122
923	201 - 300		3,350	11,490	230, 231
924	301 - 500		468	1,604	320
925	501 - 700		570	1,953	420
926	701 – 1,000		894	3,066	520
929	1 -1,000		19,827	67,998	
931	1 - 100	Kodiak	11,230	38,516	30 - 33, 35
932	101 - 200		12,634	43,332	130 - 134
933	201 - 300		3,350	11,490	230 - 232
934	301 - 500		849	2,912	330
935	501 - 700		509	1,745	430
936	701 – 1,000		1,019	3,494	530
939	1 -1,000		29,591	101,489	

Summary Code Number	Depth Range (m)	INPFC area	Area (nmi²)	Area (km²)	Strata included
941	1- 100	Yakutat	4,858	16,661	240, 241
942	101 - 200		8,568	29,383	140 – 143
943	201 - 300		1,507	5,170	240, 241
944	301 - 500		766	2,628	340, 341
945	501 - 700		428	1,469	440
946	701 – 1,000		550	1,887	540
949	1 -1,000		16,677	57,198	
951	1 - 100	Southeastern	1,909	6,546	50
952	101 - 200		3,232	11,084	150, 151
953	201 - 300		1,473	5,052	250, 251
954	301 - 500		909	3,117	350, 351
955	501 - 700		301	1,033	450
956	701 – 1,000		352	1,206	550
959	1 -1,000		8,176	28,039	
999	1 – 1,000	All Areas	93,309	320,006	

APPENDIX B

Fish and Invertebrate Taxa Encountered

Appendix Tables B-1 and B-2 list fish and invertebrate taxa encountered and identified during the 2007 Gulf of Alaska biennial bottom trawl survey. Most common and scientific names are from Robins et al. (1991). Order of listings and common names used are for convenience and do not imply adherence to a particular phylogenetic system.

Appendix Table B-1. -- Fish species encountered during the 2007 Gulf of Alaska bottom trawl survey.

Family	Species Name	Common Name
Petromyzontidae	<i>Lampetra tridentata</i>	Pacific lamprey
Lamnidae	<i>Lamna ditropis</i>	salmon shark
Squalidae	<i>Squalus acanthias</i>	spiny dogfish
	<i>Somniosus pacificus</i>	Pacific sleeper shark
Rajidae	<i>Bathyraja abyssicola</i>	deepsea skate
	<i>Raja binoculata</i>	big skate
	<i>Bathyraja interrupta</i>	Bering skate
	<i>Raja rhina</i>	longnose skate
	<i>Bathyraja trachura</i>	rougtail skate
	<i>Bathyraja parmifera</i>	Alaska skate
	<i>Bathyraja aleutica</i>	Aleutian skate
	<i>Bathyraja lindbergi</i>	commander skate
	<i>Bathyraja maculata</i>	whiteblotched skate
	<i>Bathyraja minispinosa</i>	whitebrow skate
Chimaeridae	<i>Hydrolagus colliei</i>	spotted ratfish
Bothidae	<i>Citharichthys sordidus</i>	Pacific sanddab
Pleuronectidae	<i>Atheresthes stomias</i>	arrowtooth flounder
	<i>Reinhardtius hippoglossoides</i>	Greenland turbot
	<i>Hippoglossus stenolepis</i>	Pacific halibut
	<i>Hippoglossoides elassodon</i>	flathead sole
	<i>Lyopsetta exilis</i>	slender sole
	<i>Eopsetta jordani</i>	petrale sole
	<i>Parophrys vetulus</i>	English sole
	<i>Microstomus pacificus</i>	Dover sole
	<i>Embassichthys bathybius</i>	deepsea sole
	<i>Glyptocephalus zachirus</i>	rex sole
	<i>Limanda aspera</i>	yellowfin sole
	<i>Platichthys stellatus</i>	starry flounder
	<i>Psettichthys melanostictus</i>	sand sole
	<i>Lepidopsetta polyxystra</i>	northern rock sole
	<i>Lepidopsetta bilineata</i>	southern rock sole
	<i>Isopsetta isolepis</i>	butter sole

