NOAA Technical Memorandum NMFS-NWFSC-72

The 2001 U.S. West Coast Upper Continental Slope Trawl Survey of Groundfish Resources

off Washington, Oregon, and California: Estimates of Distribution, Abundance, and Length Composition

January 2006

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum
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This document should be cited as follows:
Keller, A.A., E.L. Fruh, K.L. Bosley, D.J. Kamikawa, J.R. Wallace, B.H. Horness, V.H. Simon, and V.J. Tuttle. 2006. The 2001 U.S. West Coast upper continental slope trawl survey of groundfish resources off Washington, Oregon, and California: Estimates of distribution, abundance, and length composition. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-72, 175 p.

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The 2001 U.S. West Coast Upper Continental Slope Trawl Survey of Groundfish Resources

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January 2006

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Executive Summary

The Northwest Fisheries Science Center's Fishery Resource Analysis and Monitoring Division conducted the fourth in a series of groundfish bottom trawl surveys along the U.S. West Coast upper continental slope from 24 June 2001 to 27 September 2001. The survey targeted the commercial groundfish resources inhabiting depths of 183 m to 1,280 m (100 fathoms to 700 fathoms) from the area off Cape Flattery, Washington (lat. 48°10′N), to Point Conception, California (lat. 34°15′N), using chartered West Coast trawlers. This survey was the fourth year of a relatively new annual series of surveys designed to monitor long-term trends in distribution and abundance of West Coast groundfish species. The objectives of this report are to document the survey design and analogous field procedures.

Sampling locations were established along 84 east-west tracklines, separated by 10′ of latitude. These lines spanned the distance along the coast between survey endpoints. Five stations were selected along each transect from two bathymetric strata: shallow (183–549 m), and deep (550–1,280 m). Three stations were randomly assigned to the stratum with the greater linear distance along a transect, while two stations were randomly selected from the stratum with the lesser linear distance. In 2001, a total of 334 successful tows were completed out of 408 attempts. Simrad Integrated Trawl Instrumentation net mensuration data, global positioning system navigation data, and bottom contact sensor data, detailing the ability of the net to tend bottom, were obtained for most tows.

An Aberdeen-style net with a small mesh (2" stretched measure or less) liner in the codend (to retain smaller specimens) was used to sample fish biomass. Target duration of each tow was 15 minutes. Tow duration was the time between touchdown and liftoff of the trawl net from the seafloor based on readings of bottom contact sensors.

Catches were sorted to species, aggregate, or other appropriate taxonomic level, then weighed using an electronic, motion-compensated scale. A total of 243 species or families were identified within the survey area. Biological sampling effort was concentrated on Dover sole (*Microstomus pacificus*), shortspine thornyhead (*Sebastolobus alascanus*), longspine thornyhead (*Sebastolobus altivelis*), and sablefish (*Anoplopoma fimbria*). Up to 125 length measurements were collected per haul from each of these species. Dover sole and sablefish were sexed; maturity information was recorded for sablefish. Otoliths were collected primarily from Dover sole, shortspine thornyhead, longspine thornyhead, and sablefish. When other important commercial species were encountered, such as bocaccio (*Sebastes paucispinis*), darkblotched rockfish (*Sebastes crameri*), or Pacific ocean perch (*Sebastes alutus*), length measurements and otoliths were collected from these fish as well. For the remaining species only total counts and weights were recorded, except when additional information was needed for special projects.

Acknowledgments

We thank the captains and crews of the fishing vessels (FVs) *Captain Jack*, *Limit Stalker*, *Sea Eagle*, and *Excalibur* for their effort during the Northwest Fisheries Science Center's 2001 West Coast groundfish slope survey. We also thank the biologists who participated in the survey, including Elizabeth Clarke, Vicki Cornish, Eric Eisenhardt, John Harms, Larry Hufnagle, Marion Mann, Stacey Miller, Kevin Piner, Jean Rogers, Sean Sol, Teresa Turk, and Waldo Wakefield. Scott McEntire of the Alaska Fisheries Science Center designed the bottom contact sensors. Andrea Cook provided assistance in data analysis. We also express our appreciation to Mary Breaker, Mary Craig, and Herb Sanborn for their shoreside logistical support.

Introduction

The Fishery Resource Analysis and Monitoring (FRAM) Division of the Northwest Fisheries Science Center (NWFSC) conducted the fourth in a series of annual bottom trawl surveys of commercial groundfish resources off the U.S. West Coast between 24 June 2001 and 27 September 2001. The West Coast groundfish fishery includes about 80 commercially fished stocks off Washington, Oregon, and California. The fishery operates from the Canadian to the Mexican border in nearshore to offshore waters. Multiple vessel types, ranging in size from kayaks to trawlers, participate in the fishery. The vessels use various gear including bottom trawls, midwater trawls, pots, longlines, and other hook and line gear. Trawlers take the majority of groundfish. The catch can be diverse, with fish size and overall volume of catch varying widely. Active management of the fishery began in the early 1980s with the establishment of optimal yields (OYs) and trip limits for several managed species. Commercial management measures include landings limits, size limits, gear restrictions, and time/area closures.

The goal of the 2001 NWFSC groundfish slope survey (hereafter referred to as the 2001 NWFSC slope survey) is to provide fishery-independent data used in the assessment of the status and trends of fish species inhabiting the upper continental slope. The survey area extended along the upper continental slope from northern Washington (Cape Flattery) to Point Conception, California, in waters ranging from 183 m to 1,280 m (300 fathoms to 700 fathoms [fm]). The objective of the 2001 NWFSC slope survey is to continue the relatively new NWFSC slope survey time series, initiated in 1998 (Turk et al. 2001, Builder Ramsey et al. 2002, Keller et al. 2005). Prior to 1998, the Alaska Fisheries Science Center (AFSC) surveys were the principal source for fishery-independent data used in stock assessments of groundfish resources along the upper continental slope of the U.S. West Coast (Methot et al. 2000). The AFSC conducted these surveys from 1984 to 2001, with annual coverage beginning in 1988. The AFSC survey used NOAA research vessel RV *Miller Freeman* to undertake standardized hauls with a bottom trawl. Spatial coverage over the survey period was variable because of constraints imposed by expense and availability of ship time (Lauth 2001).

The mid-1990s determination that additional data were necessary to support stock assessments of slope groundfish species prompted the initiation of the NWFSC slope survey in 1998. Assessments are a critical tool fishery managers use to set biologically sustainable harvest levels for healthy fish stocks and to identify, monitor, and rebuild overfished stocks. The decline in abundance of five groundfish species to a depleted state drove the need to reduce uncertainty in assessments of slope species (Methot et al. 2000). The NWFSC slope survey was designed to cover the same depths and latitudes of the AFSC slope survey and was impelled in part by the projected termination of the AFSC slope survey in 2001.

The NWFSC slope survey employs fishing vessels from the West Coast commercial fishing industry. This feature uses the skills of fishing captains familiar with the challenges of fishing in the deep waters off the West Coast and fulfills the cooperative research provisions of

the Magnuson-Stevens Sustainable Fisheries Act.[1] The data collected provide indicators of the change in relative abundance, distribution, and condition of groundfish stocks over time, which is of interest to fisheries managers, fishermen, and concerned citizens.

The NWFSC slope survey geographically spans the area from Washington (lat. 48°10′N) to California (lat. 34°15′N) and is subdivided into the five International North Pacific Fisheries Commission (INPFC) statistical areas: U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception (Figure 1). During the 2001 survey, NWFSC scientists collected information about distribution, abundance, and age structure of groundfish populations throughout the study area. The objectives of this report are to document the survey design and analogous field procedures. Data summaries are provided for species composition, catch, distribution, relative density, biomass estimates, and size composition of selected species. The results are summarized by depth strata (183–549 m and 550–1,280 m, or 100–300 fm and 301–700 fm) and INPFC area. In this report, we document operations and results of the 2001 groundfish survey with the intent to provide the necessary information for subsequent stock assessment exercises.

[1] The Pacific Fishery Management Council is one of eight regional fishery management councils established by the Magnuson Fishery Conservation and Management Act of 1976 for the purpose of managing fisheries 3–200 miles offshore of the United States. The Pacific Council develops and recommends harvest specifications and management measures to the National Marine Fisheries Service (NMFS) for fisheries off the coasts of California, Oregon, and Washington.

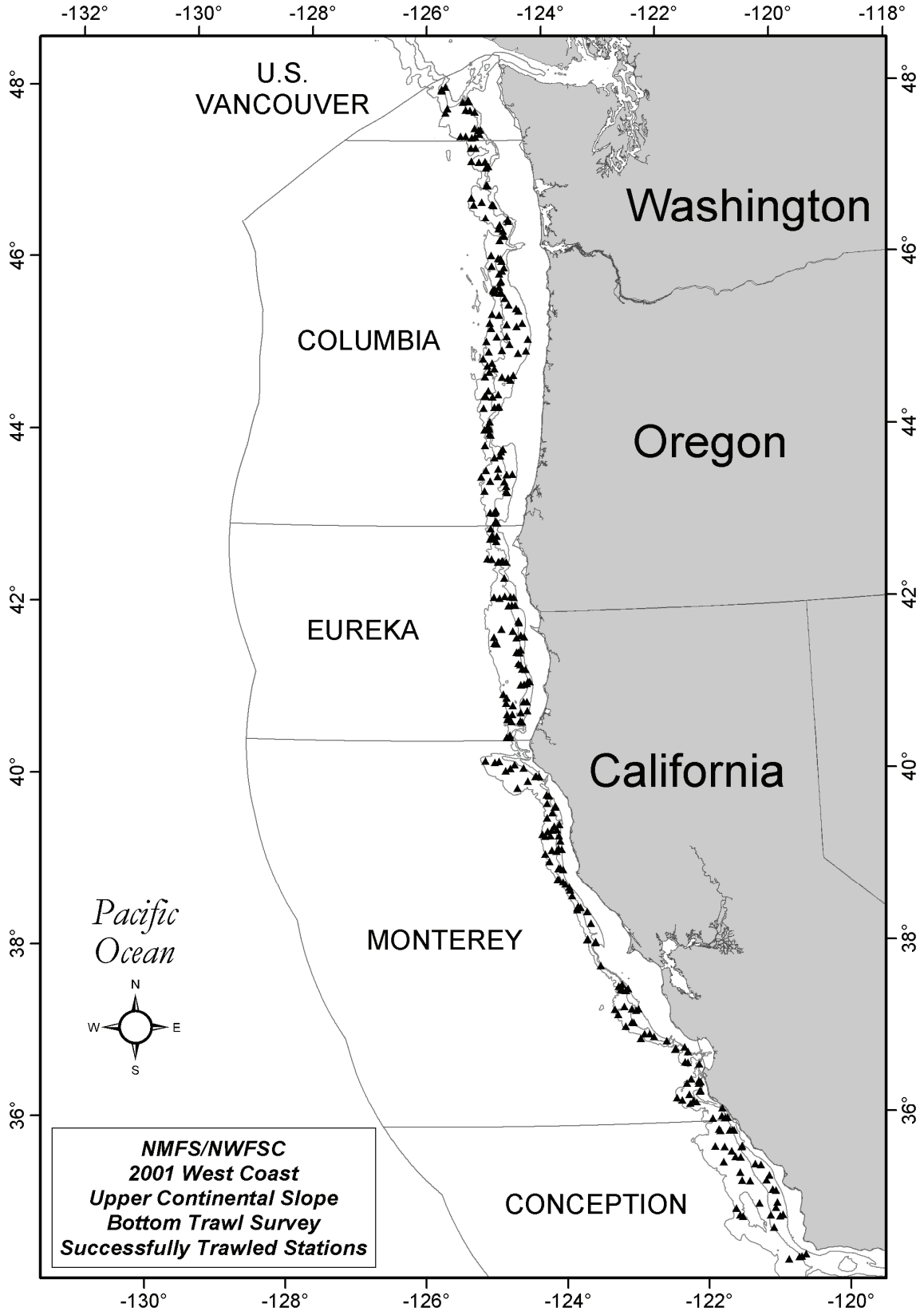


Figure 1. Map showing the extent of the 2001 NWFSC slope survey and location (▲) of successful tows.

Survey Methods

Survey Period and Sampling Area

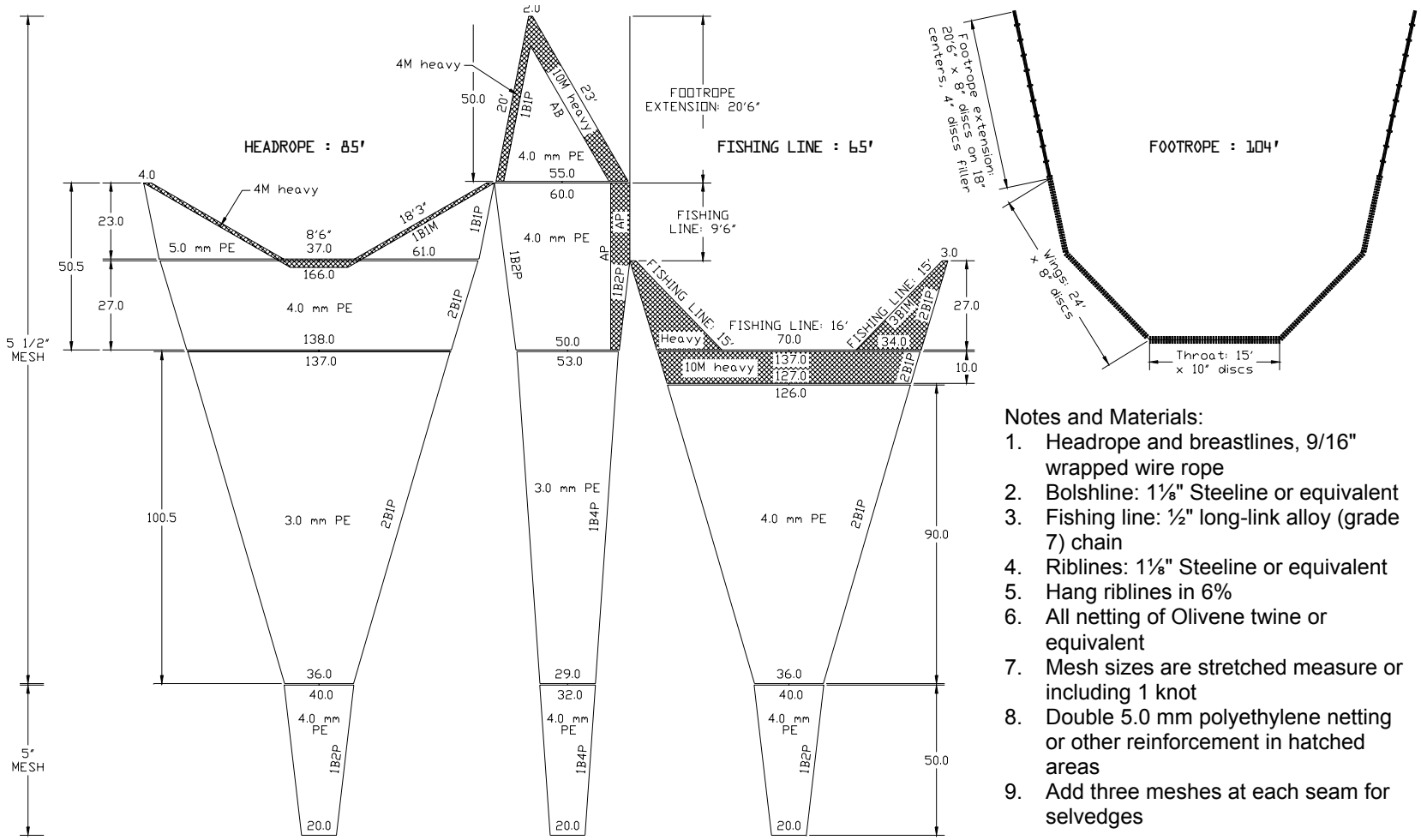
The NWFSC slope survey was conducted between 24 June 2001 and 27 September 2001 from the areas off Cape Flattery, Washington (lat. 48°10′N), to Point Conception, California (lat. 34°15′N). Four chartered West Coast bottom trawlers were selected through a competitive bid process—the fishing vessels FV *Captain Jack* and the FV *Limit Stalker* from 24 June 2001 to 30 July 2001 and the FV *Excalibur* and the FV *Sea Eagle* from 25 August 2001 to 27 September 2001. All vessels started the survey off Cape Flattery and progressed south along the coast, finishing the survey at Point Conception.

Vessels and Sampling Gear

All vessels fished with a standard Aberdeen-style net (Figures 2 and 3). Each net was outfitted with a small-mesh liner (2" stretched measure or less) in the codend to retain smaller fish. The Aberdeen-style trawl was chosen as the standard sampling gear because it demonstrates relatively stable performance over the range of conditions expected during the survey (West et al. 1998). Various aspects of the mechanical performance of the nets (e.g., spread between net wings, vertical distance from the center of the headrope to the bottom, distance from the headrope to the footrope, and clearance, if any, between the footrope and bottom) were recorded using acoustic and bottom contact instruments hung from the net during each deployment. Additional information was recorded on operational conditions such as depth, amount of towing cable deployed, towing speed, tow duration, and weather conditions. The target duration for each haul was 15 minutes.

Trawl Station Allocation

The 2001 NWFSC slope survey used combined fixed and random sampling strategies. Station locations were randomly arranged along fixed east-west transects separated by 10′ of latitude. Fishing operations were carried out at depths ranging from 183 m to 1,280 m, on a variety of bottom types. A total of 84 transects extended along the coast between the survey endpoints. Five stations in each transect were selected from two depth strata: shallow (183–549 m, or 100–300 fm) and deep (550–1,280 m, or 300–700 fm). The stratum with the greater linear distance was assigned three randomly selected stations to sample, while the stratum with the lesser linear distance was assigned two randomly selected stations. Each of the four vessels occupied a different subset of 21 transects separated by 40′ of latitude. By the end of the survey all 84 transects were sampled.



Notes and Materials:

1. Headrope and breastlines, 9/16" wrapped wire rope
2. Bolshline: 1⅛" Steeline or equivalent
3. Fishing line: ½" long-link alloy (grade 7) chain
4. Riblines: 1⅛" Steeline or equivalent
5. Hang riblines in 6%
6. All netting of Olivene twine or equivalent
7. Mesh sizes are stretched measure or including 1 knot
8. Double 5.0 mm polyethylene netting or other reinforcement in hatched areas
9. Add three meshes at each seam for selvedges

Figure 2. Detailed diagram of the NWFSC Aberdeen-style sampling trawl, including descriptions of dimensions, materials, mesh sizes, and mesh counts. See Figure 3 for a detail of the footrope.

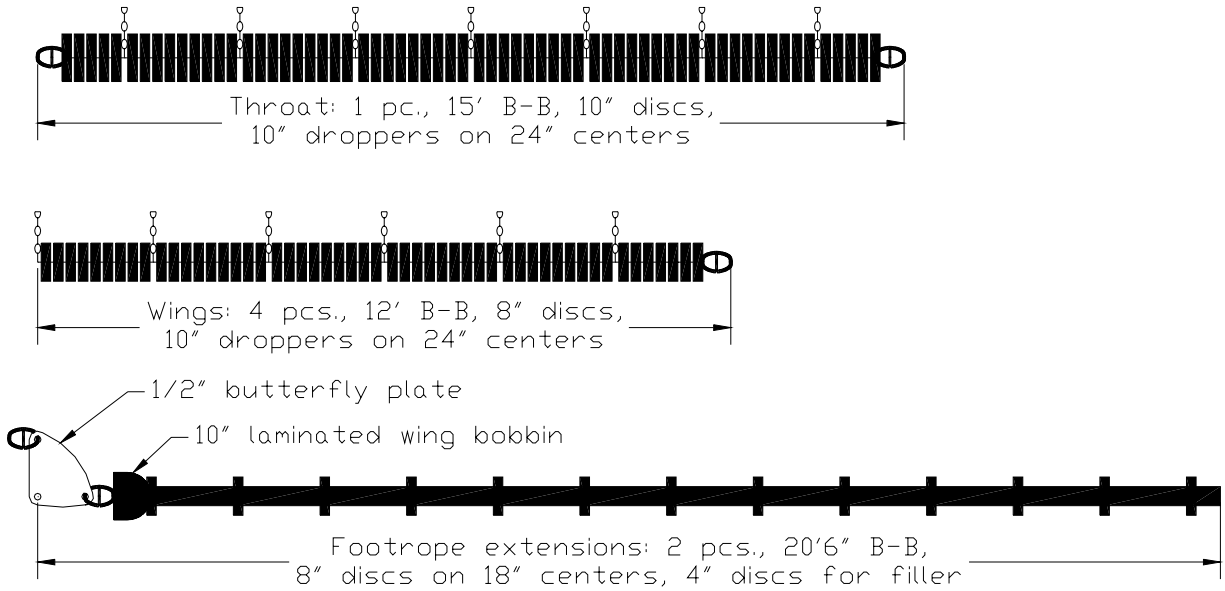


Figure 3. Footrope for the NWFSC Aberdeen-style sampling trawl composed of seven sections with an overall length of 104'. A single section of each component of the footrope is shown in the figure. Notes: Footrope composed of ½" long-link alloy (grade 7) chain, with rubber discs (8–10") and dropper chains (10") strung along the length, and section lengths (measured bearing point to bearing point, B-B) connected by ½" Campbell hammerlocks and stainless pins and spacers.

Trawling Protocol

The goal of trawling operations was to maintain constant sampling (fishing) efficiency across the range of conditions encountered during the survey and over time. Trawling operations were limited to the daylight period. The initial tow each day began (net on seafloor) following sunrise, and the last tow of the day ended (net off seafloor) before sunset. Once a vessel was in the area of a station, the captain was instructed to observe the following search rules: 1) search within the specified depth range, 2) remain within an area bounded by 5′ north or south of the transect latitude, and 3) complete the search for "trawlable" ground within 2 hours. If no "trawlable" site was found within the 2-hour limit, the station was noted in the log as "untrawlable" and the vessel proceeded to the next station. An exception to the 2-hour search limit was permitted if a station was the last one scheduled for the day or transect, and sufficient daylight hours remained to continue the search and complete a tow before sunset. The decision to abandon a station was final and no return to sample the site was attempted.

The chief scientist, or Field Party Chief (FPC), oversaw all operations, including vessel operations and gear performance based on the trawl instrumentation systems. The target towing speed for each survey haul was 2.2 knots (speed over ground) as determined by the NWFSC-supplied differential global positioning system (GPS) navigation unit, Northstar 500 (Northstar Technologies, Acton, Massachusetts), or the vessel's speed indicators. If gear was severely damaged during a tow such that it might affect catch composition, the haul was classified as unsatisfactory. Moreover, if gear performance was deemed unacceptable (e.g., large quantities of mud or jellyfish, lost or abandoned fishing gear ensnared in the net, off bottom for

an extended period during the tow, etc.), the tow was also rated as unsatisfactory. Unsatisfactory hauls were not used in the following analyses, but are included in Appendix A.

For each tow, the captain determined the initial scope (amount of wire deployed) for each station based on past experience and judgment. All trawls were monitored using the Simrad Integrated Trawl Instrumentation, or ITI (Kongsberg Simrad Mesotech Ltd., Port Coquitlam, BC, Canada). Sensors from the ITI trawl system were placed on the net prior to setting the gear. Two instruments were placed in the middle of the net headrope. The first was the trawl eye, which provided an image of the vertical opening of the trawl and its height above the bottom. The second instrument was a temperature and depth sensor, which recorded ambient temperature and the depth of the trawl headrope. A pair of wing units (one master and one slave) was placed on the port and starboard wings of the net to measure wing spread. A pair of bottom contact sensors (BCSs) was placed in the middle of the footrope portion of the net. The BCSs recorded the angle of incline of the net, indicating when the net landed on and lifted off bottom. Information gathered from the trawl monitoring system was used to adjust scope if necessary.

Tow duration was targeted at 15 minutes in length. While gear was being set, vessel speeds varied from 2.2 knots to 5 knots. After the net made contact with the bottom, vessel speed was targeted at 2.2 knots. The haul officially began when the net was in proper fishing configuration and maintained steady contact with the bottom. The haul ended when the net lifted off the bottom after the start of haul back. The Simrad ITI trawl eye was used to monitor ground-gear contact during a haul, but the actual bottom time was determined using data from the BCSs. Position data were collected at 2-second intervals for each haul using a GPS. These data, in addition to the real-time net mensuration information, were automatically stored in an onboard data logging system (known as Flipper, Scientific Fisheries Systems, Inc., Anchorage, Alaska). In addition to storing the GPS and ITI trawl information, Flipper also provided an electronic means to download and save information from the BCSs and the fish meter board (used to collect individual fish data from the catch as discussed in the following subsection).

Sampling Procedures and Biological Data Collection

Catches were sorted to species or other appropriate taxonomic levels and then weighed using an electronic, motion-compensated scale (Ryco, Inc., Riviera Beach, Florida). Biological sampling concentrated on Dover sole (*Microstomus pacificus*), shortspine thornyhead (*Sebastolobus alascanus*), longspine thornyhead (*Sebastolobus altivelis*), and sablefish (*Anoplopoma fimbria*). All Dover sole and sablefish were sorted by sex and a total of up to 125 lengths (to the nearest cm) were measured per haul from each species for both sexes combined. Up to 125 length measurements were also collected for both longspine and shortspine thornyheads, but sex was not determined. For all other species, only total counts and weights were recorded, except when additional information was needed for special projects.

Otoliths were collected primarily from Dover sole, shortspine thornyhead, longspine thornyhead, and sablefish. Fish targeted for otolith removal were randomly selected from the subset of fish chosen for length determination. Similarly, five otoliths were collected from a random subset of both shortspine and longspine thornyheads. When other important commercial species were encountered, such as bocaccio (*Sebastes paucispinis*), darkblotched rockfish (*Sebastes crameri*), or Pacific ocean perch (*Sebastes alutus*), length measurements and otoliths

were collected from these species as well. Any unidentified species were labeled, frozen or preserved in formalin, and retained for later identification. After all scientific data were collected, marketable fish were placed in the hold of the vessel, iced, and then delivered to a shoreside processing facility within 5 days. Species with no commercial value or those with catch prohibitions were returned to sea as soon as possible.

Survey Analysis

Sensor Data

Three sensors—BCS, ITI, and GPS—provided the data for effort-related estimations. All sensor streams were reviewed for spurious readings. In particular, because the computer system receiving the ITI sensor signals often recorded readings at a rate exceeding the delivery rate of new readings, the computer recorded some sensor readings multiple times. This persistence of a single sensor reading through several records appears in the data stream as strings of varying lengths with constant values.

A variety of techniques were used to remove persistent strings that otherwise distorted the overall signal pattern. These techniques included objective statistical trimming methods and subjective manual removal of data points. In particular, persistent strings that originated before and extended into the time intervals bounding subsamples used for estimation were routinely removed manually prior to analysis. But for the most part, the phenomena under observation vary little during the on-bottom time period of interest, so moderate periods of data repetition did not substantially distort the overall pattern of sensor readings. Therefore, it was assumed that treating the members of a persistent string as independent samples within the sample set would not substantially affect the mean estimate. However, it would result in unacceptable underestimation of the standard error of the mean and, accordingly, standard error estimates were not reported for mean estimates.

Simrad ITI sensor readings should be consistently present during a tow. Consequently zero readings were treated as missing values and filtered prior to estimation of depth, net dimensions, and temperature. Exclusion of extreme points was more problematic. Large spikes in the depth, net dimension, and temperature signals were assumed to be the result of acoustic or electronic noise and were removed prior to processing. Such data points were even more questionable when multiple isolated occurrences were identical, as apparent for various points in the gear depth data set. In contrast, sensor data streams also indicate that there can be large swings in the net during a tow over sloping and bumpy substrates. Trawl execution problems also produce highly variable data sets. Extreme points that appeared to be part of a contiguous variation in magnitude, or a particularly variable stretch of readings, were consequently not excluded prior to analysis.

Sensor readings used to estimate depth, net width, and height were limited to the center 80% of the tow duration to ensure only on-bottom readings were included. In the vast majority of tows, this boundary did not appreciably reduce the number of observations, but did effectively exclude small timing offsets between the BCS and ITI sensor systems and noise introduced by net touchdown and liftoff.

For some tows, few depth, net dimension, and temperature sensor readings fell within the estimation time interval and were satisfactorily unaffected by persistent data strings. The extent

to which these single or few point subsamples were representative of the entire tow was necessarily a subjective judgment. If the points seemed to align with the trajectory of points outside the subset time interval, they were used as the basis for estimation. Paper records, hand recorded at sea from real-time displays, offered a certain level of data redundancy. These data were subsequently entered into electronic format and, in some cases, provided an alternate sample set for depth and net dimension estimation when the above criteria could not be met.

Dimensions of the Tow

Tow duration was measured as the simple difference between the times marking touchdown and liftoff of the trawl net. Wherever possible, these times were determined from BCS traces of tow progression from net deployment to retrieval. Gaps left by unrecorded or otherwise suspect BCS information were filled using either patterns in ITI sensor readings or FPC observations of net touchdown and liftoff times.

In general, mean net width and height were calculated from trawl sensor readings of wingspread and headrope height from bottom, respectively. Although electronically recorded sensor readings provided the preferred basis for estimation, hand-recorded sensor readings were substituted when necessary. When neither data set provided sufficient information, estimates were calculated from linear regressions based on relationships developed using data from other tows. Each dimension (width and height) was regressed against tow depth, with vessel identification incorporated as an indicator variable. Net height predictions were made using robust linear regression (S-Plus 2000). Although the interaction between vessel identification and depth proved to be significant based on analysis of variance, it neither added appreciably to the proportion of explained variation nor produced coefficients that differed significantly from zero. Therefore, it was not included in the net height predictions. Similar regression for net width failed the default S-Plus test for bias, so prediction by simple linear regression was used instead. All estimates in the database were tagged with qualifying information indicating estimation method.

To estimate distance fished, the period of time a net was dragged over the seafloor was split into two distinct phases. The first phase, defined as normal towing, started when the net began fishing as it reached the seafloor and ended when net haul back was initiated. The FPC controlled the length of the first phase and, unless problems occurred, maintained the first phase for 15 minutes. The second phase followed sequentially and represented the time required for the net to lift off the seafloor in response to the initiation of the haul-back operation. Labeled liftoff lag, the length of this phase varied by vessel and depth.

Smoothing of the trackline yielded a reasonable estimate of the location of the net and an estimate of towing distance for the normal towing phase. However, typically the vessel was not moving forward during the liftoff lag phase, and consequently the GPS sent erroneous bearing information to the ITI. The ITI in turn calculated an invalid geographical position for the trawl net. To correct this situation, a fluxgate compass was set up onboard the vessels and its electronic information was input into the main ITI system (Wallace 2000a). The fluxgate compass generally worked well, but occasionally was unusable. When the fluxgate compass worked properly, the liftoff lag phase was smoothed along with the normal towing phase. However, if the fluxgate compass provided inadequate information, or if the ITI system worked

poorly, the distance and direction the net moved during the liftoff lag phase needed to be determined via extrapolation.

The extrapolation technique began by fixing the trawl's bearing at the average bearing from the last 5 minutes of normal towing. This measurement was combined with the range information (the distance between the vessel and the net) and the geographic location of the vessel to obtain the extrapolated location and distance covered by the net during the liftoff lag phase. This extrapolated trackline is connected to the end of the normal towing trackline, and the combined trackline is then smoothed with a two-dimensional simple exponential smoother. Visual examination was used to determine the appropriate smoothness required for each haul. A default value for the smoothing parameter worked in a majority of cases, including but not limited to tows done in a relative straight line with good signals from the ITI system. The percent of tows for which the default smoothing parameter worked varied by vessel, but all vessels had extreme cases for which the default value was not used. Details of this procedure can be found in Wallace (2000b).

The trigonometric method, developed for the 1998 survey analysis (Turk et al. 2001, Wallace and West in press), was used when the there was insufficient information for the above procedure. Within the database, all estimates were tagged with qualifying information indicating which estimation method was employed.

Gear Depth and Bottom Depth

Wherever possible, gear depth and bottom depth were estimated from electronically recorded trawl sensor readings of headrope depth and distance from bottom. Gear depth was taken as the headrope depth sensor reading, and bottom depth was taken as the sum of headrope depth and headrope distance from bottom. Hand-recorded data sets were substituted as needed. For cases with sufficient high quality data, mean estimates were calculated using a subsample limited to the center 80% of the tow duration to ensure only on-bottom readings were included. In a few cases, no acceptable data existed within the center 80% of the tow duration in either the electronically or hand-recorded sets of gear depth readings. For these tows, mean gear depths and bottom depths were estimated from observations just outside of the center 80% of tow duration. These estimates most likely fell within the limits of net touchdown and liftoff. For some tows, few to no coincident records of headrope depth and distance from bottom existed. In these cases, if gear depth and net height were available for a tow, bottom depth was estimated as the sum of these two endpoints, regardless of how the separate estimates had been derived. In cases where no reasonable observation of gear depth was recorded, bottom depth was estimated from the vessel's navigational equipment records, if available. Within the database, all estimates were tagged with qualifying information indicating estimation method.

Area Estimates

Area estimates were calculated using digital-bathymetry points acquired from Naval Oceanographic Office DBDB-V Version 4.3 (Digital Bathymetric Database-Variable resolution) (Naval Oceanographic Office no date). The input data had variable resolutions of 5.0′, 1.0′, and 0.5′. The data points were gridded at 1′ pixel resolution and contour lines for the survey depth zones were created from this grid. The contour lines were created at 100, 140, 180, 220, 260,

300, 380, 460, 540, 620, and 700 fm. Then contour lines were combined with INPFC area boundaries and with the maximum latitudinal extent of the survey (Point Conception in the south, and 48.25 decimal degrees [dd] or the extended economic zone [EEZ] in the north) to make polygons of each depth zone. Bathymetry data were projected to Albers Equal Area projection, and the total area of the seafloor in two depth zones (100−300 fm and 300−700 fm) and the five INPFC areas were calculated. Note that any areas westward of the primary 700-fm contour (e.g., pinnacles) or eastward of the primary 100-fm contour were not included in the area calculations, even if they were between 100-fm and 700-fm depth.

Temperature

Water temperature was recorded during each tow using a Simrad ITI temperature sensor (accuracy ±0.2°C) mounted in the mouth of the net. The output sensor pattern indicated that the sensor required the full duration of the tow to acclimate. Therefore, bottom temperature was estimated as the mean of sensor readings from the final 10% of the tow duration. Surface temperature was recorded using a thermometer in the surface water at the start of each tow.

Relative Density and Biomass Estimates

Relative density was calculated as catch-per-unit effort (CPUE) for individual species in each INPFC area and depth stratum by dividing total catch weight (kg) per species by area swept (hectare or ha) per tow. Mean estimates were initially calculated for each depth stratum within an INPFC area by averaging all tows, including those with zero catch, by species. To estimate mean CPUE by species for the total area (all INPFC areas combined), depth strata (shallow and deep for all areas combined), and the individual INPFC areas (depth strata combined within areas), the initial means were weighted using the appropriate area within each stratum. Mean biomass estimates (metric tons or mt) were similarly calculated by multiplying the mean CPUE for each tow by the total area of the stratum. Coefficients of variation (CV) were calculated (%) for biomass estimates using the standard error (standard deviation/number sampled) divided by the mean CPUE.

Results

Haul, Catch, and Biological Data

The 2001 NWFSC slope survey was designed to incorporate 420 potential sampling locations, with sampling subsequently attempted at 408 sites. At stations where sampling was attempted, 334 tows were successful. Simrad ITI net mensuration data, GPS course and position data, and bottom contact sensor data were obtained from most of the successful tows. Table 1 shows the latitude boundaries, depth stratum areas (km^2), and sampling densities by INPFC statistical area based on successful tows.

The mean net widths and distances fished were calculated for each haul. When net mensuration instrumentation gave estimates of net width, the mean net width for each tow was calculated for 80% of the tow duration, excluding the initial and final 10% of the tow duration. Distances fished were calculated by estimating the length that the net traveled on the seafloor from the point where it touched down to the point where it lifted off. An overall mean width of 14.6 m was calculated using data from the 334 hauls that both exhibited good trawl performance and had available net mensuration estimates. The mean net widths ranged from 9.44 m to 16.72 m with a standard deviation of 0.76 m. When the net mensuration instrumentation was not functioning properly, the mean net width was calculated using multiple linear regressions as a function of trawl depth and inverse scope for the individual chartered vessel (Figure 4).

The number of lengths and age structures that were collected from groundfish species are summarized in Table 2. A total of 243 unique taxa were identified over the entire survey area. The frequency of occurrence, depth range, mean depth, and the latitudinal range for all of the identified organisms are listed in Table 3. Unidentified species or groups are referred to as "unident." in the tables and figures. Appendix A provides detailed station information for each haul, as well as the associated catch weights of the major fish species and the total weights of invertebrates. Tables 4–9 list the number of individual fish lengths collected by species and by depth strata for all INPFC areas combined and for the individual INPFC areas.

Temperature Data

Bottom temperatures ranged from 3.2°C to 9.4°C during the June–July 2001 portion of the survey, and from 3.0°C to 9.0°C during the August–September 2001 portion of the survey (Figure 5). The mean bottom temperature was 5.6°C. Sea surface temperatures ranged from 8.9°C to 16.1°C during the June–July 2001 portion of the survey, and from 9.4°C to 18.9°C during the August–September 2001 portion of the survey (Figure 6). The mean sea surface temperature was 14.0°C.

Table 1. Latitude boundaries, depth stratum areas (km^2), and sampling densities by INPFC statistical area based on successful tows during the 2001 NWFSC slope survey.

	Stratum 1 (183–549 m)			**Stratum 2 (550–1,280 m)**			**All strata (183–1,280 m)**		
INPFC area/ Latitude bounds	Area (km^2)	No. hauls	Hauls/ 1,000km^2	Area (km^2)	No. hauls	Hauls/ 1,000km^2	Area (km^2)	No. hauls	Hauls/ 1,000km^2
U.S.-Vancouver									
47°30′–Border	2,853	12	4.2	2,286	11	4.8	5,139	20	3.9
Columbia									
43°00′–47°30′	8,621	62	7.2	9,804	54	5.5	18,425	111	6.0
Eureka									
40°30′–43°00′	2,034	28	13.8	6,365	39	6.1	8,398	65	7.7
Monterey									
36°00′–40°30′	3,650	44	12.1	8,646	51	5.9	12,297	102	8.3
Conception									
34°30′–36°00′	4,160	19	4.6	7,703	17	2.2	12,966	36	2.8
Entire survey area									
34°30′–Border	21,318	165	7.7	34,803	172	4.9	57,225	334	5.8

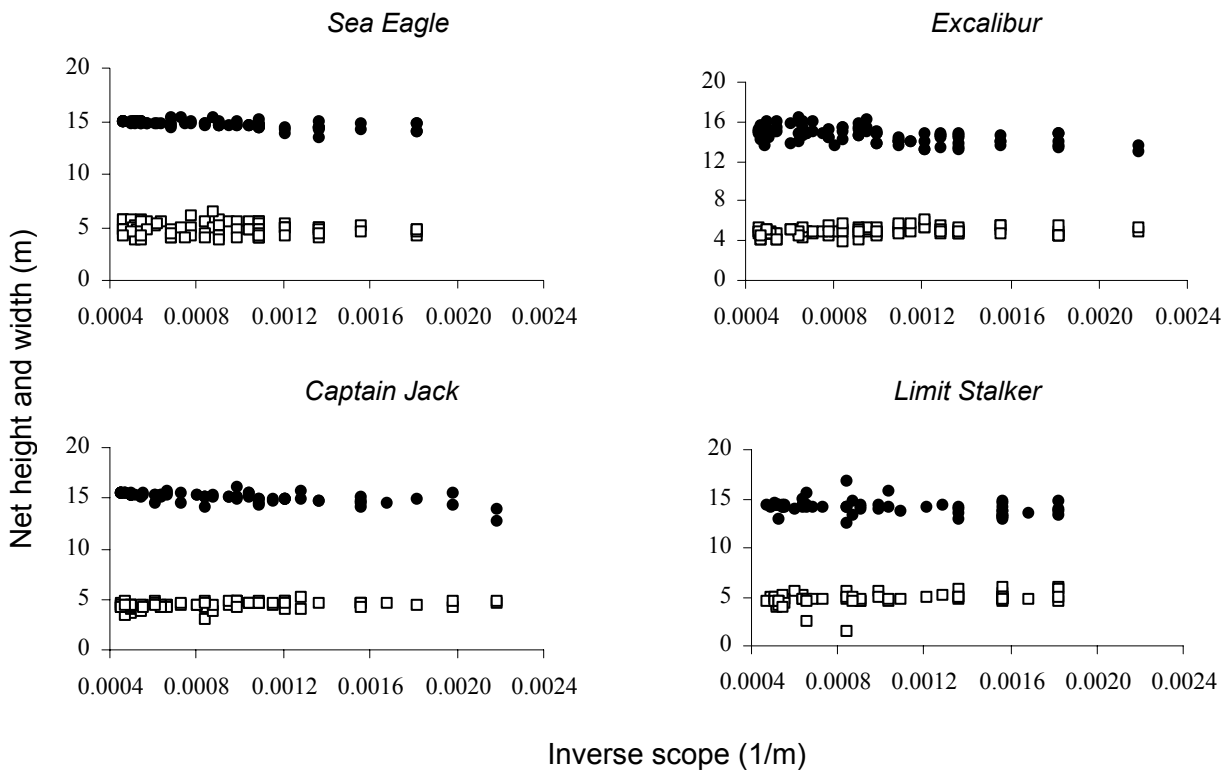


Figure 4. Mean net height and width for trawls conducted as part of the 2001 NWFSC slope survey. Estimates are grouped by vessel and plotted relative to net width (•) and net height (□) in meters. Prediction from multiple linear regression of width against net height and inverse scope and factored by vessel was used to estimate net widths for tows lacking direct width observations. (FV *Sea Eagle*: Net width = 15.44 − 0.0574 × Net height − 643.74 × Inverse scope; FV *Captain Jack*: Net width = 18.03 − 0.5683 × Net height − 499.70 × Inverse scope; FV *Excalibur*: Net width = 20.09 − 1.116 × Net height − 257.21 × Inverse scope; FV *Limit Stalker*: Net width = 21.21 − 1.220 × Net height − 558.05 × Inverse scope.)

Table 2. Biological data collected during the 2001 NWFSC slope survey.