Agonidae	<i>Pleuronectes quadrituberculatus</i>	Alaska plaice
	<i>Sarritor frenatus</i>	sawback poacher
	<i>Xeneretmus latifrons</i>	blacktip poacher
	<i>Bathyagonus alascanus</i>	gray starsnout
	<i>Bathyagonus infraspinatus</i>	spinycheek starsnout
	<i>Bathyagonus pentacanthus</i>	bigeye poacher
	<i>Bathyagonus nigripinnis</i>	blackfin poacher
	<i>Podothecus acipenserinus</i>	sturgeon poacher
	<i>Anoplagonus inermis</i>	smooth aligatorfish
	<i>Hypsagonus quadricornis</i>	fourhorn poacher
Alepocephalidae	<i>Alepocephalus tenebrosus</i>	California slickhead
Ammodytidae	<i>Ammodytes hexapterus</i>	Pacific sand lance
Anarrhichadidae	<i>Anarrhichthys ocellatus</i>	wolf-eel
	<i>Anarrhichas orientalis</i>	Bering wolffish
Anoplopomatidae	<i>Anoplopoma fimbria</i>	sablefish
Bathylagidae	<i>Bathylagus pacificus</i>	Pacific blacksmelt
	<i>Bathylagus milleri</i>	robust blacksmelt
	<i>Leuroglossus schmidti</i>	northern smoothtongue
	<i>Bathylagus ochotensis</i>	popeye blacksmelt
	<i>Ronquilus jordani</i>	northern ronquil
Bathymasteridae	<i>Bathymaster caeruleofasciatus</i>	Alaskan ronquil
	<i>Bathymaster signatus</i>	searcher
	<i>Chauliodus macouni</i>	Pacific viperfish
Chauliodontidae	<i>Chauliodus macouni</i>	Pacific viperfish
Clupeidae	<i>Clupea pallasii</i>	Pacific herring
Macrouridae	<i>Coryphaenoides acrolepis</i>	Pacific grenadier
	<i>Albatrossia pectoralis</i>	giant grenadier
	<i>Coryphaenoides cinereus</i>	popeye grenadier
Cottidae	<i>Thyriscus anoplus</i>	sponge sculpin
	<i>Icelinus borealis</i>	northern sculpin
	<i>Icelinus tenuis</i>	spotfin sculpin
	<i>Gymnocanthus tricuspis</i>	Arctic staghorn sculpin
	<i>Gymnocanthus galeatus</i>	armorhead sculpin
	<i>Radulinus asprellus</i>	slim sculpin
	<i>Bolinia euryptera</i>	broadfin sculpin
	<i>Malacocottus zonurus</i>	darkfin sculpin

	<i>Hemilepidotus spinosus</i>	brown Irish lord
	<i>Hemilepidotus zapus</i>	longfin Irish lord
	<i>Hemilepidotus hemilepidotus</i>	red Irish lord
	<i>Hemilepidotus jordani</i>	yellow Irish lord
	<i>Triglops forficata</i>	scissortail sculpin
	<i>Triglops szepticus</i>	spectacled sculpin
	<i>Triglops pingeli</i>	ribbed sculpin
	<i>Triglops macellus</i>	roughspine sculpin
	<i>Myoxocephalus verrucosus</i>	warty sculpin
	<i>Myoxocephalus polyacanthocephalus</i>	great sculpin
	<i>Myoxocephalus jaok</i>	plain sculpin
	<i>Myoxocephalus quadricornis</i>	fourhorn sculpin
	<i>Dasycottus setiger</i>	spinyhead sculpin
	<i>Psychrolutes paradoxus</i>	tadpole sculpin
	<i>Psychrolutes phrictus</i>	blob sculpin
	<i>Rhamphocottus richardsoni</i>	grunt sculpin
	<i>Hemitripterus bolini</i>	bigmouth sculpin
	<i>Triglops xenostethus</i>	scalybreasted sculpin
	<i>Icelus spiniger</i>	thorny sculpin
	<i>Icelus spatula</i>	spatulate sculpin
Trichodontidae	<i>Trichodon trichodon</i>	Pacific sandfish
Gadidae	<i>Microgadus proximus</i>	Pacific tomcod
	<i>Gadus macrocephalus</i>	Pacific cod
Moridae	<i>Antimora microlepis</i>	Pacific flatnose
	<i>Theragra chalcogramma</i>	walleye pollock
Hexagrammidae	<i>Ophiodon elongatus</i>	lingcod
	<i>Pleurogrammus monopterygius</i>	Atka mackerel
	<i>Hexagrammos stelleri</i>	whitespotted greenling
	<i>Hexagrammos decagrammus</i>	kelp greenling
Icosteidae	<i>Icosteus aenigmaticus</i>	ragfish
Cyclopteridae	<i>Aptocyclus ventricosus</i>	smooth lumpsucker
	<i>Eumicrotremus orbis</i>	Pacific spiny lumpsucker
	<i>Eumicrotremus barbatus</i>	papillose lumpsucker
	<i>Cyclopteroides phrynoides</i>	toad lumpsucker
	<i>Liparis dennyi</i>	marbled snailfish

	<i>Liparis gibbus</i>	variegated snailfish
	<i>Crystallichthys cyclospilus</i>	blotched snailfish
	<i>Liparis ochotensis</i>	Okhotsk snailfish
	<i>Elassodiscus caudatus</i>	humpback snailfish
	<i>Careproctus melanurus</i>	blacktail snailfish
	<i>Careproctus cypselurus</i>	blackfin snailfish
	<i>Paraliparis ulochir</i>	Blackfaced red snailfish
	<i>Careproctus gilberti</i>	smalldisk snailfish
	<i>Careproctus colletti</i>	Alaska snailfish
	<i>Paraliparis dactylosus</i>	red snailfish
	<i>Paraliparis cephalus</i>	swellhead snailfish
	<i>Careproctus comus</i>	comic snailfish
	<i>Nectoliparis pelagicus</i>	tadpole snailfish
	<i>Allocareproctus unangas</i>	goldeneye snailfish
Melamphaeidae	<i>Poromitra crassiceps</i>	crested bigscale
	<i>Melamphaes lugubris</i>	highsnout bigscale
Melanostomiidae	<i>Tactostoma macropus</i>	longfin dragonfish
Merluccidae	<i>Merluccius productus</i>	Pacific hake
Myctophidae	<i>Stenobrachius leucopsarus</i>	northern lampfish
	<i>Stenobrachius nannochir</i>	garnet lampfish
	<i>Diaphus theta</i>	California headlightfish
	<i>Nannobrachium regale</i>	pinpoint lampfish
	<i>Lampanyctus jordani</i>	brokenline lampfish
	<i>Tarletonbeania crenularis</i>	blue lanternfish
Osmeridae	<i>Thaleichthys pacificus</i>	eulachon
	<i>Mallotus villosus</i>	capelin
	<i>Spirinchus thaleichthys</i>	longfin smelt
Salmonidae	<i>Oncorhynchus tshawytscha</i>	Chinook salmon
	<i>Oncorhynchus kisutch</i>	coho salmon
	<i>Oncorhynchus gorbuscha</i>	pink salmon
	<i>Oncorhynchus keta</i>	chum salmon
	<i>Oncorhynchus nerka</i>	sockeye salmon
Scomberesocidae	<i>Cololabis saira</i>	Pacific saury
Scopelarchidae	<i>Benthalbella dentata</i>	northern pearleye
Alepisauridae	<i>Alepisaurus ferox</i>	longnose lancetfish

Searsiidae	<i>Sagamichthys abei</i>	shining tubeshoulder
Cryptacanthodidae	<i>Lyconectes aleutensis</i>	dwarf wrymouth
	<i>Cryptacanthodes giganteus</i>	giant wrymouth
Stichaeidae	<i>Lumpenus maculatus</i>	daubed shanny
	<i>Lumpenus fabricii</i>	slender eelblenny
	<i>Lumpenus sagitta</i>	snake prickleback
	<i>Lumpenella longirostris</i>	longsnout prickleback
	<i>Chirolophis decoratus</i>	decorated warbonnet
	<i>Poroclinus rothrocki</i>	whitebarred prickleback
Pholididae	<i>Pholis laeata</i>	crescent gunnel
Zaproridae	<i>Zaprora silenus</i>	prowfish
Zoarcidae	<i>Bothrocara brunneum</i>	twoline eelpout
	<i>Bothrocara pusillum</i>	Alaska eelpout
	<i>Embryx crotalinus</i>	snakehead eelpout
	<i>Lycodes cortezianus</i>	bigfin eelpout
	<i>Lycodes palearis</i>	wattled eelpout
	<i>Lycodes diapterus</i>	black eelpout
	<i>Lycodes brevipes</i>	shortfin eelpout
	<i>Lycodes pacificus</i>	blackbelly eelpout
Scorpaenidae	<i>Sebastolobus alascanus</i>	shortspine thornyhead
	<i>Sebastolobus altivelis</i>	longspine thornyhead
	<i>Sebastes aleutianus</i>	rougheye rockfish
	<i>Sebastes melanostictus</i>	blackspotted rockfish
	<i>Sebastes alutus</i>	Pacific ocean perch
	<i>Sebastes brevispinis</i>	silvergray rockfish
	<i>Sebastes ciliatus</i>	dark rockfish
	<i>Sebastes variabilis</i>	dusky rockfish
	<i>Sebastes crameri</i>	darkblotched rockfish
	<i>Sebastes diploproa</i>	splitnose rockfish
	<i>Sebastes elongatus</i>	greenstriped rockfish
	<i>Sebastes emphaeus</i>	Puget Sound rockfish
	<i>Sebastes entomelas</i>	widow rockfish
	<i>Sebastes flavidus</i>	yellowtail rockfish
	<i>Sebastes helvomaculatus</i>	rosethorn rockfish
<i>Sebastes maliger</i>	quillback rockfish	

<i>Sebastes melanops</i>	black rockfish
<i>Sebastes paucispinis</i>	bocaccio
<i>Sebastes pinniger</i>	canary rockfish
<i>Sebastes polyspinis</i>	northern rockfish
<i>Sebastes proriger</i>	redstripe rockfish
<i>Sebastes ruberrimus</i>	yelloweye rockfish
<i>Sebastes babcocki</i>	redbanded rockfish
<i>Sebastes variegatus</i>	harlequin rockfish
<i>Sebastes wilsoni</i>	pygmy rockfish
<i>Sebastes zacentrus</i>	sharpchin rockfish
<i>Sebastes borealis</i>	shortraker rockfish
<i>Sebastes reedi</i>	yellowmouth rockfish

Appendix Table B2. -- Invertebrate species encountered during the 2007 Gulf of Alaska bottom trawl survey.