Common name	Number of lengths	Number of age structures
Brown cat shark	226	0
Arrowtooth flounder	162	0
Slender sole	392	0
Dover sole	19,281	1,966
Rex sole	1,641	0
Sablefish	3,047	1,193
Pacific grenadier	800	0
Giant grenadier	430	0
Pacific flatnose	434	0
Lingcod	128	0
Pacific hake	467	0
Snakehead eelpout	163	0
Bigfin eelpout	170	0
Black eelpout	908	0
Shortspine thornyhead	8,102	685
Longspine thornyhead	25,840	552
Pacific ocean perch	173	172
Aurora rockfish	84	3
Darkblotched rockfish	496	359
Splitnose rockfish	249	0
Greenstriped rockfish	271	0
Rosethorn rockfish	78	0
Shortbelly rockfish	562	431
Bocaccio	39	40
Stripetail rockfish	203	0

Table 3. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Myxinidae							
Eptatretus sp.	Hagfish unident.	146	210	1,218	775	34.89	47.95
Scyliorhinidae							
Apristurus brunneus	Brown cat shark	236	214	1,238	679	34.37	48.10
Apristurus kampae	Longnose cat shark	2	263	441	352	36.01	40.83
Parmaturus xaniurus	Filetail cat shark	28	248	820	535	34.37	37.57
Squalidae							
Squalus acanthias	Spiny dogfish	32	188	730	349	34.97	47.25
Somniosus pacificus	Pacific sleeper shark	4	439	1,240	838	36.28	44.99
Rajidae							
Bathyraja sp.	–	3	522	1,119	894	34.73	43.37
Bathyraja abyssicola	Deepsea skate	7	372	1,207	1,037	34.96	43.38
Bathyraja aleutica	Aleutian skate	1	519	519	519	45.06	45.06
Bathyraja interrupta	Bering skate	137	188	745	393	34.39	48.12
Raja binoculata	Big skate	1	523	523	523	37.18	37.18
Raja rhina	Longnose skate	180	188	1,103	429	34.39	48.12
Raja stellulata	Starry skate	1	287	287	287	36.15	36.15
Bathyraja trachura	Roughtail skate	73	499	1,238	987	34.87	47.94
Rajidae	Skate unident.	2	334	426	380	44.15	45.84
Rajidae	Skate egg case unident.	5	458	816	648	37.86	47.24
Torpedinidae							
Torpedo californica	Pacific electric ray	3	248	421	350	34.97	36.46
Chimaeridae							
Hydrolagus colliei	Spotted ratfish	77	188	505	327	34.39	48.11
Nemichthyidae							
Avocettina sp.	Snipe eel unident.	1	1,186	1,186	1,186	39.17	39.17
Avocettina infans	Blackline snipe eel	8	708	1,203	998	35.89	46.77
Nemichthys scolopaceus	Slender snipe eel	3	699	1,159	927	39.42	47.41

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Serrivomeridae							
Serrivomer sector	Sawtooth eel	3	886	1,103	1,013	34.96	36.51
Argentinidae							
Argentinidae	Argentine unident.	1	220	220	220	37.35	37.35
Argentina sialis	Pacific argentine	3	242	298	276	34.41	37.33
Engraulidae							
Engraulis mordax	Northern anchovy	1	195	195	195	37.85	37.85
Bathylagidae							
Bathylagidae	Deepsea smelt unident.	129	499	1,238	963	34.96	47.82
Leuroglossus stilbius	California smoothtongue	6	523	820	681	34.37	40.06
Opisthoproctidae							
Dolichopteryx longipes	Brownsnout spookfish	3	791	1,207	981	35.30	41.13
Macropinna microstoma	Barreleye	6	524	1,189	922	39.37	46.76
Platytroctidae							
Platytroctidae	Tubeshoulder unident.	3	1,014	1,229	1,127	36.46	43.13
Sagamichthys abei	Shining tubeshoulder	4	433	626	544	40.89	46.76
Alepocephalidae							
Alepocephalus tenebrosus	California slickhead	138	578	1,229	945	34.37	47.55
Talismania bifurcata	Threadfin slickhead	39	241	1,207	843	34.37	47.94
Osmeridae							
Osmeridae	Smelt unident.	1	297	297	297	43.86	43.86
Thaleichthys pacificus	Eulachon	1	214	214	214	45.03	45.03
Gonostomatidae							
Gonostomatidae	Bristlemouth unident.	1	753	753	753	39.45	39.45
Cyclothone acclinidens	Benttooth bristlemouth	1	751	751	751	47.87	47.87
Sternoptychidae							
Argyropelecus affinis	Slender hatchetfish	2	288	1,055	672	34.41	38.19
Sternoptyx diaphana	Longspine hatchetfish	2	679	1,098	888	41.78	45.16
Sternoptyx sp.	Hatchetfish unident.	1	768	768	768	39.37	39.37
Sternoptychidae	Hatchetfish unident.	1	1,229	1,229	1,229	36.46	36.46

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Stomiidae							
Chauliodus macouni	Pacific viperfish	79	427	1,238	878	34.96	47.87
Idiacanthus antrostomus	Pacific blackdragon	6	427	875	611	34.87	46.45
Stomias atriventer	Blackbelly dragonfish	1	791	791	791	35.30	35.30
Tactostoma macropus	Longfin dragonfish	57	370	1,223	869	37.16	47.87
Bathophilus flemingi	Highfin dragonfish	1	1,030	1,030	1,030	43.55	43.55
Borostomias panamensis	Panama snaggletooth	1	946	946	946	41.13	41.13
Scopelarchidae							
Benthalbella dentata	Northern pearleye	2	946	1,061	1,003	41.13	47.38
Neoscopelidae							
Scopelengys tristis	Pacific blackchin	1	1,010	1,010	1,010	38.89	38.89
Myctophidae							
Diaphus theta	California headlightfish	8	314	1,061	592	36.67	47.25
Lampanyctus sp.	Lampfish unident.	40	210	1,238	826	34.37	47.94
Tarletonbeania crenularis	Blue lanternfish	2	578	1,186	882	37.57	38.90
Myctophidae	Lanternfish unident.	100	210	1,238	826	34.37	47.94
Ophidiidae							
Chilara taylori	Spotted cusk-eel	7	199	245	219	35.35	40.07
Bythitidae							
Cataetyx rubrirostris	Rubynose brotula	2	523	605	564	34.87	47.63
Macrouridae							
Macrouridae	Grenadier unident.	2	288	475	381	34.39	34.41
Nezumia stelgidolepis	California grenadier	20	491	1,190	643	34.39	42.57
Nezumia liolepis	Smooth grenadier	4	589	915	786	34.37	38.16
Coryphaenoides acrolepis	Pacific grenadier	150	376	1,238	936	34.37	47.95
Albatrossia pectoralis	Giant grenadier	155	364	1,238	913	34.37	48.10
Coryphaenoides cinereus	Popeye grenadier	10	730	1,223	1,046	36.51	47.82
Coryphaenoides filifer	Filamented grenadier	1	1,047	1,047	1,047	36.28	36.28
Moridae							
Antimora microlepis	Pacific flatnose	196	366	1,238	832	34.87	48.10

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Merlucciidae							
Merluccius productus	Pacific hake	182	188	1,035	425	34.39	48.11
Gadidae							
Gadus macrocephalus	Pacific cod	3	192	263	228	46.02	47.62
Theragra chalcogramma	Walleye pollock	1	188	188	188	44.76	44.76
Batrachoididae							
Porichthys notatus	Plainfin midshipman	4	241	295	257	34.89	36.87
Malacosteidae							
Malacosteidae	Loosejaw unident.	3	662	936	766	42.82	47.41
Aristostomias scintillans	Shining loosejaw	17	439	1,155	717	37.18	47.41
Melanocetidae							
Melanocetus johnsonii	Common blackdevil	2	789	1,061	925	39.78	41.14
Oneirodidae							
Oneirodidae	Dreamer unident.	3	662	1,207	1,018	37.37	46.49
Oneirodes sp.	Dreamer	4	742	1,223	944	34.89	45.19
Melamphaidae							
Melamphaidae	Bigscale unident.	3	766	1,073	966	35.57	47.38
Poromitra crassiceps	Crested bigscale	11	589	1,238	1,071	35.01	46.81
Melamphaes lugubris	Highsnout bigscale	2	992	1,189	1,091	39.37	47.54
Anoplogastridae							
Anoplogaster cornuta	Fangtooth	9	923	1,229	1,116	35.87	43.37
Scorpaenidae							
Sebastolobus sp.	Thornyhead unident.	1	314	314	314	36.67	36.67
Sebastolobus alascanus	Shortspine thornyhead	316	195	1,238	656	34.37	48.12
Sebastolobus altivelis	Longspine thornyhead	232	248	1,238	803	34.37	48.10
Sebastes sp.	Rockfish unident.	2	219	220	220	37.35	40.07
Sebastes aleutianus	Rougheye rockfish	23	263	491	382	37.85	47.97
Sebastes alutus	Pacific ocean perch	25	188	679	345	37.85	48.12
Sebastes aurora	Aurora rockfish	83	244	602	443	34.39	48.10
Sebastes brevispinis	Silvergray rockfish	1	351	351	351	45.70	45.70

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Scorpaenidae (continued)							
Sebastes chlorostictus	Greenspotted rockfish	8	188	322	226	36.37	45.16
Sebastes crameri	Darkblotched rockfish	55	188	515	298	34.87	48.12
Sebastes diploproa	Splitnose rockfish	92	188	497	314	34.41	48.11
Sebastes elongatus	Greenstriped rockfish	18	188	376	229	36.37	48.12
Sebastes entomelas	Widow rockfish	6	210	312	242	36.37	48.12
Sebastes eos	Pink rockfish	1	288	288	288	34.41	34.41
Sebastes flavidus	Yellowtail rockfish	1	236	236	236	47.95	47.95
Sebastes goodei	Chilipepper	33	188	515	278	34.41	42.87
Sebastes helvomaculatus	Rosethorn rockfish	14	188	380	285	34.87	48.11
Sebastes jordani	Shortbelly rockfish	16	195	515	273	34.41	41.31
Sebastes levis	Cowcod	2	198	241	219	36.87	41.70
Sebastes melanostomus	Blackgill rockfish	30	272	547	394	34.39	47.19
Sebastes paucispinis	Bocaccio	11	188	322	261	34.41	39.85
Sebastes pinniger	Canary rockfish	2	188	222	205	41.31	44.76
Sebastes proriger	Redstripe rockfish	4	210	421	331	34.97	36.37
Sebastes babcocki	Redbanded rockfish	40	188	370	297	34.87	48.12
Sebastes saxicola	Stripetail rockfish	38	188	432	274	34.41	47.95
Sebastes semicinctus	Halfbanded rockfish	1	210	210	210	36.37	36.37
Sebastes zacentrus	Sharpchin rockfish	17	195	350	252	36.15	47.95
Sebastes rufus	Bank rockfish	4	287	439	352	35.70	40.94
Sebastes borealis	Shortraker rockfish	4	347	522	445	47.19	48.10
Sebastes reedi	Yellowmouth rockfish	1	1,073	1,073	1,073	44.71	44.71
Sebastes (Sebastomus) sp.	–	1	468	468	468	44.51	44.51
Anoplopomatidae							
Anoplopoma fimbria	Sablefish	326	188	1,229	642	34.37	48.12
Hexagrammidae							
Ophiodon elongatus	Lingcod	28	188	367	253	34.87	47.62
Cottidae							
Icelinus filamentosus	Threadfin sculpin	3	192	322	243	36.37	47.62

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Cottidae (continued)							
Icelinus burchami	Dusky sculpin	1	314	314	314	36.83	36.83
Gymnocanthus pistilliger	Threaded sculpin	11	188	456	297	36.67	47.85
Malacocottus kincaidi	Blackfin sculpin	2	380	413	397	44.88	47.25
Psychrolutes phrictus	Blob sculpin	3	1,061	1,223	1,161	40.54	47.38
Cottidae	Sculpin unident.	2	216	283	249	38.74	48.12
Agonidae							
Xeneretmus latifrons	Blacktip poacher	10	209	413	286	36.15	48.11
Bathyagonus pentacanthus	Bigeye poacher	8	263	488	332	34.87	47.62
Bathyagonus nigripinnis	Blackfin poacher	22	347	875	530	40.06	47.95
Liparidae							
Elassodiscus caudatus	Humpback snailfish	10	372	733	560	36.24	46.10
Careproctus melanurus	Blacktail snailfish	147	241	1,119	576	34.41	48.10
Careproctus cypselurus	Blackfin snailfish	21	626	1,218	1,041	34.87	45.77
Careproctus gilberti	Smalldisk snailfish	1	515	515	515	40.84	40.84
Careproctus colletti	Alaska snailfish	7	904	1,238	1,085	37.37	46.81
Paraliparis dactylosus	Red snailfish	6	555	953	689	35.28	47.85
Paraliparis cephalus	Swellhead snailfish	16	504	1,206	924	35.14	47.55
Rhinoliparis sp.	Snailfish unident.	2	946	1,103	1,025	36.51	41.13
Liparidinae	Snailfish unident.	6	350	820	610	34.37	44.05
Zoarcidae							
Zoarcidae	Eelpout unident.	1	1,229	1,229	1,229	36.46	36.46
Bothrocara brunneum	Twoline eelpout	133	402	1,238	867	34.37	48.10
Lycenchelys crotalinus	Snakehead eelpout	118	376	1,223	907	35.40	47.95
Lycodes cortezianus	Bigfin eelpout	159	198	1,190	404	34.39	48.11
Lycodapus endemoscotus	Deepwater eelpout	2	372	460	416	35.29	43.81
Lycodapus fierasfer	Blackmouth eelpout	2	742	751	747	45.19	47.87
Lycodapus dermatinus	Looseskin eelpout	1	751	751	751	47.87	47.87
Lycodapus mandibularis	Pallid eelpout	4	766	1,238	1,053	35.57	46.81
Lycodes diapterus	Black eelpout	145	227	1,035	474	34.39	48.10

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Zoarcidae (continued)							
Lycodes pacificus	Blackbelly eelpout	3	214	356	271	34.89	45.03
Chiasmodontidae							
Chiasmodon niger	Black swallower	1	1,228	1,228	1,228	37.01	37.01
Icosteidae							
Icosteus aenigmaticus	Ragfish	2	567	954	760	36.71	37.18
Centrolophidae							
Icichthys lockingtoni	Medusafish	5	241	964	607	35.89	44.16
Paralichthyidae							
Citharichthys sordidus	Pacific sanddab	5	210	428	306	34.89	47.56
Pleuronectidae							
Atheresthes stomias	Arrowtooth flounder	69	188	605	356	38.14	48.12
Hippoglossus stenolepis	Pacific halibut	6	192	376	268	41.70	47.62
Hippoglossoides elassodon	Flathead sole	1	214	214	214	45.03	45.03
Lyopsetta exilis	Slender sole	103	188	581	333	34.41	48.11
Eopsetta jordani	Petrale sole	12	188	343	241	34.87	47.62
Parophrys vetulus	English sole	38	188	367	271	34.87	47.95
Microstomus pacificus	Dover sole	309	188	1,229	594	34.37	48.12
Embassichthys bathybius	Deepsea sole	156	413	1,238	895	34.37	48.10
Glyptocephalus zachirus	Rex sole	175	188	725	392	34.73	48.12
Lepidopsetta bilineata	Southern rock sole	1	192	192	192	47.62	47.62
Pleuronichthys decurrens	Curlfin sole	1	248	248	248	36.46	36.46
Pleuronichthys verticalis	Hornyhead turbot	1	210	210	210	36.37	36.37
Molidae							
Mola mola	Ocean sunfish	5	372	1,095	707	35.29	43.14
Porifera (phylum)							
Porifera	Sponge unident.	19	307	1,137	580	34.89	48.11
Aphrocallistes vastus	Clay pipe sponge	1	757	757	757	40.98	40.98
Scyphozoa (class)							
Scyphozoa	Jellyfish unident.	12	227	1,186	622	37.56	40.18

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Anthozoa (class)							
Anthozoa	Anthozoa unident.	1	551	551	551	45.79	45.79
Actiniaria (order)							
Actiniaria	Sea anemone unident.	288	188	1,238	675	34.37	48.11
Actinernus sp.	Sea anemone unident.	2	424	1,103	763	41.71	42.64
Paractinostola faeculenta	Rough purple sea anemone	16	424	1,207	793	40.94	43.08
Liponema brevicornis	Tentacle-shedding anemone	8	272	1,207	620	41.31	43.08
Alcyonacea (order)							
Gorgoniidae	Gorgonian coral unident.	10	372	1,207	766	38.66	46.45
Pennatulacea (order)							
Pennatulacea	Sea pen or sea whip unident.	19	195	1,218	798	37.40	45.84
Virgulariidae							
Virgularia sp.	Smoothstem sea whip	1	733	733	733	36.87	36.87
Stylatula sp.	Slender sea whip	1	1,206	1,206	1,206	40.79	40.79
Anthoptilidae							
Anthoptilum grandiflorum	Fleshy sea pen	4	1,010	1,207	1,151	38.89	43.08
Polychaeta (class)							
Aphrodita sp.	Sea mouse unident.	19	188	1,055	495	35.28	48.10
Malacostraca (class)							
Malacostraca	Shrimp unident.	1	547	547	547	34.39	34.39
Mysidacea (order)							
Gnathophausia ingens	Giant red mysid	14	700	1,189	924	35.30	41.79
Sergestidae							
Sergestes sp.	Sergestid shrimp unident.	43	270	1,159	558	34.37	47.85
Pandalidae							
Pandalus jordani	Ocean shrimp	24	188	515	272	37.33	48.12
Pandalus platyceros	Spot shrimp	15	188	376	253	34.41	48.11
Pandalopsis dispar	Sidestripe shrimp	6	272	605	355	43.04	47.97
Pandalopsis ampla	Deepwater bigeye	8	527	1,229	1,053	35.51	44.84

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Hippolytidae							
Spirontocaris sp.	–	1	306	306	306	41.89	41.89
Eualus sp.	Eualid unident.	2	499	1,186	843	38.90	44.40
Eualus macrophthalmus	Bigeye eualid	51	352	1,238	587	39.01	47.95
Crangonidae							
Crangon communis	Twospine crangon	1	214	214	214	45.03	45.03
Pasiphaeidae							
Pasiphaea pacifica	Pacific glass shrimp	77	288	803	545	34.41	48.10
Pasiphaea tarda	Crimson pasiphaeid	78	491	1,223	964	34.87	47.82
Oplophoridae							
Acanthephyra curtirostris	Peaked shrimp	8	460	1,186	899	38.90	45.70
Cancridae							
Cancer magister	Dungeness crab	15	210	515	287	37.35	46.56
Cancer productus	Red rock crab	1	210	210	210	36.37	36.37
Calappidae							
Mursia gaudichaudii	Armored box crab	1	195	195	195	37.85	37.85
Majidae							
Chionoecetes tanneri	Grooved tanner crab	239	214	1,238	782	34.37	48.11
Hyas lyratus	Pacific lyre crab	5	582	821	685	36.24	36.88
Chorilia longipes	Longhorned decorator crab	29	188	1,229	627	34.89	47.41
Anomura (infraorder)							
Anomura	Anomuran unident.	1	515	515	515	45.20	45.20
Paguridae							
Paguridae	Hermit crab unident.	65	188	1,076	491	35.46	47.97
Lithodidae							
Lopholithodes sp.	Box crab unident.	6	188	311	243	39.00	48.12
Lithodes couesi	Scarlet king crab	20	522	1,215	983	35.14	48.10
Paralithodes rathbuni	Spiny king crab	6	195	395	299	34.87	37.85
Paralomis verrilli	Flat-legged spider crab	2	1,055	1,207	1,131	38.14	38.19
Paralomis multispina	Hair crab	25	988	1,229	1,149	35.51	47.55

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Galatheidae							
Munida quadrispina	Pinchbug	2	1,026	1,098	1,062	45.16	47.55
Stereomastus sculpta	Deepsea lobster	11	923	1,229	1,078	35.51	46.16
Gastropoda (class)							
Gastropod eggs	Snail eggs unident.	1	458	458	458	45.12	45.12
Gastropod	Snail unident.	183	199	1,229	745	34.37	48.11
Nudibranchia (order)	Nudibranch unident.	55	241	1,206	671	34.87	47.24
Tritonia diomedea	Rosy tritonia	1	753	753	753	39.45	39.45
Heteropoda (order)	Pelagic gastropod unident.	1	241	241	241	36.87	36.87
Bivalvia (class)							
Yoldia scissurata	Crisscrossed yoldia	1	1,076	1,076	1,076	41.38	41.38
Cephalopoda (class)							
Octopodidae	Octopus unident.	27	245	1,238	718	34.39	48.10
Japatella heathi	Yellowring octopus	8	922	1,186	1,076	39.17	47.55
Opisthoteuthis californiana	Flapjack devilfish	55	288	1,218	699	34.39	47.55
Octopus californicus	North Pacific bigeye octopus	1	954	954	954	36.71	36.71
Graneledone boreopacifica	Ghost octopus	4	1,007	1,215	1,158	36.22	43.66
Octopus dofleini	Giant octopus	7	295	598	440	34.87	44.40
Benthoctopus sp.	Smooth octopus	16	192	1,087	517	34.87	47.87
Vampyroteuthis infernalis	Vampire squid	37	329	1,207	961	34.37	47.83
Teuthida (order)	Squid unident.	14	195	1,207	744	34.96	45.33
Rossia pacifica	Eastern Pacific bobtail	9	192	347	236	34.89	47.62
Loligo opalescens	California market squid	17	188	1,196	496	34.87	41.37
Gonatus sp.	Armhook squid unident.	5	427	1,010	719	36.87	40.20
Gonatus onyx	Clawed armhook squid	33	424	1,196	615	35.55	47.85
Berryteuthis magister	Magistrate armhook squid	5	236	433	340	39.86	47.97
Gonatopsis borealis	Boreopacific armhook squid	26	275	1,207	588	36.24	47.85
Moroteuthis robusta	Robust clubhook squid	10	303	481	374	35.29	47.85
Galiteuthis phyllura	Arrow squid	1	1,034	1,034	1,034	39.35	39.35
Chiroteuthis calyx	Glass squid	16	195	1,161	694	37.85	47.87

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species or groups caught during the 2001 NWFSC slope survey.

Family name Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Cephalopoda (continued)							
Cranchia scabra	Sandpaper squid	1	755	755	755	37.40	37.40
Taonius pavo	Cone squid	6	307	768	534	44.39	48.11
Octopoteuthis deletron	Octopus squid	94	424	1,238	798	34.73	48.10
Histioteuthis heteropsis	Cockeyed squid	37	272	1,229	618	34.87	47.19
Histioteuthis hoylei	Long-armed cockeyed squid	2	1,055	1,067	1,061	38.19	44.52
Stelleroidea (class)							
Asteroidea	Sea star unident.	287	188	1,238	657	34.37	48.12
Solaster stimpsoni	Sun sea star	3	312	1,223	637	46.63	47.97
Ophiuroidea	Brittlestarfish unident.	78	188	1,186	593	34.87	47.95
Gorgonocephalus eucnemis	Basketstar	11	188	1,189	813	34.73	39.94
Asteronyx loveni	Serpent sea star	2	733	1,206	969	36.87	40.79
Echinoidea (class)							
Echinoidea	Sea urchin unident.	191	188	1,102	500	34.37	48.12
Strongylocentrotus franciscanus	Red sea urchin	4	272	500	411	43.04	43.61
Allocentrotus fragilis	Orange-pink sea urchin	19	192	605	406	40.94	47.63
Brisaster latifrons	Heart sea urchin	15	198	1,020	539	40.94	43.61
Holothuroidea (class)							
Holothuroidea	Sea cucumber unident.	134	188	1,215	556	34.39	48.11
Parastichopus leucothele	Giant soft cucumber	2	272	378	325	43.04	43.06
Scotoplanes theeli	Sea pig	16	1,017	1,223	1,148	36.05	47.82
Brachiopoda (phylum)							
Brachiopod	Lampshells unident.	1	241	241	241	36.87	36.87
Urochordata (subphylum)							
Thaliacea	Salps unident.	20	303	1,206	700	36.22	40.84
Styela rustica	Sea potato	2	523	766	645	34.87	35.57
Invertebrate	Invertebrate unident.	242	188	1,238	684	34.87	47.19

Table 4. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for all the INPFC areas combined.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	85	141	226
Arrowtooth flounder	160	2	162
Slender sole	392	0	392
Dover sole	13,814	5,467	19,281
Rex sole	1,618	23	1,641
Sablefish	1,645	1,402	3,047
Pacific grenadier	13	787	800
Giant grenadier	10	420	430
Pacific flatnose	30	404	434
Lingcod	128	0	128
Pacific hake	467	0	467
Snakehead eelpout	0	163	163
Bigfin eelpout	170	0	170
Black eelpout	768	140	908
Shortspine thornyhead	6,466	1,636	8,102
Longspine thornyhead	2,628	23,212	25,840
Pacific ocean perch	172	1	173
Aurora rockfish	80	4	84
Darkblotched rockfish	496	0	496
Splitnose rockfish	249	0	249
Greenstriped rockfish	271	0	271
Rosethorn rockfish	78	0	78
Shortbelly rockfish	562	0	562
Bocaccio	39	0	39
Stripetail rockfish	203	0	203

Table 5. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for the INPFC Conception area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	0	0	0
Arrowtooth flounder	0	0	0
Slender sole	0	0	0
Dover sole	969	793	1,762
Rex sole	0	0	0
Sablefish	309	205	514
Pacific grenadier	0	0	0
Giant grenadier	0	0	0
Pacific flatnose	0	0	0
Lingcod	4	0	4
Pacific hake	0	0	0
Snakehead eelpout	0	0	0
Bigfin eelpout	0	0	0
Black eelpout	0	0	0
Shortspine thornyhead	374	299	673
Longspine thornyhead	327	2,513	2,840
Pacific ocean perch	0	0	0
Aurora rockfish	0	0	0
Darkblotched rockfish	3	0	3
Splitnose rockfish	0	0	0
Greenstriped rockfish	0	0	0
Rosethorn rockfish	0	0	0
Shortbelly rockfish	167	0	167
Bocaccio	3	0	3
Stripetail rockfish	0	0	0

Table 6. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for the INPFC Monterey area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	0	0	0
Arrowtooth flounder	0	0	0
Slender sole	0	0	0
Dover sole	4,343	3,172	7,515
Rex sole	0	0	0
Sablefish	461	620	1,081
Pacific grenadier	0	0	0
Giant grenadier	0	0	0
Pacific flatnose	0	0	0
Lingcod	27	0	27
Pacific hake	0	0	0
Snakehead eelpout	0	0	0
Bigfin eelpout	0	0	0
Black eelpout	0	0	0
Shortspine thornyhead	728	766	1,494
Longspine thornyhead	424	7,366	7,790
Pacific ocean perch	0	0	0
Aurora rockfish	0	4	4
Darkblotched rockfish	237	0	237
Splitnose rockfish	0	0	0
Greenstriped rockfish	0	0	0
Rosethorn rockfish	0	0	0
Shortbelly rockfish	394	0	394
Bocaccio	36	0	36
Stripetail rockfish	0	0	0

Table 7. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for the INPFC Eureka area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	14	58	72
Arrowtooth flounder	8	0	8
Slender sole	90	0	90
Dover sole	2,290	886	3,176
Rex sole	583	17	600
Sablefish	369	225	594
Pacific grenadier	0	336	336
Giant grenadier	6	171	177
Pacific flatnose	22	262	284
Lingcod	11	0	11
Pacific hake	292	0	292
Snakehead eelpout	0	156	156
Bigfin eelpout	59	0	59
Black eelpout	515	140	655
Shortspine thornyhead	682	188	870
Longspine thornyhead	223	5,258	5,481
Pacific ocean perch	3	1	4
Aurora rockfish	52	0	52
Darkblotched rockfish	52	0	52
Splitnose rockfish	36	0	36
Greenstriped rockfish	16	0	16
Rosethorn rockfish	0	0	0
Shortbelly rockfish	1	0	1
Bocaccio	0	0	0
Stripetail rockfish	100	0	100

Table 8. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for the INPFC Columbia area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	71	57	128
Arrowtooth flounder	148	1	149
Slender sole	260	0	260
Dover sole	4,962	524	5,486
Rex sole	925	6	931
Sablefish	421	314	735
Pacific grenadier	13	426	439
Giant grenadier	4	229	233
Pacific flatnose	8	142	150
Lingcod	30	0	30
Pacific hake	175	0	175
Snakehead eelpout	0	7	7
Bigfin eelpout	111	0	111
Black eelpout	253	0	253
Shortspine thornyhead	3,954	294	4,248
Longspine thornyhead	1,298	7,042	8,340
Pacific ocean perch	145	0	145
Aurora rockfish	28	0	28
Darkblotched rockfish	179	0	179
Splitnose rockfish	212	0	212
Greenstriped rockfish	156	0	156
Rosethorn rockfish	16	0	16
Shortbelly rockfish	0	0	0
Bocaccio	0	0	0
Stripetail rockfish	103	0	103

Table 9. Number of length-frequency measurements collected by stratum during the 2001 NWFSC slope survey for the INPFC U.S.-Vancouver area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Brown cat shark	0	26	26
Arrowtooth flounder	4	1	5
Slender sole	42	0	42
Dover sole	1,250	92	1,342
Rex sole	110	0	110
Sablefish	85	38	123
Pacific grenadier	0	25	25
Giant grenadier	0	20	20
Pacific flatnose	0	0	0
Lingcod	56	0	56
Pacific hake	0	0	0
Snakehead eelpout	0	0	0
Bigfin eelpout	0	0	0
Black eelpout	0	0	0
Shortspine thornyhead	728	89	817
Longspine thornyhead	356	1,033	1,389
Pacific ocean perch	24	0	24
Aurora rockfish	0	0	0
Darkblotched rockfish	25	0	25
Splitnose rockfish	1	0	1
Greenstriped rockfish	99	0	99
Rosethorn rockfish	62	0	62
Shortbelly rockfish	0	0	0
Bocaccio	0	0	0
Stripetail rockfish	0	0	0

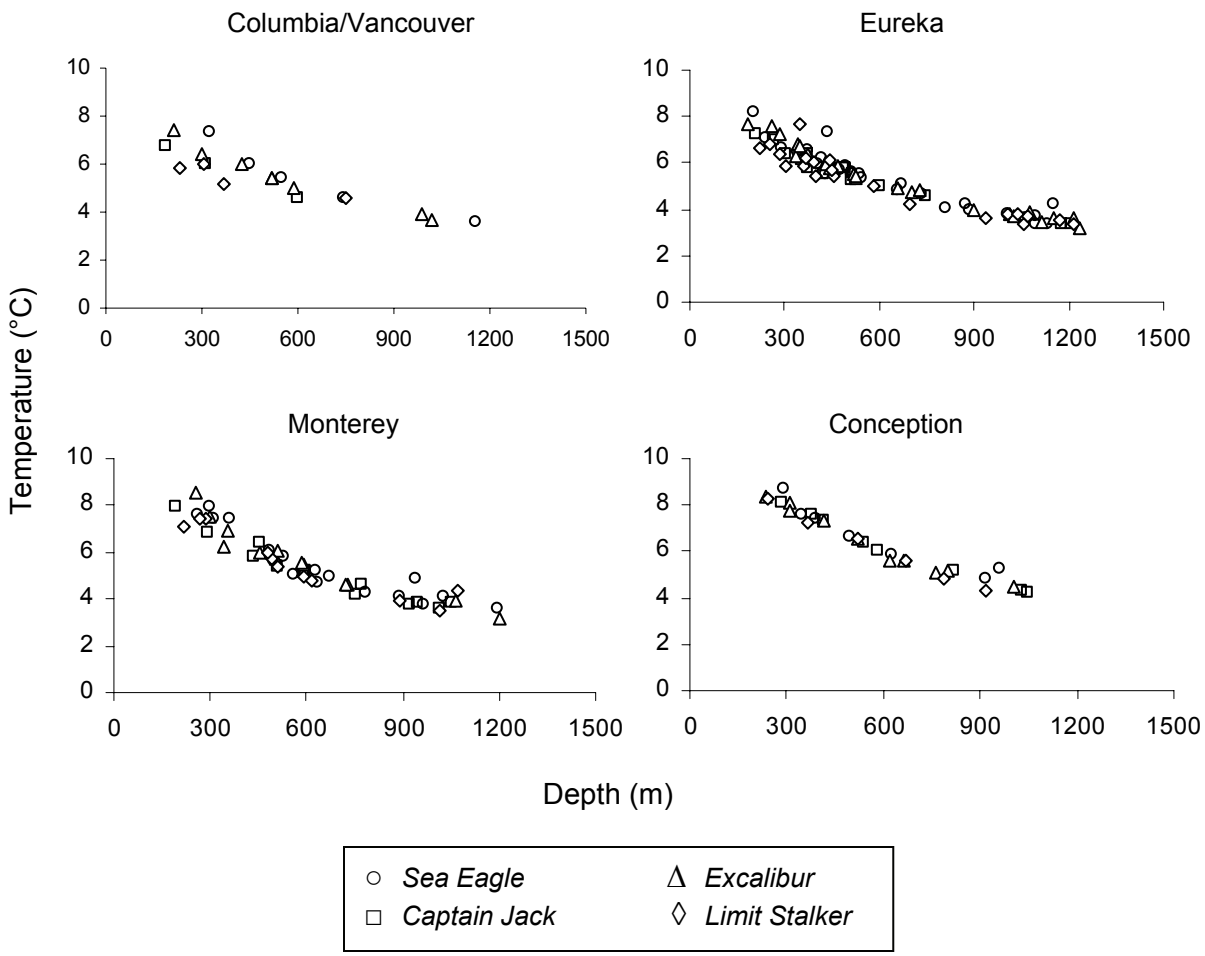


Figure 5. Near bottom water temperature observed at the mouth of the net for each tow conducted during the 2001 NWFSC slope survey, plotted relative to haul depth. Observations are grouped by INPFC area.

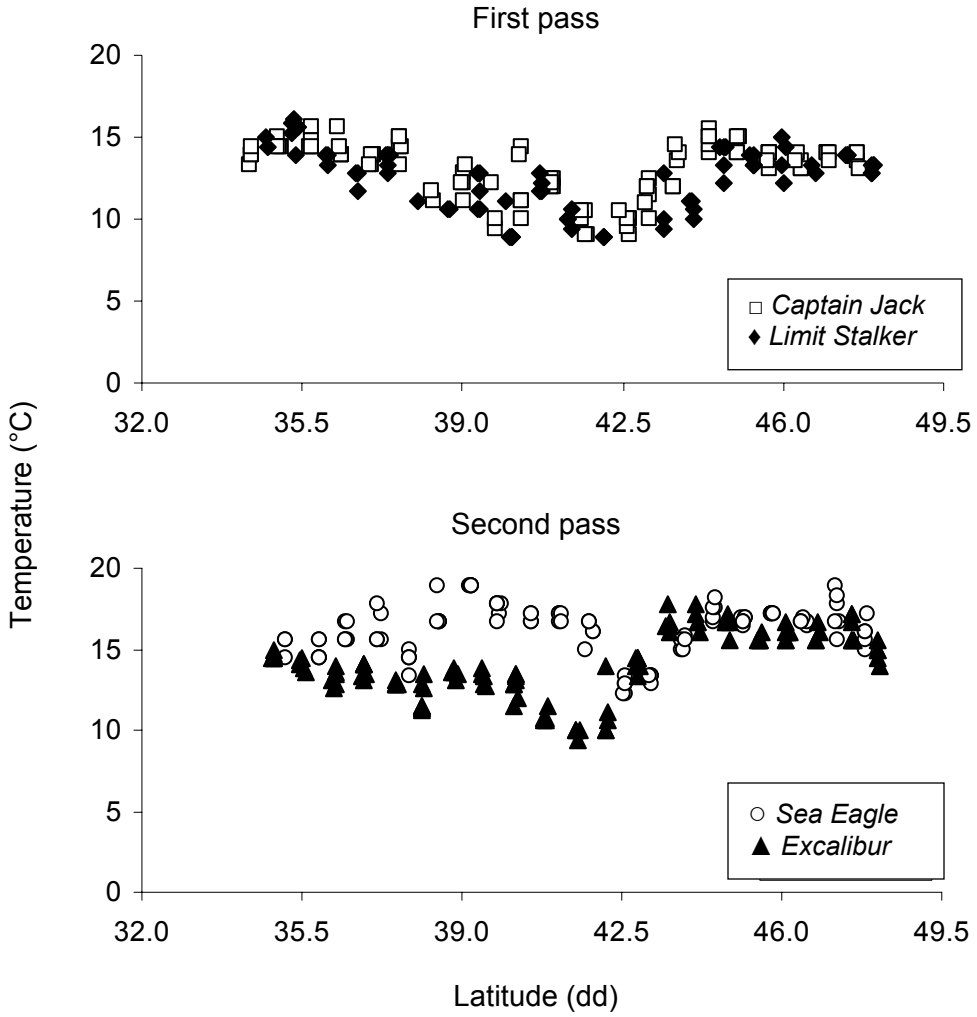


Figure 6. Sea surface temperature observed at the start of each tow during the 2001 NWFSC slope survey, plotted relative to latitude. Observations are grouped by date (first pass from 24 June 2001 to 29 July 2001; second pass from 25 August 2001 to 29 September 2001).

Relative Density and Distribution of Species

Information on the relative density and distribution of the 20 most abundant groundfish and selected crab species are reported in several ways: 1) for all depth strata and INPFC areas combined (Table 10), 2) by depth strata for all INPFC areas combined (Table 11), and 3) by depth stratum within each individual INPFC area (Tables 12–16). For all depth strata combined, Dover sole had the highest catch rates in the U.S.-Vancouver, Columbia, and Monterey INPFC areas. This pattern also holds for all INPFC areas and depth strata combined (i.e., survey-wide). Longspine thornyhead had the highest catch rates in the Eureka and Conception INPFC areas for all depth strata combined (Table 10). Note that with the exception of the U.S.-Vancouver INPFC area, Dover sole and longspine thornyhead were the two most abundant species when depth strata were combined for the remaining INPFC areas. When all INPFC areas combined were separated into depth strata, Dover sole had the highest catch rates in the shallow stratum and longspine thornyhead had the highest catch rates in the deep stratum (Table 11).

Catch rates varied with depth stratum for the individual INPFC areas (Tables 12–16). Dover sole was the predominant species in the shallow stratum in the all INPFC areas. For the deep stratum, longspine thornyhead was the dominant species in the U.S.-Vancouver, Columbia, Eureka, and Conception INPFC areas, while Dover sole was the dominant species in the Monterey INPFC area.

Figures 7–19 are maps showing the geographical distributions and relative abundances of selected groundfish species. These maps show the location points of the hauls where the species were caught. Catch rates were categorized as follows: 1) no catch, 2) greater than zero but less than or equal to the mean CPUE, 3) greater than the mean CPUE but less than or equal to one standard deviation from the mean, 4) between one and two standard deviations greater than the mean CPUE, and 5) over two standard deviations greater than the mean CPUE.

Biomass and Population Estimates

Abundance estimates of biomass in metric tons along with CV are presented for the 20 most abundant groundfish and crab species for all areas combined by depth strata and INPFC (Tables 17–22). The total number of hauls—by depth strata where weight, number of fish, and lengths were collected for the 30 most abundant groundfish and selected invertebrate species—are shown in Tables 23–28 by stratum and INPFC area for each fish species.

The calculated biomass estimates presented are not considered absolute estimates. Herding caused by doors and bridles, as well as escapement from underneath the trawl footrope, around the net opening, and through the net mesh, may affect the trawl effectiveness (Gunderson 1993). Abundance calculations are based on the assumption that all of the fish that are in front of the trawl and between the wingtips have an equal chance of being caught. The ability of a fish to avoid the net depended on the species, fish shape, size, speed, and its reaction to the part of the net it encounters (Lauth 1999). Furthermore, the survey does not cover the entire geographic range of many of the species caught.

Table 10. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught in each of the INPFC areas for all strata (183–1,280 m) combined during the 2001 NWFSC slope survey.

All areas Total hauls = 334		U.S.-Vancouver area Total hauls = 20		Columbia area Total hauls = 111	
Dover sole	21.57	Dover sole	16.45	Dover sole	15.08
Longspine thornyhead	16.22	Pacific ocean perch	10.29	Longspine thornyhead	11.21
Sablefish	7.22	Arrowtooth flounder	9.24	Sablefish	6.12
Pacific grenadier	7.10	Longspine thornyhead	8.21	Giant grenadier	5.38
Giant grenadier	5.26	Sablefish	5.10	Pacific grenadier	5.32
Shortspine thornyhead	5.16	Shortspine thornyhead	4.43	Grooved tanner crab	4.93
Grooved tanner crab	4.27	Pacific grenadier	4.24	Shortspine thornyhead	4.85
Pacific hake	3.63	Longnose skate	3.50	Pacific hake	3.79
Rex sole	3.48	Giant grenadier	3.36	Rex sole	2.88
Longnose skate	2.77	Greenstriped rockfish	2.92	Longnose skate	2.81
Splitnose rockfish	2.52	Rougheye rockfish	2.59	Pacific sleeper shark	2.64
California slickhead	2.20	Pacific cod	2.46	Arrowtooth flounder	1.34
Arrowtooth flounder	1.29	Grooved tanner crab	2.35	Splitnose rockfish	0.93
Spotted ratfish	1.24	Rex sole	2.28	Darkblotched rockfish	0.73
Stripetail rockfish	1.15	Splitnose rockfish	1.89	Roughtail skate	0.70
Pacific sleeper shark	1.14	Darkblotched rockfish	1.23	Bigfin eelpout	0.65
Pacific ocean perch	1.12	Pacific hake	1.22	Twoline eelpout	0.61
Deepsea sole	1.06	Lingcod	1.17	Pacific ocean perch	0.59
Shortbelly rockfish	1.05	Twoline eelpout	1.07	Pacific flatnose	0.58
Brown cat shark	0.94	Deepsea sole	0.92	Brown cat shark	0.58

Eureka area Total hauls = 65		Monterey area Total hauls = 102		Conception area Total hauls = 36	
Longspine thornyhead	20.54	Dover sole	37.05	Longspine thornyhead	22.03
Dover sole	16.62	Longspine thornyhead	18.00	Dover sole	21.35
Pacific grenadier	11.08	Pacific grenadier	14.53	Sablefish	8.49
Giant grenadier	10.92	Sablefish	8.40	Shortspine thornyhead	6.63
Grooved tanner crab	10.34	Giant grenadier	6.70	Splitnose rockfish	5.37
Sablefish	7.22	Shortspine thornyhead	5.57	Pacific hake	4.56
Pacific hake	5.67	Shortbelly rockfish	4.76	Rex sole	3.38
Rex sole	4.99	California slickhead	4.15	Longnose skate	3.07
California slickhead	4.79	Spotted ratfish	3.98	California slickhead	2.11
Shortspine thornyhead	3.41	Rex sole	3.94	Stripetail rockfish	1.42
Longnose skate	1.92	Splitnose rockfish	3.68	Aurora rockfish	1.14
Deepsea sole	1.62	Grooved tanner crab	3.51	Pacific grenadier	1.13
Pacific flatnose	1.03	Stripetail rockfish	3.25	Brown cat shark	0.98
Black eelpout	0.92	Chilipepper	3.13	Grooved tanner crab	0.86
Brown cat shark	0.86	Longnose skate	2.66	Spotted ratfish	0.84
Roughtail skate	0.72	Pacific hake	2.03	Deepsea sole	0.83
Bering skate	0.52	Deepsea sole	1.71	Filetail cat shark	0.80
Twoline eelpout	0.50	Brown cat shark	1.66	Giant grenadier	0.79
Bigfin eelpout	0.49	Pacific sleeper shark	1.32	Slender sole	0.56
Snakehead eelpout	0.30	English sole	1.13	Twoline eelpout	0.55

Table 11. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in all INPFC areas combined during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) **Total hauls = 165**		**Stratum 2 (550–1,280 m)** **Total hauls = 169**	
Dover sole	30.72	Longspine thornyhead	25.16
Pacific hake	9.44	Dover sole	16.14
Rex sole	9.08	Pacific grenadier	11.31
Longnose skate	6.79	Giant grenadier	8.26
Splitnose rockfish	6.77	Sablefish	7.61
Sablefish	6.56	Grooved tanner crab	6.50
Shortspine thornyhead	4.96	Shortspine thornyhead	5.27
Arrowtooth flounder	3.41	California slickhead	3.50
Spotted ratfish	3.34	Pacific sleeper shark	1.81
Stripetail rockfish	3.09	Deepsea sole	1.67
Pacific ocean perch	3.00	Brown cat shark	1.01
Shortbelly rockfish	2.83	Roughtail skate	0.87
Chilipepper	2.04	Twoline eelpout	0.81
Bigfin eelpout	1.62	Pacific flatnose	0.79
Bering skate	1.35	Longnose skate	0.38
Aurora rockfish	1.33	Filetail cat shark	0.26
Longspine thornyhead	1.16	Snakehead eelpout	0.25
Darkblotched rockfish	1.10	Pacific hake	0.18
Rougheye rockfish	0.92	Rex sole	0.15
Greenstriped rockfish	0.91	Black eelpout	0.12

Table 12. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in the Conception INPFC area during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) **Total hauls = 19**		**Stratum 2 (550–1,280 m)** **Total hauls = 17**	
Dover sole	17.34	Longspine thornyhead	31.69
Splitnose rockfish	16.72	Dover sole	23.25
Pacific hake	13.26	Sablefish	9.45
Rex sole	10.55	Shortspine thornyhead	7.52
Longnose skate	8.77	California slickhead	3.11
Sablefish	6.46	Pacific grenadier	1.66
Shortspine thornyhead	4.75	Grooved tanner crab	1.26
Stripetail rockfish	4.43	Deepsea sole	1.22
Aurora rockfish	3.54	Giant grenadier	1.16
Spotted ratfish	2.62	Brown cat shark	0.85
Slender sole	1.74	Twoline eelpout	0.81
Longspine thornyhead	1.58	Filetail cat shark	0.78
Brown cat shark	1.27	Pacific hake	0.45
Bigfin eelpout	1.21	Longnose skate	0.38
Chilipepper	1.14	Roughtail skate	0.28
Bering skate	1.06	Pacific flatnose	0.14
Plainfin midshipman	1.01	Threadfin slickhead	0.14
Filetail cat shark	0.85	Deepsea skate	0.12
Lingcod	0.63	Hagfish unident.	0.12
English sole	0.50	Deepsea smelt unident.	0.10

Table 13. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in the Monterey INPFC area during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) Total hauls = 44		**Stratum 2 (550–1,280 m) Total hauls = 58**	
Dover sole	54.63	Dover sole	29.63
Shortbelly rockfish	16.03	Longspine thornyhead	25.09
Spotted ratfish	13.42	Pacific grenadier	20.66
Rex sole	13.16	Giant grenadier	9.53
Splitnose rockfish	12.41	Sablefish	9.31
Stripetail rockfish	10.96	Shortspine thornyhead	7.01
Chilipepper	10.54	California slickhead	5.91
Longnose skate	7.16	Grooved tanner crab	4.88
Pacific hake	6.58	Deepsea sole	2.41
Sablefish	6.25	Pacific sleeper shark	1.87
English sole	3.80	Brown cat shark	1.86
Bigfin eelpout	2.71	Pacific flatnose	0.99
Redstripe rockfish	2.44	Roughtail skate	0.92
Shortspine thornyhead	2.15	Longnose skate	0.75
Bering skate	2.07	Twoline eelpout	0.55
Aurora rockfish	1.70	Filetail cat shark	0.30
Blackgill rockfish	1.50	Snakehead eelpout	0.30
Longspine thornyhead	1.20	Bigfin eelpout	0.29
Brown cat shark	1.18	Deepsea skate	0.16
Filetail cat shark	1.08	Blacktail snailfish	0.14

Table 14. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in the Eureka INPFC area during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) Total hauls = 28		**Stratum 2 (550–1,280 m) Total hauls = 37**	
Dover sole	30.77	Longspine thornyhead	26.92
Pacific hake	23.26	Pacific grenadier	14.62
Rex sole	18.27	Giant grenadier	14.09
Sablefish	9.66	Grooved tanner crab	13.35
Longnose skate	6.77	Dover sole	12.10
Black eelpout	2.37	Sablefish	6.44
Bering skate	1.97	California slickhead	6.33
Bigfin eelpout	1.95	Shortspine thornyhead	3.89
Shortspine thornyhead	1.90	Deepsea sole	2.13
Splitnose rockfish	1.23	Pacific flatnose	1.31
Stripetail rockfish	1.23	Roughtail skate	0.95
Giant grenadier	0.99	Brown cat shark	0.89
Spiny dogfish	0.96	Rex sole	0.75
Grooved tanner crab	0.94	Twoline eelpout	0.59
Aurora rockfish	0.85	Black eelpout	0.45
Brown cat shark	0.76	Snakehead eelpout	0.40
Lingcod	0.73	Longnose skate	0.36
Darkblotched rockfish	0.68	Hagfish unident.	0.10
Arrowtooth flounder	0.64	Blob sculpin	0.08
Longspine thornyhead	0.58	Blacktail snailfish	0.07

Table 15. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in the Columbia INPFC area during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) Total hauls = 62		**Stratum 2 (550–1,280 m) Total hauls = 49**	
Dover sole	28.30	Longspine thornyhead	20.15
Pacific hake	8.05	Pacific grenadier	9.99
Shortspine thornyhead	6.68	Giant grenadier	9.98
Sablefish	6.49	Grooved tanner crab	8.69
Rex sole	6.13	Sablefish	5.79
Longnose skate	5.95	Pacific sleeper shark	4.96
Arrowtooth flounder	2.81	Dover sole	3.45
Splitnose rockfish	2.00	Shortspine thornyhead	3.23
Darkblotched rockfish	1.55	Roughtail skate	1.32
Bigfin eelpout	1.39	Deepsea sole	1.05
Pacific ocean perch	1.26	Twoline eelpout	1.01
Bering skate	1.10	Pacific flatnose	0.91
Longspine thornyhead	1.04	California slickhead	0.69
Spotted ratfish	0.79	Brown cat shark	0.50
Rougheye rockfish	0.71	Snakehead eelpout	0.26
Brown cat shark	0.67	Hagfish unident.	0.10
Slender sole	0.66	Blacktail snailfish	0.07
Grooved tanner crab	0.66	Deepsea smelt unident.	0.07
Sharpchin rockfish	0.63	Longnose skate	0.06
Aurora rockfish	0.55	Threadfin slickhead	0.06

Table 16. Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught by depth strata in the U.S.-Vancouver INPFC area during the 2001 NWFSC slope survey.