Phylum	Species/Taxon Name	Common Name
Cnidaria	<i>Periphylla periphylla</i>	
	<i>Chrysaora melanaster</i>	
	<i>Phacellophora camtschatica</i>	egg yolk jelly
	<i>Atolla</i> sp.	
	<i>Aurelia labiata</i>	
	<i>Cyanea capillata</i>	lion's mane
	<i>Alcyonium</i> sp.	
	<i>Gersemia</i> sp.	sea raspberry
	<i>Primnoa pacifica</i>	
	<i>Primnoa willeyi</i>	red tree coral
	<i>Lillipathes lilliei</i>	
	<i>Paragorgia arborea</i>	Kamchatka coral
	<i>Paragorgia pacifica</i>	
	<i>Paragorgia nodosa</i>	
	<i>Calcigorgia spiculifera</i>	
	<i>Virgularia</i> sp.	smoothstem seawhip
	<i>Halipterus willemoesi</i>	
	<i>Ptilosarcus gurneyi</i>	orange sea pen
	<i>Anthoptilum murrayi</i>	Murray sea pen
	<i>Actinauge verrillii</i>	reticulate anemone
	<i>Paractinostola faeculenta</i>	rough purple sea anemone
	<i>Actinoscyphia</i> sp.	
	<i>Metridium farcimen</i>	gigantic anemone
	<i>Stomphia didemon</i>	cowardly anemone
	<i>Stomphia coccinea</i>	swimming anemone
	<i>Urticina crassicornis</i>	mottled anemone
	<i>Bathypheilia australis</i>	hot dog sea anemone
	<i>Oractis diomedeeae</i>	grape anemone
	<i>Cribrinopsis fernaldi</i>	chevron-tentacled anemone
	<i>Liponema brevicornis</i>	tentacle-shedding anemone
<i>Actinistola</i> sp.		
<i>Javania borealis</i>		

	<i>Stylaster campylecus</i>	
	<i>Stylaster moseleyana</i>	
	<i>Cyclohelix lamellata</i>	
	<i>Stylaster alaskanus</i>	
	<i>Thouarella superba</i>	
	<i>Errinopora zarhyncha</i>	
	<i>Isidella</i> sp.	articulated bamboo coral
	<i>Plumarella</i> sp.	
	<i>Thouarella</i> sp.	
	<i>Keratoisis</i> sp.	bamboo coral
	<i>Fanellia compressa</i>	
	<i>Fanellia fraseri</i>	
	<i>Muriceides nigra</i>	
	<i>Amphilaphis</i> sp.	
	<i>Muriceides</i> sp.	
	<i>Arthrogorgia otsukai</i>	
Ctenophora	<i>Ctenophora</i>	comb jelly
Annelida	<i>Polychaeta</i>	polychaete worm
	<i>Eunice valens</i>	
	<i>Chaetopterus</i> sp.	
	<i>Aphrodita negligens</i>	sea mouse
	<i>Euphrosine multibranchiata</i>	
	<i>Nereidae</i>	
	<i>Eunoe nodosa</i>	giant scale worm
	<i>Eunoe depressa</i>	depressed scale worm
	<i>Gattyana ciliata</i>	
	<i>Serpula columbiana</i>	
	<i>Notostombdella</i>	
	<i>cyclostomum</i>	striped sea leech
Arthropoda	<i>Isopoda</i>	isopod
	<i>Rocinella angusta</i>	
	<i>Anuropus bathypelagica</i>	
	<i>Euphausiacea</i>	euphausiid unident.
	<i>Neognathophausia</i> sp.	
	<i>Balanus evermanni</i>	giant barnacle
	<i>Balanus nubilus</i>	

<i>Pandalus danae</i>	dock shrimp
<i>Pandalus jordani</i>	ocean shrimp
<i>Pandalus borealis</i>	northern shrimp
<i>Pandalus tridens</i>	yellowleg pandalid
<i>Pandalus platyceros</i>	spot shrimp
<i>Pandalus goniurus</i>	humpy shrimp
<i>Pandalus hypsinotus</i>	coonstripe shrimp
<i>Pandalus stenolepis</i>	roughpatch shrimp
<i>Pandalopsis longirostris</i>	
<i>Pandalopsis dispar</i>	sidestripe shrimp
<i>Penaeidae</i>	penaeid shrimps
<i>Eualus barbatus</i>	barbed eualid
<i>Eualus macrophthalmus</i>	bigeye eualid
<i>Eualus biunguis</i>	deepsea eualid
<i>Lebbeus groenlandicus</i>	spiny lebbeid
<i>Crangon communis</i>	twospine crangon
<i>Crangon dalli</i>	ridged crangon
<i>Crangon septemspinosa</i>	sevenspine bay shrimp
<i>Argis alaskensis</i>	common argid
<i>Argis dentate</i>	Arctic argid
<i>Sclerocrangon boreas</i>	sculptured shrimp
<i>Argis levior</i>	Nelson's argid
<i>Argis ovifer</i>	split-eye argid
<i>Pasiphaea pacifica</i>	Pacific glass shrimp
<i>Pasiphaea tarda</i>	crimson pasiphaeid
<i>Notostomus japonicus</i>	spinyridge shrimp
<i>Cancer branneri</i>	
<i>Cancer magister</i>	Dungeness crab
<i>Cancer oregonensis</i>	Oregon rock crab
<i>Oregonia bifurca</i>	
<i>Oregonia gracilis</i>	graceful decorator crab
<i>Chorilia longipes</i>	longhorned decorator crab
<i>Chionoecetes tanneri</i>	grooved Tanner crab
<i>Chionoecetes bairdi</i>	Tanner crab
<i>Chionoecetes angulatus</i>	triangle Tanner crab

<i>Hyas coarctatus</i>	circumboreal toad crab
<i>Hyas lyratus</i>	Pacific lyre crab
<i>Telmessus cheiragonus</i>	helmet crab
<i>Pagurus brandti</i>	sponge hermit
<i>Pagurus aleuticus</i>	Aleutian hermit
<i>Labidochirus splendescens</i>	splendid hermit
<i>Pagurus confragosus</i>	knobbyhand hermit
<i>Pagurus cornutus</i>	
<i>Pagurus dalli</i>	whiteknee hermit
<i>Pagurus kennerlyi</i>	bluespine hermit
<i>Pagurus trigonocheirus</i>	fuzzy hermit crab
<i>Pagurus beringanus</i>	Bering hermit
<i>Pagurus ochotensis</i>	Alaskan hermit
<i>Pagurus rathbuni</i>	longfinger hermit
<i>Pagurus tanneri</i>	longhand hermit
<i>Elassochirus tenuimanus</i>	widehand hermit crab
<i>Pagurus capillatus</i>	hairy hermit crab
<i>Elassochirus cavimanus</i>	purple hermit
<i>Elassochirus gilli</i>	Pacific red hermit
<i>Lopholithodes foraminatus</i>	box crab
<i>Acantholithodes hispidus</i>	fuzzy crab
<i>Lithodes couesi</i>	scarlet king crab
<i>Lithodes aequispinus</i>	golden king crab
<i>Hapalogaster grebnitzkii</i>	
<i>Rhinolithodes</i>	
<i>wosnessenskii</i>	rhinoceros crab
<i>Paralithodes camtschaticus</i>	red king crab
<i>Placetrion wosnessenskii</i>	scaled crab
<i>Erimacrus isenbeckii</i>	horsehair crab
<i>Pugettia gracilis</i>	graceful kelp crab
<i>Munida quadrispina</i>	pinchbug
<i>Neomenia yamamoti</i>	
<i>Lepidozona abyssicola</i>	
<i>Placiphorella pacifica</i>	
<i>Mopalia swanii</i>	
<i>Mopalia egretta</i>	

Mollusca

<i>Tochuina tetraquetra</i>	giant orange tochui
<i>Dendronotus dalli</i>	Dall's dendronotid
<i>Tritonia festiva</i>	festive tritonia
<i>Tritonia diomedea</i>	rosy tritonia
<i>Triopha catalinae</i>	sea-clown triopha
<i>Chlamylla</i> sp.	
<i>Anisodoris nobilis</i>	Pacific sea lemon
<i>Anisodoris lentiginosa</i>	mottled pale sea-lemon
<i>Archidoris odhneri</i>	white night doris
<i>Cranopsis major</i>	great puncturella
<i>Scelitoboma bella</i>	
<i>Cryptonatica affinis</i>	Arctic moonsnail
<i>Cryptonatica aleutica</i>	Aleutian moonsnail
<i>Nucella lamellosa</i>	frilled dogwinkle
<i>Euspira pallidus</i>	pale moonsnail
<i>Crepidula</i> sp.	slipper shell
<i>Japelion aleutica</i>	
<i>Pyrulofusus dexius</i>	
<i>Pyrulofusus deformis</i>	warped whelk
<i>Pyrulofusus harpa</i>	left-hand whelk
<i>Volutopsius regularis</i>	regular whelk
<i>Beringius kennicottii</i>	
<i>Beringius undatus</i>	
<i>Beringius rotundus</i>	rotund whelk
<i>Neptunea amianta</i>	white neptune
<i>Neptunea pribiloffensis</i>	Pribilof whelk
<i>Neptunea lyrata</i>	lyre whelk
<i>Neptunea ventricosa</i>	fat whelk
<i>Plicifusus oceanodromae</i>	seahorse whelk
<i>Plicifusus virens</i>	
<i>Plicifusus griseus</i>	gray whelk
<i>Boreotrophon stuarti</i>	winged trophon
<i>Fusitriton oregonensis</i>	Oregon triton
<i>Bathybembix bairdii</i>	
<i>Cidarina cidaris</i>	

<i>Buccinum oedematum</i>	swollen whelk
<i>Buccinum plectrum</i>	sinuous whelk
<i>Buccinum scalariforme</i>	ladder whelk
<i>Buccinum moarchianum</i>	
<i>Arctomelon stearnsii</i>	Alaska volute
<i>Modiolus modiolus</i>	northern horsemussel
<i>Mytilus edulis</i>	blue mussel
<i>Chlamys rubida</i>	reddish scallop
<i>Patinopecten caurinus</i>	weathervane scallop
<i>Delectopecten vancouverensis</i>	Vancouver scallop
<i>Cyclopecten davidsoni</i>	salmon glass-scallop
<i>Panopea abrupta</i>	Pacific geoduck
<i>Hiatella arctica</i>	Arctic hiatella
<i>Nucula</i> sp.	
<i>Yoldia seminuda</i>	crisscrossed yoldia
<i>Yoldia thraciaeformis</i>	broad yoldia
<i>Yoldia hyperborea</i>	northern yoldia
<i>Nuculana pernula</i>	northern nutclam
<i>Nuculana conceptionis</i>	
<i>Limopsis akutanica</i>	Akutan limops
<i>Empleconia vaginata</i>	vaginated limops
<i>Musculus discors</i>	discordant mussel
<i>Astarte borealis</i>	boreal astarte
<i>Astarte elliptica</i>	elliptical astarte
<i>Clinocardium nuttallii</i>	Nuttall cockle
<i>Clinocardium ciliatum</i>	hairy cockle
<i>Clinocardium californiense</i>	California cockle
<i>Clinocardium blandum</i>	strait cockle
<i>Saxidomus gigantea</i>	butter clam
<i>Humilaria kennerleyi</i>	Kennerley's venus
<i>Tellina modesta</i>	
<i>Macoma</i> sp.	
<i>Serripes groenlandicus</i>	Greenland cockle
<i>Serripes laperousii</i>	broad cockle
<i>Serripes notabilis</i>	oblique smoothcockle