Stratum 1 (183–549 m) Total hauls = 12		**Stratum 2 (550–1,280 m) Total hauls = 8**	
Dover sole	26.90	Longspine thornyhead	16.89
Pacific ocean perch	18.53	Pacific grenadier	9.51
Arrowtooth flounder	16.48	Giant grenadier	7.29
Longnose skate	5.95	Sablefish	5.07
Shortspine thornyhead	5.83	Grooved tanner crab	4.29
Greenstriped rockfish	5.25	Dover sole	3.41
Sablefish	5.13	Shortspine thornyhead	2.68
Rougheye rockfish	4.67	Deepsea sole	2.00
Pacific cod	4.44	Twoline eelpout	1.61
Rex sole	4.11	Brown cat shark	0.92
Splitnose rockfish	3.40	Roughtail skate	0.77
Darkblotched rockfish	2.21	Pacific flatnose	0.66
Lingcod	2.11	Longnose skate	0.45
Pacific hake	1.91	Black eelpout	0.36
Spotted ratfish	1.47	Pacific hake	0.35
Longspine thornyhead	1.27	Snakehead eelpout	0.22
Bigfin eelpout	1.27	Hagfish unident.	0.21
Rosethorn rockfish	1.25	Arrowtooth flounder	0.20
Bering skate	1.13	Blacktail snailfish	0.16
Pacific halibut	1.00	California slickhead	0.13

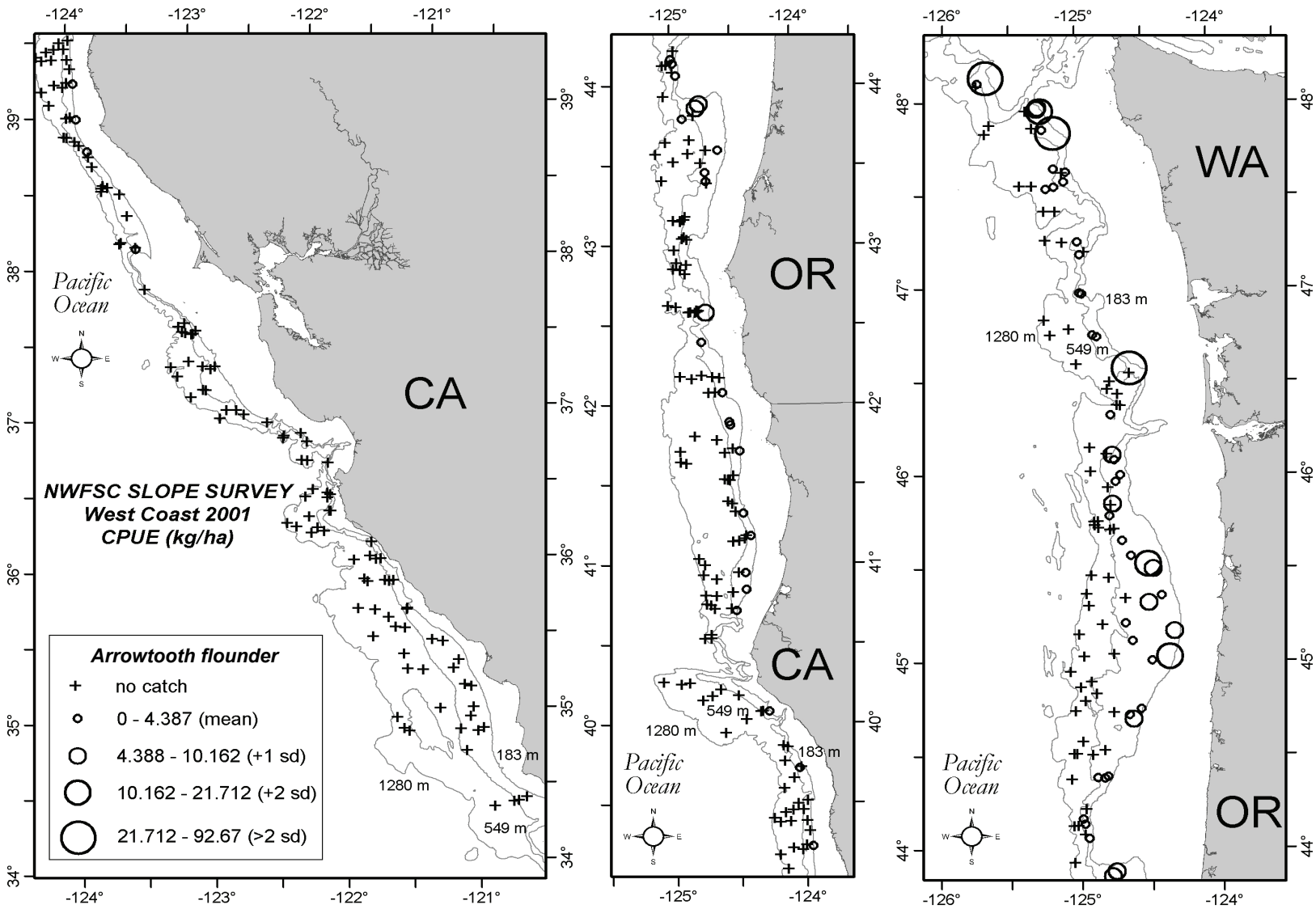


Figure 7. Arrowtooth flounder distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

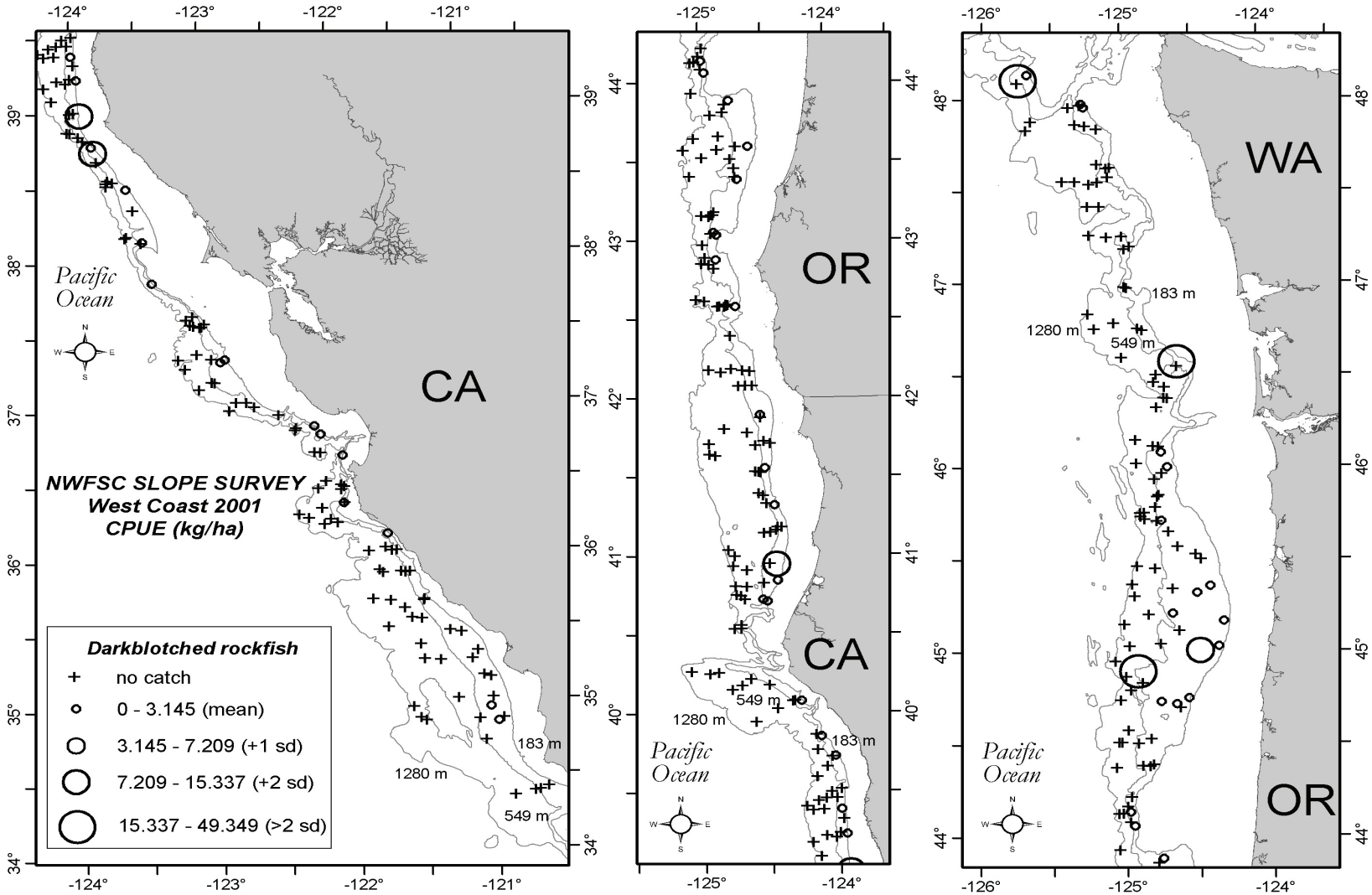


Figure 8. Darkblotched rockfish distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

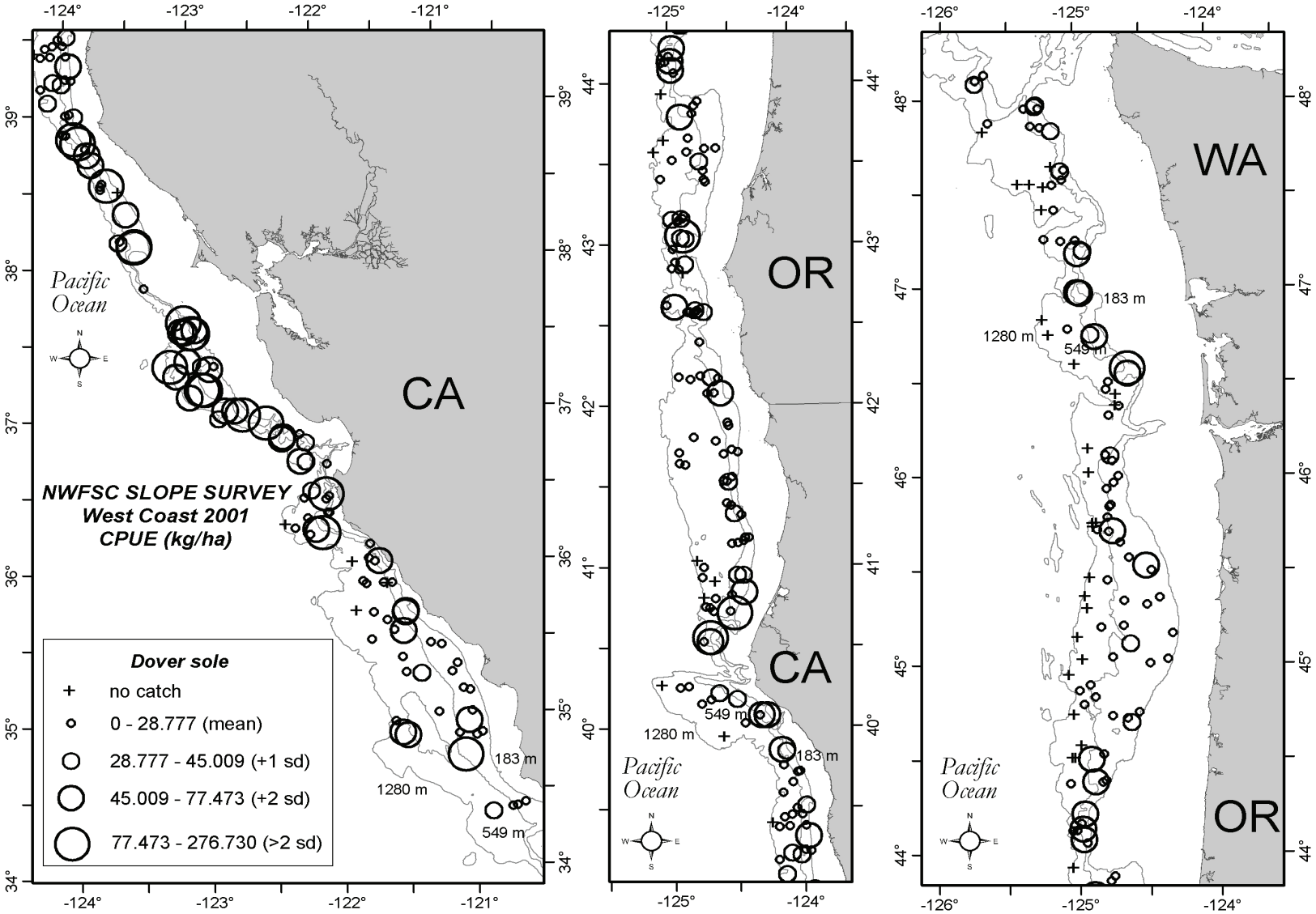


Figure 9. Dover sole distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

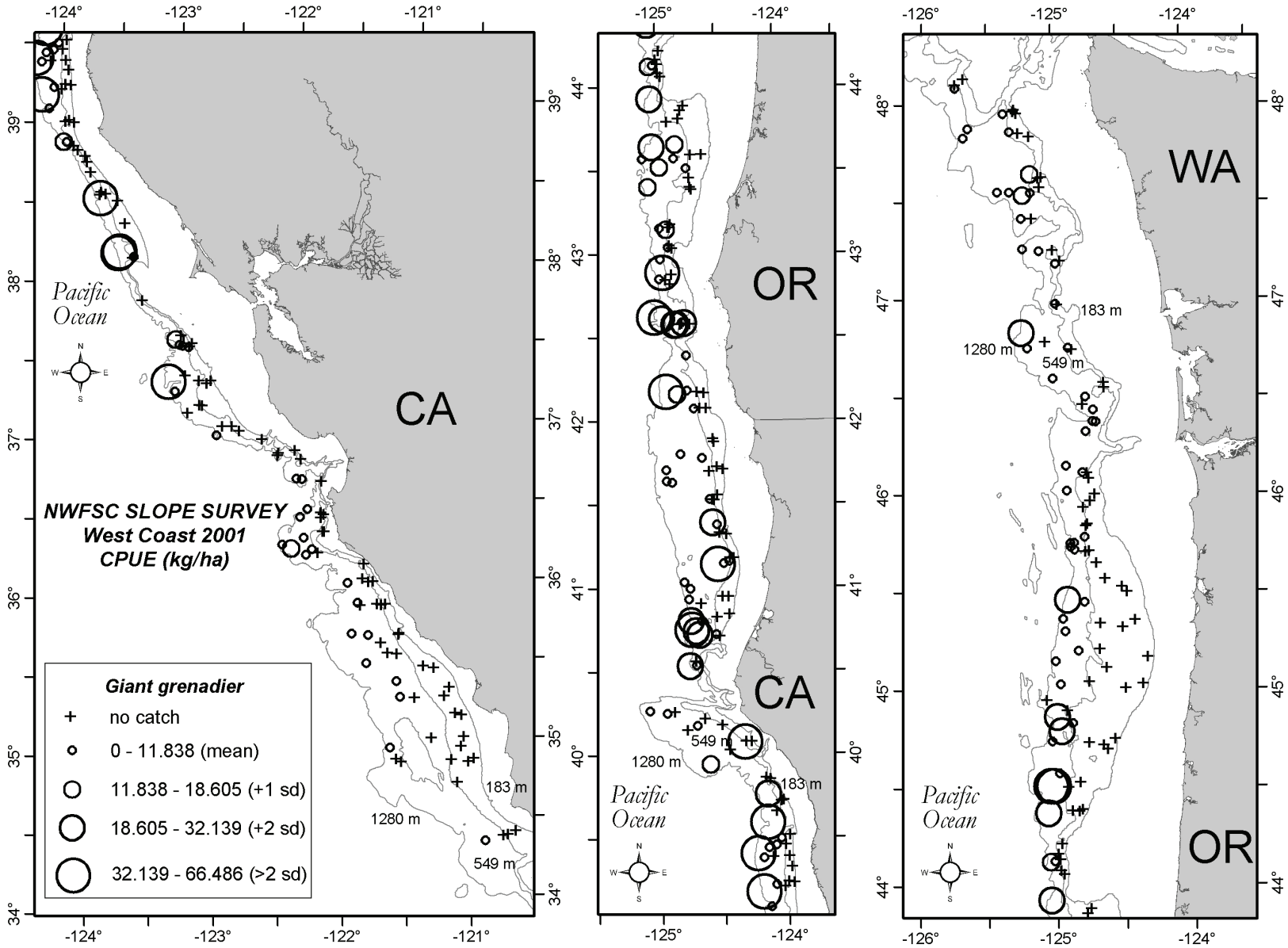


Figure 10. Giant grenadier distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

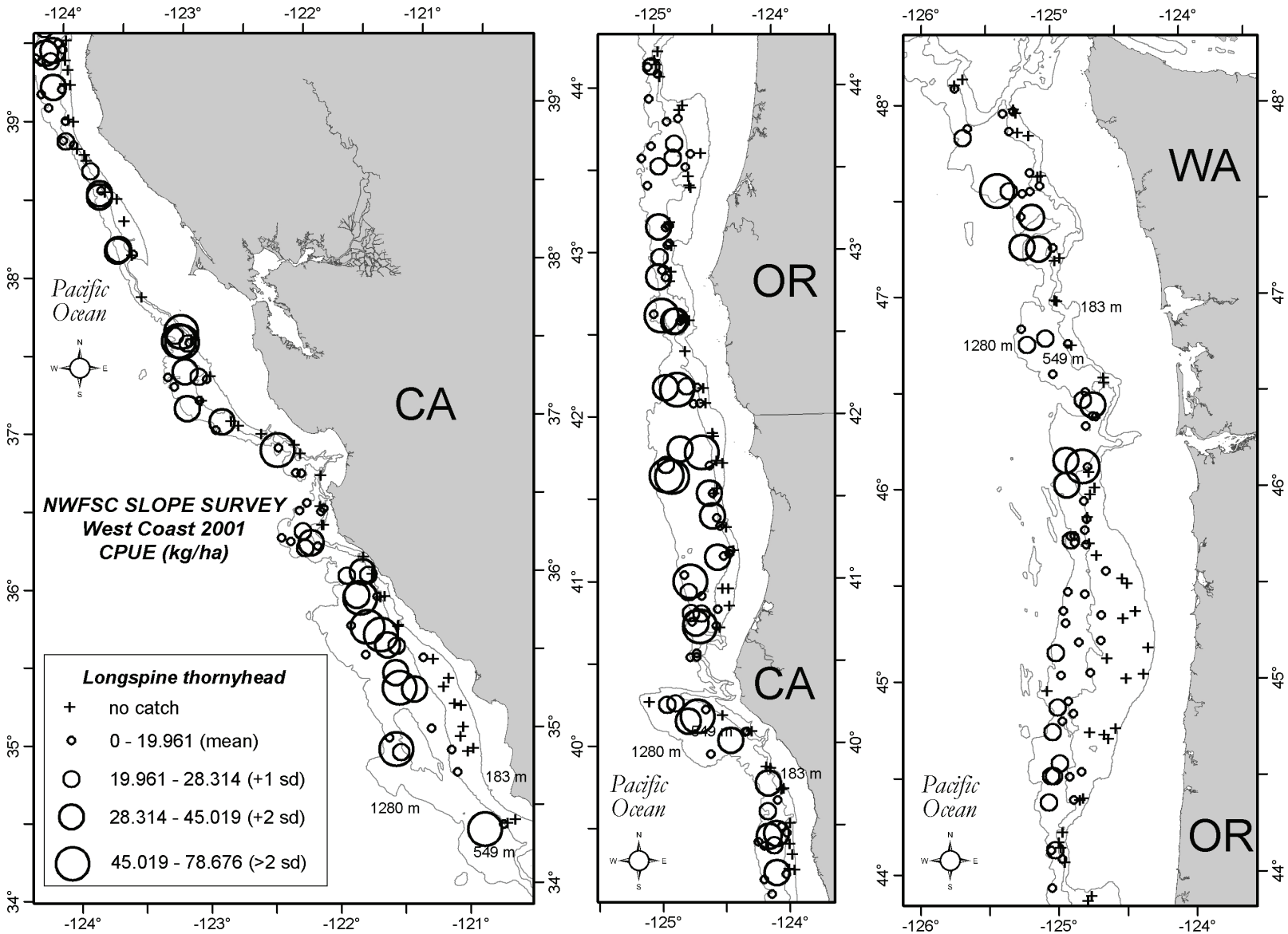


Figure 11. Longspine thornyhead distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

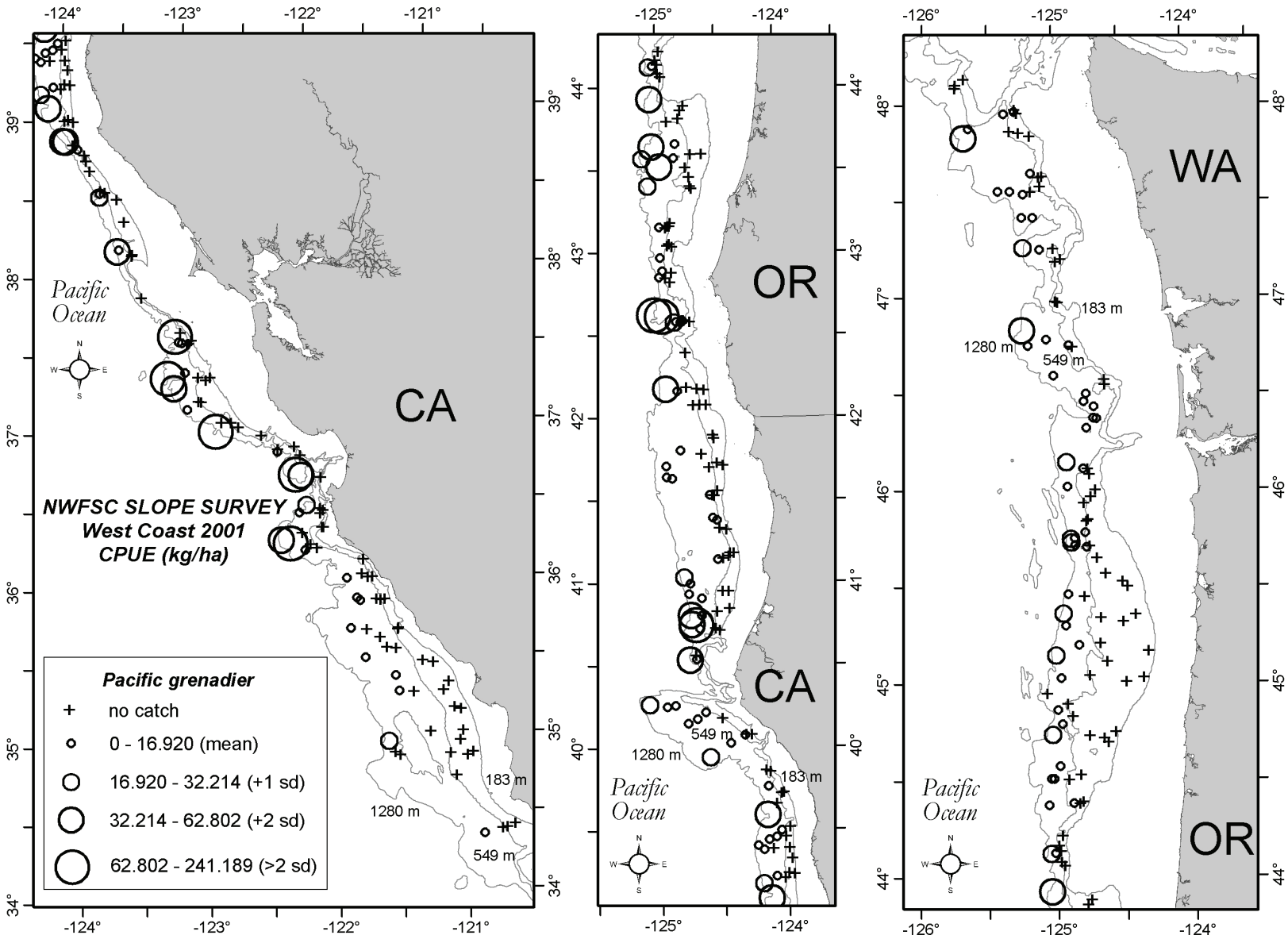


Figure 12. Pacific grenadier distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

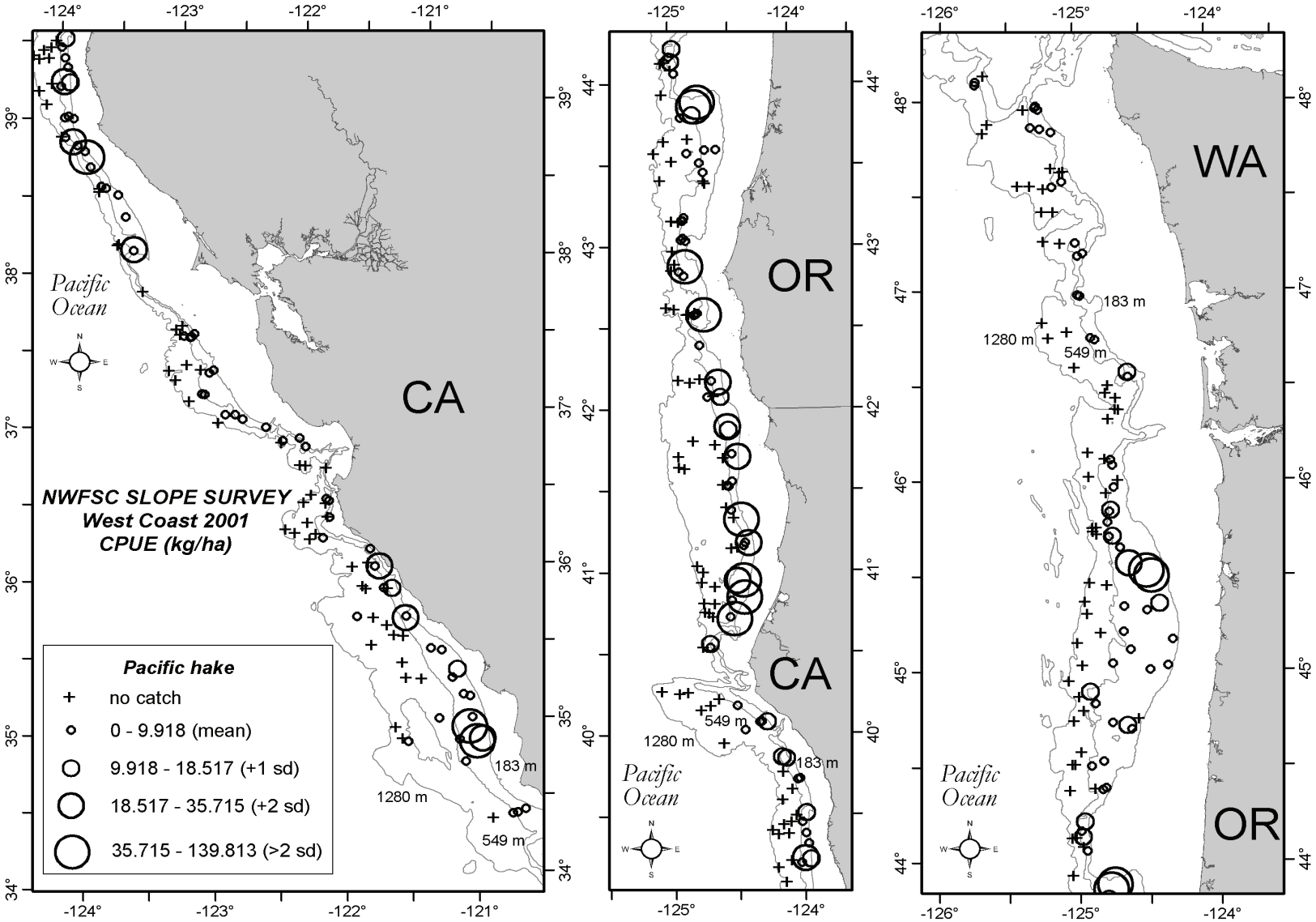


Figure 13. Pacific hake distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

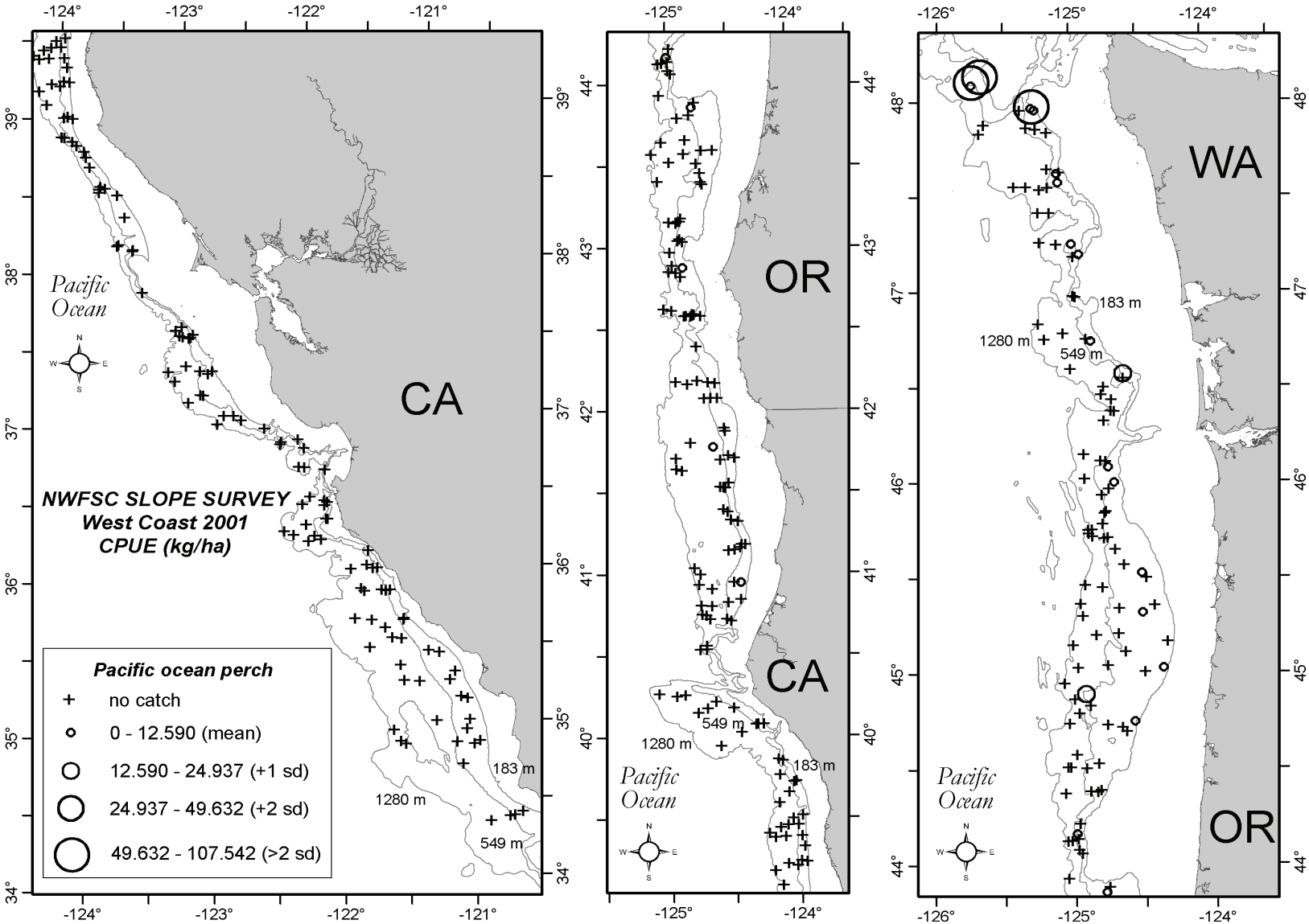


Figure 14. Pacific ocean perch distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

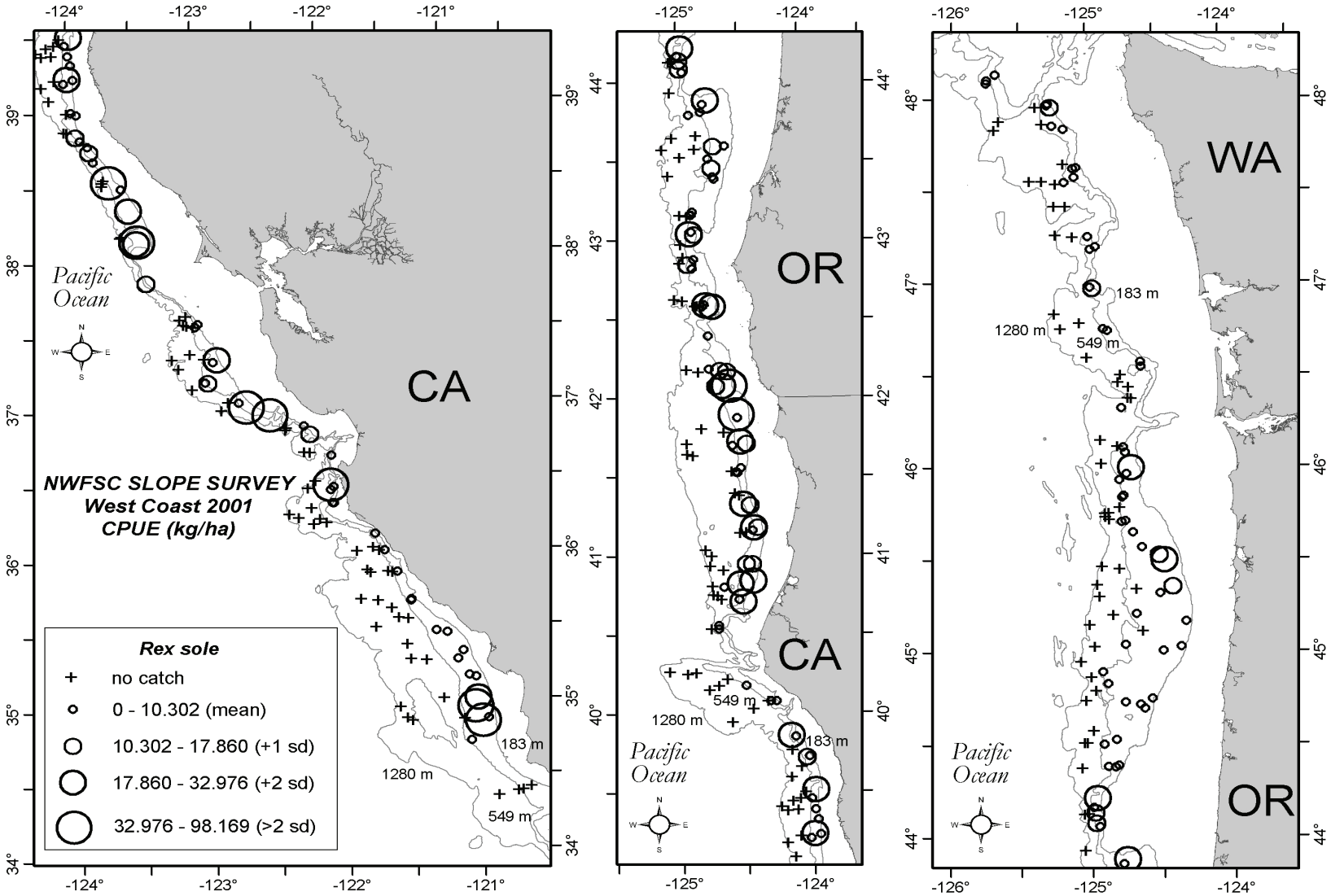


Figure 15. Rex sole distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

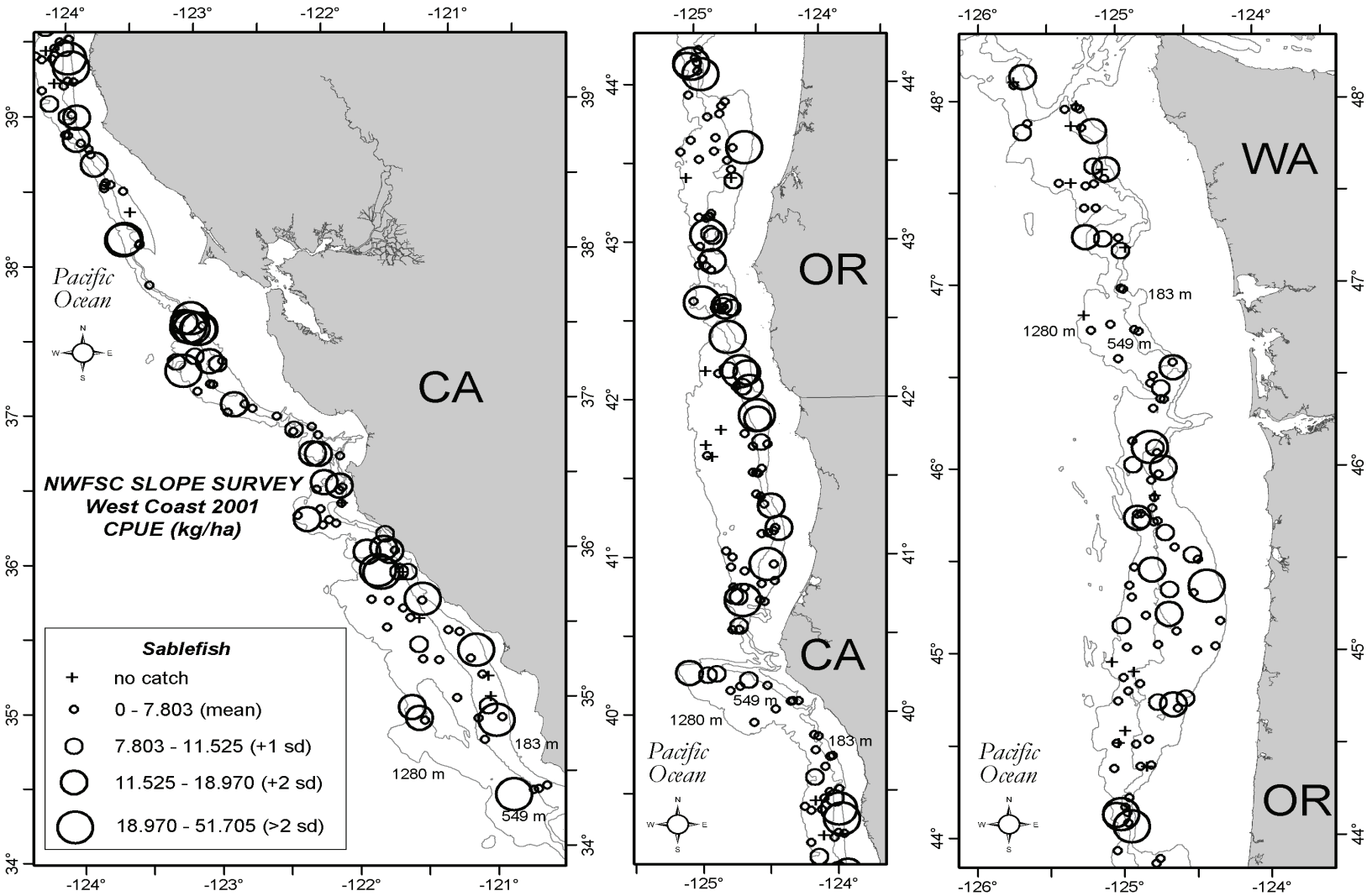


Figure 16. Sablefish distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

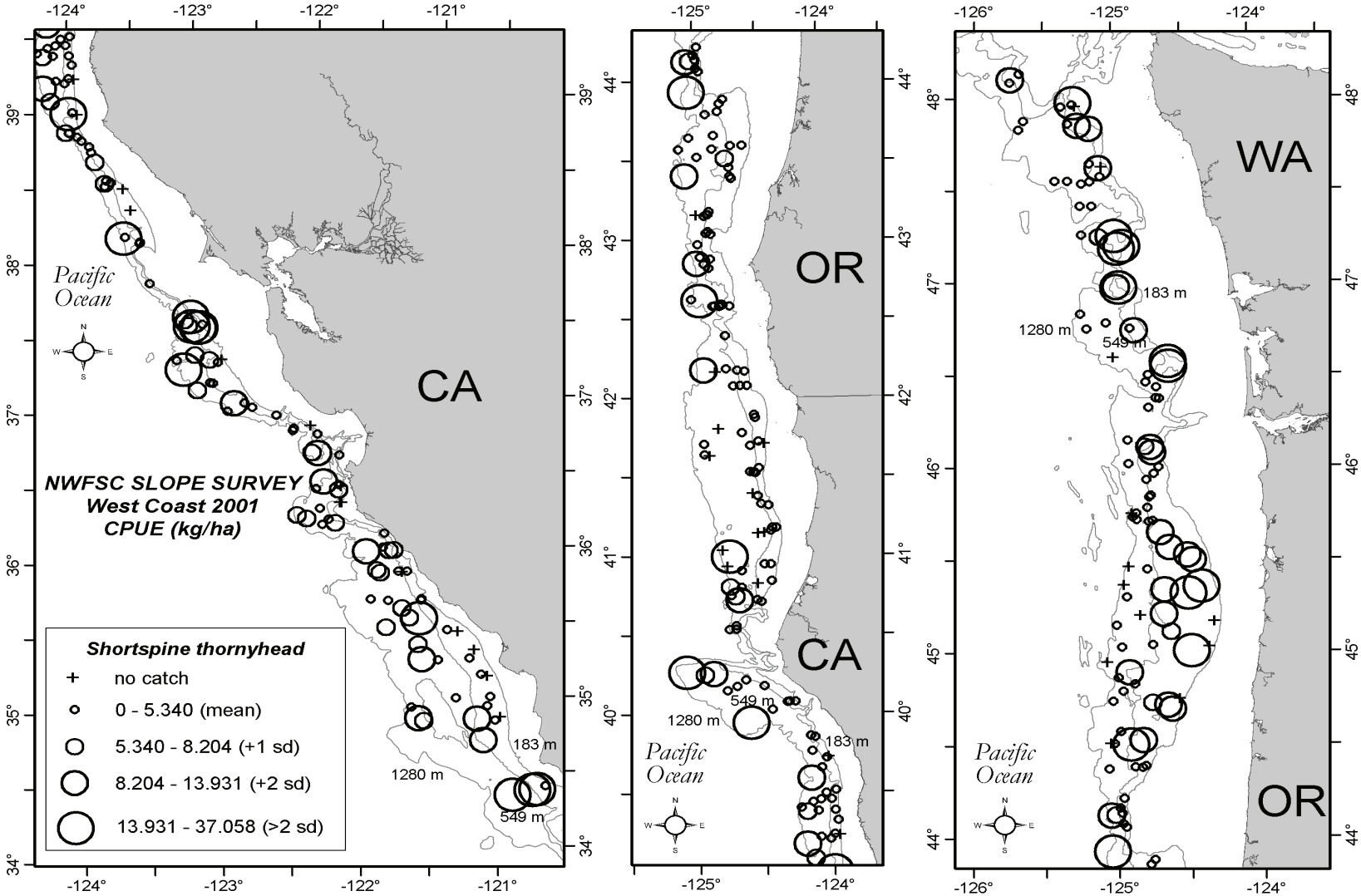


Figure 17. Shortspine thornyhead distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

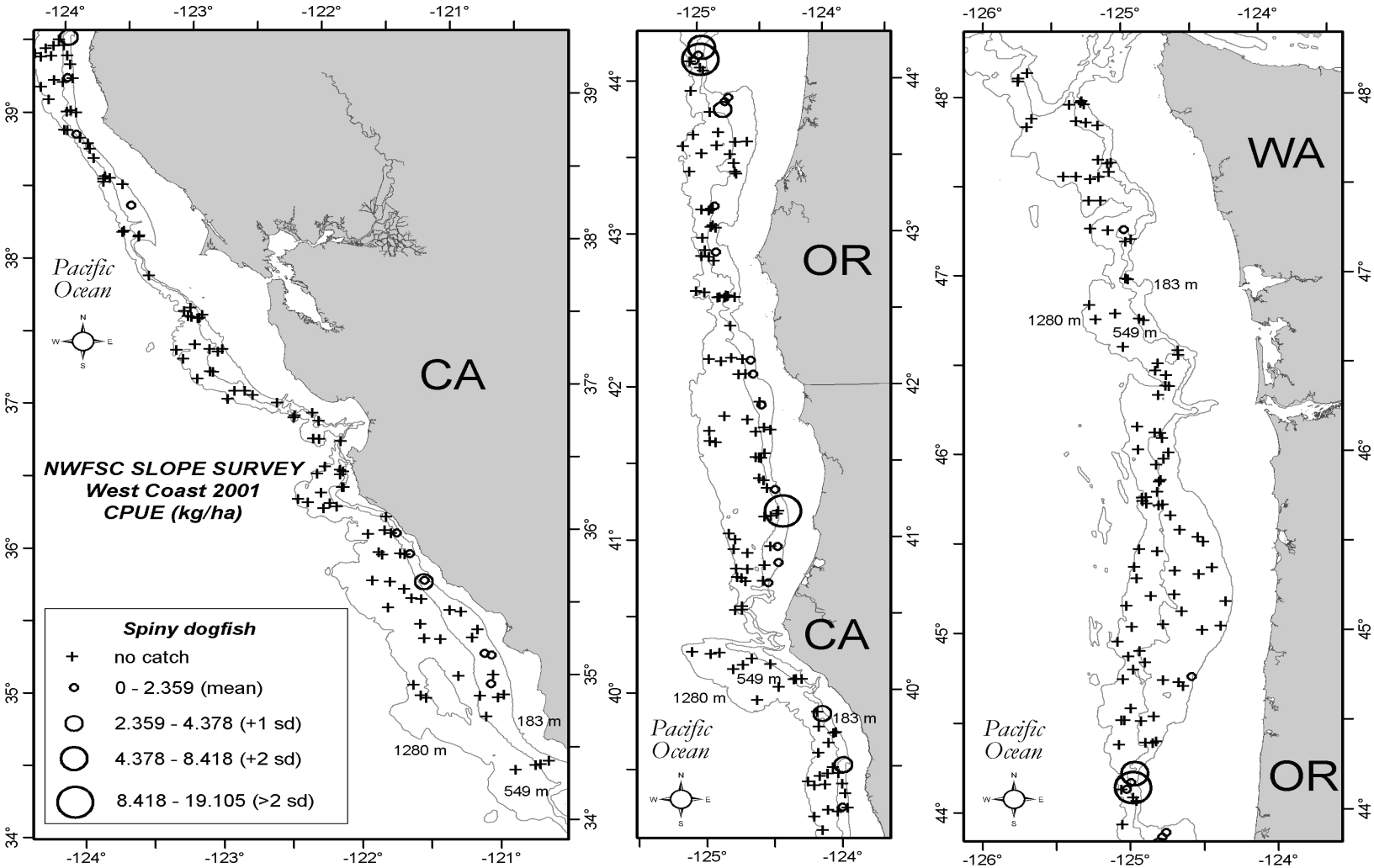


Figure 18. Spiny dogfish distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

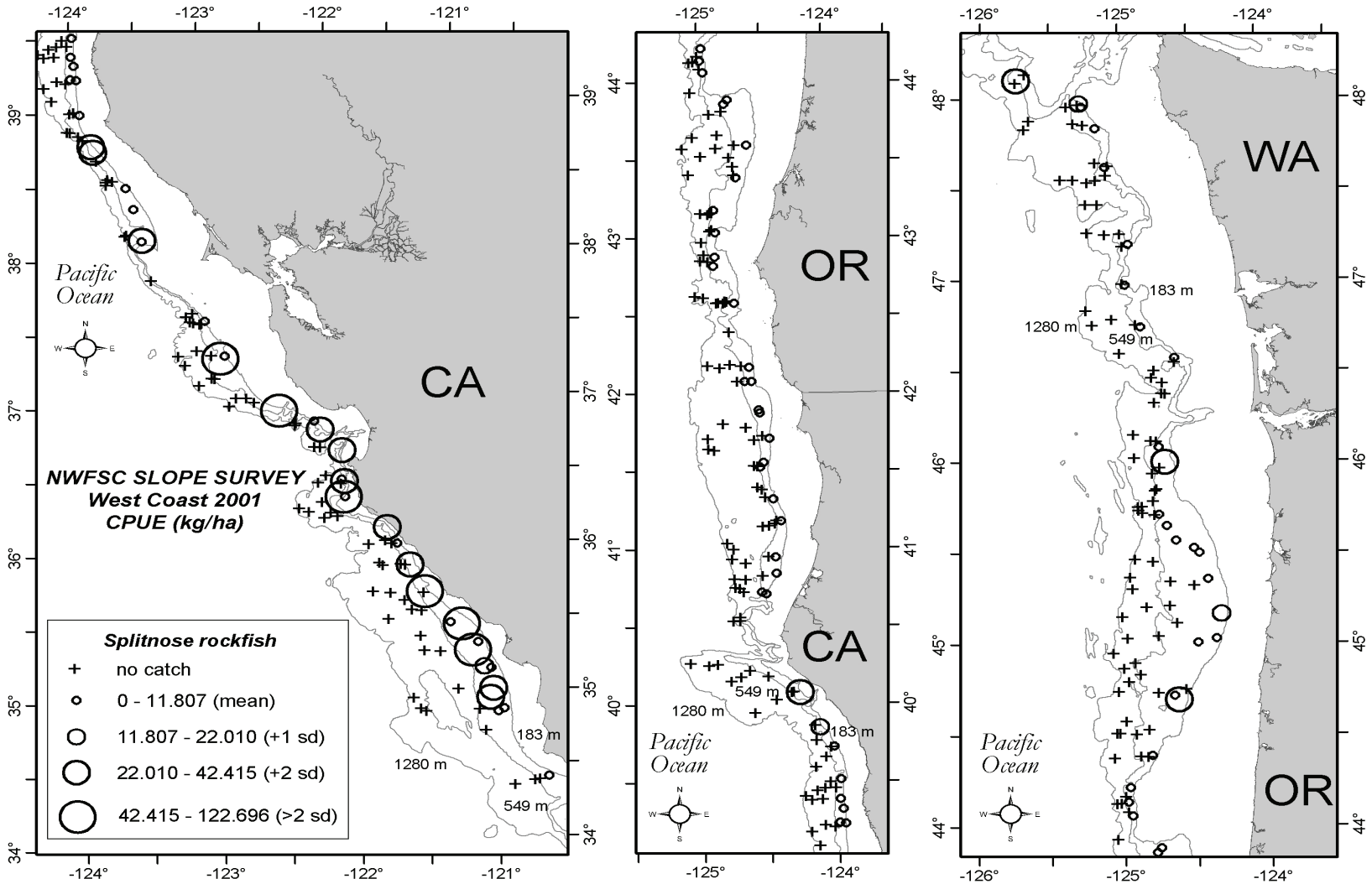


Figure 19. Splitnose rockfish distribution and relative abundance (kg/ha) from the 2001 NWFSC slope survey.

Table 17. Estimates of fish biomass (mt) and CV by stratum for the INPFC U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception areas from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	65,487	18	57,951	20	123,438	21
Longspine thornyhead	2,476	47	90,348	11	92,824	12
Sablefish	13,993	18	27,307	17	41,301	17
Pacific grenadier	23	106	40,595	37	40,618	42
Giant grenadier	402	201	29,676	23	30,078	26
Shortspine thornyhead	10,576	21	18,940	15	29,515	18
Grooved tanner crab	1,088	59	23,327	22	24,415	24
Pacific hake	20,132	32	650	67	20,782	58
Rex sole	19,359	31	543	113	19,902	57
Longnose skate	14,467	24	1,378	47	15,845	42
Splitnose rockfish	14,429	41	0	–	14,429	77
California slickhead	0	–	12,576	67	12,576	76
Arrowtooth flounder	7,262	70	95	131	7,357	131
Spotted ratfish	7,117	133	0	–	7,117	251
Stripetail rockfish	6,579	57	0	–	6,579	108
Pacific sleeper shark	27	432	6,487	160	6,515	180
Pacific ocean perch	6,386	90	6	264	6,392	171
Deepsea sole	56	95	6,002	19	6,058	21
Shortbelly rockfish	6,029	199	0	–	6,029	376
Brown cat shark	1,744	33	3,625	39	5,368	36

Table 18. Estimates of fish biomass (mt) and CV by stratum for the INPFC Conception area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	7,216	34	20,470	23	27,686	26
Longspine thornyhead	657	57	27,908	12	28,566	12
Sablefish	2,686	26	8,324	18	11,010	20
Pacific grenadier	0	–	1,464	78	1,464	79
Giant grenadier	0	–	1,019	38	1,019	39
Shortspine thornyhead	1,978	46	6,622	14	8,600	26
Grooved tanner crab	0	–	1,110	35	1,110	36
Pacific hake	5,517	27	400	61	5,917	58
Rex sole	4,389	54	0	–	4,389	121
Longnose skate	3,651	27	334	41	3,985	56
Splitnose rockfish	6,957	34	0	–	6,957	76
California slickhead	0	–	2,735	38	2,735	38
Arrowtooth flounder	0	–	0	–	0	–
Spotted ratfish	1,092	52	0	–	1,092	117
Stripetail rockfish	1,843	49	0	–	1,843	112
Pacific sleeper shark	0	–	0	–	0	–
Pacific ocean perch	0	–	0	–	0	–
Deepsea sole	0	–	1,079	21	1,079	21
Shortbelly rockfish	176	79	0	–	176	179
Brown cat shark	530	44	744	32	1,274	45

Table 19. Estimates of fish biomass (mt) and CV by stratum for the INPFC Monterey area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	19,940	15	25,623	14	45,563	17
Longspine thornyhead	438	51	21,691	9	22,129	10
Sablefish	2,280	18	8,046	14	10,326	14
Pacific grenadier	5	100	17,865	26	17,870	28
Giant grenadier	4	100	8,238	22	8,241	24
Shortspine thornyhead	785	20	6,065	12	6,850	12
Grooved tanner crab	99	39	4,223	13	4,322	14
Pacific hake	2,401	20	93	37	2,494	43
Rex sole	4,802	20	47	94	4,850	43
Longnose skate	2,614	25	652	31	3,266	45
Splitnose rockfish	4,531	29	0	–	4,531	64
California slickhead	0	–	5,106	24	5,106	25
Arrowtooth flounder	8	47	0	–	8	104
Spotted ratfish	4,898	63	0	–	4,898	140
Stripetail rockfish	4,003	27	0	–	4,003	59
Pacific sleeper shark	0	–	1,617	100	1,617	107
Pacific ocean perch	0	–	0	–	0	–
Deepsea sole	15	95	2,082	15	2,097	16
Shortbelly rockfish	5,851	68	0	–	5,851	151
Brown cat shark	431	24	1,610	33	2,041	30

Table 20. Estimates of fish biomass (mt) and CV by stratum for the INPFC Eureka area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	6,258	17	7,699	18	13,957	23
Longspine thornyhead	119	49	17,133	10	17,252	10
Sablefish	1,965	13	4,101	22	6,066	19
Pacific grenadier	0	100	9,303	28	9,303	28
Giant grenadier	201	92	8,970	16	9,171	17
Shortspine thornyhead	386	15	2,474	23	2,861	20
Grooved tanner crab	191	58	8,494	19	8,685	19
Pacific hake	4,730	26	35	42	4,766	70
Rex sole	3,715	19	477	48	4,191	46
Longnose skate	1,378	22	232	49	1,610	51
Splitnose rockfish	250	23	0	–	250	63
California slickhead	0	–	4,027	73	4,027	73
Arrowtooth flounder	131	47	0	–	131	127
Spotted ratfish	26	48	0	–	26	130
Stripetail rockfish	250	68	0	–	250	185
Pacific sleeper shark	27	100	5	100	32	229
Pacific ocean perch	9	76	6	100	15	133
Deepsea sole	0	–	1,359	17	1,359	17
Shortbelly rockfish	1	100	0	–	1	271
Brown cat shark	156	20	567	21	723	20

Table 21. Estimates of fish biomass (mt) and CV by stratum for the INPFC Columbia area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	24,397	9	3,381	30	27,778	14
Longspine thornyhead	900	27	19,756	9	20,656	11
Sablefish	5,597	12	5,678	14	11,275	13
Pacific grenadier	15	79	9,790	18	9,805	23
Giant grenadier	136	59	9,783	15	9,919	19
Shortspine thornyhead	5,763	12	3,165	18	8,928	15
Grooved tanner crab	570	38	8,521	11	9,090	13
Pacific hake	6,939	19	41	92	6,980	31
Rex sole	5,281	12	19	90	5,300	20
Longnose skate	5,127	21	58	100	5,185	34
Splitnose rockfish	1,720	35	0	–	1,720	55
California slickhead	0	–	677	25	677	31
Arrowtooth flounder	2,421	20	48	70	2,469	32
Spotted ratfish	681	31	0	–	681	50
Stripetail rockfish	472	100	0	–	472	159
Pacific sleeper shark	0	–	4,865	100	4,865	125
Pacific ocean perch	1,090	43	0	–	1,090	69
Deepsea sole	24	60	1,026	14	1,050	17
Shortbelly rockfish	0	–	0	–	0	–
Brown cat shark	578	23	492	22	1,069	23

Table 22. Estimates of fish biomass (mt) and CV by stratum for the INPFC U.S.-Vancouver area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m		**Stratum 2 550–1,280 m**		**All strata 183–1,280 m**	
	Biomass	CV	Biomass	CV	Biomass	CV
Species	(mt)	%	(mt)	%	(mt)	%
Dover sole	7,676	14	778	61	8,454	19
Longspine thornyhead	362	71	3,859	31	4,221	41
Sablefish	1,465	39	1,158	30	2,623	36
Pacific grenadier	3	100	2,174	78	2,177	110
Giant grenadier	62	72	1,667	24	1,729	32
Shortspine thornyhead	1,663	27	614	11	2,277	28
Grooved tanner crab	229	54	980	43	1,209	51
Pacific hake	545	45	81	100	626	58
Rex sole	1,172	26	0	–	1,172	37
Longnose skate	1,697	31	102	65	1,799	41
Splitnose rockfish	971	71	0	–	971	99
California slickhead	0	–	31	80	31	114
Arrowtooth flounder	4,702	53	47	66	4,749	74
Spotted ratfish	420	92	0	–	420	128
Stripetail rockfish	12	100	0	–	12	140
Pacific sleeper shark	0	–	0	–	0	–
Pacific ocean perch	5,287	54	0	–	5,287	75
Deepsea sole	17	67	456	27	473	37
Shortbelly rockfish	0	–	0	–	0	–
Brown cat shark	50	82	211	55	261	67

Table 23. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception areas from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	162	162	161	131	132	131
Longspine thornyhead	46	48	46	167	168	166
Sablefish	151	154	153	155	154	152
Pacific grenadier	6	6	2	132	132	17
Giant grenadier	12	12	4	130	130	17
Shortspine thornyhead	143	144	143	153	155	153
Grooved tanner crab	58	58	0	166	166	0
Pacific hake	150	150	21	25	25	0
Rex sole	157	157	24	13	13	3
Longnose skate	143	143	21	31	31	1
Splitnose rockfish	86	89	11	0	0	0
California slickhead	0	0	0	124	125	9
Arrowtooth flounder	64	65	13	4	4	2
Spotted ratfish	74	73	0	0	0	0
Stripetail rockfish	38	38	1	0	0	0
Pacific sleeper shark	1	1	0	3	2	0
Pacific ocean perch	23	23	17	1	1	1
Deepsea sole	8	8	0	135	135	14
Shortbelly rockfish	16	16	15	0	0	0
Brown cat shark	88	89	13	138	138	13
Chilipepper	32	33	1	0	0	0
Bigfin eelpout	141	141	10	10	12	0
Twoline eelpout	17	17	1	107	107	5
Pacific flatnose	37	38	3	144	144	11
Roughtail skate	1	1	1	61	62	9
Bering skate	120	120	18	9	9	0
Aurora rockfish	73	73	9	6	6	3
Darkblotched rockfish	54	54	45	0	0	0
Rougheye rockfish	22	22	3	0	0	0
Greenstriped rockfish	18	18	4	0	0	0

Table 24. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC U.S.-Vancouver area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	12	12	12	3	3	3
Longspine thornyhead	4	4	4	8	8	8
Sablefish	9	10	10	6	6	6
Pacific grenadier	1	1	0	7	7	1
Giant grenadier	2	2	0	8	8	1
Shortspine thornyhead	10	10	10	8	8	8
Grooved tanner crab	5	5	0	8	8	0
Pacific hake	9	9	0	1	1	0
Rex sole	12	12	2	0	0	0
Longnose skate	12	12	2	2	2	0
Splitnose rockfish	4	5	1	0	0	0
California slickhead	0	0	0	2	2	0
Arrowtooth flounder	10	10	1	2	2	1
Spotted ratfish	3	3	0	0	0	0
Stripetail rockfish	1	1	0	0	0	0
Pacific sleeper shark	0	0	0	0	0	0
Pacific ocean perch	8	8	4	0	0	0
Deepsea sole	2	2	0	7	7	1
Shortbelly rockfish	0	0	0	0	0	0
Brown cat shark	4	4	0	7	7	1
Chilipepper	0	0	0	0	0	0
Bigfin eelpout	8	8	0	0	0	0
Twoline eelpout	2	2	0	7	7	0
Pacific flatnose	2	2	0	8	8	0
Roughtail skate	0	0	0	4	4	0
Bering skate	8	8	1	0	0	0
Aurora rockfish	3	3	0	0	0	0
Darkblotched rockfish	4	4	1	0	0	0
Rougheye rockfish	3	3	0	0	0	0
Greenstriped rockfish	3	3	1	0	0	0

Table 25. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC Columbia area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	62	62	62	25	25	24
Longspine thornyhead	22	23	22	48	48	46
Sablefish	56	58	58	44	44	42
Pacific grenadier	3	3	2	45	45	7
Giant grenadier	6	6	2	44	44	7
Shortspine thornyhead	59	59	59	41	41	39
Grooved tanner crab	27	27	0	47	47	0
Pacific hake	56	56	15	2	2	0
Rex sole	60	60	16	2	2	1
Longnose skate	49	49	14	1	1	0
Splitnose rockfish	27	27	8	0	0	0
California slickhead	0	0	0	33	33	0
Arrowtooth flounder	38	38	9	2	2	1
Spotted ratfish	23	22	0	0	0	0
Stripetail rockfish	2	2	0	0	0	0
Pacific sleeper shark	0	0	0	1	0	0
Pacific ocean perch	13	13	11	0	0	0
Deepsea sole	4	4	0	38	38	5
Shortbelly rockfish	0	0	0	0	0	0
Brown cat shark	30	30	10	33	33	5
Chilipepper	0	0	0	0	0	0
Bigfin eelpout	52	52	5	0	0	0
Twoline eelpout	7	7	0	36	36	1
Pacific flatnose	18	19	1	44	44	1
Roughtail skate	1	1	1	25	25	4
Bering skate	43	43	12	0	0	0
Aurora rockfish	29	29	6	0	0	0
Darkblotched rockfish	21	21	18	0	0	0
Rougheye rockfish	17	17	3	0	0	0
Greenstriped rockfish	5	5	2	0	0	0

Table 26. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC Eureka area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	27	27	27	34	34	34
Longspine thornyhead	7	8	8	37	37	37
Sablefish	28	28	28	33	33	33
Pacific grenadier	1	1	0	30	30	9
Giant grenadier	3	3	2	33	33	9
Shortspine thornyhead	26	27	27	29	31	31
Grooved tanner crab	12	12	0	37	37	0
Pacific hake	26	26	6	6	6	0
Rex sole	27	27	6	9	9	2
Longnose skate	26	26	5	6	6	1
Splitnose rockfish	16	16	2	0	0	0
California slickhead	0	0	0	26	27	9
Arrowtooth flounder	11	11	3	0	0	0
Spotted ratfish	4	4	0	0	0	0
Stripetail rockfish	4	4	1	0	0	0
Pacific sleeper shark	1	1	0	1	1	0
Pacific ocean perch	2	2	2	1	1	1
Deepsea sole	0	0	0	30	30	8
Shortbelly rockfish	1	1	1	0	0	0
Brown cat shark	20	20	3	32	32	7
Chilipepper	4	4	1	0	0	0
Bigfin eelpout	26	26	5	2	2	0
Twoline eelpout	5	5	1	21	21	4
Pacific flatnose	11	11	2	35	35	10
Roughtail skate	0	0	0	13	14	5
Bering skate	23	23	5	2	2	0
Aurora rockfish	11	11	3	0	0	0
Darkblotched rockfish	9	9	9	0	0	0
Rougheye rockfish	1	1	0	0	0	0
Greenstriped rockfish	2	2	1	0	0	0

Table 27. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC Monterey area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	43	43	42	53	53	53
Longspine thornyhead	9	9	8	57	58	58
Sablefish	42	42	41	56	55	55
Pacific grenadier	1	1	0	42	42	0
Giant grenadier	1	1	0	37	37	0
Shortspine thornyhead	34	34	33	58	58	58
Grooved tanner crab	14	14	0	57	57	0
Pacific hake	41	41	0	12	12	0
Rex sole	44	44	0	2	2	0
Longnose skate	38	38	0	16	16	0
Splitnose rockfish	26	28	0	0	0	0
California slickhead	0	0	0	49	49	0
Arrowtooth flounder	5	6	0	0	0	0
Spotted ratfish	33	33	0	0	0	0
Stripetail rockfish	22	22	0	0	0	0
Pacific sleeper shark	0	0	0	1	1	0
Pacific ocean perch	0	0	0	0	0	0
Deepsea sole	2	2	0	48	48	0
Shortbelly rockfish	12	12	11	0	0	0
Brown cat shark	22	22	0	52	52	0
Chilipepper	19	20	0	0	0	0
Bigfin eelpout	39	39	0	7	9	0
Twoline eelpout	3	3	0	32	32	0
Pacific flatnose	6	6	0	45	45	0
Roughtail skate	0	0	0	15	15	0
Bering skate	34	34	0	7	7	0
Aurora rockfish	18	18	0	5	5	3
Darkblotched rockfish	18	18	16	0	0	0
Rougheye rockfish	1	1	0	0	0	0
Greenstriped rockfish	8	8	0	0	0	0

Table 28. Number of hauls by depth strata where weight (Wt.), number of fish (No.), and lengths (Len.) were collected for the 30 most abundant groundfish and selected invertebrate species in the INPFC Conception area from the 2001 NWFSC slope survey.

	Stratum 1 183–549 m Total hauls = 158			**Stratum 2 550–1,280 m Total hauls = 172**		
	Hauls with:			Hauls with:		
Species	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	18	18	18	16	17	17
Longspine thornyhead	4	4	4	17	17	17
Sablefish	16	16	16	16	16	16
Pacific grenadier	0	0	0	8	8	0
Giant grenadier	0	0	0	8	8	0
Shortspine thornyhead	14	14	14	17	17	17
Grooved tanner crab	0	0	0	17	17	0
Pacific hake	18	18	0	4	4	0
Rex sole	14	14	0	0	0	0
Longnose skate	18	18	0	6	6	0
Splitnose rockfish	13	13	0	0	0	0
California slickhead	0	0	0	14	14	0
Arrowtooth flounder	0	0	0	0	0	0
Spotted ratfish	11	11	0	0	0	0
Stripetail rockfish	9	9	0	0	0	0
Pacific sleeper shark	0	0	0	0	0	0
Pacific ocean perch	0	0	0	0	0	0
Deepsea sole	0	0	0	12	12	0
Shortbelly rockfish	3	3	3	0	0	0
Brown cat shark	12	13	0	14	14	0
Chilipepper	9	9	0	0	0	0
Bigfin eelpout	16	16	0	1	1	0
Twoline eelpout	0	0	0	11	11	0
Pacific flatnose	0	0	0	12	12	0
Roughtail skate	0	0	0	4	4	0
Bering skate	12	12	0	0	0	0
Aurora rockfish	12	12	0	1	1	0
Darkblotched rockfish	2	2	1	0	0	0
Rougheye rockfish	0	0	0	0	0	0
Greenstriped rockfish	0	0	0	0	0	0

Size Compositions

Figures 20–43 show the estimated population length frequencies for the four Dover sole, shortspine and longspine thornyhead, and sablefish (DTS) complex species and are presented by depth stratum for all INPFC areas combined, and for individual INPFC areas. Note that the length frequencies are the sum of all measured fish and are not adjusted for subsampling, area swept, or stratum size.

Analysis Approach and Data Requests

Population parameters were estimated using statistical procedures similar to those used by Lauth (1999) for comparable surveys conducted on the RV *Miller Freeman*. This approach does not consider possible differences between vessels, treating each tow as both independent and random. A statistical analysis that explicitly considers vessel effects, the probability distribution of catch per tow, and alternative stratifications is under development (Helser et al. 2004). The results from this analysis will lead to a better understanding of the slope survey data and may require an updating of the results and analysis presented in this document at a later date.

This document only includes information for key species. For information on other species that are not listed in this document or more detailed information, please contact the senior author, Aimee Keller, at 206-860-3460 or aimee.keller@noaa.gov.

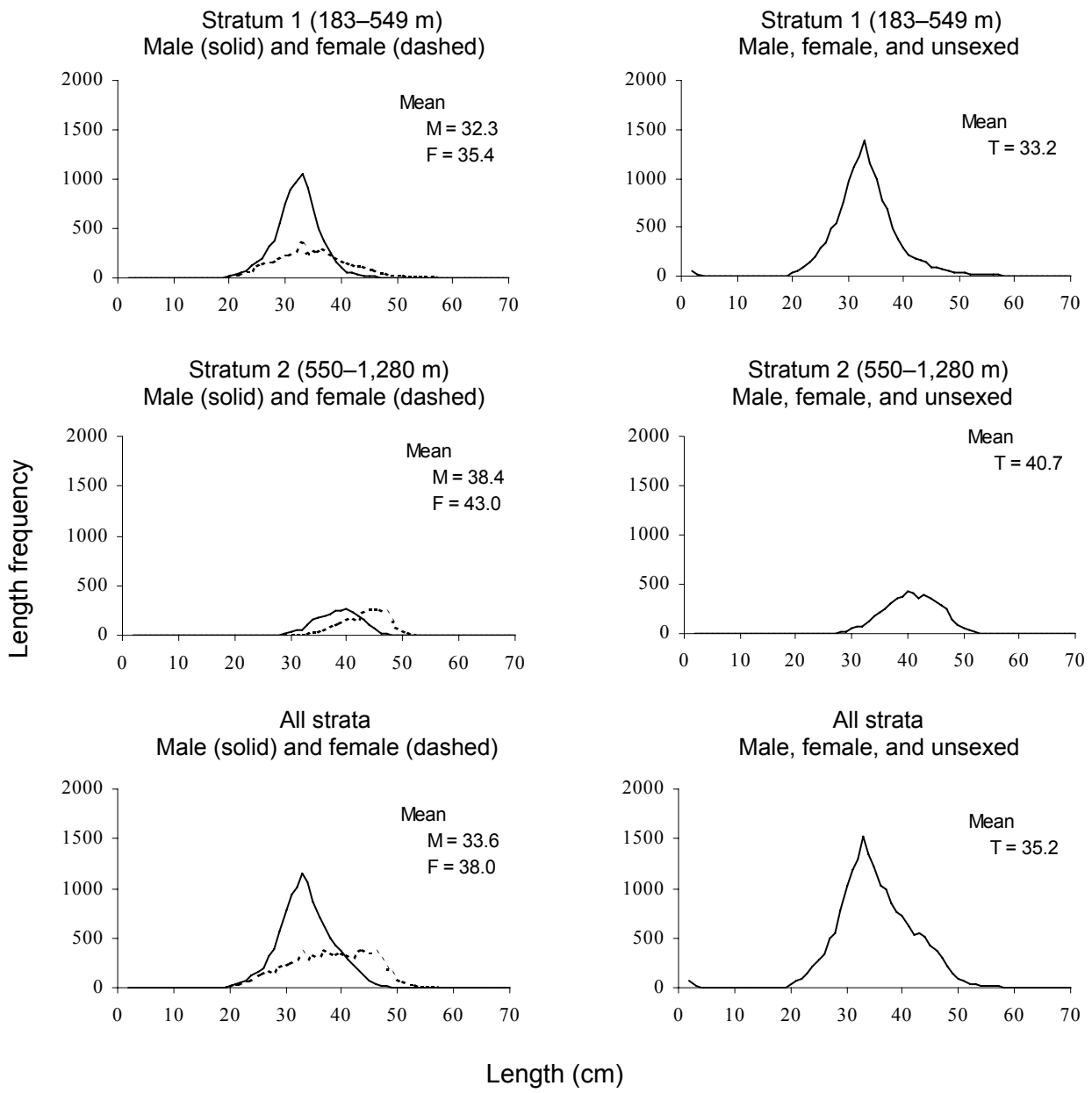


Figure 20. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for all INPFC areas sampled during the 2001 NWFSC slope survey.

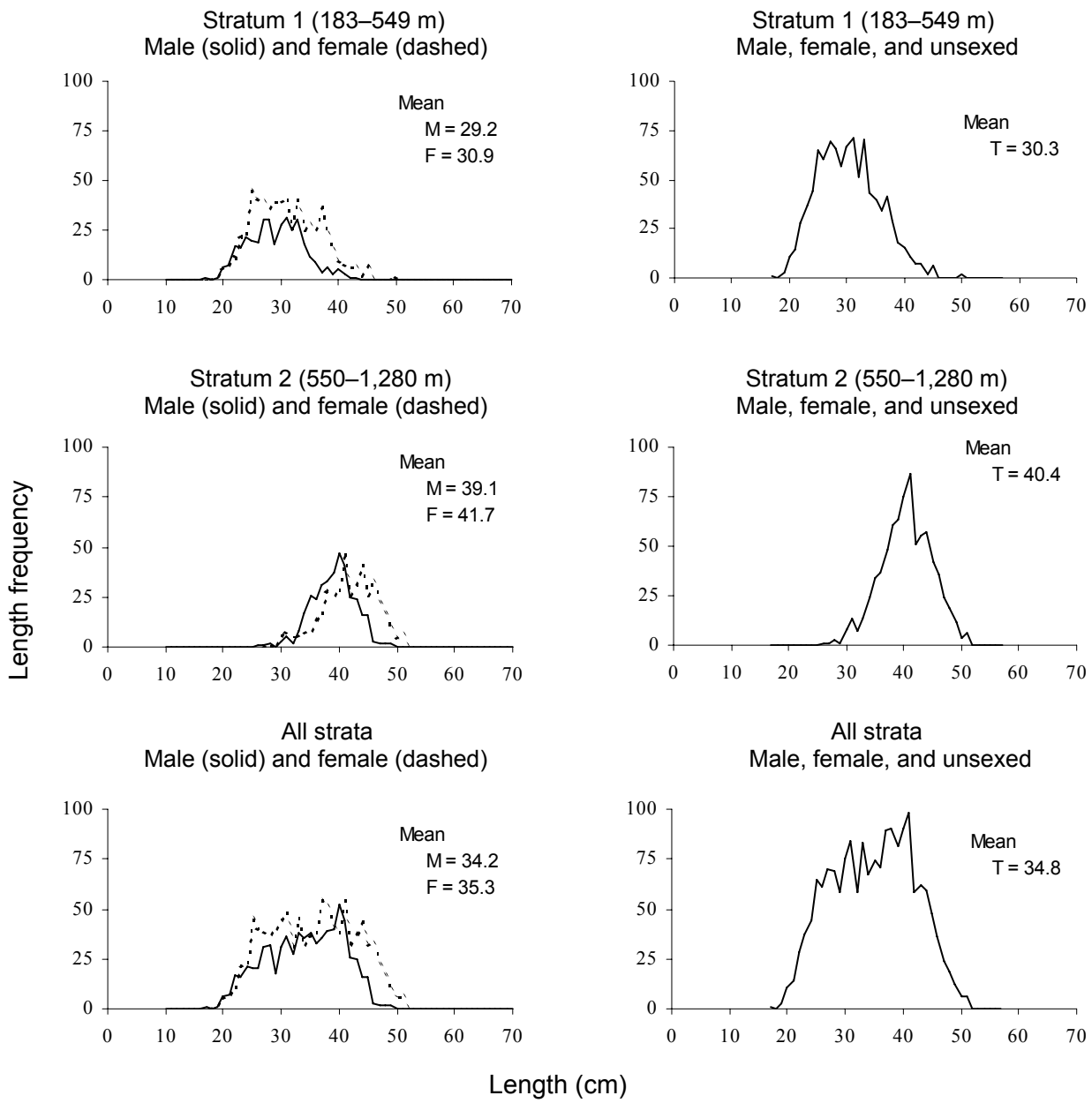


Figure 21. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Conception area from the 2001 NWFSC slope survey.

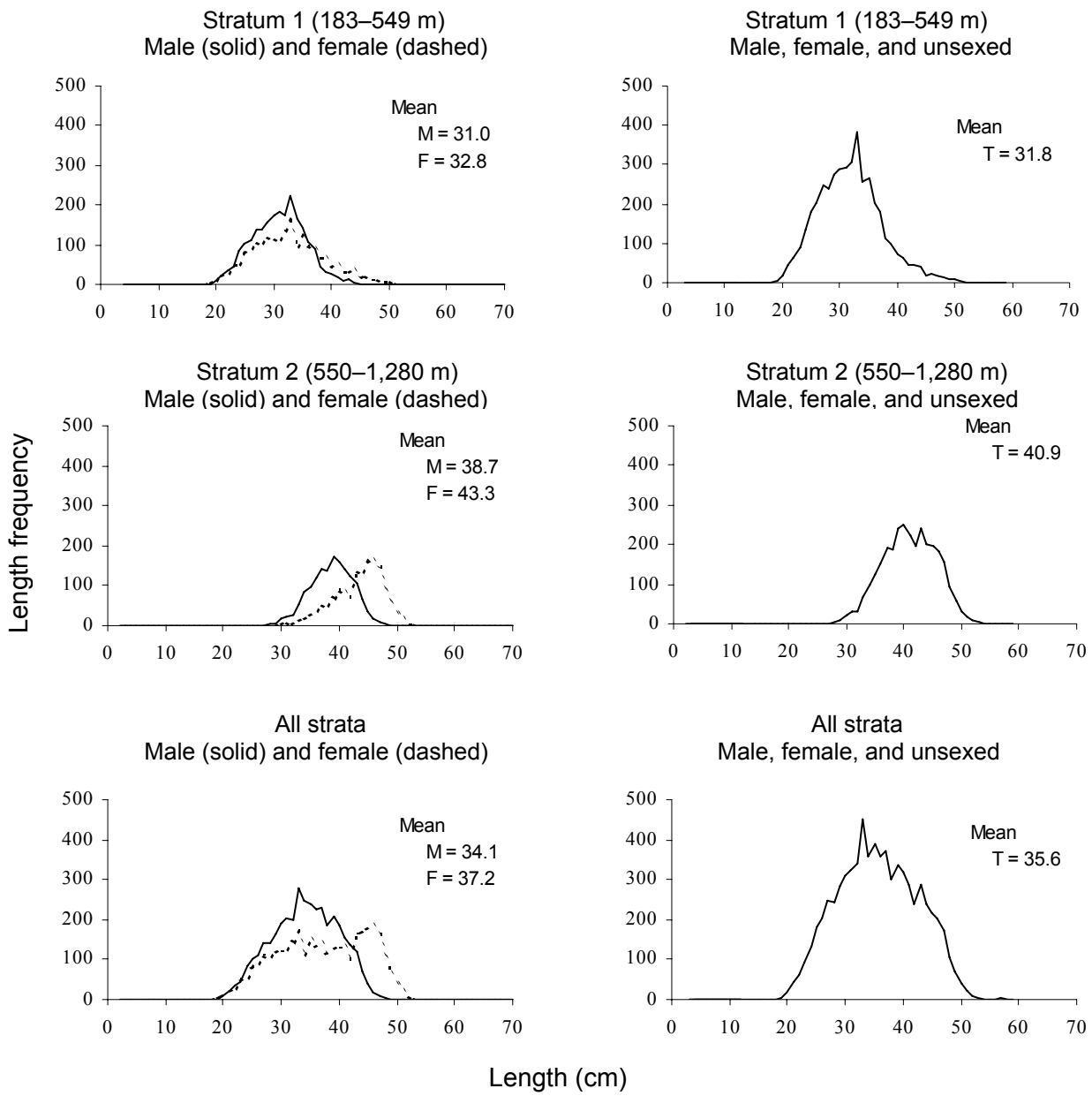


Figure 22. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Monterey area from the 2001 NWFSC slope survey.

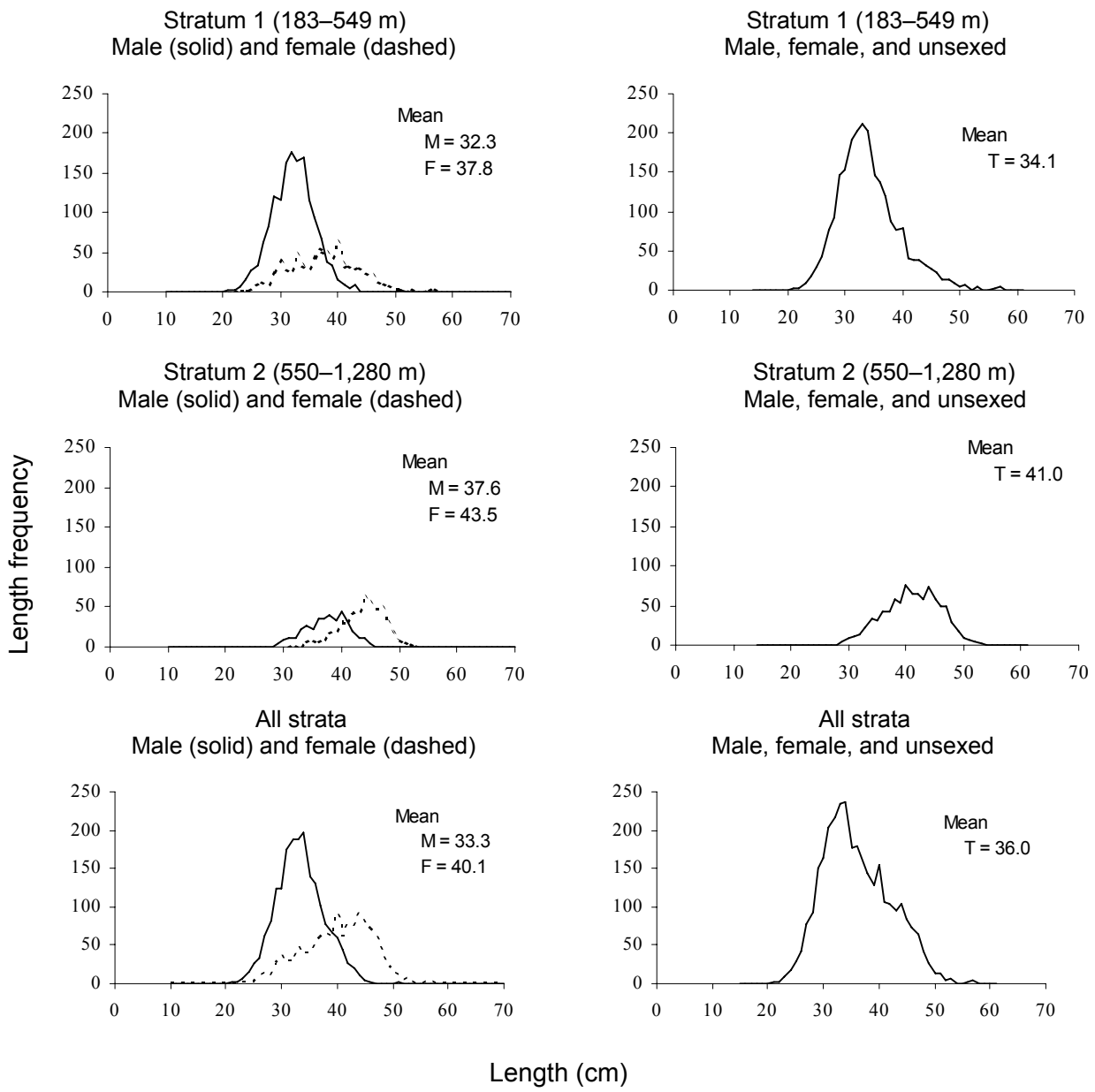


Figure 23. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Eureka area from the 2001 NWFSC slope survey.

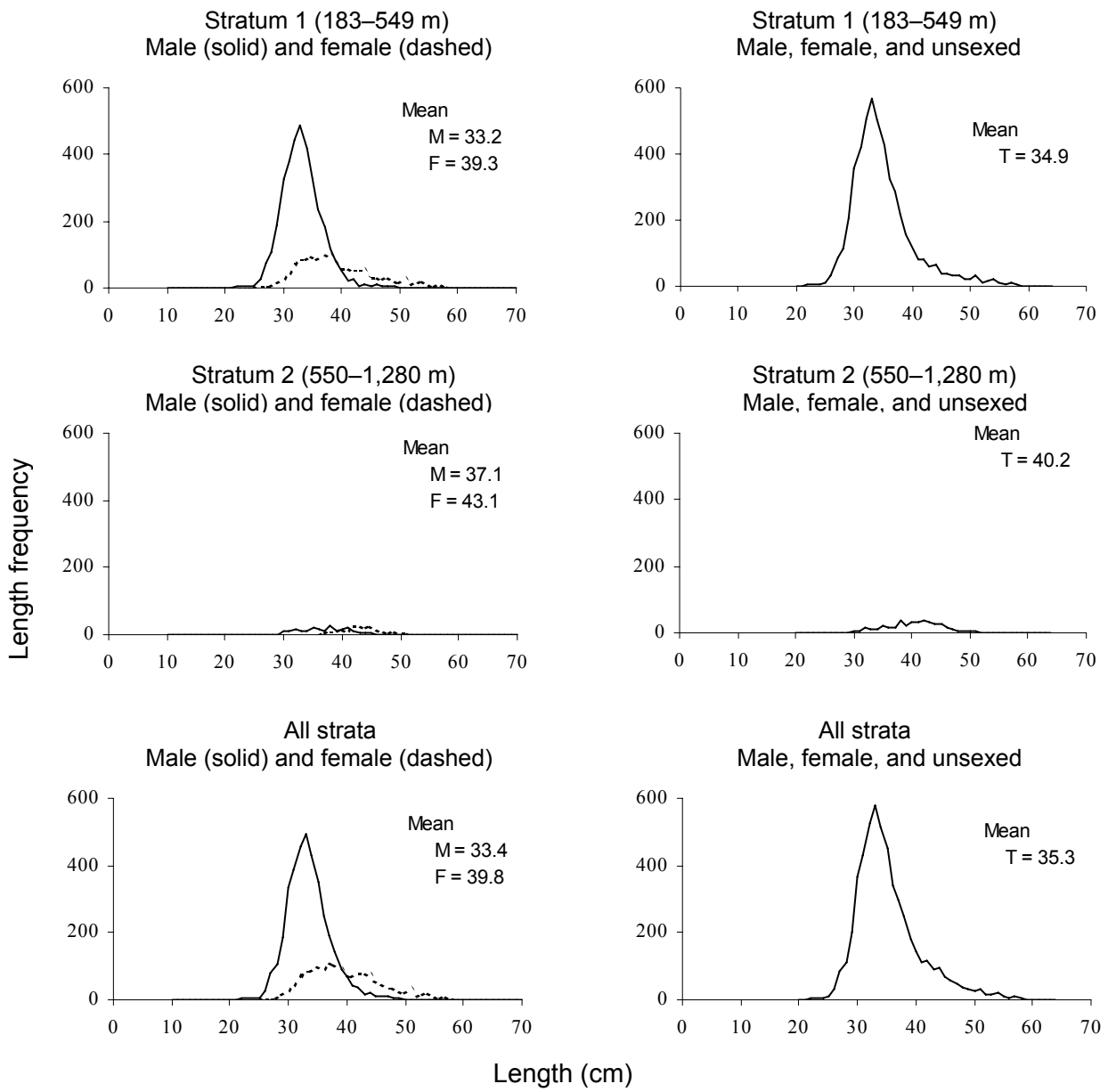


Figure 24. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Columbia area from the 2001 NWFSC slope survey.

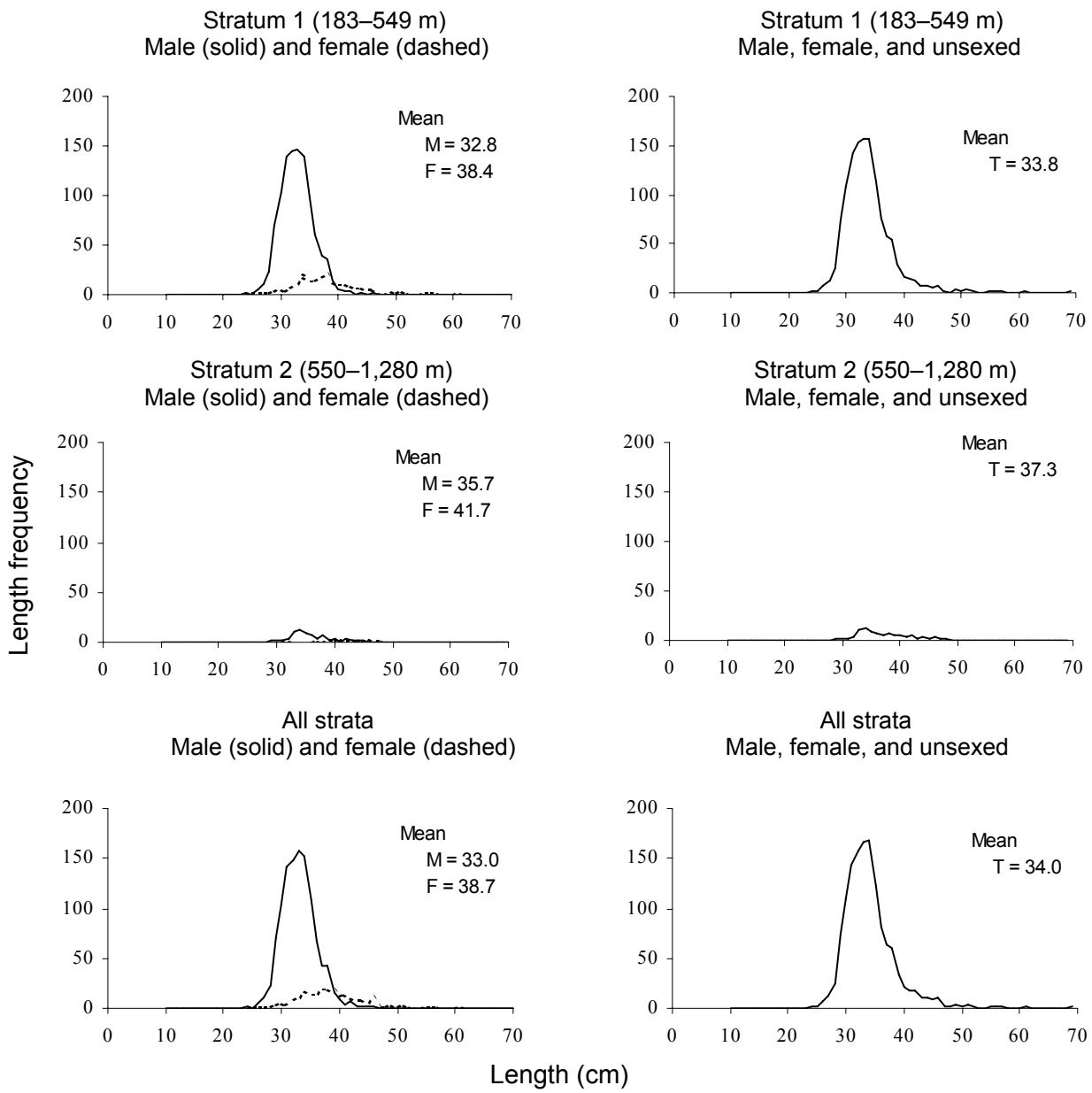


Figure 25. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC U.S.-Vancouver area from the 2001 NWFSC slope survey.

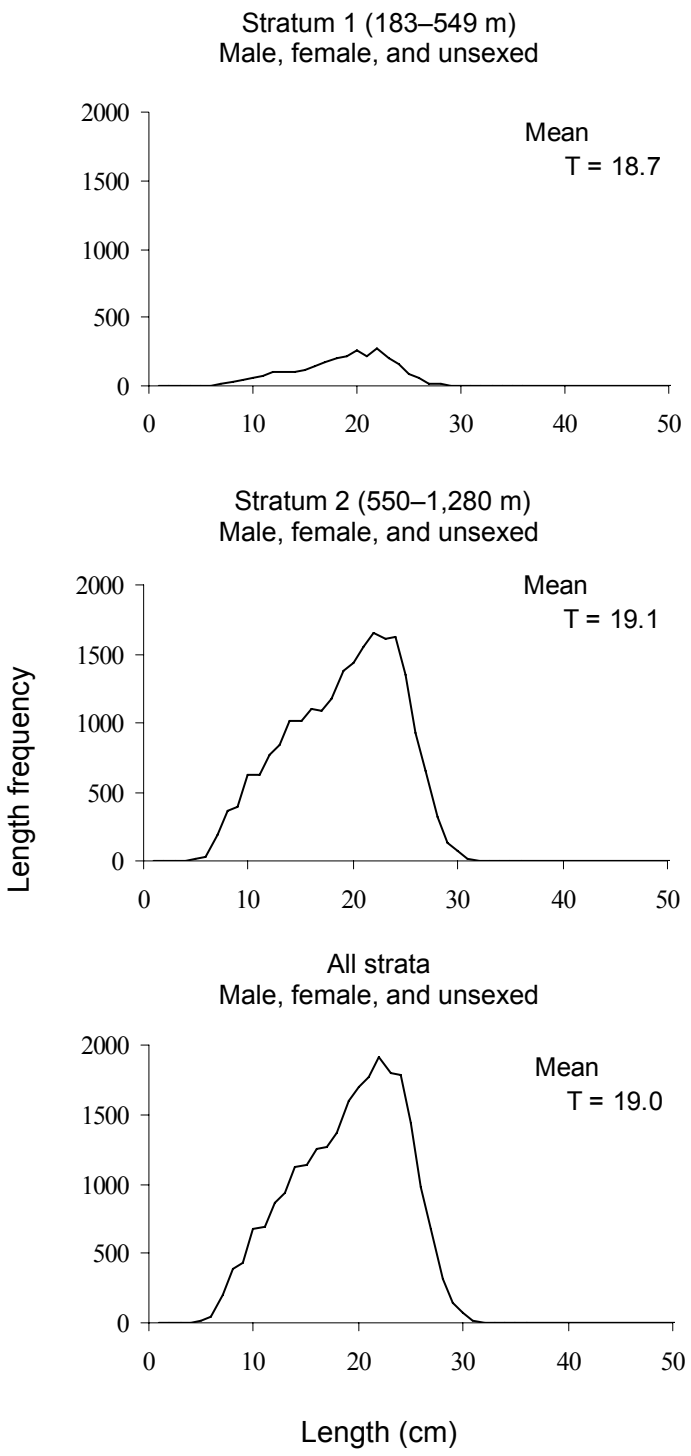


Figure 26. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for all INPFC areas sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

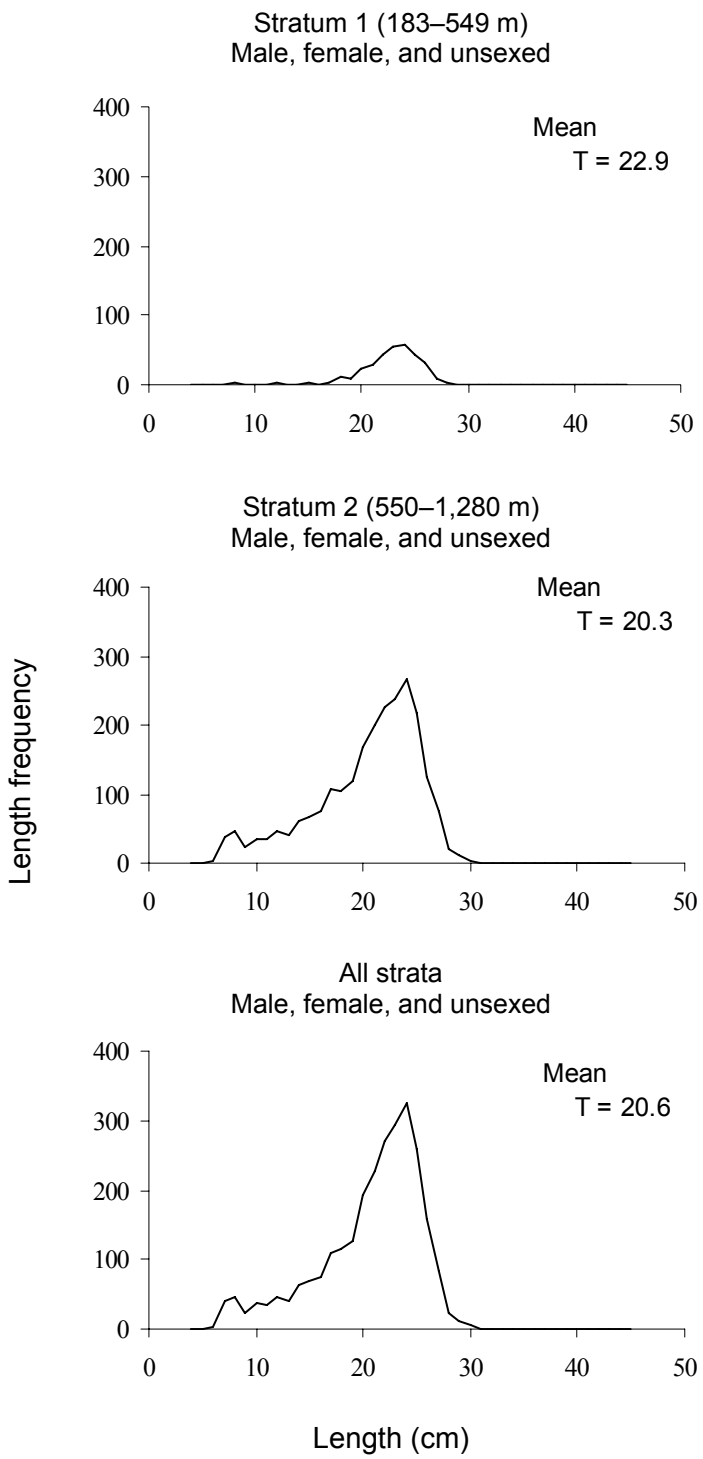


Figure 27. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Conception area from the 2001 NWFSC slope survey (T = males, females, and unsexed).