	<i>Pododesmus macrochisma</i>	Alaska falsejingle
	<i>Pododesmus cepio</i>	abalone jingle
	<i>Benthoctopus leioderma</i>	smoothskin octopus
	<i>Japatella diaphana</i>	
	<i>Opisthoteuthis californiana</i>	flapjack devilfish
	<i>Octopus dofleini</i>	giant octopus
	<i>Rossia pacifica</i>	eastern Pacific bobtail
	<i>Loligo opalescens</i>	California market squid
	<i>Gonatus</i> sp.	
	<i>Berryteuthis magister</i>	magistrate armhook squid
	<i>Berryteuthis anonychus</i>	
	<i>Gonatopsis borealis</i>	boreopacific armhook squid
	<i>Moroteuthis robusta</i>	robust clubhook squid
	<i>Onychoteuthis borealijaponicus</i>	boreal clubhook squid
	<i>Galiteuthis phyllura</i>	
	<i>Chiroteuthis calyx</i>	
	<i>Cranchiidae</i>	
	<i>Taonius pavo</i>	
	<i>Octopoteuthis deletron</i>	
	<i>Histioteuthis hoylei</i>	
Echinodermata	<i>Evasterias troschelii</i>	mottled sea star
	<i>Evasterias echinosoma</i>	giant sea star
	<i>Orthasterias koehleri</i>	redbanded sea star
	<i>Leptasterias hylodes</i>	Aleutian sea star
	<i>Leptasterias stolocantha</i>	
	<i>Leptasterias coei</i>	
	<i>Pycnopodia helianthoides</i>	sunflower sea star
	<i>Stylasterias forreri</i>	long-rayed star
	<i>Ampheraster marianus</i>	
	<i>Tarsaster alaskanus</i>	
	<i>Lethasterias nanimensis</i>	blackspined sea star
	<i>Pedicellaster magister</i>	majestic sea star
	<i>Stephanasterias albula</i>	
	<i>Poraniopsis inflata</i>	thorny sea star
	<i>Henricia sanguinolenta</i>	sanguine sea star

<i>Henricia aspera</i>	ridged blood star
<i>Henricia leviuscula</i>	blood sea star
<i>Henricia longispina</i>	
<i>Henricia spiculifera</i>	spiny Henricia
<i>Odontohenricia fisheri</i>	
<i>Leptasterias katharinae</i>	
<i>Gephyreaster swifti</i>	Swift's sea star
<i>Pseudarchaster alascensis</i>	
<i>Hippasteria californica</i>	
<i>Hippasteria heathi</i>	
<i>Hippasteria spinosa</i>	spiny red sea star
<i>Pseudarchaster parelii</i>	scarlet sea star
<i>Cryptopeltaster lepidonotus</i>	
<i>Mediaster tenellus</i>	
<i>Mediaster aequalis</i>	vermilion sea star
<i>Ceramaster japonicus</i>	red bat star
<i>Ceramaster patagonicus</i>	orange bat sea star
<i>Ceramaster arcticus</i>	Arctic bat sea star
<i>Ceramaster clarki</i>	
<i>Ceramaster stellatus</i>	
<i>Luidia foliolata</i>	sand sea star
<i>Dermasterias imbricata</i>	leather sea star
<i>Solaster endeca</i>	northern sun sea star
<i>Solaster hypothyrsus</i>	
<i>Solaster dawsoni</i>	morning sun sea star
<i>Solaster stimpsoni</i>	striped sun sea star
<i>Crossaster borealis</i>	grooved sea star
<i>Crossaster papposus</i>	rose sea star
<i>Heterozonias alternatus</i>	cannonball sun star
<i>Lophaster vexator</i>	crested star
<i>Lophaster furcilliger</i>	crested sea star
<i>Pteraster tessellatus</i>	
<i>Pteraster jordani</i>	
<i>Pteraster militaris</i>	wrinkled star
<i>Pteraster marssipus</i>	