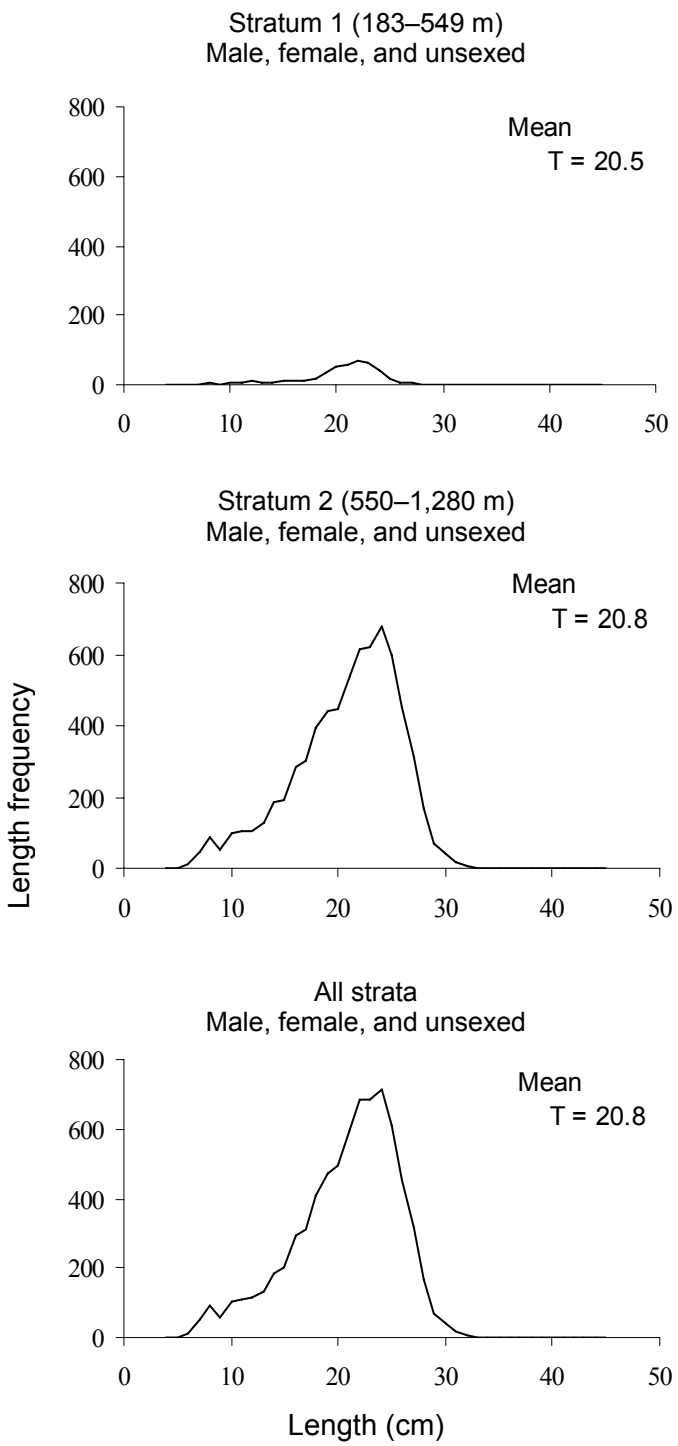


Figure 28. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Monterey area from the 2001 NWFSC slope survey (T = males, females, and unsexed).

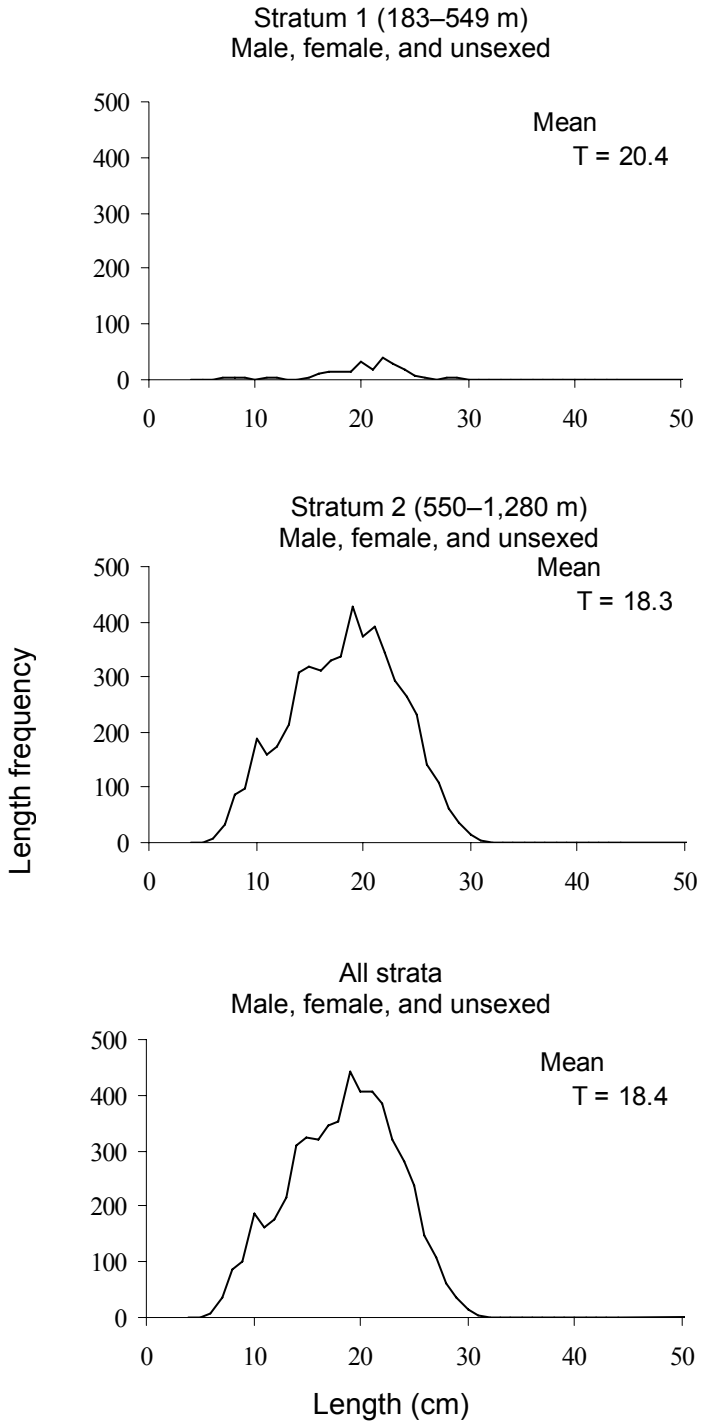


Figure 29. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Eureka area from the 2001 NWFSC slope survey (T = males, females, and unsexed).

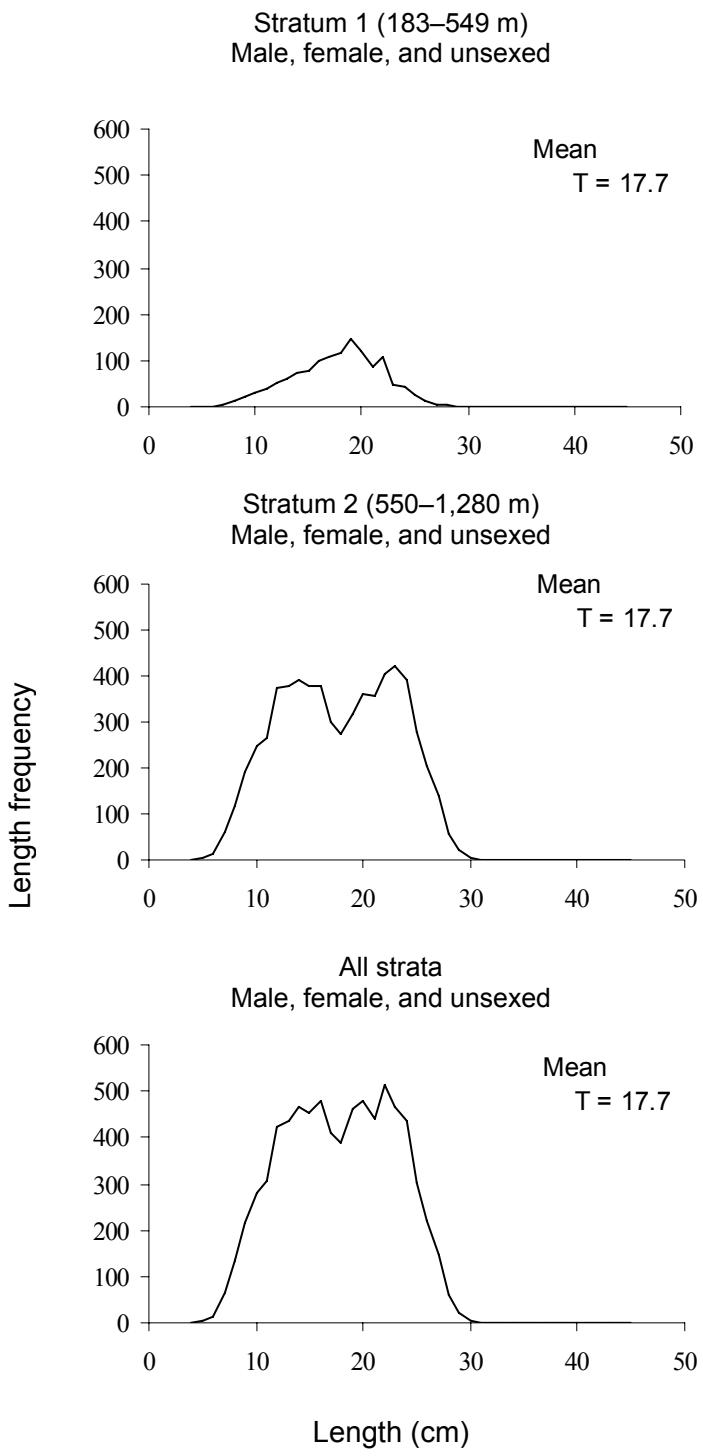


Figure 30. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Columbia area from the 2001 NWFSC slope survey (T = males, females, and unsexed).

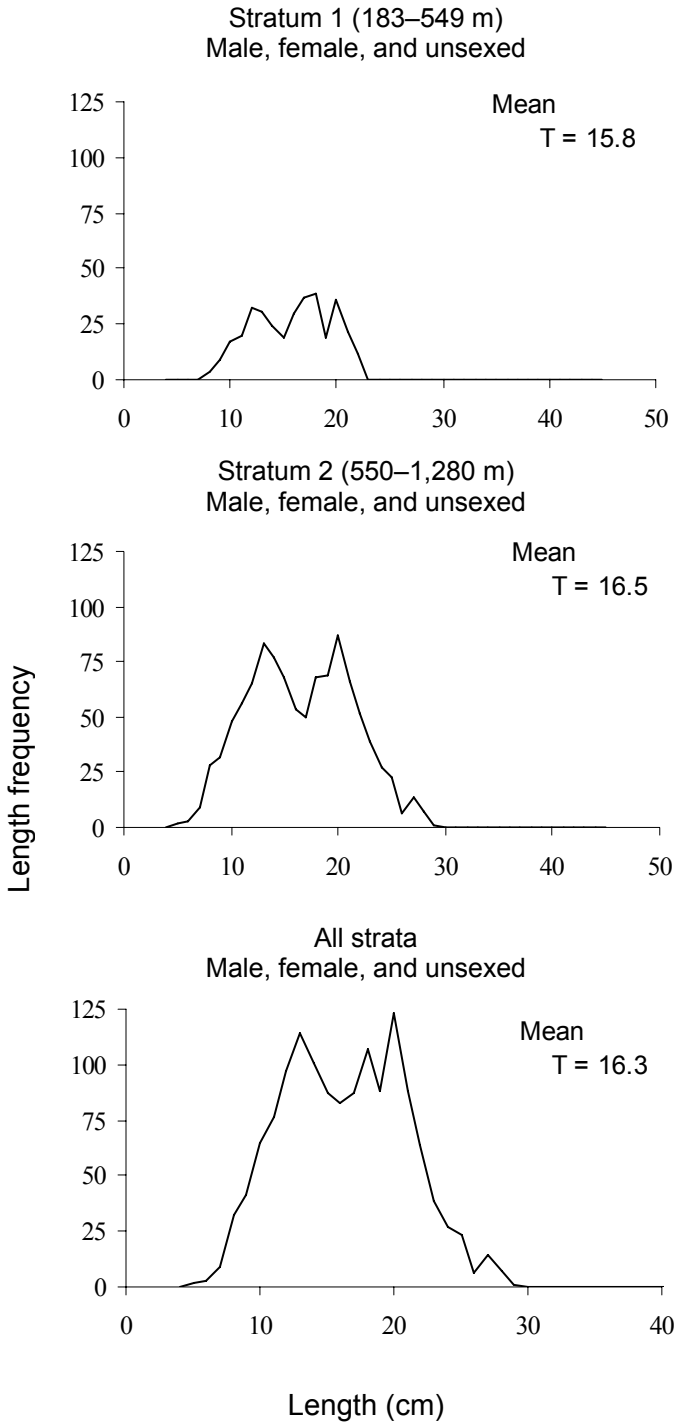


Figure 31. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC U.S.-Vancouver area from the 2001 NWFSC slope survey (T = males, females, and unsexed).

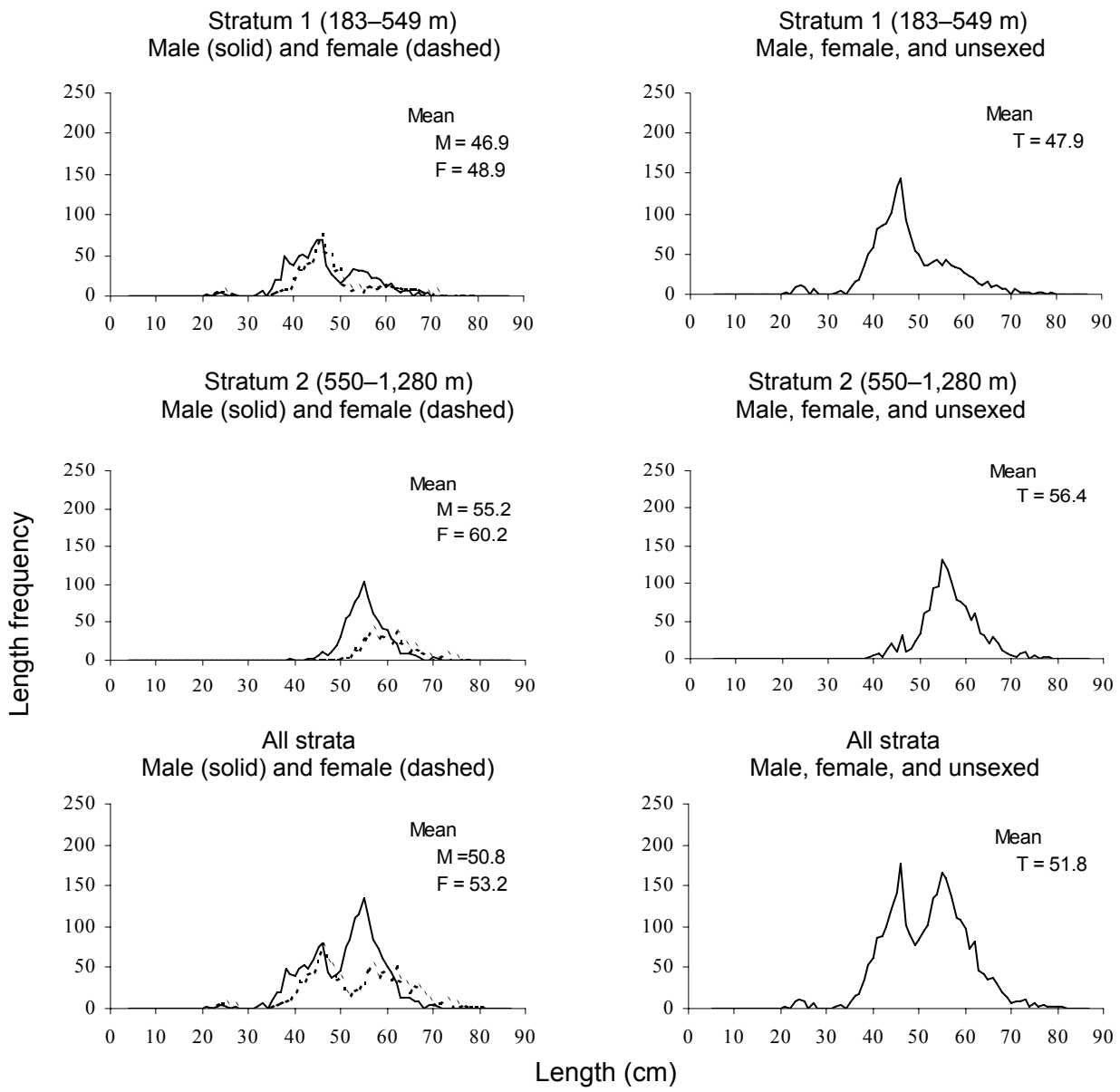


Figure 32. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for all INPFC areas sampled during the 2001 NWFSC slope survey.

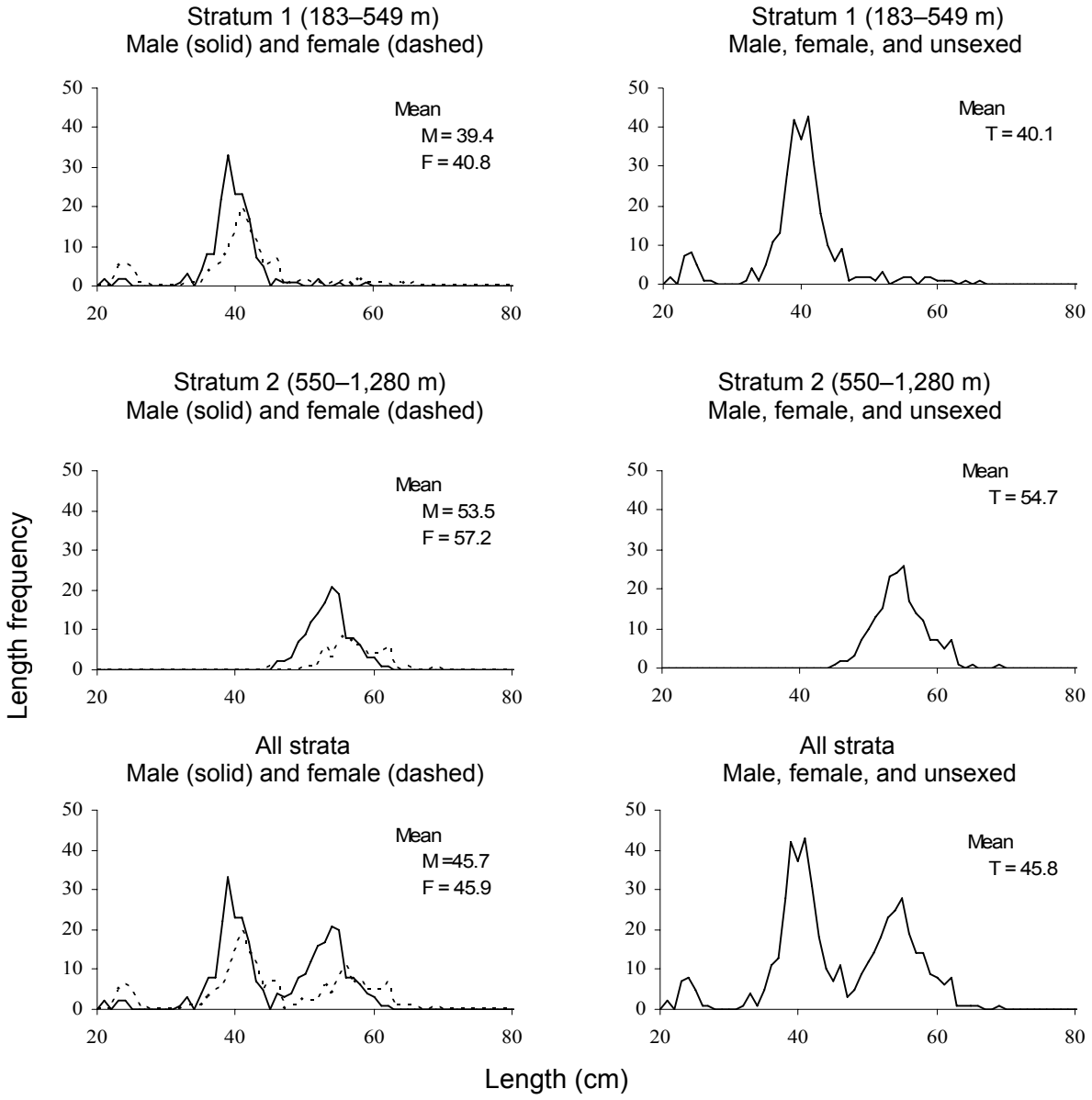


Figure 33. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Conception area from the 2001 NWFSC slope survey.

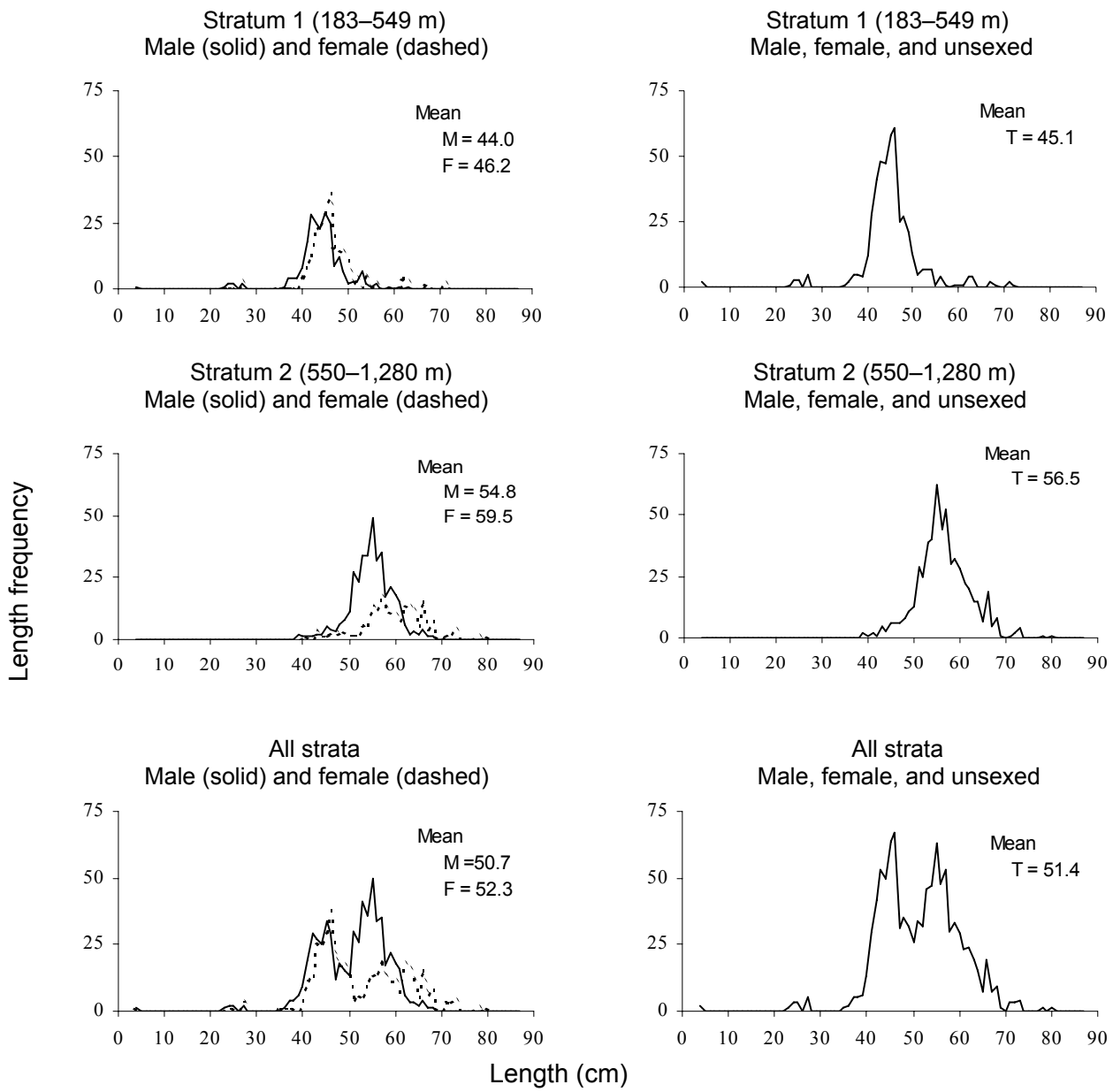


Figure 34. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Monterey area from the 2001 NWFSC slope survey.

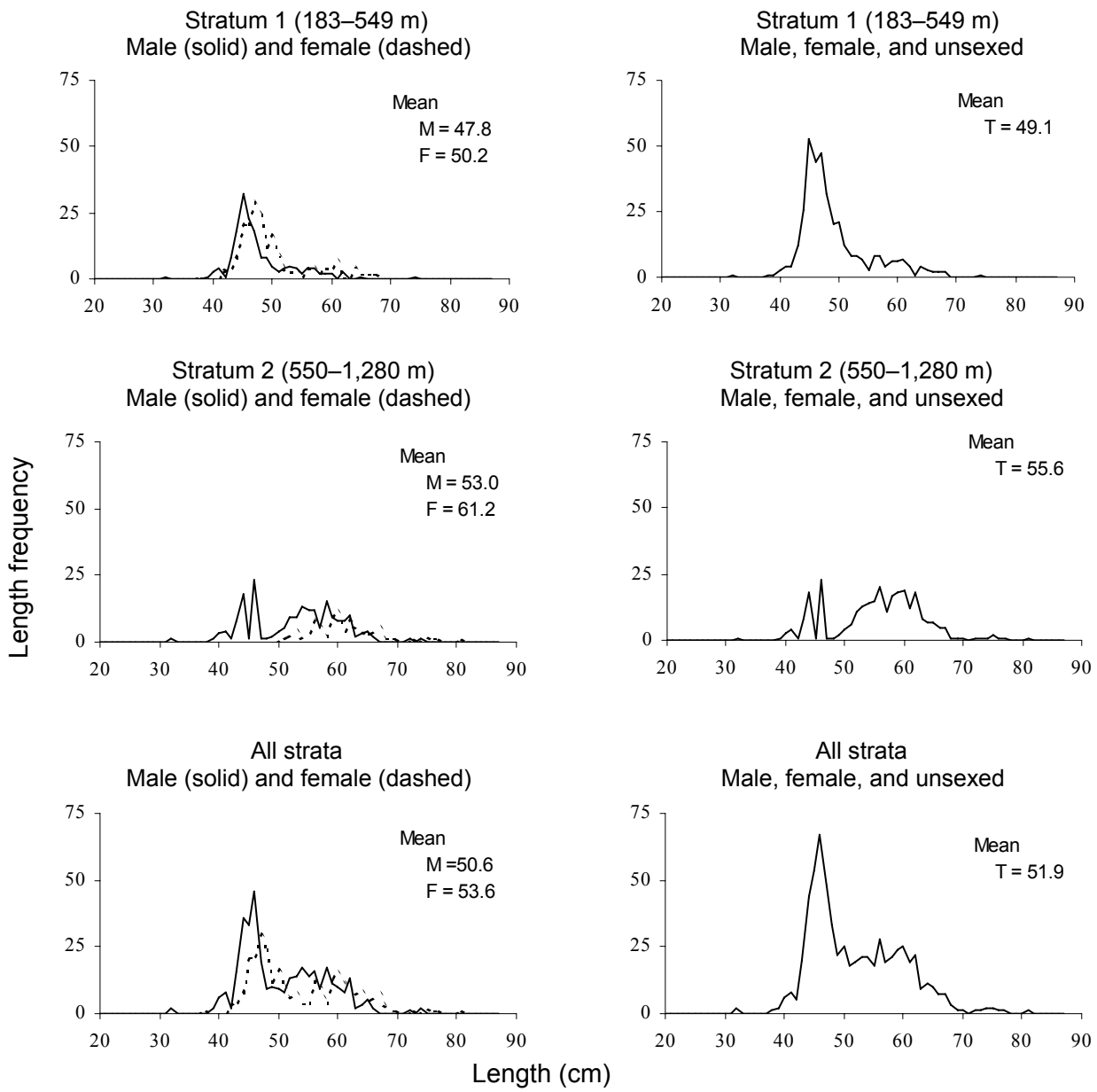


Figure 35. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Eureka area from the 2001 NWFSC slope survey.

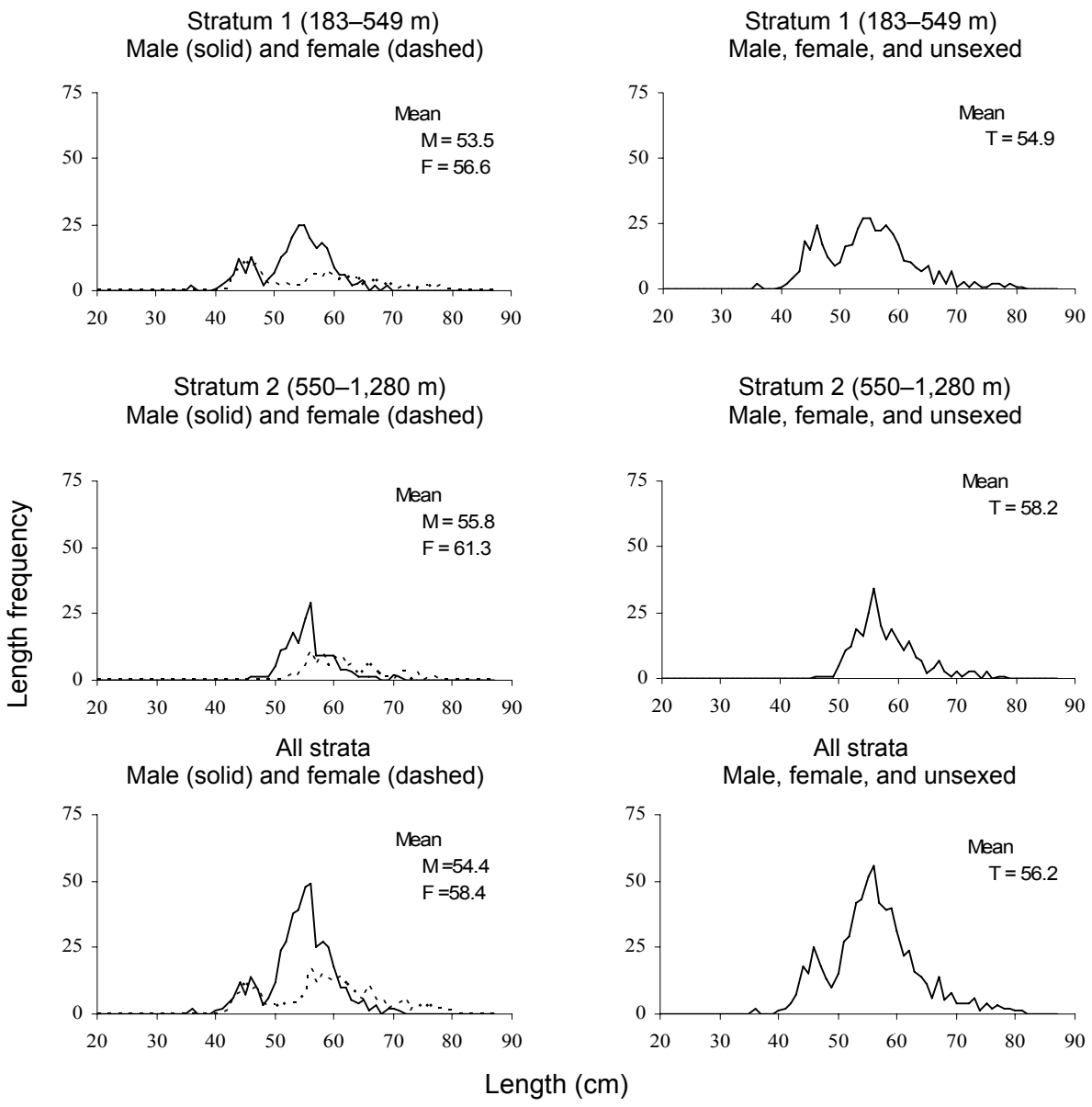


Figure 36. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Columbia area from the 2001 NWFSC slope survey.

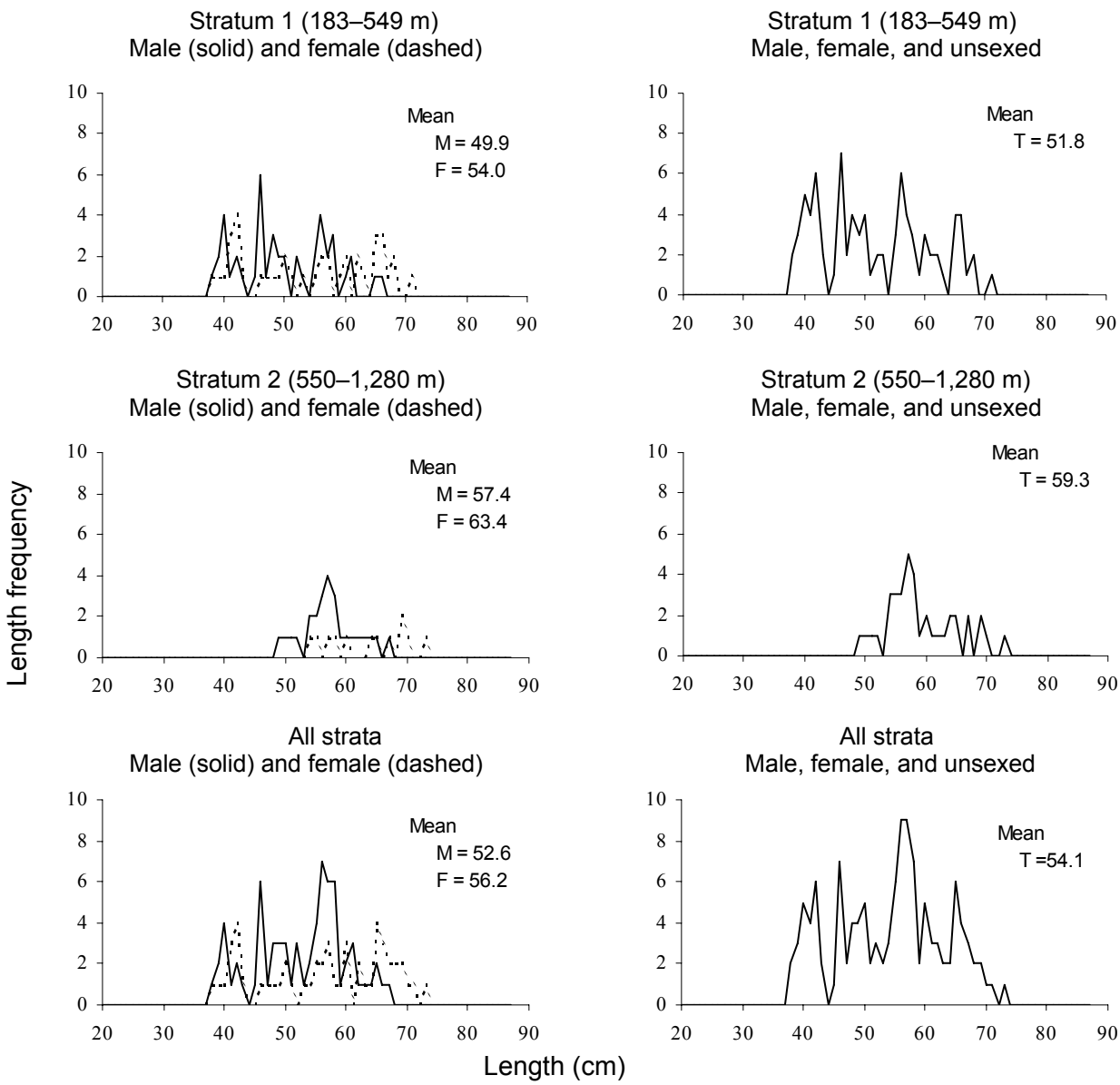


Figure 37. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC U.S.-Vancouver area from the 2001 NWFSC slope survey.

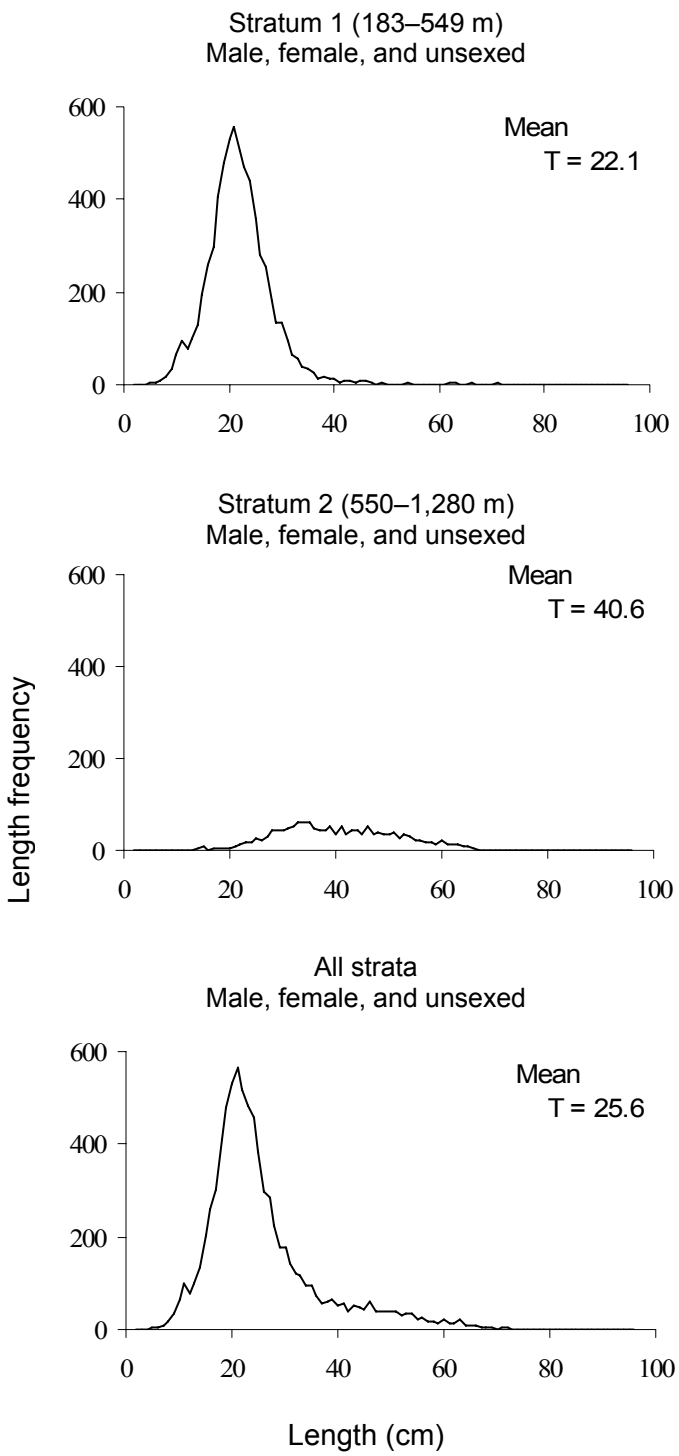


Figure 38. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for all INPFC areas sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

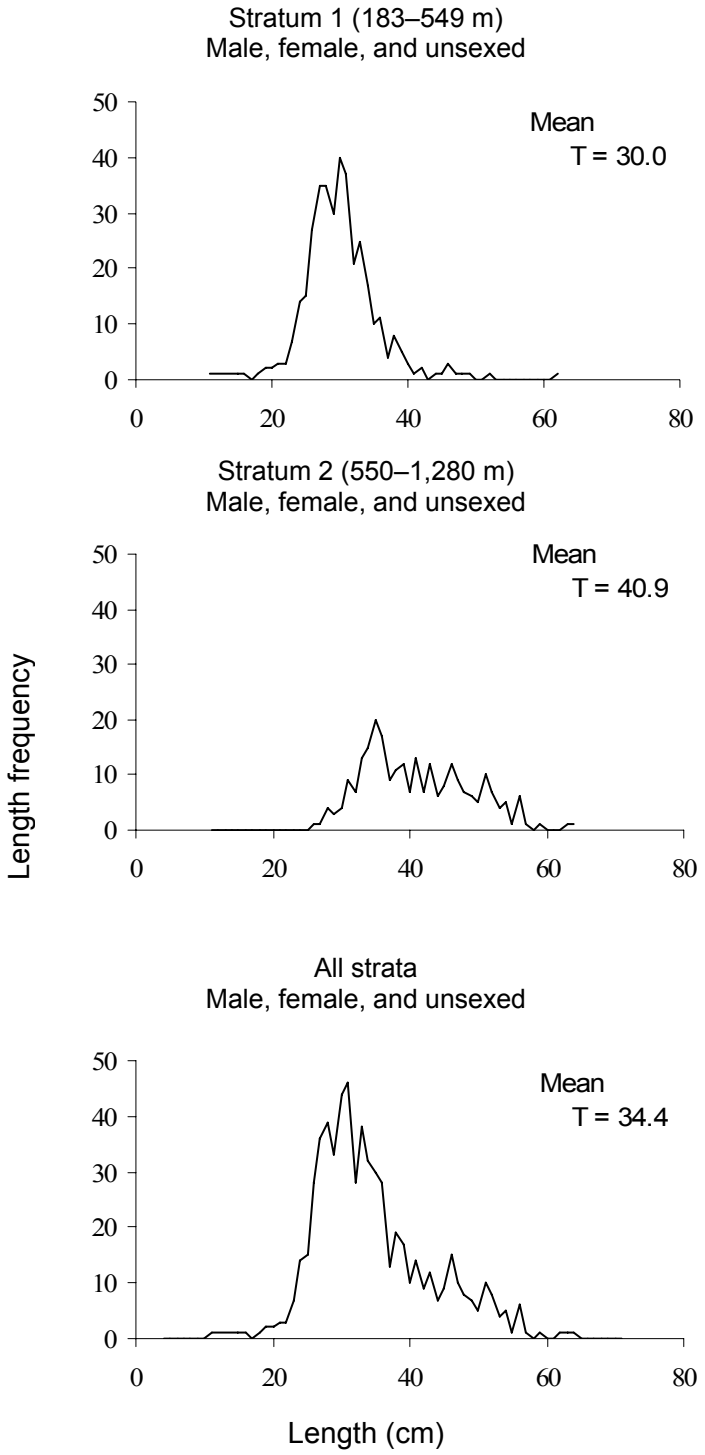


Figure 39. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Conception area sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

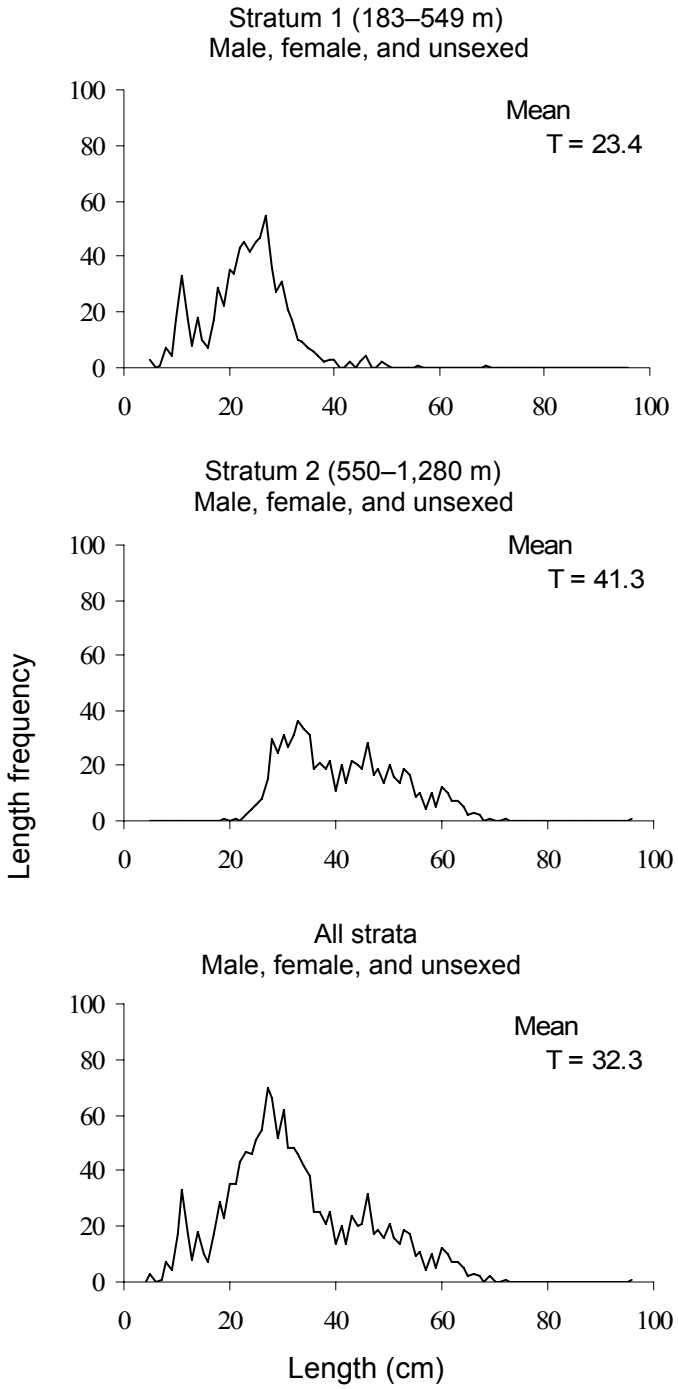


Figure 40. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Monterey area sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

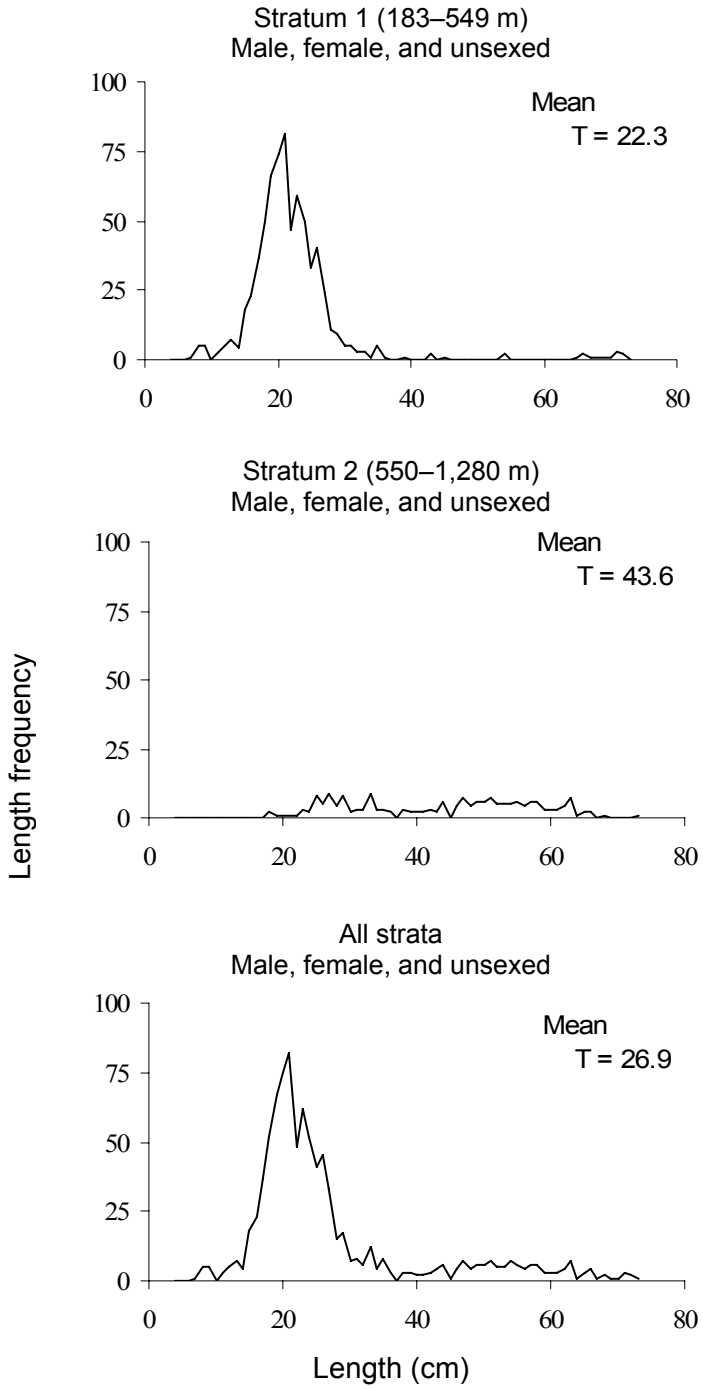


Figure 41. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Eureka area sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

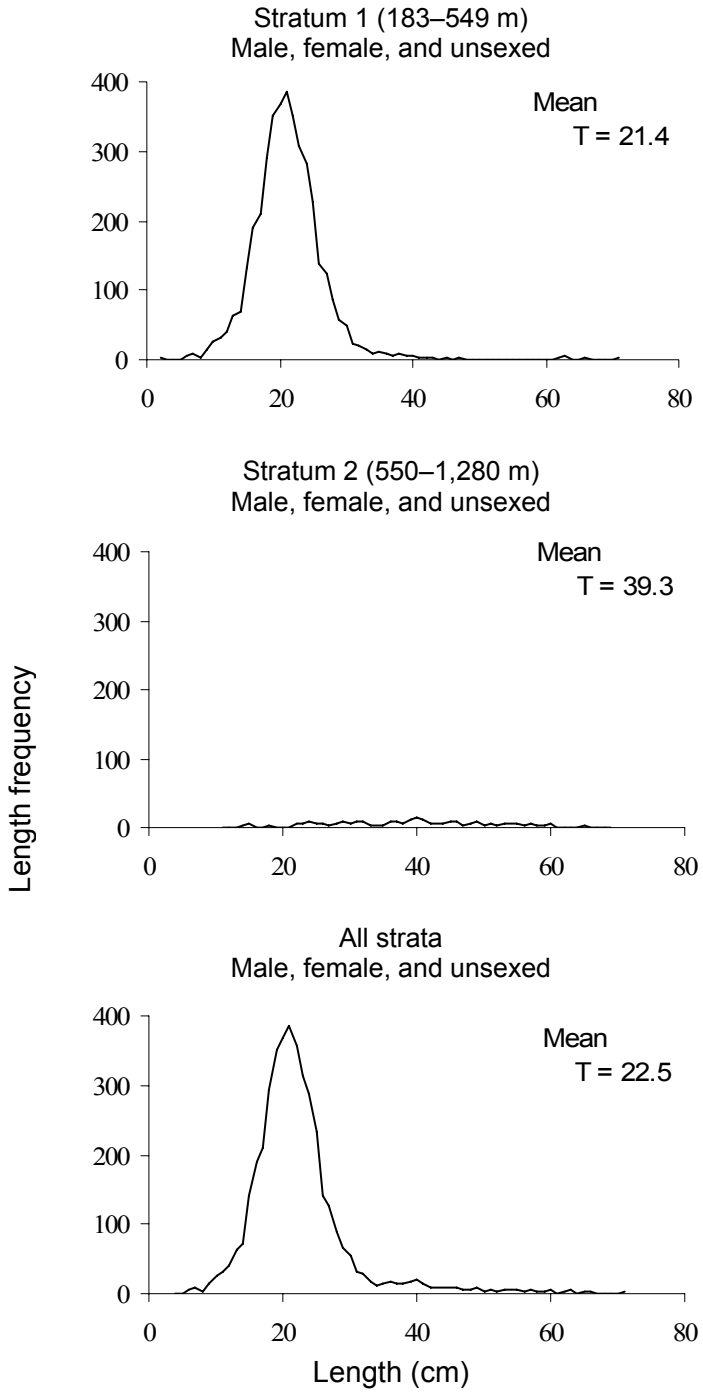


Figure 42. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Columbia area sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

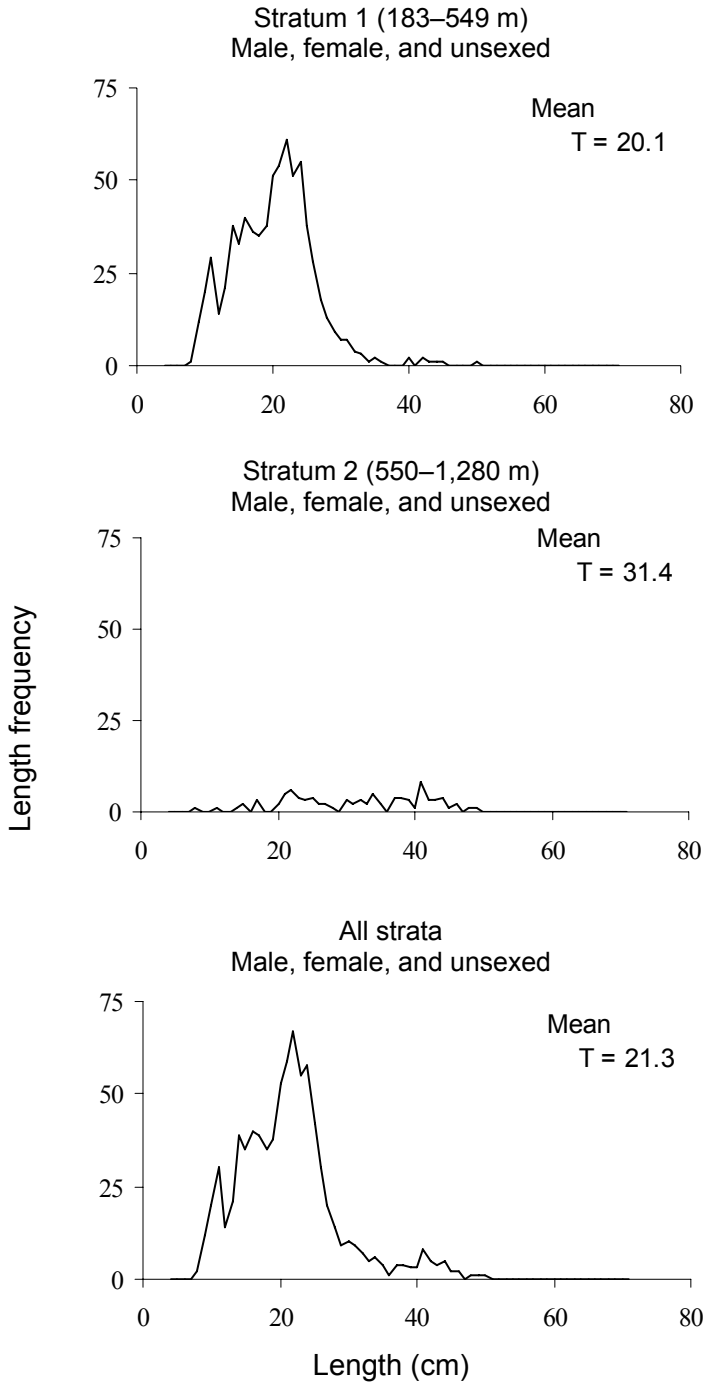


Figure 43. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC U.S.-Vancouver area sampled during the 2001 NWFSC slope survey (T = males, females, and unsexed).