<i>Pteraster obscurus</i>	obscure sea star
<i>Diplopteraster multipes</i>	pincushion sea star
<i>Asterias amurensis</i>	purple-orange sea star
<i>Ctenodiscus crispatus</i>	common mud star
<i>Leptychaster pacificus</i>	
<i>Leptychaster arcticus</i>	North Pacific sea star
<i>Dipsacaster borealis</i>	northern sea star
<i>Dipsacaster eximus</i>	
<i>Cheiraster dawsoni</i>	fragile sea star
<i>Nearchaster variabilis</i>	
<i>Nearchaster aciculosus</i>	
<i>Nearchaster pedicellaris</i>	
<i>Astronebris tatafilius</i>	
<i>Strongylocentrotus droebachiensis</i>	green sea urchin
<i>Strongylocentrotus franciscanus</i>	red sea urchin
<i>Strongylocentrotus polyacanthus</i>	
<i>Strongylocentrotus purpuratus</i>	purple sea urchin
<i>Alloccentrotus fragilis</i>	orange-pink sea urchin
<i>Brisaster latifrons</i>	heart urchin
<i>Brisaster owstoni</i>	
<i>Echinarachnius parma</i>	parma sand dollar
<i>Florometra inexpectata</i>	
<i>Florometra asperrima</i>	common northern feather star
<i>Gorgonocephalus eucnemis</i>	basketstar
<i>Asteronyx loveni</i>	serpent sea star
<i>Astrochele laevis</i>	
<i>Ophiura sarsi</i>	notched brittlestar
<i>Amphiophiura</i> sp.	
<i>Stegophiura ponderosa</i>	
<i>Ophiacantha normani</i>	
<i>Ophiacantha cataleimmoidea</i>	
<i>Ophiopholis longispina</i>	

	<i>Ophiopholis aculeata</i>	ubiquitous brittle star
	<i>Ophiosphalma</i> sp.	
	<i>Ophiolebes</i> sp.	
	<i>Parastichopus leukothele</i>	giant orange cucumber
	<i>Parastichopus californicus</i>	California sea cucumber
	<i>Pseudostichopus mollis</i>	sandy sea cucumber
	<i>Molpadia arenicola</i>	
	<i>Molpadia intermedia</i>	sweet sea potato
	<i>Pentamera lissoplaca</i>	crescent sea cucumber
	<i>Bathyploetes</i> sp.	
	<i>Cucumaria fallax</i>	sea football
	<i>Cucumaria frondosa</i>	
	<i>Psolus squamatus</i>	whitescaled sea cucumber
	<i>Psolus japonicus</i>	
	<i>Thylonidium</i> sp.	
	<i>Synallactes challengeri</i>	
Porifera	<i>Suberites ficus</i>	
	<i>Suberites domuncula</i>	hermit sponge
	<i>Aphrocallistes vastus</i>	clay pipe sponge
	<i>Mycale loveni</i>	tree sponge
	<i>Mycale adhaerens</i>	smooth scallop sponge
	<i>Coelospaeridae</i>	ginseng sponge
	<i>Geodia mesotriaena</i>	
	<i>Halichondria panicea</i>	barrel sponge
	<i>Rhabdocalyptus</i> sp.	cloud sponge
	<i>Mycale bellabellensis</i>	lampshade sponge
	<i>Phakellia cribrosa</i>	funnel sponge
	<i>Phakellia dalli</i>	cat-o-nine-tails sponge
	<i>Myxilla incrustans</i>	scallop sponge
	<i>Myxilla brunnea</i>	soft brown sponge
	<i>Phakellia beringensis</i>	hat sponge
	<i>Plicatellopsis amphispicula</i>	firm finger sponge
	<i>Histodermella</i> sp.	spud sponge
	<i>Leucosolenia blanca</i>	yellow leafy sponge
	<i>Tethya</i> sp.	ball sponge

	<i>Hyalonema</i> sp.	fiberoptic sponge
	<i>Halichondria sitiens</i>	black papillate sponge
	<i>Halichondria cf. sitiens</i>	yellow green papillate
	<i>Polymastia</i> sp.	orange nipple ball sponge
	<i>Leucandra</i> sp.	hairy vase sponge
	<i>Neoesperiopsis rigida</i>	soft finger sponge
	<i>Neoesperiopsis infundibula</i>	rough China hat sponge
	<i>Neoesperiopsis digitata</i>	
	<i>Inflatella</i> sp.	orange papillate sponge
	<i>Stelletta</i> sp.	stone sponge
	<i>Polymastia fluegeli</i>	Flugel's nipples sponge
	<i>Polymastia robusta</i>	long nipples sponge
	<i>Tentorium semisuberites</i>	two nipple sponge
	<i>Plakina tanaga</i>	white convoluted sponge
	<i>Latrunculia</i> sp.	green papillate sponge
	<i>Axinella</i> sp.	firm gray sponge
	<i>Stelodoryx alaskaensis</i>	Alaskan lobed sponge
	<i>Staurocalyptus</i> sp.	
	<i>Geodinella robusta</i>	calcareous finger sponge
	<i>Aulosaccus schulzei</i>	vase sponge
	<i>Farrea beringiana</i>	Bering lace sponge
Platyhelminthes	<i>Platyhelminthes</i>	flatworm unident.
Rhynchocoela	<i>Nemertea</i>	nemertean worm
	<i>Emplectonema</i> sp.	
	<i>Tubulanus</i> sp.	
	<i>Cerebratulus californienesis</i>	
Sipuncula	<i>Sipuncula</i>	peanut worm
	<i>Phascolosomatidae</i>	
Echiura	<i>Echiura</i>	echiuroid worm unident.
Bryozoa	<i>Leieschara orientalis</i>	
	<i>Bugula californica</i>	
	<i>Flustrellidra corniculata</i>	
	<i>Alcyonidium pedunculatum</i>	
	<i>Myriozoum subgracile</i>	
	<i>Rhaphostomella costata</i>	ribbed bryozoan