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Appendix A:
Haul and Catch Information

Appendix A consists of Table A-1, listing station data and catch data for all hauls from the 2001 slope survey of the INPFC U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception statistical areas. Depths are reported in meters (m), distances fished in kilometers (km), and catch weights are in kilograms (kg). Geodetic positions are displayed in the table as decimal degrees (dd)—for example, 45.3350 corresponds to 45°20′30″N latitude. Only catches from hauls with performance codes greater than or equal to zero were used for data analyses. Empty cells in the species by weight section of Table A-1 indicate unsatisfactory performance or no catch of the listed species in that haul.

Performance codes that appear in the appendix are as follows:

Code	Explanation
0	Good performance
1	Satisfactory performance, hung up
1.1	Satisfactory performance, minor hangs
1.2	Satisfactory performance, major hang
5.1	Satisfactory performance, net came off bottom
5.4	Satisfactory performance, unspecified door problems
−6	Unsatisfactory performance, unspecified problems
−5.4	Unsatisfactory performance, unspecified door problems
−5.1	Unsatisfactory performance, net came off bottom
−5	Unsatisfactory performance, unspecified gear performance problem
−4.3	Unsatisfactory performance, caught debris or wreckage
−4.2	Unsatisfactory performance, caught large quantity of mud
−4	Unsatisfactory performance, caught unspecified object
−2.4	Unsatisfactory performance, belly damaged
−1.2	Unsatisfactory performance, major hang
−1.1	Unsatisfactory performance, minor hangs
−1	Unsatisfactory performance, hung up

Table A-1. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001001	200101001002	200101001003	200101001004	200101001005
Start date and time	8/25/2001 0650	8/25/2001 0905	8/25/2001 1102	8/25/2001 1358	8/25/2001 1557
Latitude (dd)	47.8280	47.8461	47.8524	47.8690	47.8172
Longitude (dd)	−125.1454	−125.2371	−125.3176	−125.6268	−125.6780
Station	3C	3D	3F	3G	3J
Avg. bottom depth (m)	329.13	455.73	555.35	751.28	1,160.84
Duration (hr)	0.32	0.29	0.31	0.29	0.39
Distance fished (km)	1.22	1.26	1.29	1.21	1.41
Net width (m)	1.74	1.83	1.87	1.78	2.10
Area swept (ha)	14.23	14.46	14.53	14.7	14.84
Performance	0	0	5.1	0	0
Species by weight					
Hagfish	0.32	0.78	0.20	0.14	0.07
Brown cat shark			0.20	1.20	0.05
Spiny dogfish					
Skates	18.27	8.42	3.32	3.20	3.86
Other Chondrichthyes					
Arrowtooth flounder	161.58	4.24			
Petrale sole					
Dover sole	75.27	16.09	29.80	15.05	
Deepsea sole				2.11	10.59
Rex sole	6.69	2.34			
Other flatfish	2.60	0.09			
Sablefish	29.42	6.64		10.6	18.9
Pacific grenadier				0.64	127.34
Giant grenadier			3.63	7.00	21.25
Other grenadier					0.30
Pacific flatnose			0.53	0.75	2.19
Slickheads					
Eelpouts	7.69	5.53	0.22	2.15	1.9
Snailfish			0.24	0.10	
Pacific hake	17.09	3.69	5.29		
Other roundfish		0.10	0.25	0.45	0.62
Shortspine thornyhead	17.57	21.07	3.89	5.94	7.35
Longspine thornyhead			2.45	20.67	53.68
Rougheye rockfish	12.97				
Pacific ocean perch					
Aurora rockfish		6.61			
Darkblotched rockfish					
Splitnose rockfish	0.27				
Shortbelly rockfish					
Other rockfish	1.40				
Grooved tanner crab			1.25	29.48	1.09
Other invertebrates	31.02	47.10	10.90	1.75	35.29
Total catch weight (kg)	382.16	122.70	62.17	101.23	284.48

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001006	200101001007	200101001008	200101001009	200101001010
Start date and time	8/26/2001 0618	8/26/2001 0846	8/26/2001 1122	8/26/2001 1441	8/26/2001 1714
Gear latitude (dd)	47.2214	47.2478	47.2380	47.1914	47.2460
Gear longitude (dd)	−125.1825	−125.2119	−125.1071	−124.9779	−124.9926
Station	7J	7J	7G	7E	7D
Depth (m)	1,207.01	1,137.23	815.65	482.00	412.77
Duration (hr)		0.37	0.37	0.28	0.30
Distance fished (km)		1.35	1.49	1.09	1.26
Area swept (ha)		2.00	2.20	1.58	1.82
Net width (m)		14.82	14.76	14.45	14.43
Performance	−5.1	0	0	1.1	0
Species by weight					
Hagfish			0.15		
Brown cat shark			1.29	0.66	
Spiny dogfish					1.66
Skates		9.95	0.16	35.51	6.77
Other Chondrichthyes					
Arrowtooth flounder				2.39	3.01
Petrale sole					
Dover sole		1.40	3.16	91.79	42.22
Deepsea sole		1.17	2.8		1.50
Rex sole				2.92	0.84
Other flatfish				0.07	0.01
Sablefish		23.13	18.27	15.94	2.15
Pacific grenadier		52.27	5.98		
Giant grenadier		13.08	0.70	0.93	
Other grenadier					
Pacific flatnose		3.63	0.60	1.68	
Slickheads		0.44	1.21		
Eelpouts			1.64	6.11	3.80
Snailfish			0.07		
Pacific hake				4.25	2.70
Other roundfish		0.22	0.50	0.04	1.08
Shortspine thornyhead		7.93	12.94	25.82	28.65
Longspine thornyhead		69.55	86.54		4.10
Rougheye rockfish					5.45
Pacific ocean perch					22.56
Aurora rockfish				2.42	2.31
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish				15.35	
Grooved tanner crab		0.78	13.86	0.05	
Other invertebrates		9.68	5.77	27.98	4.83
Total catch weight (kg)		193.23	155.64	233.91	133.64

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001011	200101001012	200101001013	200101001014	200101001015
Start date and time	8/26/2001 1930	8/27/2001 0625	8/27/2001 0940	8/27/2001 1236	8/27/2001 1447
Gear latitude (dd)	47.1892	46.5590	46.5482	46.4893	46.4544
Gear longitude (dd)	−124.9501	−124.6230	−124.5901	−124.7363	−124.7601
Station	7C	11B	11E	11G	11H
Depth (m)	347.26	262.82	487.87	661.84	875.15
Duration (hr)	0.40	0.34	0.27	0.39	0.31
Distance fished (km)	1.67	1.38	1.07	1.63	1.27
Area swept (ha)	2.42	1.97	1.56	2.40	1.88
Net width (m)	14.46	14.28	14.49	14.69	14.83
Performance	0	0	0	0	1.1
Species by weight					
Hagfish			0.33		0.20
Brown cat shark			1.99	3.75	0.10
Spiny dogfish					
Skates	88.65	25.10	2.92		
Other Chondrichthyes		6.48			
Arrowtooth flounder		43.63			
Petrale sole					
Dover sole	99.19	155.03	70.39	2.98	2.67
Deepsea sole				1.53	5.14
Rex sole	11.41	6.22	8.15		
Other flatfish		1.08			
Sablefish		8.99	24.22	17.66	7.95
Pacific grenadier				1.33	0.90
Giant grenadier				5.42	
Other grenadier					
Pacific flatnose			1.96	4.56	0.01
Slickheads					1.41
Eelpouts	3.49	6.27	9.28	3.47	1.08
Snailfish			0.49	0.75	
Pacific hake	3.76	33.78	0.74		
Other roundfish	0.07	9.39	0.12	0.32	0.37
Shortspine thornyhead	34.73	34.63	25.84	5.75	2.37
Longspine thornyhead				29.99	46.33
Rougheye rockfish	5.16	0.38			
Pacific ocean perch	3.70	48.04			
Aurora rockfish	0.42				
Darkblotched rockfish		45.25			
Splitnose rockfish	0.60	0.26			
Shortbelly rockfish					
Other rockfish	28.69	18.61			
Grooved tanner crab	0.10		5.97	32.69	34.79
Other invertebrates	14.15	9.35	14.56	6.42	6.60
Total catch weight (kg)	294.12	452.49	166.96	116.62	109.92

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001016	200101001017	200101001018	200101001019	200101001020
Start date and time	8/27/2001 1732	8/28/2001 0612	8/28/2001 0906	8/28/2001 1224	8/28/2001 1416
Gear latitude (dd)	46.4322	45.7687	45.7657	45.7918	45.8279
Gear longitude (dd)	−124.6848	−124.8851	−124.8602	−124.7736	−124.7721
Station	11I	15J	15H	15F	15E
Depth (m)	1,101.84	1,217.95	966.47	551.29	517.37
Duration (hr)	0.28	0.50	0.40	0.32	0.32
Distance fished (km)	1.05	1.84	1.54	1.25	1.28
Area swept (ha)	1.56	2.72	2.28	1.82	1.86
Net width (m)	14.82	14.81	14.77	14.59	14.51
Performance	0	1.1	0	0	0
Species by weight					
Hagfish		0.15	0.65	0.20	
Brown cat shark	1.50		0.76	2.81	4.10
Spiny dogfish					
Skates	4.08			5.31	
Other Chondrichthyes					
Arrowtooth flounder				1.96	
Petrale sole					
Dover sole				7.58	16.92
Deepsea sole			2.58		
Rex sole					0.62
Other flatfish					
Sablefish	13.77	17.38	1.50	4.21	9.00
Pacific grenadier	8.25	53.52	15.48	0.28	
Giant grenadier	18.17	30.30	6.45	20.42	
Other grenadier	0.92	0.31			
Pacific flatnose	1.06	7.40	1.92	0.75	3.94
Slickheads		0.58	4.40		
Eelpouts	3.37	0.90	30.69	4.56	3.22
Snailfish		0.37	0.15	0.35	0.44
Pacific hake				3.44	16.04
Other roundfish	0.48	0.59	0.10	0.05	0.16
Shortspine thornyhead	7.62		5.92	3.79	6.36
Longspine thornyhead	67.46	14.96	30.86	2.52	9.34
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	25.50	31.03	43.79	7.19	8.01
Other invertebrates	14.51	88.09	8.09	8.00	5.01
Total catch weight (kg)	166.69	245.58	153.34	73.42	83.16

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001021	200101001022	200101001023	200101001024	200101001025
Start date and time	8/28/2001 1632	8/29/2001 0641	8/29/2001 0925	8/29/2001 1144	8/29/2001 1432
Gear latitude (dd)	45.8414	45.1627	45.1245	45.1988	45.1914
Gear longitude (dd)	−124.7566	−124.3187	−124.6202	−124.6705	−124.8466
Station	15D	19A	19D	19E	19G
Depth (m)	426.19	210.30	457.64	515.39	742.17
Duration (hr)	0.26	0.33	0.30	0.30	0.35
Distance fished (km)	1.11	1.44	1.19	1.18	1.63
Area swept (ha)	1.60	2.01	1.73	1.72	2.40
Net width (m)	14.42	13.99	14.49	14.58	14.71
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.23			
Brown cat shark				3.92	2.33
Spiny dogfish					
Skates	11.18	121.49	0.20	9.51	0.03
Other Chondrichthyes	0.92	5.04			
Arrowtooth flounder	11.96	15.59	1.85	4.26	
Petrale sole		0.84			
Dover sole	39.08	34.75	73.75	38.33	11.02
Deepsea sole					1.65
Rex sole	1.64	5.58		1.41	
Other flatfish		46.25			
Sablefish		15.43	4.84	23.44	3.97
Pacific grenadier					0.23
Giant grenadier					9.90
Other grenadier					
Pacific flatnose			0.15	0.86	0.32
Slickheads					0.44
Eelpouts	0.59	2.79	1.61	2.22	0.57
Snailfish			0.22	0.97	1.86
Pacific hake	16.36	13.37	14.12	4.64	
Other roundfish		4.92	0.10	0.01	0.72
Shortspine thornyhead	5.01		10.02	21.27	
Longspine thornyhead				12.35	29.72
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.13		1.99		
Darkblotched rockfish		0.13		0.45	
Splitnose rockfish		28.35			
Shortbelly rockfish					
Other rockfish	2.19	1.50			
Grooved tanner crab	1.27				2.30
Other invertebrates	54.75	7.08	37.50	14.57	4.97
Total catch weight (kg)	145.08	303.34	146.35	138.21	70.03

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001026	200101001027	200101001028	200101001029	200101001030
Start date and time	8/29/2001 1724	8/29/2001 1905	8/30/2001 0634	8/30/2001 0846	8/30/2001 1040
Gear latitude (dd)	45.1713	45.1611	44.5252	44.5236	44.5631
Gear longitude (dd)	−125.0026	−124.9942	−125.0346	−125.0175	−124.9780
Station	19I	19I	23J	23I	23H
Depth (m)	1,060.70	1,098.13	1,154.98	1,067.26	889.01
Duration (hr)		0.30	0.28	0.30	0.35
Distance fished (km)		1.03	1.07	1.06	1.37
Area swept (ha)		1.53	1.58	1.57	2.02
Net width (m)		14.79	14.8	14.81	14.75
Performance	−5.1	1.2	0	0	0
Species by weight					
Hagfish		0.36		0.25	
Brown cat shark		0.60	1.10		3.21
Spiny dogfish					
Skates		11.09	0.96		
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole					
Deepsea sole		0.97		4.34	1.74
Rex sole					
Other flatfish					
Sablefish		17.03	1.99		
Pacific grenadier		41.25	8.78	6.03	1.39
Giant grenadier		10.68	72.49	67.09	12.16
Other grenadier					
Pacific flatnose		2.21	0.99	0.81	
Slickheads		3.11	0.87	0.80	1.43
Eelpouts		12.10	0.15	0.73	0.78
Snailfish			0.73	0.08	
Pacific hake					
Other roundfish		0.38	0.66	0.25	0.24
Shortspine thornyhead		7.22		3.19	4.79
Longspine thornyhead		41.37	36.65	34.54	50.74
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		10.17	14.89	4.28	5.77
Other invertebrates		14.28	115.27	70.70	4.57
Total catch weight (kg)		172.82	255.53	193.09	86.82

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001031	200101001032	200101001033	200101001034	200101001035
Start date and time	8/30/2001 1246	8/30/2001 1356	8/30/2001 1516	9/10/2001 0643	9/10/2001 0950
Gear latitude (dd)	44.5147	44.5457	44.5400	43.9013	43.8047
Gear longitude (dd)	−124.9176	−124.8717	−124.8324	−125.0513	−124.9012
Station	23E	23D	23D	27J	27F
Depth (m)	468.28	438.91	433.61	1,187.11	545.53
Duration (hr)	0.31		0.31	0.21	0.31
Distance fished (km)	1.29		1.44	0.65	1.27
Area swept (ha)	1.86		2.07	0.97	1.50
Net width (m)	14.49		14.43	14.87	11.79
Performance	5.1	−5	0	0	0
Species by weight					
Hagfish	0.15		0.67	0.25	
Brown cat shark	0.61		1.64		4.43
Spiny dogfish					
Skates	18.13		4.29	5.71	12.41
Other Chondrichthyes					
Arrowtooth flounder					1.25
Petrale sole					
Dover sole	100.06		51.16		71.82
Deepsea sole				2.13	
Rex sole	9.73		3.53		1.30
Other flatfish	0.10		0.08		
Sablefish	12.23		9.80	3.41	3.53
Pacific grenadier				38.28	
Giant grenadier				24.06	
Other grenadier					
Pacific flatnose				0.40	2.38
Slickheads				0.19	
Eelpouts	1.09		3.86	1.14	1.27
Snailfish			0.24		0.43
Pacific hake	11.20		1.58		4.81
Other roundfish	0.05		0.10	0.11	0.20
Shortspine thornyhead	50.04		18.05	24.21	0.96
Longspine thornyhead	15.97		0.06	11.86	0.20
Rougheye rockfish	4.57				
Pacific ocean perch					
Aurora rockfish	1.96		8.70		
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	0.05				
Grooved tanner crab	0.09		0.48	4.72	
Other invertebrates	23.69		24.26	5.97	6.17
Total catch weight (kg)	249.72		128.50	122.44	111.16

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001036	200101001037	200101001038	200101001039	200101001040
Start date and time	9/10/2001 1203	9/10/2001 1402	9/10/2001 1628	9/11/2001 0708	9/11/2001 0934
Gear latitude (dd)	43.8093	43.8574	43.8842	43.1523	43.1623
Gear longitude (dd)	−124.8155	−124.7745	−124.7491	−124.8861	−124.8815
Station	27D	27B	27A	31D	31C
Depth (m)	459.58	296.86	244.21	439.00	375.17
Duration (hr)	0.33	0.33	0.33	0.28	0.35
Distance fished (km)	1.27	1.26	1.23	1.02	1.21
Area swept (ha)	1.93	1.89	1.82	1.47	1.75
Net width (m)	15.17	14.98	14.79	14.42	14.52
Performance	0	0	0	5.1	0
Species by weight					
Hagfish	0.05				
Brown cat shark	2.32			4.27	
Spiny dogfish	5.41	1.2	1.10		1.54
Skates	3.27	13.74	44.80	6.59	16.66
Other Chondrichthyes					0.67
Arrowtooth flounder		9.54	8.92		
Petrale sole					
Dover sole	26.04	30.38	51.68	18.37	35.04
Deepsea sole	0.47			0.92	
Rex sole	18.26	19.41	37.05	11.41	13.01
Other flatfish	0.03	1.59	5.52		0.16
Sablefish	4.44	8.71	12.33	8.12	6.79
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	7.45	0.48	2.22	2.24	0.57
Snailfish	0.03		0.52		
Pacific hake	24.71	115.97	87.25	4.40	14.40
Other roundfish		3.09	0.17	0.27	
Shortspine thornyhead	2.64	6.29	8.49	2.69	1.26
Longspine thornyhead	0.13			6.19	
Rougheye rockfish				5.29	
Pacific ocean perch		0.64			
Aurora rockfish	7.11	0.87	0.20	3.71	0.85
Darkblotched rockfish			0.64		
Splitnose rockfish		19.58	7.21		0.20
Shortbelly rockfish					
Other rockfish		0.75	0.14		
Grooved tanner crab				0.04	
Other invertebrates	38.39	109.79	5.96	5.46	51.82
Total catch weight (kg)	140.75	342.03	274.20	79.97	142.97

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001041	200101001042	200101001043	200101001044	200101001045
Start date and time	9/11/2001 1136	9/11/2001 1252	9/11/2001 1446	9/11/2001 1659	9/12/2001 0643
Gear latitude (dd)	43.1835	43.1477	43.1365	43.1311	42.5716
Gear longitude (dd)	−124.9011	−124.9010	−124.9234	−124.9734	−124.8730
Station	31E	31E	31F	31I	35I
Depth (m)	512.06	497.30	673.98	1,014.27	1,034.60
Duration (hr)		0.26	0.34	0.40	0.40
Distance fished (km)		0.97	1.31	1.30	1.56
Area swept (ha)		1.46	2.01	1.93	2.32
Net width (m)		15.00	15.33	14.83	14.83
Performance	−1	0	0	0	0
Species by weight					
Hagfish		0.12	0.01	0.91	1.11
Brown cat shark		0.59	0.06	0.51	0.40
Spiny dogfish					
Skates		1.65		1.70	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole		45.42	21.1	75.18	2.76
Deepsea sole			0.55	7.16	3.87
Rex sole		6.89			
Other flatfish					
Sablefish		4.80	13.17	6.33	12.01
Pacific grenadier				27.62	70.33
Giant grenadier			31.18	22.25	50.17
Other grenadier					
Pacific flatnose		0.17	1.26	1.65	13.60
Slickheads				6.27	18.33
Eelpouts		3.94	2.14	1.01	9.20
Snailfish		0.44	0.02	0.04	0.58
Pacific hake		0.18			
Other roundfish			0.76	0.34	0.20
Shortspine thornyhead		5.25	0.45		2.17
Longspine thornyhead		2.41	35.18	57.63	70.68
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.71			
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		0.54	64.1	19.98	80.70
Other invertebrates		14.58	3.54	12.77	12.51
Total catch weight (kg)		87.69	173.52	241.35	348.62

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001046	200101001047	200101001048	200101001049	200101001050
Start date and time	9/12/2001 0934	9/12/2001 1205	9/12/2001 1417	9/12/2001 1615	9/13/2001 0711
Gear latitude (dd)	42.5689	42.5626	42.5696	42.5726	41.8646
Gear longitude (dd)	−124.8478	−124.8191	−124.8005	−124.7316	−124.5250
Station	35H	35H	35E	35B	39B
Depth (m)	969.97	631.25	533.06	264.67	292.61
Duration (hr)	0.39	0.36	0.30	0.33	
Distance fished (km)	1.62	1.35	1.03	1.27	
Area swept (ha)	2.41	2.01	1.52	1.81	
Net width (m)	14.84	14.87	14.68	14.28	
Performance	0	0	0	0	−5
Species by weight					
Hagfish	0.59				
Brown cat shark	1.19	1.58	0.99	0.47	
Spiny dogfish					
Skates			3.50	43.44	
Other Chondrichthyes					
Arrowtooth flounder				14.87	
Petrale sole					
Dover sole	4.53	17.80	15.87	79.69	
Deepsea sole	4.61	3.30			
Rex sole		0.12		50.02	
Other flatfish			0.05	19.01	
Sablefish	10.86	11.74	7.76	14.43	
Pacific grenadier	39.03	3.20	0.01		
Giant grenadier	46.01				
Other grenadier			0.30		
Pacific flatnose	4.24	2.83	0.89		
Slickheads	35.93				
Eelpouts	4.70	3.20	9.24	3.54	
Snailfish	0.20	1.27	0.53	0.47	
Pacific hake		0.68	4.13	131.50	
Other roundfish	0.04			4.15	
Shortspine thornyhead	2.46	8.13	2.40	7.18	
Longspine thornyhead	99.10	6.95			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish				0.24	
Splitnose rockfish				5.34	
Shortbelly rockfish					
Other rockfish				0.54	
Grooved tanner crab	67.84	55.57	3.79		
Other invertebrates	5.49	4.84	4.81	11.78	
Total catch weight (kg)	326.82	121.21	54.27	386.67	

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001051	200101001052	200101001053	200101001054	200101001055
Start date and time	9/13/2001 0821	9/13/2001 1055	9/13/2001 1355	9/13/2001 1631	9/13/2001 1851
Gear latitude (dd)	41.8873	41.8661	41.7840	41.7906	41.6980
Gear longitude (dd)	−124.5425	−124.5338	−124.6509	−124.8095	−124.9511
Station	39B	39C	39G	39H	39I
Depth (m)	305.58	368.34	678.83	893.91	987.82
Duration (hr)	0.33	0.34	0.37	0.40	0.25
Distance fished (km)	1.32	1.32	1.41	1.54	1.01
Area swept (ha)	1.78	1.73	2.04	2.28	1.50
Net width (m)	13.49	13.11	14.47	14.81	14.83
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.12	0.24	0.51	0.26
Brown cat shark	2.52		10.35	3.65	3.43
Spiny dogfish		0.95			
Skates	28.89	26.15	12.21	3.67	5.76
Other Chondrichthyes					
Arrowtooth flounder	4.17	2.94			
Petrale sole					
Dover sole	22.49	17.57	5.14	48.54	2.95
Deepsea sole			0.85	7.20	4.41
Rex sole	175.13	14.80			
Other flatfish	0.57				
Sablefish	39.03	25.15	7.70		
Pacific grenadier				2.15	1.39
Giant grenadier			3.98	7.07	4.51
Other grenadier					0.20
Pacific flatnose			0.10	0.27	0.42
Slickheads				0.44	0.56
Eelpouts	16.43	3.25	1.17	1.00	0.54
Snailfish	0.33	0.38	0.29		
Pacific hake	61.18	22.67			
Other roundfish			0.19	0.03	0.38
Shortspine thornyhead	4.16	2.60	0.41		4.04
Longspine thornyhead			99.71	95.34	32.56
Rougheye rockfish					
Pacific ocean perch			0.67		
Aurora rockfish		0.35			
Darkblotched rockfish	1.66				
Splitnose rockfish	3.92	0.06			
Shortbelly rockfish					
Other rockfish	2.33	0.05			
Grooved tanner crab			6.56	12.37	4.41
Other invertebrates	172.18	110.19	8.50	14.26	19.22
Total catch weight (kg)	534.99	227.23	158.07	196.50	85.04

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001056	200101001057	200101001058	200101001059	200101001060
Start date and time	9/14/2001 0639	9/14/2001 0907	9/14/2001 1137	9/14/2001 1332	9/14/2001 1524
Gear latitude (dd)	41.1328	41.1377	41.1540	41.1696	41.1706
Gear longitude (dd)	−124.5315	−124.4790	−124.4279	−124.4158	−124.3863
Station	43I	43G	43F	43E	43B
Depth (m)	946.10	789.01	567.87	504.07	317.67
Duration (hr)	0.34	0.36	0.28	0.34	0.33
Distance fished (km)	0.96	1.25	1.00	1.34	1.26
Area swept (ha)	1.42	1.84	1.52	1.99	1.72
Net width (m)	14.77	14.73	15.2	14.85	13.68
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.22	0.01	0.20	0.10	0.07
Brown cat shark	1.66	1.07	0.15	4.41	0.99
Spiny dogfish					32.84
Skates			1.86	0.37	24.60
Other Chondrichthyes					
Arrowtooth flounder					0.57
Petrale sole					
Dover sole	16.61	13.45	9.76	26.46	11.73
Deepsea sole	4.98	1.33			
Rex sole			6.09	35.75	19.24
Other flatfish					0.10
Sablefish	6.44	12.91	2.63	3.56	24.92
Pacific grenadier	1.59				
Giant grenadier	52.39	19.86	15.96		
Other grenadier				0.25	
Pacific flatnose	1.57	0.20	0.25	0.26	
Slickheads	4.46	1.25			
Eelpouts	1.48	1.27	3.53	7.20	8.18
Snailfish	0.04		0.24	0.05	0.49
Pacific hake			0.63	2.17	54.63
Other roundfish	0.77	0.49	0.03	0.10	
Shortspine thornyhead			0.72	1.26	7.66
Longspine thornyhead	45.73	34.93	11.31	3.03	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				1.94	
Darkblotched rockfish					
Splitnose rockfish					6.76
Shortbelly rockfish					
Other rockfish					0.24
Grooved tanner crab	22.50	18.82	9.05	0.75	
Other invertebrates	5.17	12.78	9.60	39.50	231.54
Total catch weight (kg)	165.61	118.37	72.01	127.16	424.56

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001061	200101001062	200101001063	200101001064	200101001065
Start date and time	9/17/2001 0719	9/17/2001 0958	9/17/2001 1207	9/17/2001 1451	9/17/2001 1550
Gear latitude (dd)	40.5436	40.5470	40.5450	40.5661	40.5348
Gear longitude (dd)	−124.7678	−124.7093	−124.7056	−124.6994	−124.6949
Station	47J	47F	47E	47D	47D
Depth (m)	1,200.28	642.24	491.41	438.91	438.91
Duration (hr)	0.35	0.41	0.28		
Distance fished (km)	1.32	1.42	1.01		
Area swept (ha)	1.97	1.34	1.46		
Net width (m)	14.89	9.44	14.56		
Performance	5.1	1.1	0	−5	−2.4
Species by weight					
Hagfish			0.23		
Brown cat shark		2.17	3.49		
Spiny dogfish					
Skates	3.88		23.49		
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	32.80	70.49	147.52		
Deepsea sole	6.44				
Rex sole		4.62	12.55		
Other flatfish					
Sablefish	2.59	9.18	15.91		
Pacific grenadier	82.00	0.30			
Giant grenadier	41.32	11.62			
Other grenadier			0.16		
Pacific flatnose	15.74	0.54	0.80		
Slickheads		0.53			
Eelpouts	0.79	2.36	3.20		
Snailfish		0.25	0.25		
Pacific hake		0.80	22.14		
Other roundfish	5.98				
Shortspine thornyhead	9.43	6.50	6.47		
Longspine thornyhead	19.12	3.31	0.10		
Rougheye rockfish			1.99		
Pacific ocean perch					
Aurora rockfish			2.60		
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	10.87	17.57	3.97		
Other invertebrates	4.62	3.93	23.00		
Total catch weight (kg)	235.58	134.17	267.87		

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001066	200101001067	200101001068	200101001069	200101001070
Start date and time	9/18/2001 0703	9/18/2001 0926	9/18/2001 1155	9/18/2001 1427	9/18/2001 1622
Gear latitude (dd)	39.8473	39.8559	39.7726	39.7857	39.7840
Gear longitude (dd)	−124.1193	−124.1516	−124.1484	−124.1701	−124.1690
Station	51B	51D	51G	51H	51H
Depth (m)	282.42	432.82	744.78	914.40	914.40
Duration (hr)	0.32	0.31	0.36		
Distance fished (km)	1.19	1.18	1.38		
Area swept (ha)	1.70	1.72	1.98		
Net width (m)	14.23	14.53	14.28		
Performance	0	0	1.1	−5.1	−5.1
Species by weight					
Hagfish			0.28		
Brown cat shark	3.59	5.77	1.64		
Spiny dogfish	6.53				
Skates	7.96	18.54	0.53		
Other Chondrichthyes	4.09				
Arrowtooth flounder					
Petrale sole					
Dover sole	56.19	102.05	35.96		
Deepsea sole			4.59		
Rex sole	4.74	38.75			
Other flatfish	4.43	0.58			
Sablefish	0.88	12.09	5.37		
Pacific grenadier			1.45		
Giant grenadier			51.76		
Other grenadier			0.22		
Pacific flatnose		0.09	0.57		
Slickheads			6.68		
Eelpouts	4.36	7.58	0.91		
Snailfish		1.30	0.09		
Pacific hake	26.70	17.59			
Other roundfish			0.46		
Shortspine thornyhead	1.55	0.09	6.16		
Longspine thornyhead			67.72		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		8.09			
Darkblotched rockfish	0.85				
Splitnose rockfish	23.60				
Shortbelly rockfish					
Other rockfish	4.32				
Grooved tanner crab			38.91		
Other invertebrates	38.61	14.55	9.37		
Total catch weight (kg)	188.40	227.07	232.67		

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001071	200101001072	200101001073	200101001074	200101001075
Start date and time	9/18/2001 1818	9/19/2001 0634	9/19/2001 0933	9/19/2001 1150	9/19/2001 1348
Gear latitude (dd)	39.7764	39.1665	39.2139	39.1996	39.2307
Gear longitude (dd)	−124.1740	−124.1932	−124.0881	−124.0294	−123.9993
Station	51I	55J	55G	55E	55D
Depth (m)	1,060.70	1,186.00	715.17	506.56	410.58
Duration (hr)		0.39	0.33	0.32	0.31
Distance fished (km)		1.67	1.20	1.16	1.22
Area swept (ha)		2.48	1.84	1.69	1.78
Net width (m)		14.87	15.33	14.62	14.65
Performance	−5.1	0	0	0	0
Species by weight					
Hagfish				0.32	
Brown cat shark			6.25	3.26	
Spiny dogfish					1.60
Skates	6.08		0.09	3.25	4.50
Other Chondrichthyes					3.11
Arrowtooth flounder					
Petrale sole					
Dover sole	7.78	6.86	67.18	71.55	41.22
Deepsea sole	6.85	0.83	3.09		
Rex sole				5.95	44.04
Other flatfish					
Sablefish	2.51	12.17		3.83	13.41
Pacific grenadier	48.46	70.60	0.60		
Giant grenadier	33.85	136.12	5.01		
Other grenadier					
Pacific flatnose	2.04	9.61	0.08	0.13	
Slickheads	7.19	11.44	8.67		
Eelpouts	1.48	0.35	0.98	5.51	5.32
Snailfish			0.01		1.84
Pacific hake				8.23	51.42
Other roundfish	0.35	0.35	0.07	0.01	0.01
Shortspine thornyhead	23.28	26.48	6.15	6.48	8.70
Longspine thornyhead	46.44	21.04	53.23	11.84	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					4.21
Darkblotched rockfish					
Splitnose rockfish					2.18
Shortbelly rockfish					
Other rockfish					1.32
Grooved tanner crab	26.32	7.92	15.89	0.62	0.90
Other invertebrates	10.87	16.33	10.10	12.98	24.73
Total catch weight (kg)	223.50	320.10	177.40	133.96	208.51

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001076	200101001077	200101001078	200101001079	200101001080
Start date and time	9/19/2001 1549	9/20/2001 0701	9/20/2001 0846	9/20/2001 1105	9/20/2001 1313
Gear latitude (dd)	39.2238	38.4824	38.5282	38.5389	38.5267
Gear longitude (dd)	−123.9496	−123.5832	−123.6822	−123.7088	−123.7256
Station	55A	59A	59D	59F	59H
Depth (m)	187.76	208.57	432.09	640.69	843.62
Duration (hr)	0.32	0.32	0.30	0.31	0.35
Distance fished (km)	1.16	1.16	1.21	1.17	1.21
Area swept (ha)	1.72	1.70	1.76	1.71	1.79
Net width (m)	14.75	14.66	14.49	14.69	14.80
Performance	0	0	0	0	0
Species by weight					
Hagfish				0.09	0.77
Brown cat shark			4.75	1.91	0.10
Spiny dogfish					
Skates	5.92	13.91	43.13	15.81	1.98
Other Chondrichthyes	3.33	1.58	2.64		
Arrowtooth flounder	0.10				
Petrale sole	1.04				
Dover sole	1.08		486.00	48.57	49.86
Deepsea sole				0.84	8.61
Rex sole	14.20	2.84	66.94		
Other flatfish	22.23	24.57	0.67		
Sablefish	3.06	0.74	5.33	2.21	2.61
Pacific grenadier					9.14
Giant grenadier					
Other grenadier					
Pacific flatnose				0.46	
Slickheads					4.54
Eelpouts			3.10		2.14
Snailfish			0.48	0.55	
Pacific hake	20.58	15.13	6.90	0.38	
Other roundfish	2.76	0.05	0.02		0.16
Shortspine thornyhead			0.51	2.19	10.41
Longspine thornyhead				23.11	55.92
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			2.59		
Darkblotched rockfish	1.54	0.33			
Splitnose rockfish	0.12	0.40			
Shortbelly rockfish					
Other rockfish	57.96	41.63	8.68		
Grooved tanner crab				4.16	7.66
Other invertebrates	4.12	28.12	19.16	8.26	23.90
Total catch weight (kg)	138.04	129.30	650.90	108.54	177.80

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001081	200101001082	200101001083	200101001084	200101001085
Start date and time	9/20/2001 1545	9/21/2001 0639	9/21/2001 0815	9/21/2001 1133	9/21/2001 1406
Gear latitude (dd)	38.4966	37.8732	37.8641	37.8559	37.8604
Gear longitude (dd)	−123.7307	−123.4643	−123.4618	−123.4351	−123.4215
Station	59I	63I	63I	63G	63C
Depth (m)	1008.91	1060.70	1060.70	768.10	365.76
Duration (hr)	0.37				
Distance fished (km)	1.45				
Area swept (ha)	2.15				
Net width (m)	14.89				
Performance	0	−5	−5.1	−5.1	−5.1
Species by weight					
Hagfish	0.78		0.16	0.22	
Brown cat shark	0.30		0.65	0.75	
Spiny dogfish					
Skates	3.09		10.42	0.02	95.46
Other Chondrichthyes					9.97
Arrowtooth flounder					
Petrale sole					
Dover sole	6.01		241.71	304.54	320.08
Deepsea sole	15.21		8.31	0.90	
Rex sole					22.63
Other flatfish					0.54
Sablefish	14.93		151.09	63.10	31.33
Pacific grenadier	50.66		256.56	0.14	
Giant grenadier	73.48		165.82	47.05	
Other grenadier					
Pacific flatnose	1.04		1.53		
Slickheads	10.69		21.29	35.50	
Eelpouts	9.64		5.38	2.74	26.82
Snailfish	0.10			0.04	
Pacific hake					37.00
Other roundfish	0.55		0.17	0.01	0.09
Shortspine thornyhead	8.96		36.89	64.24	87.97
Longspine thornyhead	65.02		63.05	213.97	3.04
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					8.61
Darkblotched rockfish					1.14
Splitnose rockfish					204.75
Shortbelly rockfish					
Other rockfish					8.94
Grooved tanner crab	18.75		4.15	6.23	
Other invertebrates	25.81		10.12	8.05	17.53
Total catch weight (kg)	305.02		977.30	747.50	875.90

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001086	200101001087	200101001088	200101001089	200101001090
Start date and time	9/21/2001 1648	9/21/2001 1825	9/24/2001 0641	9/24/2001 1031	9/24/2001 1255
Gear latitude (dd)	37.8547	37.8473	37.2559	37.2434	37.1550
Gear longitude (dd)	−123.4047	−123.4123	−123.1565	−123.0793	−123.0629
Station	63A	63D	67I	67G	67G
Depth (m)	194.72	438.91	1086.86	768.10	700.07
Duration (hr)	0.31		0.48		0.38
Distance fished (km)	1.27		1.97		1.61
Area swept (ha)	1.77		2.93		2.38
Net width (m)	14.00		14.87		14.75
Performance	0	−5.1	0	−1	0
Species by weight					
Hagfish			0.46		0.95
Brown cat shark		0.61	3.14		2.26
Spiny dogfish					
Skates	1.44	112.42	9.89		
Other Chondrichthyes	21.26	1.21			
Arrowtooth flounder					
Petrale sole					
Dover sole	29.00	228.41	158.23		146.56
Deepsea sole			13.28		0.40
Rex sole	27.64	23.57			
Other flatfish	3.67				
Sablefish	0.87	6.85	67.38		13.65
Pacific grenadier			147.92		0.02
Giant grenadier			19.60		
Other grenadier					0.02
Pacific flatnose			5.04		0.13
Slickheads			38.06		4.16
Eelpouts		12.61	9.51		
Snailfish		0.22			0.11
Pacific hake		18.95			
Other roundfish	8.87		0.53		0.37
Shortspine thornyhead	0.52	111.44	59.49		12.77
Longspine thornyhead		16.02	38.86		67.82
Rougheye rockfish		1.30			
Pacific ocean perch		0.55			
Aurora rockfish		8.12			
Darkblotched rockfish	0.03				
Splitnose rockfish		15.93			
Shortbelly rockfish	1.60				
Other rockfish	566.65	8.56			
Grooved tanner crab			3.37		6.89
Other invertebrates	6.46	26.10	22.44		38.35
Total catch weight (kg)	668.01	592.87	597.20		294.46

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001091	200101001092	200101001093	200101001094	200101001095
Start date and time	9/24/2001 1512	9/24/2001 1752	9/25/2001 0708	9/25/2001 0926	9/25/2001 1133
Gear latitude (dd)	37.1838	37.1782	36.4878	36.4600	36.4610
Gear longitude (dd)	−122.9637	−122.9455	−122.0222	−122.0276	−122.0017
Station	67F	67E	71D	71F	71A
Depth (m)	566.64	523.36	439.39	586.44	248.49
Duration (hr)	0.33	0.31	0.33	0.33	0.31
Distance fished (km)	1.32	1.12	1.12	1.22	1.31
Area swept (ha)	1.94	1.63	1.62	1.79	1.86
Net width (m)	14.65	14.61	14.50	14.67	14.18
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark	69.18	10.49	10.07	4.84	0.14
Spiny dogfish					
Skates	15.83	9.98	45.41	7.82	2.91
Other Chondrichthyes	0.34		37.39	7.82	8.97
Arrowtooth flounder					
Petrale sole					3.11
Dover sole	159.79	184.27	158.63	24.64	8.58
Deepsea sole				3.53	
Rex sole	5.78	18.93	141.77	0.37	3.95
Other flatfish					41.02
Sablefish	3.50	1.73	23.53	9.60	6.76
Pacific grenadier					
Giant grenadier					
Other grenadier	0.21	0.25		0.07	
Pacific flatnose	0.23				
Slickheads					
Eelpouts	12.68	8.74	6.00	1.50	0.46
Snailfish	3.30			0.45	
Pacific hake	1.63	3.22	10.93		1.04
Other roundfish	0.60	0.05			9.75
Shortspine thornyhead	7.05	0.67	3.67	10.38	
Longspine thornyhead	8.62			23.19	0.13
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.88	0.81	4.76	1.23	
Darkblotched rockfish					
Splitnose rockfish			4.00		75.68
Shortbelly rockfish					376.22
Other rockfish			3.20		102.08
Grooved tanner crab	13.10	1.12	0.18	0.17	
Other invertebrates	26.31	23.37	32.81	68.95	19.34
Total catch weight (kg)	329.03	263.63	482.35	164.56	660.14

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001096	200101001097	200101001098	200101001099	200101001100
Start date and time	9/25/2001 1454	9/25/2001 1743	9/26/2001 0637	9/26/2001 1023	9/26/2001 1308
Gear latitude (dd)	36.5139	36.4612	35.8868	35.8724	35.8758
Gear longitude (dd)	−122.1283	−122.1644	−121.7743	−121.7415	−121.6120
Station	71I	71J	75I	75H	75F
Depth (m)	1102.97	1229.22	964.08	923.08	630.71
Duration (hr)	0.39	0.29	0.35	0.39	0.35
Distance fished (km)	1.43	1.35	1.63	1.71	1.34
Area swept (ha)	2.13	2.02	2.42	2.54	1.97
Net width (m)	14.86	14.91	14.87	14.85	14.72
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.27		0.36	0.08	
Brown cat shark	0.84		1.44	1.83	6.85
Spiny dogfish					
Skates	8.80	5.93	0.90		1.17
Other Chondrichthyes					6.26
Arrowtooth flounder					
Petrale sole					
Dover sole	69.47	1.40	27.61	28.42	38.36
Deepsea sole	12.90		7.68	5.37	
Rex sole					
Other flatfish					
Sablefish	30.28	2.62	46.57	54.70	20.81
Pacific grenadier	65.43	25.25	2.48	0.03	
Giant grenadier	12.18	4.16	1.52		
Other grenadier	0.17				
Pacific flatnose	3.01	4.41	0.16	0.60	0.28
Slickheads	35.76	6.90	4.75	3.43	
Eelpouts	1.98	0.02	0.91	2.26	0.07
Snailfish	0.24		0.07		0.15
Pacific hake					2.00
Other roundfish	0.72	1.88	0.52	0.44	
Shortspine thornyhead	20.14	7.93	17.79	19.61	9.22
Longspine thornyhead	40.56	14.30	71.92	126.32	29.37
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	11.82	8.76	5.84	4.02	0.03
Other invertebrates	10.78	16.38	159.85	86.14	27.39
Total catch weight (kg)	325.35	99.94	350.37	333.25	141.96

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101001101	200101001102	200101001103	200101001104	200101001105
Start date and time	9/26/2001 1501	9/26/2001 1706	9/27/2001 0656	9/27/2001 0832	9/27/2001 1400
Gear latitude (dd)	35.8744	35.8772	35.1520	35.1653	35.1358
Gear longitude (dd)	−121.5688	−121.5344	−120.9862	−121.0354	−121.5695
Station	75E	75C	79B	79D	79G
Depth (m)	502.53	350.26	295.23	395.12	768.10
Duration (hr)	0.33	0.32	0.32	0.33	
Distance fished (km)	1.30	1.23	1.23	1.30	
Area swept (ha)	1.9	1.77	1.76	1.89	
Net width (m)	14.64	14.42	14.31	14.5	
Performance	0	0	0	5.1	−1
Species by weight					
Hagfish					0.10
Brown cat shark		7.31		1.50	
Spiny dogfish		0.57	2.43	1.13	
Skates		19.22	5.88	10.81	
Other Chondrichthyes		47.14	1.00	4.56	
Arrowtooth flounder					
Petrale sole					
Dover sole		32.60	0.10	4.89	9.23
Deepsea sole					
Rex sole		1.03	0.10	7.65	
Other flatfish		0.35	0.10	1.22	
Sablefish		16.38		7.31	10.96
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					0.15
Slickheads					4.80
Eelpouts		2.25	0.22	1.67	
Snailfish		0.21			0.41
Pacific hake		24.90	5.86	13.17	0.17
Other roundfish			0.62		0.09
Shortspine thornyhead		0.90		0.29	80.18
Longspine thornyhead					59.21
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.46		3.29	
Darkblotched rockfish					
Splitnose rockfish		50.48	14.49	35.03	
Shortbelly rockfish					
Other rockfish		1.28	4.90	0.67	
Grooved tanner crab					
Other invertebrates		28.56	45.95	200.78	89.41
Total catch weight (kg)		233.64	81.65	293.97	254.71

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006001	200101006002	200101006003	200101006004	200101006005
Start date and time	6/24/2001 0611	6/24/2001 1043	6/24/2001 1328	6/24/2001 2006	6/25/2001 0726
Gear latitude (dd)	47.6213	47.6176	47.6333	47.6483	46.9745
Gear longitude (dd)	−125.0652	−125.0900	−125.1659	−125.3855	−124.9945
Station	4A	4B	4F	4I	8D
Depth (m)	192.39	317.58	604.64	1,060.70	426.55
Duration (hr)	0.28	0.26	0.27		0.25
Distance fished (km)	1.18	1.14	1.06		1.13
Area swept (ha)	1.51	1.61	1.60		1.66
Net width (m)	12.75	14.10	15.09		14.74
Performance	0	1.1	1.1	−5	1.1
Species by weight					
Hagfish					0.54
Brown cat shark			6.81		0.96
Spiny dogfish					
Skates	36.13	5.89			2.94
Other Chondrichthyes	24.58				1.13
Arrowtooth flounder	6.60		1.44		5.71
Petrale sole	10.65				
Dover sole	21.89	55.22			79.21
Deepsea sole			1.85		
Rex sole	5.57	15.68			4.93
Other flatfish	22.09	0.10			0.01
Sablefish	20.94		18.36		1.68
Pacific grenadier			1.38		
Giant grenadier			19.53		3.67
Other grenadier					
Pacific flatnose			1.62		0.45
Slickheads			0.02		
Eelpouts		2.23	2.93		2.89
Snailfish			0.99		2.07
Pacific hake					0.72
Other roundfish	126.77	0.01	0.00		0.01
Shortspine thornyhead		16.15	4.37		16.31
Longspine thornyhead			11.62		
Rougheye rockfish					1.27
Pacific ocean perch		0.55			
Aurora rockfish					1.99
Darkblotched rockfish					
Splitnose rockfish		0.13			
Shortbelly rockfish					
Other rockfish	106.15				
Grooved tanner crab			5.49		
Other invertebrates	5.96	10.42	16.11		17.68
Total catch weight (kg)	387.33	106.38	92.52		144.17

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006006	200101006007	200101006008	200101006009	200101006010
Start date and time	6/25/2001 1028	6/25/2001 1310	6/25/2001 1544	6/25/2001 1816	6/26/2001 0614
Gear latitude (dd)	46.9705	46.9738	47.0006	47.0115	46.4083
Gear longitude (dd)	−124.9892	−125.0419	−125.0929	−125.0592	−124.5621
Station	8C	8G	8I	8G	12A
Depth (m)	376.38	768.10	1,060.70	768.10	219.46
Duration (hr)	0.26				
Distance fished (km)	1.12				
Area swept (ha)	1.65				
Net width (m)	14.75				
Performance	0	−5.1	−5.1	−5.1	−6
Species by weight					
Hagfish					
Brown cat shark	0.37				
Spiny dogfish					
Skates	11.30				
Other Chondrichthyes	1.31				
Arrowtooth flounder	6.54				
Petrale sole					
Dover sole	109.50				
Deepsea sole					
Rex sole	17.92				
Other flatfish	11.68				
Sablefish	7.17				
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	3.98				
Snailfish	0.96				
Pacific hake	4.21				
Other roundfish	0.27				
Shortspine thornyhead	29.03				
Longspine thornyhead					
Rougheye rockfish	3.75				
Pacific ocean perch					
Aurora rockfish	4.72				
Darkblotched rockfish					
Splitnose rockfish	0.88				
Shortbelly rockfish					
Other rockfish	0.91				
Grooved tanner crab	0.72				
Other invertebrates	36.85				
Total catch weight (kg)	252.07				

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006011	200101006012	200101006013	200101006014	200101006015
Start date and time	6/26/2001 0829	6/26/2001 1111	6/26/2001 1446	6/26/2001 1834	6/27/2001 0658
Gear latitude (dd)	46.4002	46.4062	46.3235	46.2621	45.7055
Gear longitude (dd)	−124.6581	−124.6786	−124.7328	−124.4602	−124.8951
Station	12I	12J	12F	12D	16I
Depth (m)	1,092.38	1,183.22	601.20	438.91	1,062.47
Duration (hr)	0.34	0.51	0.29	0.31	0.57
Distance fished (km)	1.29	1.87	1.25		2.05
Area swept (ha)	1.98	2.88	1.74		3.14
Net width (m)	15.34	15.37	13.99		15.34
Performance	0	0	0	−4.2	0
Species by weight					
Hagfish			0.11		
Brown cat shark		0.13	4.37		0.64
Spiny dogfish					
Skates			1.88		
Other Chondrichthyes					
Arrowtooth flounder			2.31		
Petrale sole					
Dover sole	3.97		24.69		
Deepsea sole		1.99	4.23		0.84
Rex sole			1.46		
Other flatfish					
Sablefish	15.21	21.85	11.39		46.53
Pacific grenadier	2.11	6.48	0.02		70.82
Giant grenadier	8.68	4.88	3.21		32.41
Other grenadier		0.46			
Pacific flatnose	0.14	0.86	1.93		3.51
Slickheads		0.52			2.61
Eelpouts	10.17	3.69	1.02		4.73
Snailfish			2.95		
Pacific hake					
Other roundfish	0.00	0.04	0.08		0.00
Shortspine thornyhead	8.32	4.12	7.00		10.44
Longspine thornyhead	22.04	47.72	17.63		71.24
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	6.84	22.31	12.67		35.67
Other invertebrates	4.81	38.37	9.80		26.09
Total catch weight (kg)	82.29	153.42	106.75		305.53

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006016	200101006017	200101006018	200101006019	200101006020
Start date and time	6/27/2001 1001	6/27/2001 1445	6/27/2001 1615	6/27/2001 1801	6/27/2001 1928
Gear latitude (dd)	45.6966	45.6986	45.7042	45.6968	45.6670
Gear longitude (dd)	−124.8410	−124.7489	−124.7301	−124.7343	−124.6873
Station	16G	16E	16C	16D	16D
Depth (m)	770.73	514.39	350.63	438.91	430.40
Duration (hr)	0.32	0.28	0.25		0.36
Distance fished (km)	1.33	1.04	0.87		1.39
Area swept (ha)	2.02	1.56	1.28		2.07
Net width (m)	15.22	15.02	14.72		14.92
Performance	0	1.1	1.1	−5.1	0
Species by weight					
Hagfish	0.05	0.39			
Brown cat shark	1.07	1.05			
Spiny dogfish					
Skates	0.95	5.14	0.89		4.19
Other Chondrichthyes			1.16		
Arrowtooth flounder					5.98
Petrale sole					
Dover sole	4.19	10.31	61.10		47.28
Deepsea sole	1.97				
Rex sole		1.62	9.84		4.92
Other flatfish		0.01	0.54		
Sablefish	17.19	7.28	9.96		17.15
Pacific grenadier	0.95	0.25			
Giant grenadier	4.09				
Other grenadier					
Pacific flatnose	0.66	2.36			
Slickheads	1.23				
Eelpouts	0.22	6.23	1.04		0.89
Snailfish		0.56	0.01		
Pacific hake		12.46	19.25		18.19
Other roundfish	0.00	0.01			0.00
Shortspine thornyhead	4.82	1.48	1.96		27.08
Longspine thornyhead	35.80	0.00			
Rougheye rockfish					9.10
Pacific ocean perch					
Aurora rockfish					0.56
Darkblotched rockfish			1.30		
Splitnose rockfish			0.68		0.69
Shortbelly rockfish					
Other rockfish			2.26		
Grooved tanner crab	12.27				
Other invertebrates	1.69	41.53	0.66		41.65
Total catch weight (kg)	87.15	90.68	110.65		177.68

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006021	200101006022	200101006023	200101006024	200101006025
Start date and time	6/28/2001 0603	6/28/2001 0842	6/28/2001 1147	6/28/2001 1443	6/28/2001 1806
Gear latitude (dd)	45.0267	45.0221	45.0590	45.0513	44.9873
Gear longitude (dd)	−124.3595	−124.4846	−124.7563	−124.9676	−125.0476
Station	20A	20C	20E	20I	20J
Depth (m)	214.07	355.81	518.79	1,081.84	1,240.05
Duration (hr)	0.28	0.31	0.32	0.48	0.45
Distance fished (km)	1.17	1.33	1.38	1.90	2.14
Area swept (ha)	1.82	2.08	2.09	2.92	3.29
Net width (m)	15.5	15.68	15.17	15.35	15.37
Performance	0	0	0	0	5.1
Species by weight					
Hagfish				0.50	
Brown cat shark			1.32	0.44	
Spiny dogfish					
Skates	14.92	2.20	11.87	9.37	
Other Chondrichthyes	1.44				800.00
Arrowtooth flounder	33.74	4.99			
Petrale sole	1.25				
Dover sole	19.77	14.94	6.92		
Deepsea sole				2.71	
Rex sole	7.95	10.92	1.21		
Other flatfish	10.91	0.48			
Sablefish	6.40	11.38	8.83	6.40	
Pacific grenadier				26.94	
Giant grenadier				15.40	
Other grenadier					
Pacific flatnose			0.62	3.31	
Slickheads				1.55	
Eelpouts	1.41	2.73	0.05	2.54	
Snailfish		0.10		0.05	
Pacific hake	12.24	10.21	1.96		
Other roundfish	7.53	0.00	0.03	0.02	
Shortspine thornyhead		33.23	3.21	10.37	
Longspine thornyhead			14.00	49.83	
Rougheye rockfish					
Pacific ocean perch	0.00				
Aurora rockfish		0.17			
Darkblotched rockfish	1.40	24.97			
Splitnose rockfish	1.26	6.87			
Shortbelly rockfish					
Other rockfish	0.94	1.90			
Grooved tanner crab			11.16	55.32	
Other invertebrates	10.57	78.96	14.57	39.19	
Total catch weight (kg)	131.73	204.05	75.75	223.94	800.00

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006026	200101006027	200101006028	200101006029	200101006030
Start date and time	6/29/2001 0514	6/29/2001 0721	6/29/2001 1010	6/29/2001 1223	6/29/2001 1411
Gear latitude (dd)	44.4073	44.3937	44.3996	44.3925	44.4021
Gear longitude (dd)	−127.1072	−125.0691	−124.8913	−124.8389	−124.8114
Station	24J	24H	24E	24D	24B
Depth (m)	1,207.01	902.06	498.87	453.76	310.68
Duration (hr)		0.41	0.31	0.28	0.26
Distance fished (km)		1.80	1.36	1.11	1.16
Area swept (ha)		2.79	2.02	1.6	1.62
Net width (m)		15.47	14.85	14.38	14
Performance	−1.2	0	0	0	0
Species by weight					
Hagfish		2.31	0.28	0.10	
Brown cat shark		0.37	2.00	1.50	
Spiny dogfish					
Skates			2.87	11.87	14.64
Other Chondrichthyes				0.89	
Arrowtooth flounder			5.72	1.84	4.04
Petrale sole					
Dover sole		17.08	94.61	16.69	28.44
Deepsea sole		5.36			
Rex sole			4.53	3.24	4.28
Other flatfish			0.00		0.48
Sablefish		5.41	6.91		6.46
Pacific grenadier		10.24	1.67		
Giant grenadier		82.60			
Other grenadier					
Pacific flatnose		0.76	0.78		
Slickheads		5.49			
Eelpouts		1.73	1.45	0.54	4.22
Snailfish		0.18	0.86	1.70	0.38
Pacific hake				12.33	5.00
Other roundfish		0.12	0.00		
Shortspine thornyhead		1.20	1.02	0.53	2.53
Longspine thornyhead		55.67	2.56		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				1.21	
Darkblotched rockfish					
Splitnose rockfish					0.39
Shortbelly rockfish					
Other rockfish					0.18
Grooved tanner crab		12.61	27.67		
Other invertebrates		13.49	48.46	22.97	40.10
Total catch weight (kg)		214.62	201.39	75.41	111.14

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006031	200101006032	200101006033	200101006034	200101006035
Start date and time	7/11/2001 0610	7/11/2001 0859	7/11/2001 1146	7/11/2001 1420	7/11/2001 1723
Gear latitude (dd)	43.6045	43.6074	43.6756	43.7343	43.6609
Gear longitude (dd)	−124.6083	−124.7065	−124.8389	−124.9411	−125.0170
Station	28B	28E	28G	28I	28J
Depth (m)	269.62	491.83	748.87	1,060.70	1,215.21
Duration (hr)	0.29	0.31	0.31		0.50
Distance fished (km)	1.35	1.25	1.37		2.02
Area swept (ha)	2.02	1.99	2.12		3.10
Net width (m)	15.05	15.96	15.48		15.4
Performance	0	0	0	−5.1	0
Species by weight					
Hagfish		0.10		0.18	0.47
Brown cat shark		1.98	2.09		
Spiny dogfish					
Skates	0.99	4.91	3.76	14.14	0.75
Other Chondrichthyes					
Arrowtooth flounder	5.90				
Petrale sole					
Dover sole	26.91	21.83	0.66		
Deepsea sole				2.88	0.91
Rex sole	17.51	25.48			
Other flatfish	1.62				
Sablefish	40.35	5.84	10.98	5.06	9.74
Pacific grenadier			1.32	94.71	112.37
Giant grenadier			37.71	5.04	60.11
Other grenadier					
Pacific flatnose		0.53	0.40	3.48	11.76
Slickheads			0.39	0.58	0.38
Eelpouts	2.20	6.52	0.21	2.51	2.94
Snailfish	0.30	0.22		0.73	0.25
Pacific hake	2.78	5.41			
Other roundfish		0.00	0.02	0.01	0.05
Shortspine thornyhead	3.26	3.49	0.56	11.71	5.96
Longspine thornyhead		2.22	42.93	54.93	35.04
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish	0.81				
Splitnose rockfish	0.54				
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			11.62	16.77	29.48
Other invertebrates	57.06	20.56	9.27	16.27	43.11
Total catch weight (kg)	160.23	99.09	121.92	229.00	313.32

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006036	200101006037	200101006038	200101006039	200101006040
Start date and time	7/12/2001 0610	7/12/2001 1010	7/12/2001 1212	7/12/2001 1421	7/12/2001 1712
Gear latitude (dd)	43.0824	43.0734	43.0537	43.0638	43.0422
Gear longitude (dd)	−125.0308	−124.9338	−124.9088	−124.8894	−124.8719
Station	32J	32G	32E	32C	32B
Depth (m)	1,207.01	768.10	500.15	378.06	272.33
Duration (hr)			0.30	0.28	0.29
Distance fished (km)			1.41	1.40	1.29
Area swept (ha)			2.13	2.06	1.87
Net width (m)			15.1	14.76	14.5
Performance	−5.1	−5.1	0	0	0
Species by weight					
Hagfish		0.40	0.10	0.05	
Brown cat shark		0.80	1.99	1.20	1.10
Spiny dogfish					
Skates	14.80		0.74	15.10	14.59
Other Chondrichthyes				2.60	5.50
Arrowtooth flounder					
Petrale sole					
Dover sole	0.00	20.00	74.80	175.51	84.00
Deepsea sole	1.70	2.40			
Rex sole			45.30	13.50	29.40
Other flatfish			0.80	0.90	3.75
Sablefish	36.00	8.10	43.52	22.62	18.33
Pacific grenadier	188.14	0.30			
Giant grenadier	85.97	7.10	1.83		
Other grenadier					
Pacific flatnose	9.10		0.48		
Slickheads	0.67	0.10			
Eelpouts	25.60	1.40	6.75	6.55	3.70
Snailfish	0.70	0.00	1.46		
Pacific hake			1.86	9.90	3.47
Other roundfish	0.11	0.01			1.30
Shortspine thornyhead	4.24		4.18	2.20	5.30
Longspine thornyhead	23.30	59.20	0.36	0.10	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				2.60	
Darkblotched rockfish				2.30	2.85
Splitnose rockfish					18.30
Shortbelly rockfish					
Other rockfish					1.31
Grooved tanner crab	2.60	6.70	1.34		
Other invertebrates	17.01	4.30	15.50	45.54	13.70
Total catch weight (kg)	409.94	110.81	201.01	300.67	206.60

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006041	200101006042	200101006043	200101006044	200101006045
Start date and time	7/12/2001 1917	7/13/2001 0636	7/13/2001 0830	7/13/2001 1153	7/13/2001 1550
Gear latitude (dd)	42.9806	42.6404	42.6367	42.6429	42.6034
Gear longitude (dd)	−124.9597	−125.0031	−125.0170	−124.9623	−124.7855
Station	32G	34J	34J	34I	34F
Depth (m)	775.30	1,207.01	1,202.76	1,102.84	595.85
Duration (hr)	0.28		0.46	0.39	0.28
Distance fished (km)	1.25		1.76	1.58	1.23
Area swept (ha)	1.89		2.7	2.42	1.89
Net width (m)	15.12		15.37	15.34	15.34
Performance	1.1	−5	0	0	0
Species by weight					
Hagfish					0.20
Brown cat shark	0.60				0.70
Spiny dogfish					
Skates			8.77	8.40	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	29.50		2.40	117.50	80.80
Deepsea sole	1.00		11.80	5.03	
Rex sole					0.90
Other flatfish					
Sablefish	8.26		15.58	122.90	19.86
Pacific grenadier	0.70		189.10	225.42	0.65
Giant grenadier	18.10		121.30	67.30	18.40
Other grenadier					
Pacific flatnose	0.20		24.90	4.90	4.50
Slickheads	1.95		0.30	415.80	
Eelpouts	1.20			14.36	4.80
Snailfish				0.30	0.60
Pacific hake					
Other roundfish	0.18		0.50	0.00	
Shortspine thornyhead	5.84		1.62	62.30	5.92
Longspine thornyhead	52.82		34.10	176.46	3.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	15.80		0.80	31.93	6.20
Other invertebrates	3.51		38.18	7.50	6.40
Total catch weight (kg)	139.66		449.35	1260.10	153.53

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006046	200101006047	200101006048	200101006049	200101006050
Start date and time	7/13/2001 1817	7/14/2001 0611	7/15/2001 0655	7/15/2001 1045	7/15/2001 1246
Gear latitude (dd)	42.6008	42.4100	41.7016	41.7125	41.6846
Gear longitude (dd)	−124.7727	−124.7716	−124.4668	−124.5155	−124.5754
Station	34E	36D	40A	40D	40F
Depth (m)	513.60	456.62	197.53	423.94	603.16
Duration (hr)	0.29	0.31	0.28	0.28	0.31
Distance fished (km)	1.19	1.37	1.28	1.18	1.18
Area swept (ha)	1.8	2.12	1.91	1.82	1.8
Net width (m)	15.06	15.43	14.87	15.39	15.2
Performance	5.1	0	5.1	0	0
Species by weight					
Hagfish		0.15		0.20	
Brown cat shark	0.30	1.15		2.60	1.30
Spiny dogfish					
Skates	2.00	14.30	3.90	4.65	2.10
Other Chondrichthyes					
Arrowtooth flounder		1.50	1.40		
Petrale sole					
Dover sole	32.60	54.30	37.60	37.87	1.70
Deepsea sole					
Rex sole	40.90	11.10	25.20	37.50	1.60
Other flatfish	0.15	0.35	21.60		
Sablefish	31.29	40.70	8.30	15.00	4.60
Pacific grenadier					
Giant grenadier	45.70	1.60			
Other grenadier					
Pacific flatnose	1.30	0.05			0.20
Slickheads					0.05
Eelpouts	10.40	11.50	0.80	10.80	4.35
Snailfish	0.10			1.50	0.40
Pacific hake	0.20	12.00	63.40	5.98	
Other roundfish		0.09	22.63		0.20
Shortspine thornyhead	1.20	2.00		3.40	4.70
Longspine thornyhead					25.50
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		2.55		7.64	
Darkblotched rockfish					
Splitnose rockfish			1.00		
Shortbelly rockfish					
Other rockfish			40.60		
Grooved tanner crab	1.60			0.30	26.10
Other invertebrates	3.50	11.80	72.00	19.39	2.90
Total catch weight (kg)	171.24	165.14	298.43	146.83	75.70

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006051	200101006052	200101006053	200101006054	200101006055
Start date and time	7/15/2001 1646	7/15/2001 1929	7/16/2001 0543	7/16/2001 0829	7/16/2001 1120
Gear latitude (dd)	41.6005	41.6206	41.0081	40.9448	40.9755
Gear longitude (dd)	−124.8770	−124.9346	−124.7955	−124.7755	−124.7463
Station	40H	40I	44I	44H	44G
Depth (m)	953.05	1,019.84	1,053.66	923.05	757.00
Duration (hr)	0.40	0.44	0.33	0.46	0.38
Distance fished (km)	1.61	1.93	1.51	1.92	1.63
Area swept (ha)	2.47	2.96	2.37	2.9	2.53
Net width (m)	15.32	15.34	15.7	15.11	15.58
Performance	0	1.1	0	0	5.1
Species by weight					
Hagfish		0.10	0.20	0.20	0.10
Brown cat shark	2.10	1.80		2.80	3.10
Spiny dogfish					
Skates			4.00	0.00	2.00
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	7.70	30.33		15.10	65.60
Deepsea sole	2.70	13.90	3.50	11.50	2.60
Rex sole					
Other flatfish					
Sablefish		1.36	7.90	12.80	11.86
Pacific grenadier	1.30	8.70	59.40	11.60	0.50
Giant grenadier	1.70	13.70	13.70	12.60	1.80
Other grenadier					
Pacific flatnose	1.00	2.20	5.30	3.60	0.20
Slickheads	1.00	15.24	2.90	5.10	1.14
Eelpouts	4.50	4.50	0.70	3.40	0.70
Snailfish	0.02			0.11	
Pacific hake					
Other roundfish	0.09	0.19	0.06	0.18	0.23
Shortspine thornyhead	0.00	7.30	0.00		44.80
Longspine thornyhead	112.84	135.76	36.10	69.00	128.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	6.70	10.80	32.00	66.20	9.00
Other invertebrates	37.91	38.81	7.06	14.92	23.50
Total catch weight (kg)	179.56	284.69	172.82	229.11	295.73

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006056	200101006057	200101006058	200101006059	200101006060
Start date and time	7/16/2001 1432	7/16/2001 1632	7/19/2001 0633	7/19/2001 0855	7/19/2001 1128
Gear latitude (dd)	40.9361	40.9378	40.2743	40.2782	40.2732
Gear longitude (dd)	−124.4846	−124.4375	−124.6655	−124.7787	−124.8956
Station	44D	44B	48D	48E	48G
Depth (m)	439.05	299.40	438.91	512.06	827.81
Duration (hr)	0.26	0.26			0.33
Distance fished (km)	1.15	1.08			1.55
Area swept (ha)	1.71	1.56			2.23
Net width (m)	14.9	14.41			14.39
Performance	0	0	−5.1	−5.1	1.1
Species by weight					
Hagfish	0.40				0.23
Brown cat shark					2.56
Spiny dogfish		3.20			
Skates	12.30	9.70			
Other Chondrichthyes	6.40	1.40			
Arrowtooth flounder		1.50			
Petrale sole					
Dover sole	53.80	48.00			9.89
Deepsea sole					1.96
Rex sole	23.00	26.80			
Other flatfish					
Sablefish	39.40	2.40			25.01
Pacific grenadier					0.19
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					0.07
Eelpouts	17.30	8.20			
Snailfish	0.90				
Pacific hake	34.50	73.80			
Other roundfish	0.07				0.01
Shortspine thornyhead	2.50	2.20			21.41
Longspine thornyhead					56.07
Rougheye rockfish					
Pacific ocean perch		1.40			
Aurora rockfish	12.30				
Darkblotched rockfish		18.80			
Splitnose rockfish		1.80			
Shortbelly rockfish					
Other rockfish		1.31			
Grooved tanner crab	0.40				2.75
Other invertebrates	45.24	21.00			2.36
Total catch weight (kg)	248.51	221.51			122.51

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006061	200101006062	200101006063	200101006064	200101006065
Start date and time	7/19/2001 1507	7/19/2001 1819	7/20/2001 0609	7/20/2001 0925	7/20/2001 1158
Gear latitude (dd)	40.2654	40.2981	39.7328	39.7283	39.6666
Gear longitude (dd)	−124.9565	−125.0617	−124.0315	−124.0486	−124.0786
Station	48H	48J	52A	52C	52F
Depth (m)	955.36	1,195.51	213.55	351.72	678.51
Duration (hr)	0.37	0.40	0.31	0.30	0.32
Distance fished (km)	1.72	1.60	1.38	1.30	1.45
Area swept (ha)	2.64	2.48	2.05	1.94	2.25
Net width (m)	15.3	15.52	14.88	14.91	15.48
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.35	0.20			0.20
Brown cat shark	8.24		1.41	3.10	4.95
Spiny dogfish					
Skates		2.00	5.45	33.80	
Other Chondrichthyes				2.40	
Arrowtooth flounder				0.60	
Petrale sole					
Dover sole	71.54		34.35	50.90	26.53
Deepsea sole	3.28	4.10			2.20
Rex sole			13.22	25.40	
Other flatfish			18.60	2.05	
Sablefish	22.39	36.90	8.75	9.11	3.84
Pacific grenadier	1.73	51.00			
Giant grenadier	0.52	2.90			
Other grenadier					
Pacific flatnose	0.49	1.10			
Slickheads	0.27	4.35			
Eelpouts	4.22		0.10	8.60	0.44
Snailfish					0.20
Pacific hake			6.76	0.60	
Other roundfish	0.31	0.70	11.88		
Shortspine thornyhead	16.30	37.20		3.10	0.96
Longspine thornyhead	73.46	0.00			37.14
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish			0.29		
Splitnose rockfish			2.29		
Shortbelly rockfish					
Other rockfish			35.90	0.20	
Grooved tanner crab	5.01	34.10	0.33	0.80	2.10
Other invertebrates	1.44	24.58	59.65	27.70	11.46
Total catch weight (kg)	209.55	199.13	198.98	168.36	90.02

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006066	200101006067	200101006068	200101006069	200101006070
Start date and time	7/20/2001 1454	7/20/2001 1759	7/21/2001 0612	7/21/2001 0939	7/21/2001 1301
Gear latitude (dd)	39.6210	39.5943	39.0465	39.0667	39.0127
Gear longitude (dd)	−124.1546	−124.1856	−124.1966	−124.1483	−124.0144
Station	52I	52J	56J	56I	56F
Depth (m)	1,066.71	1,207.01	1,207.01	1,118.60	586.12
Duration (hr)	0.40			0.31	0.34
Distance fished (km)	1.80			1.24	1.54
Area swept (ha)	2.77			1.91	2.29
Net width (m)	15.42			15.35	14.87
Performance	0	−5.1	−5.1	0	0
Species by weight					
Hagfish	0.14			0.10	0.50
Brown cat shark	7.92		5.70	1.76	2.10
Spiny dogfish					
Skates				12.14	3.70
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	14.20		7.04	66.78	22.60
Deepsea sole	10.20		2.20	4.80	3.20
Rex sole					
Other flatfish					
Sablefish	27.75		14.70	19.28	23.30
Pacific grenadier	156.60		277.73	66.12	
Giant grenadier	120.40		40.30	2.94	
Other grenadier					
Pacific flatnose	7.20		17.24	1.44	0.30
Slickheads	12.44		5.26	36.98	
Eelpouts	2.96		7.50	2.10	1.30
Snailfish	0.12			0.10	
Pacific hake					0.60
Other roundfish			1.00	0.22	
Shortspine thornyhead	23.30		4.10	10.70	44.80
Longspine thornyhead	60.52		6.94	23.00	28.00
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	8.18		0.10	0.48	10.40
Other invertebrates	21.76		4.64	8.71	12.90
Total catch weight (kg)	473.69		394.45	257.65	153.70

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006071	200101006072	200101006073	200101006074	200101006075
Start date and time	7/21/2001 1536	7/21/2001 1720	7/22/2001 0625	7/22/2001 1020	7/25/2001 0707
Gear latitude (dd)	39.0192	39.0016	38.3706	38.3427	37.6321
Gear longitude (dd)	−123.9762	−123.9356	−123.5437	−123.5279	−123.0782
Station	56D	56A	60A	60A	64D
Depth (m)	426.71	198.81	219.46	236.95	438.91
Duration (hr)	0.27	0.27		0.28	
Distance fished (km)	1.14	1.26		1.18	
Area swept (ha)	1.64	1.74		1.71	
Net width (m)	14.32	13.83		14.53	
Performance	0	0	−1	0	−4.3
Species by weight					
Hagfish	0.16				
Brown cat shark	0.40				
Spiny dogfish				0.27	
Skates	3.60	5.70		25.21	
Other Chondrichthyes		0.20		1.22	
Arrowtooth flounder		0.10			
Petrale sole				1.90	
Dover sole	35.48	56.50		108.91	
Deepsea sole					
Rex sole	1.90	0.70		42.52	
Other flatfish		22.10		16.76	
Sablefish	9.70	29.40			
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	1.30	0.02		0.48	
Snailfish	0.14				
Pacific hake	1.70	16.80		2.24	
Other roundfish		0.04		9.45	
Shortspine thornyhead	2.00				
Longspine thornyhead					
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.58				
Darkblotched rockfish		22.70			
Splitnose rockfish		4.30		0.56	
Shortbelly rockfish					
Other rockfish		195.10		100.03	
Grooved tanner crab	1.64				
Other invertebrates	42.35	22.52		96.64	
Total catch weight (kg)	100.95	376.18		406.19	

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006076	200101006077	200101006078	200101006079	200101006080
Start date and time	7/25/2001 0916	7/25/2001 1011	7/25/2001 1236	7/25/2001 1633	7/25/2001 1852
Gear latitude (dd)	37.6173	37.6189	37.6175	37.6594	37.6146
Gear longitude (dd)	−123.0512	−123.0562	−123.0757	−123.1596	−123.1788
Station	64E	64E	64F	64H	64I
Depth (m)	512.06	512.06	668.69	914.40	1,078.57
Duration (hr)			0.36		0.34
Distance fished (km)			1.58		1.49
Area swept (ha)			2.28		2.28
Net width (m)			14.43		15.34
Performance	−1	−5.1	5.1	−5.1	1.1
Species by weight					
Hagfish			0.35		0.30
Brown cat shark			1.80		2.58
Spiny dogfish					
Skates			8.26		5.56
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			209.24		50.54
Deepsea sole			0.40		20.38
Rex sole					
Other flatfish					
Sablefish			118.08		42.20
Pacific grenadier					156.38
Giant grenadier					37.12
Other grenadier					
Pacific flatnose					4.78
Slickheads			0.10		51.08
Eelpouts			0.02		
Snailfish			0.81		
Pacific hake					
Other roundfish					
Shortspine thornyhead			84.63		15.56
Longspine thornyhead			166.92		59.90
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			7.10		1.58
Other invertebrates			3.10		5.50
Total catch weight (kg)			600.81		453.46

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006081	200101006082	200101006083	200101006084	200101006085
Start date and time	7/26/2001 0638	7/26/2001 0934	7/26/2001 1240	7/26/2001 1513	7/26/2001 1807
Gear latitude (dd)	37.0146	37.0638	37.0639	37.0232	36.9627
Gear longitude (dd)	−122.8398	−122.7824	−122.7204	−122.6698	−122.4861
Station	68J	68G	68E	68D	68C
Depth (m)	1,227.86	768.93	504.50	445.24	342.62
Duration (hr)	0.33	0.31	0.32	0.29	0.28
Distance fished (km)	1.33	1.27	1.41	1.35	1.23
Area swept (ha)	2.05	1.94	2.13	2.02	1.82
Net width (m)	15.37	15.23	15.07	14.99	14.78
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.70			
Brown cat shark	2.02	2.10	3.40	12.00	4.48
Spiny dogfish					
Skates	3.50		60.70	156.57	11.00
Other Chondrichthyes			1.30	0.60	10.18
Arrowtooth flounder					
Petrale sole					0.84
Dover sole	72.69	112.08	117.00	217.20	301.84
Deepsea sole		2.40			
Rex sole			11.20	114.23	69.28
Other flatfish					21.40
Sablefish	5.50	23.80	1.40	10.00	6.70
Pacific grenadier	493.36				
Giant grenadier	17.74				
Other grenadier			0.30		
Pacific flatnose	6.05	0.10			
Slickheads	1.20	2.52			
Eelpouts		0.70	20.80	8.62	17.36
Snailfish		0.10			
Pacific hake		1.10	0.90	8.70	11.30
Other roundfish	0.30	0.10			
Shortspine thornyhead	2.33	24.90	8.80	1.30	6.24
Longspine thornyhead	6.28	69.50			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			6.40	3.32	
Darkblotched rockfish					
Splitnose rockfish					116.38
Shortbelly rockfish					
Other rockfish				9.62	29.84
Grooved tanner crab	0.92	2.20	0.70		
Other invertebrates	14.92	19.08	19.50	16.26	2.30
Total catch weight (kg)	626.81	261.38	252.40	558.42	609.14

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006086	200101006087	200101006088	200101006089	200101006090
Start date and time	7/27/2001 0622	7/27/2001 1004	7/27/2001 1420	7/27/2001 1719	7/27/2001 1932
Gear latitude (dd)	36.3694	36.3678	36.3470	36.2809	36.3040
Gear longitude (dd)	−122.0018	−122.0098	−122.1810	−122.2821	−122.3619
Station	72A	72B	72G	72I	72J
Depth (m)	209.73	322.25	820.69	1,046.76	1,189.78
Duration (hr)	0.27	0.31	0.34	0.30	0.26
Distance fished (km)	1.22	1.37	1.62	1.38	1.15
Area swept (ha)	1.75	2.02	2.47	2.12	1.77
Net width (m)	14.28	14.71	15.26	15.34	15.37
Performance	0	0	0	0	0
Species by weight					
Hagfish			0.10		
Brown cat shark			4.70	1.48	2.40
Spiny dogfish					
Skates	0.70	5.26			
Other Chondrichthyes	593.17	349.31		230.00	
Arrowtooth flounder					
Petrale sole	1.00				
Dover sole	6.10	18.12	33.04	0.64	
Deepsea sole			0.40	3.10	
Rex sole	4.20	2.00			
Other flatfish	5.70	13.25			
Sablefish		1.65	9.20	25.70	4.70
Pacific grenadier				178.98	87.90
Giant grenadier			3.30	31.00	4.00
Other grenadier			0.32	0.40	0.10
Pacific flatnose			2.60	1.13	7.00
Slickheads			3.74	75.50	6.04
Eelpouts	0.60	1.47	3.04	5.12	0.05
Snailfish			0.10		
Pacific hake	0.10				
Other roundfish	3.96	1.78	1.00	0.01	0.22
Shortspine thornyhead			7.50	15.00	11.50
Longspine thornyhead			67.10	31.34	5.40
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish		0.20			
Splitnose rockfish	1.60	248.16			
Shortbelly rockfish	767.31	123.12			
Other rockfish	152.83	72.55			
Grooved tanner crab			10.50	2.10	0.40
Other invertebrates	3.90	1.78	3.44	12.94	16.65
Total catch weight (kg)	1541.17	838.65	150.08	614.44	146.36

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006091	200101006092	200101006093	200101006094	200101006095
Start date and time	7/28/2001 0639	7/28/2001 0921	7/28/2001 1232	7/28/2001 1522	7/28/2001 1639
Gear latitude (dd)	35.7254	35.7117	35.6610	35.6991	35.7045
Gear longitude (dd)	−121.8196	−121.6969	−121.5995	−121.4581	−121.4490
Station	76I	76H	76G	76D	76C
Depth (m)	1,034.74	885.95	755.48	448.69	381.44
Duration (hr)	0.30	0.31	0.38	0.27	0.25
Distance fished (km)	1.27	1.33	1.90	1.28	1.13
Area swept (ha)	1.94	2.03	2.9	1.92	1.68
Net width (m)	15.34	15.29	15.23	14.95	14.83
Performance	0	0	0	0	0
Species by weight					
Hagfish	1.00	0.32	0.30		
Brown cat shark	0.44	1.28	1.30	19.33	0.52
Spiny dogfish				5.80	0.40
Skates			3.40	22.73	16.15
Other Chondrichthyes				1.30	3.00
Arrowtooth flounder					
Petrale sole					
Dover sole	0.00	18.20	64.70	136.26	87.48
Deepsea sole		3.20			
Rex sole				3.70	2.12
Other flatfish					
Sablefish	12.75	14.90	10.50	13.75	33.10
Pacific grenadier	0.60				
Giant grenadier	4.55	0.78			
Other grenadier					
Pacific flatnose	0.30	0.12			
Slickheads	31.57	2.96	0.90		
Eelpouts	1.90	1.20	0.40	2.80	1.27
Snailfish					
Pacific hake	0.20			65.99	12.36
Other roundfish	1.74	0.30	0.01		
Shortspine thornyhead	9.78	7.70	17.10	3.87	0.44
Longspine thornyhead	19.20	93.10	134.53		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				19.05	2.14
Darkblotched rockfish					
Splitnose rockfish					87.36
Shortbelly rockfish					
Other rockfish				2.90	1.64
Grooved tanner crab	0.75	0.48	0.60		
Other invertebrates	8.75	61.99	24.10	27.65	40.55
Total catch weight (kg)	93.53	206.53	257.84	325.13	288.53

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006096	200101006097	200101006098	200101006099	200101006100
Start date and time	7/29/2001 0601	7/29/2001 0829	7/29/2001 1132	7/29/2001 1611	7/29/2001 1904
Gear latitude (dd)	35.0333	34.9723	35.0144	34.9184	34.9585
Gear longitude (dd)	−120.9840	−121.0020	−121.2268	−121.5022	−121.5704
Station	80C	80D	80F	80G	80I
Depth (m)	372.11	421.34	588.81	768.10	1,051.36
Duration (hr)	0.28	0.27	0.26		0.33
Distance fished (km)	1.21	1.21	1.05		1.38
Area swept (ha)	1.8	1.81	1.59		2.12
Net width (m)	14.83	14.92	15.09		15.35
Performance	0	0	0	−1	0
Species by weight					
Hagfish					
Brown cat shark	1.26	2.44	0.80		
Spiny dogfish		0.70			
Skates	8.40	16.10			4.44
Other Chondrichthyes	2.50				
Arrowtooth flounder					
Petrale sole					
Dover sole	5.30	84.09	9.76		58.76
Deepsea sole					3.70
Rex sole	51.60	133.92			
Other flatfish	7.80	0.10			
Sablefish		19.50	6.50		25.04
Pacific grenadier					47.50
Giant grenadier					10.76
Other grenadier			0.10		
Pacific flatnose					2.24
Slickheads					11.30
Eelpouts	6.54	14.76			3.28
Snailfish	0.10				0.22
Pacific hake	13.60	90.45	4.00		
Other roundfish			0.20		0.40
Shortspine thornyhead	0.10	5.90	7.10		8.20
Longspine thornyhead			20.50		16.52
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.10	22.60	0.20		
Darkblotched rockfish		0.20			
Splitnose rockfish	39.90	58.92			
Shortbelly rockfish					
Other rockfish	3.30	7.06			
Grooved tanner crab			0.10		0.34
Other invertebrates	15.50	34.80	4.00		5.75
Total catch weight (kg)	156.00	491.54	53.26		198.45

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101006101	200101006102	200101006103	200101006104	200101006105
Start date and time	7/30/2001 0543	7/30/2001 0853	7/30/2001 1206	7/30/2001 1410	7/30/2001 1541
Gear latitude (dd)	34.3879	34.3684	34.3907	34.3934	34.4099
Gear longitude (dd)	−120.9951	−120.8708	−120.7172	−120.6829	−120.6223
Station	84J	84G	84E	84D	84B
Depth (m)	1,207.01	819.62	546.89	474.53	287.93
Duration (hr)		0.28	0.35	0.27	0.26
Distance fished (km)	0.00	1.01	1.43	1.13	1.16
Area swept (ha)		1.54	2.15	1.7	1.68
Net width (m)		15.26	15.09	14.99	14.59
Performance	−5	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark		0.10	0.61		
Spiny dogfish					
Skates			5.10	16.82	5.70
Other Chondrichthyes		2.16	5.30	2.90	0.80
Arrowtooth flounder					
Petrale sole					
Dover sole		62.62	5.00	5.66	6.30
Deepsea sole		1.20			
Rex sole					
Other flatfish					2.42
Sablefish		31.40	7.76	5.50	2.10
Pacific grenadier		2.14			
Giant grenadier		2.60			
Other grenadier		0.00	1.20	0.61	0.10
Pacific flatnose					
Slickheads		15.18			
Eelpouts		2.50		1.60	0.66
Snailfish		0.10			0.34
Pacific hake			6.27	8.32	5.50
Other roundfish		0.10			0.20
Shortspine thornyhead		26.00	57.75	56.30	1.80
Longspine thornyhead		77.64	11.90		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			9.48	5.40	
Darkblotched rockfish					
Splitnose rockfish					1.14
Shortbelly rockfish					2.80
Other rockfish			1.46	0.50	33.13
Grooved tanner crab		0.10			
Other invertebrates		4.36	68.44	134.43	50.64
Total catch weight (kg)		228.20	180.27	238.04	113.63

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008001	200101008002	200101008003	200101008004	200101008005
Start date and time	8/25/2001 0724	8/25/2001 0935	8/25/2001 1308	8/25/2001 1519	8/25/2001 1705
Gear latitude (dd)	48.1236	48.1140	48.0954	48.1139	48.1053
Gear longitude (dd)	−125.6694	−125.7368	−125.7503	−125.8669	−125.8960
Station	1A	1B	1E	1I	1I
Depth (m)	215.54	307.33	522.33	1,060.70	1,060.70
Duration (hr)	0.27	0.27	0.28		
Distance fished (km)	1.28	1.19	1.08		
Area swept (ha)	1.72	1.70	1.66		
Net width (m)	13.50	14.30	15.36		
Performance	0	0	5.1	−5	−5
Species by weight					
Hagfish					
Brown cat shark			0.20		
Spiny dogfish					
Skates	11.10	4.15	2.25		
Other Chondrichthyes		0.90			
Arrowtooth flounder	116.45	3.70			
Petrale sole					
Dover sole	46.95	30.25	63.80		
Deepsea sole			0.60		
Rex sole	2.70	7.80	0.75		
Other flatfish		0.30			
Sablefish	31.15		2.20		
Pacific grenadier					
Giant grenadier			2.90		
Other grenadier					
Pacific flatnose			2.35		
Slickheads					
Eelpouts		5.10	10.95		
Snailfish			1.50		
Pacific hake		5.40	0.75		
Other roundfish	0.25	0.10			
Shortspine thornyhead	0.40	18.65	4.05		
Longspine thornyhead			6.50		
Rougheye rockfish					
Pacific ocean perch	91.35	183.15	1.55		
Aurora rockfish			0.45		
Darkblotched rockfish	2.55	39.90			
Splitnose rockfish		46.10			
Shortbelly rockfish					
Other rockfish	18.26	7.25	2.70		
Grooved tanner crab		0.05	0.75		
Other invertebrates	33.39	7.10	14.55		
Total catch weight (kg)	354.55	359.90	118.80		

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008006	200101008007	200101008008	200101008009	200101008010
Start date and time	8/26/2001 0623	8/26/2001 0804	8/26/2001 1055	8/26/2001 1337	8/26/2001 1545
Gear latitude (dd)	47.5530	47.5490	47.5439	47.5280	47.5520
Gear longitude (dd)	−125.4300	−125.4307	−125.2926	−125.1926	−125.1525
Station	5I	5I	5H	5F	5E
Depth (m)	1,060.70	1,025.52	992.25	593.71	526.51
Duration (hr)		0.51	0.40	0.30	0.28
Distance fished (km)		1.61	1.59	1.48	1.18
Area swept (ha)		2.32	2.37	2.11	1.61
Net width (m)		14.43	14.89	14.31	13.70
Performance	−5	0	0	0	0
Species by weight					
Hagfish		0.34	1.26	0.20	
Brown cat shark			0.10	2.09	0.31
Spiny dogfish					
Skates		4.44	0.20	2.68	1.60
Other Chondrichthyes					
Arrowtooth flounder				1.55	1.47
Petrale sole					
Dover sole					35.28
Deepsea sole		7.41	3.56	3.60	
Rex sole					1.04
Other flatfish					
Sablefish		16.47		13.04	1.68
Pacific grenadier		20.22	10.67	1.86	
Giant grenadier		22.66	12.49	29.47	1.37
Other grenadier					
Pacific flatnose		2.21	0.85	2.43	1.81
Slickheads		2.11	0.60		
Eelpouts		1.99	0.54	9.72	4.23
Snailfish		0.00	0.01	0.65	0.66
Pacific hake					0.96
Other roundfish		0.16	0.25	0.02	0.01
Shortspine thornyhead		7.76	2.00	6.10	0.29
Longspine thornyhead		110.82	50.24	18.35	16.83
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		9.04	11.30	5.41	3.68
Other invertebrates		26.78	19.20	12.18	13.82
Total catch weight (kg)		232.41	113.27	109.35	85.04