	<i>Hippodiplosia insculpta</i>	
	<i>Microporina borealis</i>	
	<i>Dendrobeania</i> sp.	
Brachiopoda	<i>Terebratalia transversa</i>	common brachiopod
	<i>Frieleia halli</i>	
	<i>Terebratulina unguicula</i>	snakeshead brachiopod
	<i>Laqueus californianus</i>	California lamp shell
Chordata	<i>Styela rustica</i>	sea potato
	<i>Boltenia ovifera</i>	
	<i>Halocynthia igaboja</i>	
	<i>Halocynthia aurantium</i>	sea peach
	<i>Cnemidocarpa</i>	
	<i>finmarkiensis</i>	broad base tunicate
	<i>Pyura haustor</i>	wrinkled tunicate
	<i>Distaplia occidentalis</i>	
	<i>Distaplia smithi</i>	
	<i>Amaroucium soldatovi</i>	
	<i>Aplidium</i> sp.	sea glob
	<i>Synoicum</i> sp.	sea blob
	<i>Ascidia paratropa</i>	glassy tunicate
	<i>Halocynthia hispidus</i>	hairy tunicate
	<i>Chelysoma productum</i>	
	<i>Molgula griffithsii</i>	sea grape
	<i>Molgula retortiformis</i>	sea clod
Miscellaneous	<i>Craniella cranium</i>	baseball sponge
	<i>Tetilla sigmoanchoratum</i>	spiny ball sponge
	<i>Craniella</i> sp.	puffball sponges
		brain sponge
		scapula sponge
		club sponge
		orange ball sponge
		slimy antler sponge
		pita sponge
		lobed tree sponge

APPENDIX C

Weight-length relationships

Appendix Table C-1. -- Length-weight parameters (a and b) for species where individual length and weight data were collected. The number of individuals measured and weighed (n) is also provided.

Species	Sex	a	b	n	Species	Sex	a	b	n
Arrowtooth flounder	Male	1.016E-05	2.967	452	Walleye pollock	Male	1.009E-05	2.955	648
	Female	3.965E-06	3.137	740		Female	8.997E-06	2.972	683
	Both	3.201E-06	3.161	1195		Both	9.764E-06	2.96	1338
Atka mackerel	Male	4.149E-07	3.583	110	Pacific ocean perch	Male	1.433E-05	2.993	546
	Female	4.002E-05	2.814	121		Female	2.670E-05	2.886	620
	Both	4.120E-05	2.818	231		Both	2.241E-05	2.916	1186
Blackspotted rockfish	Male	2.496E-05	2.921	236	Rex sole	Male	1.209E-06	3.286	291
	Female	1.675E-05	2.991	280		Female	8.495E-07	3.351	393
	Both	1.959E-05	2.963	518		Both	7.279E-07	3.375	684
Pacific cod	Male	2.947E-06	3.201	241	Rougheye rockfish	Male	2.438E-05	2.93	163
	Female	2.006E-06	3.263	241		Female	2.171E-05	2.948	189
	Both	2.129E-06	3.253	482		Both	2.280E-05	2.94	352
Dover sole	Male	4.524E-06	3.129	253	Sablefish	Male	4.042E-06	3.136	314
	Female	4.481E-06	3.132	251		Female	3.588E-06	3.155	283
	Both	4.143E-06	3.144	504		Both	3.715E-06	3.149	598
Dusky rockfish	Male	1.895E-05	2.986	475	Sharpchin rockfish	Male	1.216E-05	3.028	403
	Female	2.009E-05	2.978	604		Female	8.131E-06	3.104	525
	Both	1.854E-05	2.99	1079		Both	7.632E-06	3.114	938
Flathead sole	Male	1.006E-06	3.383	374	Shorthead rockfish	Male	1.820E-05	2.983	105
	Female	8.964E-07	3.396	445		Female	1.269E-05	3.043	170
	Both	1.194E-06	3.35	819		Both	1.309E-05	3.037	275
Giant grenadier	Male	1.005E-03	2.626	58	Southern rocksole	Male	5.848E-06	3.131	174
	Female	3.914E-04	2.801	100		Female	1.628E-06	3.347	275
	Both	3.580E-04	2.816	158		Both	1.816E-06	3.33	449
Northern rockfish	Male	1.032E-05	3.064	849	Shortspine thornyhead	Male	3.369E-06	3.212	305
	Female	1.001E-05	3.073	1009		Female	2.054E-06	3.293	339
	Both	8.678E-06	3.096	1858		Both	2.305E-06	3.275	707
Northern rocksole	Male	4.473E-06	3.168	234					
	Female	3.552E-06	3.215	307					
	Both	2.668E-06	3.261	541					

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