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008011	200101008012	200101008013	200101008014	200101008015
Start date and time	8/26/2001 1747	8/27/2001 0640	8/27/2001 0930	8/27/2001 1128	8/27/2001 1342
Gear latitude (dd)	47.5613	46.7567	46.7643	46.7724	46.7636
Gear longitude (dd)	−125.0754	−124.8602	−124.8955	−125.0747	−125.1949
Station	5D	9C	9E	9G	9I
Depth (m)	428.20	344.63	523.51	708.30	1,017.23
Duration (hr)	0.26	0.35	0.27	0.34	0.35
Distance fished (km)	1.12	1.28	1.00	1.27	1.43
Area swept (ha)	1.48	1.83	1.49	1.89	2.15
Net width (m)	13.22	14.28	14.97	14.88	15.05
Performance	5.1	0	0	0	0
Species by weight					
Hagfish			0.25		
Brown cat shark	2.55		3.07	2.18	4.58
Spiny dogfish					
Skates	10.99	16.34	10.35		
Other Chondrichthyes		3.11			
Arrowtooth flounder	4.07	7.99	2.50		
Petrale sole					
Dover sole	40.50	102.61	53.12	25.52	
Deepsea sole	0.53			0.66	3.80
Rex sole	11.27	14.23	1.09		
Other flatfish	0.49	1.15			
Sablefish	4.44	6.86	2.90	7.00	4.01
Pacific grenadier			0.11	0.65	9.60
Giant grenadier			7.87		2.50
Other grenadier					
Pacific flatnose			1.89	1.87	1.61
Slickheads				0.31	
Eelpouts	0.43	6.80	4.33	0.07	1.70
Snailfish			1.14		
Pacific hake	0.61	7.23	0.50		
Other roundfish	0.01		0.35	0.26	0.27
Shortspine thornyhead	6.33	17.29	2.35	1.21	7.09
Longspine thornyhead	0.15		5.11	40.35	51.43
Rougheye rockfish		3.27			
Pacific ocean perch	0.61	0.65			
Aurora rockfish	0.32				
Darkblotched rockfish					
Splitnose rockfish		1.58			
Shortbelly rockfish					
Other rockfish	7.70				
Grooved tanner crab	3.11	0.33	4.00	30.45	7.85
Other invertebrates	32.56	34.11	10.10	9.33	49.26
Total catch weight (kg)	126.67	223.55	111.03	119.86	143.70

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008016	200101008017	200101008018	200101008019	200101008020
Start date and time	8/27/2001 1627	8/28/2001 0612	8/28/2001 0958	8/28/2001 1319	8/28/2001 1557
Gear latitude (dd)	46.8124	46.1572	46.1297	46.0910	46.1056
Gear longitude (dd)	−125.2375	−124.8916	−124.7586	−124.8408	−124.7532
Station	9J	13I	13H	13G	13D
Depth (m)	1,237.78	1,083.08	904.06	768.10	438.91
Duration (hr)	0.36	0.52	0.43		
Distance fished (km)	1.25	2.04	1.63		
Area swept (ha)	1.87	2.78	2.45		
Net width (m)	14.95	13.63	15.02		
Performance	5.1	0	1.1	−5.1	−5
Species by weight					
Hagfish			1.20		
Brown cat shark	0.21		2.46	1.29	
Spiny dogfish					
Skates	9.19	4.42		0.52	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			21.01	30.27	
Deepsea sole	3.48	6.58	6.19	3.13	
Rex sole					
Other flatfish					
Sablefish		21.19	64.77	13.99	
Pacific grenadier	70.47	47.48	9.08		
Giant grenadier	53.46	15.37	1.40	2.29	
Other grenadier					
Pacific flatnose	8.28	2.12			
Slickheads		0.49	10.21	0.93	
Eelpouts	1.22	11.86	6.55	0.29	
Snailfish	0.60				
Pacific hake				0.58	
Other roundfish	0.63	0.13	0.44	0.34	
Shortspine thornyhead	2.20	12.40	13.15	7.42	
Longspine thornyhead	26.31	90.52	193.02	37.53	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	3.00	13.63	12.29	5.31	
Other invertebrates	27.94	20.38	15.22	2.16	
Total catch weight (kg)	206.99	246.57	356.99	106.05	

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008021	200101008022	200101008023	200101008024	200101008025
Start date and time	8/28/2001 1736	8/28/2001 1859	8/29/2001 0625	8/29/2001 0817	8/29/2001 1019
Gear latitude (dd)	46.0988	46.0981	45.5113	45.5364	45.5602
Gear longitude (dd)	−124.7523	−124.7385	−124.4682	−124.5083	−124.6271
Station	13D	13C	17B	17C	17D
Depth (m)	448.53	337.99	263.27	351.54	434.26
Duration (hr)	0.29	0.27	0.26	0.27	0.26
Distance fished (km)	1.19	1.18	1.12	1.20	1.15
Area swept (ha)	1.65	1.73	1.56	1.66	1.60
Net width (m)	13.86	14.60	13.93	13.79	13.89
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.14				
Brown cat shark	3.40				0.35
Spiny dogfish					
Skates	7.92	1.90	3.82	20.30	3.20
Other Chondrichthyes			1.66		
Arrowtooth flounder	11.68	5.15	7.59	32.89	5.42
Petrale sole					
Dover sole	69.51	47.28	19.93	91.84	33.69
Deepsea sole					
Rex sole	3.01	13.10	29.61	23.04	0.76
Other flatfish		0.05	1.95	1.14	
Sablefish	14.73	11.85	5.85	18.15	9.25
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose	0.54				
Slickheads					
Eelpouts	6.41	2.06	0.44	3.96	4.13
Snailfish	0.07			0.35	
Pacific hake	9.92	11.86	73.52	66.24	38.04
Other roundfish					0.05
Shortspine thornyhead	17.61	18.44	18.48	18.05	14.51
Longspine thornyhead	1.20				4.34
Rougheye rockfish	0.94			1.43	
Pacific ocean perch		19.08		0.75	
Aurora rockfish					
Darkblotched rockfish		2.20			
Splitnose rockfish		4.37	7.26	2.75	0.47
Shortbelly rockfish					
Other rockfish	1.53	1.77	1.52		
Grooved tanner crab	1.22	0.49			
Other invertebrates	17.36	6.04	156.55	57.25	18.86
Total catch weight (kg)	167.19	145.64	328.18	338.14	133.07

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008026	200101008027	200101008028	200101008029	200101008030
Start date and time	8/29/2001 1312	8/29/2001 1554	8/30/2001 0616	8/30/2001 0855	8/30/2001 1113
Gear latitude (dd)	45.4438	45.4552	44.8420	44.7845	44.8401
Gear longitude (dd)	−124.7807	−124.9116	−124.9876	−124.9614	−124.8884
Station	17G	17J	21H	21F	21E
Depth (m)	710.01	1,159.13	903.92	644.58	527.40
Duration (hr)	0.29	0.38	0.39	0.28	0.29
Distance fished (km)	1.15	1.31	1.51	1.16	1.17
Area swept (ha)	1.69	1.95	2.32	1.58	1.61
Net width (m)	14.66	14.80	15.39	13.61	13.70
Performance	0	1.1	0	0	0
Species by weight					
Hagfish			0.29		
Brown cat shark	6.26		0.59	1.62	6.66
Spiny dogfish					
Skates			3.64	2.38	6.60
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	19.72		0.96	39.30	9.35
Deepsea sole	2.61		2.57		0.10
Rex sole					0.01
Other flatfish					
Sablefish	23.78	5.22	10.99	10.56	5.31
Pacific grenadier		13.07	3.25	0.71	
Giant grenadier	0.41	38.02	43.86	35.81	0.88
Other grenadier					
Pacific flatnose	0.23	4.47	0.83	0.87	1.74
Slickheads	0.58	0.37	4.30		
Eelpouts	0.86	3.64	1.63	0.61	2.66
Snailfish			0.05	0.23	1.46
Pacific hake					9.32
Other roundfish	0.29	0.45	0.47	0.05	0.00
Shortspine thornyhead	5.94		6.06	7.10	6.55
Longspine thornyhead	27.45	5.27	62.99	15.77	12.29
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					0.58
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	3.16	17.46	11.03	13.53	4.69
Other invertebrates	3.96	34.66	14.65	9.36	13.46
Total catch weight (kg)	95.25	122.63	168.16	137.90	81.66

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008031	200101008032	200101008033	200101008034	200101008035
Start date and time	8/30/2001 1311	8/30/2001 1615	9/2/2001 0640	9/2/2001 0845	9/2/2001 1129
Gear latitude (dd)	44.8814	44.7586	44.2106	44.1470	44.1569
Gear longitude (dd)	−124.9222	−124.5640	−124.9721	−124.9850	−124.9973
Station	21C	21A	25B	25C	25D
Depth (m)	380.28	187.87	288.93	334.07	432.94
Duration (hr)	0.29	0.28	0.27	0.28	0.26
Distance fished (km)	1.08	1.06	1.18	1.17	1.09
Area swept (ha)	1.44	1.38	1.63	1.70	1.52
Net width (m)	13.25	12.99	13.86	14.50	13.87
Performance	1	0	0	0	0
Species by weight					
Hagfish				0.10	
Brown cat shark					
Spiny dogfish		0.63	8.87	24.70	2.97
Skates		38.02	10.44	25.00	3.00
Other Chondrichthyes	1.21	2.12	17.99	6.13	
Arrowtooth flounder		0.78		2.55	0.90
Petrale sole		3.12			
Dover sole	0.62	6.41	75.43	111.66	25.90
Deepsea sole					
Rex sole	2.23	7.24	34.73	21.15	4.04
Other flatfish		2.48	7.87	2.27	0.10
Sablefish		11.36	4.57	4.59	2.34
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts			10.44	7.13	1.93
Snailfish					0.20
Pacific hake	16.55		27.80	27.97	4.12
Other roundfish	0.10	26.74	2.86	0.10	0.15
Shortspine thornyhead	14.07		1.10	3.35	1.10
Longspine thornyhead	1.92				
Rougheye rockfish	14.69				
Pacific ocean perch	23.81	1.11			0.67
Aurora rockfish	5.65				1.89
Darkblotched rockfish	70.83	0.58		0.41	
Splitnose rockfish			5.53	2.85	
Shortbelly rockfish					
Other rockfish	2.82	41.95	0.31	1.35	
Grooved tanner crab				3.17	
Other invertebrates	2.36	2.55	6.52	10.89	8.44
Total catch weight (kg)	156.86	145.09	214.46	255.37	57.75

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008036	200101008037	200101008038	200101008039	200101008040
Start date and time	9/2/2001 1313	9/2/2001 1508	9/3/2001 0613	9/3/2001 0906	9/3/2001 1224
Gear latitude (dd)	44.1071	44.0991	43.5446	43.5489	43.5591
Gear longitude (dd)	−125.0228	−125.0561	−125.0848	−124.9874	−124.8436
Station	25G	25I	29J	29I	29F
Depth (m)	729.87	1,121.46	1,222.98	1,029.91	662.25
Duration (hr)	0.29	0.41	0.41	0.33	0.30
Distance fished (km)	1.02	1.49	1.48	1.18	1.19
Area swept (ha)	1.50	2.25	2.22	1.89	1.91
Net width (m)	14.79	15.13	15.02	15.95	16.01
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.10	1.05			
Brown cat shark	0.24				0.10
Spiny dogfish	0.91				
Skates		17.09	3.25	5.13	2.68
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	8.50	6.20		1.49	8.89
Deepsea sole	0.86	4.00	0.23	5.17	
Rex sole					
Other flatfish					
Sablefish	34.22	42.31	10.50	4.23	1.51
Pacific grenadier	0.56	67.10	69.71	80.47	1.25
Giant grenadier	3.41	38.47	10.44	31.76	14.09
Other grenadier	0.10				
Pacific flatnose	0.17	3.24	4.80	2.84	0.10
Slickheads		6.30	4.04	12.19	0.05
Eelpouts	1.06	1.02	0.40	5.59	0.67
Snailfish		0.20			
Pacific hake					0.30
Other roundfish	0.09	0.12	3.62	0.39	0.15
Shortspine thornyhead	9.18	24.54	2.82	6.00	9.86
Longspine thornyhead	40.26	41.39	30.13	41.76	52.91
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	24.07	14.37	39.27	16.73	9.71
Other invertebrates	1.63	8.28	27.00	5.83	7.83
Total catch weight (kg)	125.36	275.68	206.21	219.58	110.10

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008041	200101008042	200101008043	200101008044	200101008045
Start date and time	9/3/2001 1428	9/3/2001 1618	9/4/2001 0635	9/4/2001 0844	9/4/2001 1007
Gear latitude (dd)	43.5006	43.4449	42.8701	42.8280	42.8339
Gear longitude (dd)	−124.7503	−124.7215	−124.8612	−124.8804	−124.9309
Station	29E	29D	33B	33C	33E
Depth (m)	529.03	470.39	305.98	349.54	511.27
Duration (hr)	0.24	0.26	0.31	0.30	0.26
Distance fished (km)	1.03	1.13	1.32	1.11	1.08
Area swept (ha)	1.55	1.56	1.94	1.63	1.61
Net width (m)	15.07	13.88	14.65	14.65	14.88
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark	10.19	3.96			1.56
Spiny dogfish			2.70		
Skates	1.76	3.73	14.42	9.08	2.91
Other Chondrichthyes			1.84		
Arrowtooth flounder		2.70			
Petrale sole					
Dover sole	46.95	1.70	79.35		29.23
Deepsea sole					
Rex sole	8.58	20.54	8.99	4.36	18.41
Other flatfish			1.31	0.10	0.15
Sablefish	3.00	6.30	25.56	1.07	3.47
Pacific grenadier					
Giant grenadier	0.43				
Other grenadier					
Pacific flatnose	0.35				0.32
Slickheads					
Eelpouts	8.87	3.47	9.62	2.90	1.27
Snailfish	0.87	0.77			0.20
Pacific hake	2.89	3.68	100.62	13.43	2.42
Other roundfish	0.10		0.20		
Shortspine thornyhead	10.25	3.09	7.14	0.01	0.91
Longspine thornyhead	10.97				0.10
Rougheye rockfish					
Pacific ocean perch			0.70		
Aurora rockfish		0.61			
Darkblotched rockfish			1.35		
Splitnose rockfish			3.02	1.43	
Shortbelly rockfish					
Other rockfish			1.13		
Grooved tanner crab					
Other invertebrates	11.33	124.51	39.28	12.16	7.34
Total catch weight (kg)	116.54	175.06	297.23	44.54	68.29

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008046	200101008047	200101008048	200101008049	200101008050
Start date and time	9/4/2001 1219	9/4/2001 1344	9/4/2001 1734	9/4/2001 1855	9/5/2001 0633
Gear latitude (dd)	42.8323	42.8478	42.8796	42.8210	42.1430
Gear longitude (dd)	−124.9611	−124.9610	−124.9605	−124.9916	−124.9227
Station	33G	33G	33G	33I	37I
Depth (m)	768.10	768.10	732.41	936.02	1,069.26
Duration (hr)			0.30	0.36	0.41
Distance fished (km)			1.01	0.94	1.16
Area swept (ha)			1.61	1.42	1.74
Net width (m)			16.04	15.08	15.08
Performance	−5.1	−5.4	0	0	0
Species by weight					
Hagfish			0.10		0.33
Brown cat shark			1.20	0.85	0.33
Spiny dogfish					
Skates				1.76	6.14
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			5.85	21.46	6.96
Deepsea sole			0.80	6.84	11.10
Rex sole					
Other flatfish					
Sablefish			6.16	5.67	
Pacific grenadier			0.10	23.99	74.72
Giant grenadier			69.88	15.37	84.34
Other grenadier				0.87	
Pacific flatnose				0.46	1.60
Slickheads			1.51	7.97	3.12
Eelpouts			0.87	3.30	2.43
Snailfish			0.20		
Pacific hake					
Other roundfish				0.20	0.20
Shortspine thornyhead			1.54	11.68	21.33
Longspine thornyhead			30.41	46.34	67.42
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			9.53	11.73	15.51
Other invertebrates			6.98	2.80	29.45
Total catch weight (kg)			135.13	161.29	324.98

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008051	200101008052	200101008053	200101008054	200101008055
Start date and time	9/5/2001 0937	9/5/2001 1238	9/5/2001 1358	9/5/2001 1553	9/5/2001 1822
Gear latitude (dd)	42.1797	42.2017	42.1707	42.1881	42.1572
Gear longitude (dd)	−124.8328	−124.7822	−124.7531	−124.6763	−124.6080
Station	37G	37F	37F	37E	37B
Depth (m)	777.59	621.79	598.40	478.66	308.80
Duration (hr)	0.38		0.25	0.36	0.28
Distance fished (km)	1.48		0.93	1.36	1.10
Area swept (ha)	2.17		1.40	2.00	1.60
Net width (m)	14.70		14.98	14.74	14.48
Performance	0	−1	0	0	0
Species by weight					
Hagfish	0.39		0.10	0.24	
Brown cat shark	2.23		0.89	3.03	0.18
Spiny dogfish					0.20
Skates			3.84	4.01	8.02
Other Chondrichthyes					1.66
Arrowtooth flounder					
Petrale sole					
Dover sole	18.49		25.16	86.82	34.92
Deepsea sole	1.72				
Rex sole			7.80	22.15	22.39
Other flatfish				0.12	0.10
Sablefish	12.11		15.45	45.49	21.30
Pacific grenadier	0.15				
Giant grenadier	26.51		15.35		
Other grenadier					
Pacific flatnose			0.70		
Slickheads	2.82				
Eelpouts	2.04		2.56	10.22	2.95
Snailfish			0.10		0.74
Pacific hake				2.71	51.67
Other roundfish	0.13		0.18		
Shortspine thornyhead			6.53	4.92	6.39
Longspine thornyhead	139.55		30.08	7.73	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					4.73
Shortbelly rockfish					
Other rockfish					1.01
Grooved tanner crab	8.72		7.97	0.05	
Other invertebrates	24.00		4.33	119.03	36.27
Total catch weight (kg)	238.86		121.04	306.52	192.53

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008056	200101008057	200101008058	200101008059	200101008060
Start date and time	9/6/2001 0630	9/6/2001 0812	9/6/2001 1026	9/6/2001 1217	9/9/2001 0643
Gear latitude (dd)	41.5416	41.5154	41.5091	41.5597	40.8330
Gear longitude (dd)	−124.5270	−124.5494	−124.5610	−124.5939	−124.4341
Station	41C	41D	41F	41G	45A
Depth (m)	361.91	459.09	592.65	755.67	263.06
Duration (hr)	0.27	0.30	0.30	0.32	0.29
Distance fished (km)	0.87	0.94	1.01	1.27	0.89
Area swept (ha)	1.22	1.35	1.55	2.02	1.31
Net width (m)	13.99	14.38	15.31	15.90	14.73
Performance	0	5.1	0	0	0
Species by weight					
Hagfish				0.53	
Brown cat shark	2.73	2.27	1.28	3.09	0.86
Spiny dogfish					0.30
Skates	14.89	9.40	1.46		44.61
Other Chondrichthyes					0.10
Arrowtooth flounder					1.53
Petrale sole					
Dover sole	33.92	46.65	29.67	9.23	73.96
Deepsea sole				1.71	
Rex sole	11.91	8.59	2.63		29.96
Other flatfish					9.16
Sablefish	7.28	4.44	10.79	9.92	6.79
Pacific grenadier				0.92	
Giant grenadier				12.22	
Other grenadier					
Pacific flatnose		0.11	1.53	0.20	
Slickheads				0.71	
Eelpouts	3.02	3.29	3.34	2.21	9.58
Snailfish		0.48	0.10		
Pacific hake	1.13	0.75	0.23		49.41
Other roundfish			0.02	0.23	0.05
Shortspine thornyhead	1.12	0.48	3.90	1.10	0.49
Longspine thornyhead			5.90	64.36	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.80			
Darkblotched rockfish	1.99				0.47
Splitnose rockfish	4.36	1.42			4.93
Shortbelly rockfish					
Other rockfish					0.58
Grooved tanner crab			2.57	52.52	1.65
Other invertebrates	17.53	41.12	6.34	9.81	8.14
Total catch weight (kg)	99.88	119.80	69.76	168.76	242.57

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008061	200101008062	200101008063	200101008064	200101008065
Start date and time	9/9/2001 0843	9/9/2001 1127	9/9/2001 1353	9/9/2001 1500	9/9/2001 1721
Gear latitude (dd)	40.8374	40.8900	40.8313	40.8149	40.7942
Gear longitude (dd)	−124.5248	−124.6549	−124.6745	−124.6704	−124.7456
Station	45E	45F	45G	45G	45J
Depth (m)	515.41	626.45	768.10	725.13	1,205.63
Duration (hr)	0.30	0.35		0.36	0.32
Distance fished (km)	1.09	1.19		1.37	1.18
Area swept (ha)	1.75	1.75		2.11	1.66
Net width (m)	16.12	14.74		15.41	14.13
Performance	0	0	−5.1	0	0
Species by weight					
Hagfish		0.24			0.34
Brown cat shark	0.44	8.44		1.73	
Spiny dogfish					
Skates	14.81	3.66			11.16
Other Chondrichthyes		0.51			
Arrowtooth flounder					
Petrale sole					
Dover sole	8.19			16.74	
Deepsea sole		0.88		0.59	7.72
Rex sole	45.30			0.27	
Other flatfish					
Sablefish	5.45	8.85		14.14	11.94
Pacific grenadier		0.10		2.56	88.20
Giant grenadier				12.65	43.03
Other grenadier					
Pacific flatnose	0.10	0.88		0.42	4.61
Slickheads		0.51		8.73	0.59
Eelpouts	10.97	0.25		1.42	0.44
Snailfish	0.08	0.50		0.01	0.01
Pacific hake	3.89				
Other roundfish	0.01	0.24		0.00	0.33
Shortspine thornyhead	0.00	4.47		4.31	8.98
Longspine thornyhead	7.17	23.23		57.61	35.11
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	5.04				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		20.10		36.86	150.61
Other invertebrates	27.54	10.61		9.66	25.98
Total catch weight (kg)	128.99	83.47		167.70	389.05

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008066	200101008067	200101008068	200101008069	200101008070
Start date and time	9/10/2001 0634	9/10/2001 0807	9/10/2001 1019	9/10/2001 1254	9/10/2001 1449
Gear latitude (dd)	40.1576	40.1573	40.1774	40.2051	40.1971
Gear longitude (dd)	−124.7746	−124.7767	−124.6991	−124.6240	−124.5346
Station	49H	49H	49G	49F	49E
Depth (m)	914.40	911.41	818.69	642.84	512.06
Duration (hr)		0.36	0.31	0.28	
Distance fished (km)		1.38	1.10	1.06	
Area swept (ha)		2.20	1.74	1.52	
Net width (m)		15.92	15.79	14.27	
Performance	−5	0	0	0	−5.1
Species by weight					
Hagfish		0.50	0.11		
Brown cat shark		3.11	0.88	3.71	1.29
Spiny dogfish					
Skates				1.41	8.26
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole		19.13	8.92	55.06	57.00
Deepsea sole		8.80	1.00		
Rex sole					2.21
Other flatfish					
Sablefish		5.98	6.76	16.83	6.96
Pacific grenadier		3.69	0.09	0.13	
Giant grenadier			1.17		
Other grenadier					
Pacific flatnose		0.28		0.63	0.62
Slickheads		7.87	3.36	5.25	
Eelpouts		2.30	0.70	0.34	2.39
Snailfish		0.14	0.01	0.04	0.10
Pacific hake					0.10
Other roundfish		0.10		0.14	
Shortspine thornyhead		1.10	0.34	0.42	1.33
Longspine thornyhead		82.23	79.97	3.14	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					0.47
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		24.78	24.07	8.41	9.17
Other invertebrates		8.05	5.28	8.07	2.75
Total catch weight (kg)		168.06	132.66	103.58	92.65

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008071	200101008072	200101008073	200101008074	200101008075
Start date and time	9/10/2001 1558	9/10/2001 1701	9/10/2001 1848	9/11/2001 0701	9/11/2001 0859
Gear latitude (dd)	40.1803	40.1845	40.1556	39.5078	39.4695
Gear longitude (dd)	−124.5055	−124.5180	−124.3907	−123.9795	−124.0158
Station	49E	49E	49C	53B	53E
Depth (m)	512.06	519.58	365.76	302.89	498.22
Duration (hr)		0.30		0.27	0.26
Distance fished (km)		1.24		0.85	1.09
Area swept (ha)		1.80		1.15	1.60
Net width (m)		14.56		13.57	14.74
Performance	−5.1	0	−1	0	0
Species by weight					
Hagfish					
Brown cat shark	0.41	0.93	0.21	6.22	8.25
Spiny dogfish			0.32	4.86	
Skates	4.98	3.68	45.68	14.12	4.03
Other Chondrichthyes			3.16	1.78	
Arrowtooth flounder					
Petrale sole					
Dover sole	28.41	54.20	11.04	34.18	35.43
Deepsea sole					
Rex sole	1.65	4.23	9.32	22.55	1.29
Other flatfish			0.05	11.05	
Sablefish	7.32	9.14	4.13	8.09	13.63
Pacific grenadier					
Giant grenadier					
Other grenadier					0.43
Pacific flatnose	0.20	0.15	0.10		
Slickheads					
Eelpouts	0.89	1.00	1.55	3.14	1.60
Snailfish		0.46	0.35		1.17
Pacific hake	1.53	6.45	1.79	14.38	1.87
Other roundfish					
Shortspine thornyhead	1.16	3.93	2.34	2.71	3.07
Longspine thornyhead					9.25
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.59	0.32		2.21
Darkblotched rockfish					
Splitnose rockfish				13.52	
Shortbelly rockfish					
Other rockfish				9.06	
Grooved tanner crab		4.66	1.36		1.32
Other invertebrates	8.83	2.78	17.89	40.84	14.71
Total catch weight (kg)	55.38	92.20	99.61	186.50	98.26

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008076	200101008077	200101008078	200101008079	200101008080
Start date and time	9/11/2001 1036	9/11/2001 1211	9/11/2001 1411	9/12/2001 0639	9/12/2001 0858
Gear latitude (dd)	39.4913	39.4479	39.4162	38.8958	38.8901
Gear longitude (dd)	−124.0559	−124.0999	−124.1589	−124.0469	−124.0269
Station	53F	53G	53H	57J	57I
Depth (m)	634.10	753.04	921.59	1,186.33	1,009.51
Duration (hr)	0.27	0.30	0.43	0.45	0.41
Distance fished (km)	0.99	0.96	1.57	1.70	1.48
Area swept (ha)	1.51	1.40	2.36	2.64	2.23
Net width (m)	15.22	14.62	15.04	15.52	15.12
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.35		0.75		0.33
Brown cat shark	2.45	0.71	1.29		0.42
Spiny dogfish					
Skates	1.45			3.80	8.09
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	18.94	14.01	2.10	3.89	28.58
Deepsea sole	1.64	2.79	14.42	21.25	10.32
Rex sole					
Other flatfish					
Sablefish	4.86	1.39		4.50	5.75
Pacific grenadier	0.16	0.28	3.10	109.29	83.93
Giant grenadier	10.49	1.77	4.17	46.42	5.04
Other grenadier					
Pacific flatnose	0.25		0.67	7.34	3.67
Slickheads	0.33	0.60	4.41	2.57	5.05
Eelpouts	2.24	0.80	3.52	5.88	8.76
Snailfish	0.48	0.04	0.08		0.16
Pacific hake					0.66
Other roundfish		0.10	0.21	0.38	0.42
Shortspine thornyhead	5.23	2.77	3.13	19.78	11.78
Longspine thornyhead	22.10	57.51	73.97	44.59	62.00
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	1.85	13.95	12.94	46.12	36.09
Other invertebrates	7.06	13.09	23.13	38.08	16.35
Total catch weight (kg)	79.88	109.81	147.89	353.89	287.40

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008081	200101008082	200101008083	200101008084	200101008085
Start date and time	9/12/2001 1202	9/12/2001 1403	9/12/2001 1600	9/13/2001 0625	9/13/2001 0939
Gear latitude (dd)	38.8194	38.8431	38.7726	38.1354	38.1894
Gear longitude (dd)	−123.9208	−123.9256	−123.8478	−123.5917	−123.6028
Station	57E	57D	57B	61J	61I
Depth (m)	490.61	427.40	271.96	1,207.01	1,055.14
Duration (hr)	0.29	0.28	0.30		0.38
Distance fished (km)	1.25	0.89	1.00		1.25
Area swept (ha)	1.81	1.26	1.45		1.84
Net width (m)	14.48	14.15	14.48		14.74
Performance	0	5.1	0	−5	0
Species by weight					
Hagfish					
Brown cat shark	0.32				
Spiny dogfish		1.67			
Skates	14.34	32.83	1.02	9.30	1.88
Other Chondrichthyes	0.75	4.00	0.55		
Arrowtooth flounder			0.46		
Petrale sole					
Dover sole	223.34	145.37	0.86	13.94	56.02
Deepsea sole		0.12		9.38	16.06
Rex sole	12.38	19.61	0.69		
Other flatfish		0.39	5.28		
Sablefish	6.32	19.96	0.84		48.14
Pacific grenadier	1.15			156.67	95.80
Giant grenadier				400.04	76.71
Other grenadier	0.10				
Pacific flatnose	2.42			4.76	2.68
Slickheads					5.68
Eelpouts	10.81	12.65	2.09	0.91	1.61
Snailfish	0.24		0.36		
Pacific hake	6.81	28.00	2.05		
Other roundfish	0.05	0.00	7.70	0.04	0.61
Shortspine thornyhead	3.16	5.92	0.66	13.65	29.41
Longspine thornyhead		4.10		5.40	78.78
Rougheye rockfish			0.07		
Pacific ocean perch					
Aurora rockfish	0.42	12.00	1.80		
Darkblotched rockfish			0.12		
Splitnose rockfish			41.73		
Shortbelly rockfish					
Other rockfish		3.70	4.61		
Grooved tanner crab	1.97			9.60	7.01
Other invertebrates	15.36	14.18	28.35	13.55	12.90
Total catch weight (kg)	299.94	304.50	99.24	637.24	433.29

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008086	200101008087	200101008088	200101008089	200101008090
Start date and time	9/13/2001 1214	9/13/2001 1441	9/13/2001 1548	9/13/2001 1650	9/13/2001 1751
Gear latitude (dd)	38.1634	38.1453	38.1343	38.1418	38.1351
Gear longitude (dd)	−123.5813	−123.4656	−123.4682	−123.4723	−123.4681
Station	61H	61C	61C	61C	61C
Depth (m)	915.47	364.30	365.76	365.76	367.41
Duration (hr)	0.33	0.29			0.33
Distance fished (km)	1.16	0.88			1.11
Area swept (ha)	1.64	1.16			1.50
Net width (m)	14.13	13.14			13.53
Performance	0	5.1	−5.1	−5.1	1.1
Species by weight					
Hagfish	1.30				
Brown cat shark	1.85				
Spiny dogfish					
Skates		11.77			26.52
Other Chondrichthyes		2.16			9.53
Arrowtooth flounder					0.13
Petrale sole					
Dover sole	44.16	113.94			139.68
Deepsea sole	8.84				
Rex sole		38.50			38.97
Other flatfish		14.63			6.27
Sablefish	31.25	0.79			0.88
Pacific grenadier	2.53				
Giant grenadier	71.26	0.51			
Other grenadier	0.12				
Pacific flatnose	1.88				
Slickheads	2.70				
Eelpouts	5.10	7.58			14.97
Snailfish		0.13			0.94
Pacific hake		23.66			11.75
Other roundfish	0.22	3.44			5.79
Shortspine thornyhead	6.75	1.93			5.54
Longspine thornyhead	64.38	2.37			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish		0.58			
Splitnose rockfish		26.98			11.78
Shortbelly rockfish					
Other rockfish		0.52			0.20
Grooved tanner crab	10.86	0.10			
Other invertebrates	10.95	13.94			57.21
Total catch weight (kg)	264.15	263.53			330.16

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008091	200101008092	200101008093	200101008094	200101008095
Start date and time	9/13/2001 1854	9/14/2001 0634	9/14/2001 0820	9/14/2001 1000	9/14/2001 1140
Gear latitude (dd)	38.1282	37.5721	37.5695	37.5631	37.5672
Gear longitude (dd)	−123.4428	−123.1209	−123.1145	−123.0843	−123.0585
Station	61A	65H	65H	65G	65F
Depth (m)	219.46	914.40	876.17	714.46	577.93
Duration (hr)			0.38	0.31	0.32
Distance fished (km)			1.11	1.15	1.11
Area swept (ha)			1.66	1.74	1.72
Net width (m)			15.00	15.09	15.41
Performance	−5.1	−5.1	1.1	0	0
Species by weight					
Hagfish			0.46	0.86	0.40
Brown cat shark			2.03	1.69	4.46
Spiny dogfish					
Skates			0.93		9.39
Other Chondrichthyes					1.39
Arrowtooth flounder					
Petrale sole					
Dover sole			94.04	110.89	233.41
Deepsea sole			7.99		1.43
Rex sole					
Other flatfish					
Sablefish			44.58	47.68	61.48
Pacific grenadier			11.38	2.66	
Giant grenadier			17.36	12.76	8.53
Other grenadier					
Pacific flatnose			0.10		
Slickheads			79.83	14.51	0.18
Eelpouts			3.05	1.34	13.11
Snailfish			0.22	0.82	1.78
Pacific hake				0.33	0.53
Other roundfish			0.43	0.02	0.00
Shortspine thornyhead			11.33	27.74	26.16
Longspine thornyhead			123.33	112.47	39.02
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			5.29	2.27	
Other invertebrates			53.02	4.46	36.56
Total catch weight (kg)			455.37	340.50	437.83

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008096	200101008097	200101008098	200101008099	200101008100
Start date and time	9/14/2001 1328	9/14/2001 1500	9/17/2001 0648	9/17/2001 0942	9/17/2001 1149
Gear latitude (dd)	37.5637	37.5875	36.8643	36.8680	36.8776
Gear longitude (dd)	−123.0451	−123.0189	−122.3711	−122.3329	−122.3279
Station	65E	65A	69J	69G	69F
Depth (m)	528.42	227.43	1,207.01	732.90	598.26
Duration (hr)	0.30	0.30		0.36	0.33
Distance fished (km)	1.07	0.81		1.43	1.13
Area swept (ha)	1.68	1.08		2.01	1.58
Net width (m)	15.69	13.35		13.99	13.98
Performance	0	0	−5.1	0	0
Species by weight					
Hagfish					
Brown cat shark	0.93	0.69		1.72	3.20
Spiny dogfish					
Skates	25.17	3.86		5.08	11.22
Other Chondrichthyes		2.50			0.68
Arrowtooth flounder					
Petrale sole					
Dover sole	290.78	62.78		115.50	111.21
Deepsea sole				1.94	
Rex sole	10.27	0.47			
Other flatfish	0.24	20.04			
Sablefish	55.04	4.64		13.50	12.72
Pacific grenadier				0.07	
Giant grenadier					
Other grenadier	2.14				
Pacific flatnose				0.10	0.36
Slickheads				3.24	
Eelpouts	13.07	3.99		2.36	0.61
Snailfish	1.37			0.80	1.07
Pacific hake	0.40	3.37			1.69
Other roundfish		0.39			0.07
Shortspine thornyhead	26.75	1.71		8.89	4.91
Longspine thornyhead	7.80			148.19	21.59
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	1.17				0.82
Darkblotched rockfish					
Splitnose rockfish		1.48			
Shortbelly rockfish		0.47			
Other rockfish		42.71			
Grooved tanner crab				12.60	4.76
Other invertebrates	38.05	29.27		5.30	5.02
Total catch weight (kg)	473.18	178.37		319.29	179.93

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008101	200101008102	200101008103	200101008104	200101008105
Start date and time	9/17/2001 1336	9/17/2001 1522	9/17/2001 1659	9/18/2001 0635	9/18/2001 0840
Gear latitude (dd)	36.8851	36.8292	36.8727	36.2176	36.2417
Gear longitude (dd)	−122.2426	−122.1680	−122.2062	−122.1496	−122.1055
Station	69B	69B	69A	73I	73G
Depth (m)	292.61	314.29	240.53	1,006.95	768.10
Duration (hr)		0.29	0.26	0.44	
Distance fished (km)		0.94	0.98	1.46	
Area swept (ha)		1.24	1.32	2.14	
Net width (m)		13.22	13.50	14.66	
Performance	−5.1	5.1	1.1	0	−5.1
Species by weight					
Hagfish				0.18	
Brown cat shark				0.96	
Spiny dogfish					
Skates		1.91	1.60	23.47	
Other Chondrichthyes		4.57	0.95		
Arrowtooth flounder					
Petrale sole		2.05			
Dover sole		55.48	26.09	1.94	
Deepsea sole				24.99	
Rex sole		21.24	0.42		
Other flatfish		2.25	3.88		
Sablefish		7.50	0.92	9.50	
Pacific grenadier				17.83	
Giant grenadier				0.43	
Other grenadier					
Pacific flatnose				2.95	
Slickheads			0.40	3.78	
Eelpouts		3.48	0.35	2.13	
Snailfish			0.12	0.62	
Pacific hake		0.30	0.03		
Other roundfish		0.53	0.43	0.57	
Shortspine thornyhead		0.25		7.68	
Longspine thornyhead				57.16	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.06			
Darkblotched rockfish		0.27	0.10		
Splitnose rockfish		39.27	4.82		
Shortbelly rockfish		0.37	0.09		
Other rockfish	17.08	60.13	28.52		
Grooved tanner crab				12.95	
Other invertebrates		9.42	161.41	22.73	
Total catch weight (kg)	17.08	209.08	230.13	189.87	

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008106	200101008107	200101008108	200101008109	200101008110
Start date and time	9/18/2001 0951	9/18/2001 1156	9/18/2001 1402	9/18/2001 1759	9/19/2001 0653
Gear latitude (dd)	36.2383	36.2351	36.2304	36.1504	35.5131
Gear longitude (dd)	−122.1023	−122.0746	−121.9686	−121.7101	−121.7090
Station	73G	73F	73B	73B	77H
Depth (m)	693.87	581.51	292.61	286.64	1,005.86
Duration (hr)	0.30	0.33		0.27	0.50
Distance fished (km)	0.95	1.27		1.14	1.75
Area swept (ha)	1.43	1.80		1.58	2.60
Net width (m)	14.99	14.14		13.95	14.84
Performance	0	0	−5.1	0	1.1
Species by weight					
Hagfish		0.10			1.24
Brown cat shark	2.21	5.36			
Spiny dogfish					
Skates		8.43		6.45	2.66
Other Chondrichthyes	0.92	3.66		20.87	
Arrowtooth flounder					
Petrale sole					
Dover sole	84.29	229.77		6.18	1.20
Deepsea sole	1.47	2.14			5.52
Rex sole				0.24	
Other flatfish				0.48	
Sablefish	3.02	2.64		15.41	14.49
Pacific grenadier					4.12
Giant grenadier	0.93				13.17
Other grenadier					
Pacific flatnose	0.20				0.46
Slickheads	2.40				30.67
Eelpouts	0.70	3.73		0.31	8.69
Snailfish	0.20	0.04			0.06
Pacific hake		3.24		1.66	
Other roundfish	0.12			0.03	0.50
Shortspine thornyhead	0.85	14.14		7.20	15.20
Longspine thornyhead	49.82	16.01			38.37
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		0.62			
Darkblotched rockfish				0.29	
Splitnose rockfish				37.23	
Shortbelly rockfish				0.73	
Other rockfish				122.27	
Grooved tanner crab	2.29	0.61			10.38
Other invertebrates	2.31	30.19		42.64	21.94
Total catch weight (kg)	151.73	320.68		261.99	168.67

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008111	200101008112	200101008113	200101008114	200101008115
Start date and time	9/19/2001 0924	9/19/2001 1122	9/19/2001 1346	9/19/2001 1520	9/20/2001 0637
Gear latitude (dd)	35.5694	35.5516	35.4765	35.4629	34.8902
Gear longitude (dd)	−121.5340	−121.4599	−121.2618	−121.1833	−121.5149
Station	77G	77F	77D	77B	81G
Depth (m)	766.21	669.45	417.79	312.92	803.13
Duration (hr)	0.35	0.30	0.28	0.29	0.34
Distance fished (km)	1.26	1.09	0.89	0.90	1.09
Area swept (ha)	2.05	1.69	1.25	1.20	1.50
Net width (m)	16.29	15.58	14.01	13.37	13.69
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.10			0.10	0.43
Brown cat shark	1.89	6.49	0.08	0.15	1.54
Spiny dogfish					
Skates	0.10		19.08	25.87	2.86
Other Chondrichthyes		10.47	3.45	16.31	
Arrowtooth flounder					
Petrale sole					
Dover sole	40.17	90.91	12.66	1.95	110.98
Deepsea sole	1.94	2.46			3.86
Rex sole			1.07	3.74	
Other flatfish				0.92	
Sablefish	1.35		6.96	0.78	28.22
Pacific grenadier					
Giant grenadier					
Other grenadier		0.46			
Pacific flatnose	0.10				0.16
Slickheads	1.30				0.72
Eelpouts	0.78		0.52	1.71	
Snailfish	0.12				0.04
Pacific hake			10.63	6.63	
Other roundfish	0.18	0.05			0.00
Shortspine thornyhead	12.58	32.98	0.89		14.54
Longspine thornyhead	66.50	46.93	0.39		72.61
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			9.27		
Darkblotched rockfish					
Splitnose rockfish			1.59	70.90	
Shortbelly rockfish					
Other rockfish			0.20	28.67	
Grooved tanner crab	2.09	0.38			0.92
Other invertebrates	117.03	80.78	43.95	278.90	46.47
Total catch weight (kg)	246.23	271.91	110.74	436.63	283.35

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101008116	200101008117	200101008118	200101008119	200101008120
Start date and time	9/20/2001 0838	9/20/2001 0956	9/20/2001 1329	9/20/2001 1512	9/20/2001 1615
Gear latitude (dd)	34.8632	34.8705	34.8724	34.8684	34.8863
Gear longitude (dd)	−121.4728	−121.4673	−121.0844	−120.9513	−120.9095
Station	81F	81F	81E	81B	81A
Depth (m)	621.79	626.20	523.02	311.72	241.77
Duration (hr)		0.29	0.31	0.30	0.28
Distance fished (km)		0.97	1.06	1.17	1.04
Area swept (ha)		1.38	1.62	1.72	1.52
Net width (m)		14.27	15.26	14.79	14.66
Performance	−5.1	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark		1.80	4.99	0.01	
Spiny dogfish					
Skates		4.32	4.85	81.37	13.59
Other Chondrichthyes		0.76	6.00	7.99	
Arrowtooth flounder					
Petrale sole				1.93	4.27
Dover sole		75.31	9.88	37.27	0.60
Deepsea sole		1.57			
Rex sole				140.86	5.53
Other flatfish				39.81	24.51
Sablefish		9.32	2.73	37.58	3.38
Pacific grenadier					
Giant grenadier					
Other grenadier		0.10			
Pacific flatnose		0.05			
Slickheads		0.06			
Eelpouts		0.34	0.48	11.00	2.68
Snailfish		0.29	0.13	0.30	0.10
Pacific hake		5.64	8.29	94.17	30.07
Other roundfish		0.04	0.01	9.27	29.05
Shortspine thornyhead		9.47	14.82	1.49	
Longspine thornyhead		38.77	21.63		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			11.47		
Darkblotched rockfish				0.30	
Splitnose rockfish				6.25	0.21
Shortbelly rockfish				0.27	
Other rockfish				56.51	1.79
Grooved tanner crab		1.16			
Other invertebrates		58.18	84.74	71.81	166.14
Total catch weight (kg)		207.18	170.02	598.19	281.92

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009001	200101009002	200101009003	200101009004	200101009005
Start date and time	6/25/2001 0749	6/25/2001 1107	6/25/2001 1412	6/25/2001 1729	6/25/2001 1916
Gear latitude (dd)	47.9433	47.9543	47.9674	47.9448	47.9471
Gear longitude (dd)	−125.3907	−125.2776	−125.2797	−125.2522	−125.2575
Station	2G	2C	2B	2A	2A
Depth (m)	757.33	376.38	312.01	219.46	235.72
Duration (hr)	0.44	0.30	0.29		0.30
Distance fished (km)	1.92	1.11	1.13		1.26
Area swept (ha)	2.76	1.53	1.51		1.66
Net width (m)	14.35	13.77	13.29		13.23
Performance	0	0	0	−1.1	0
Species by weight					
Hagfish	1.81	0.11			
Brown cat shark	3.59	0.07			
Spiny dogfish					
Skates	2.96	13.64	19.14		3.40
Other Chondrichthyes					1.41
Arrowtooth flounder		9.65	9.64		19.85
Petrale sole					
Dover sole	7.88	57.57	64.70		14.41
Deepsea sole	6.00				
Rex sole		1.84	4.18		19.77
Other flatfish		0.11	3.07		4.18
Sablefish	2.28	4.48	0.00		1.31
Pacific grenadier	0.37	0.20			
Giant grenadier	3.15				
Other grenadier					
Pacific flatnose	0.21				
Slickheads	0.33				
Eelpouts	21.42	11.74	1.42		
Snailfish	0.45	0.21	0.17		
Pacific hake		8.54	0.80		0.56
Other roundfish	0.95	0.14	0.05		0.09
Shortspine thornyhead	7.59	7.89	22.73		
Longspine thornyhead	32.22	1.14			
Rougheye rockfish		60.72	13.45		
Pacific ocean perch		0.51	79.42		11.40
Aurora rockfish					
Darkblotched rockfish			2.10		0.32
Splitnose rockfish			20.29		0.08
Shortbelly rockfish					
Other rockfish			2.81		5.16
Grooved tanner crab	5.18	7.30			
Other invertebrates	5.56	17.03	113.13		20.55
Total catch weight (kg)	101.95	202.89	357.10		102.49

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009006	200101009007	200101009008	200101009009	200101009010
Start date and time	6/26/2001 0911	6/26/2001 1149	6/26/2001 1428	6/27/2001 0616	6/27/2001 1025
Gear latitude (dd)	47.3815	47.3896	47.4125	46.6332	46.6971
Gear longitude (dd)	−125.2655	−125.2515	−125.1754	−125.0039	−124.9986
Station	6I	6H	6G	10J	10H
Depth (m)	1,060.70	944.07	699.07	1,222.79	914.40
Duration (hr)		0.52	0.39	0.44	
Distance fished (km)		1.97	1.44	1.70	0.00
Area swept (ha)		2.74	1.97	2.40	
Net width (m)		13.93	13.69	14.14	
Performance	−5.1	0	0	5.1	−5
Species by weight					
Hagfish		0.78	0.46		0.26
Brown cat shark			0.52		
Spiny dogfish					
Skates	0.50		2.43	2.13	3.64
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			11.68		
Deepsea sole	0.86	5.36	4.48	1.67	1.51
Rex sole					
Other flatfish					
Sablefish		3.18	12.32	10.73	18.80
Pacific grenadier	12.11	3.21	0.12	18.85	1.11
Giant grenadier	10.78	0.60		21.97	2.68
Other grenadier				1.46	
Pacific flatnose	0.67	0.41	1.32	5.42	0.39
Slickheads	0.39	1.16			0.28
Eelpouts	7.04	2.67	0.35	0.71	0.15
Snailfish					
Pacific hake					
Other roundfish	5.62	0.32	0.60	0.36	0.30
Shortspine thornyhead	5.53	8.08	9.98		2.47
Longspine thornyhead	20.55	37.00	73.00	32.61	65.48
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	16.70	51.40	24.99	4.82	6.25
Other invertebrates	24.24	5.89	11.99	78.97	7.29
Total catch weight (kg)	104.99	120.06	154.24	179.70	110.61

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009011	200101009012	200101009013	200101009014	200101009015
Start date and time	6/28/2001 0933	6/28/2001 1307	6/28/2001 1448	6/28/2001 1717	6/29/2001 0620
Gear latitude (dd)	46.0161	45.9803	45.9466	46.0407	45.3323
Gear longitude (dd)	−124.7032	−124.7394	−124.7861	−124.9014	−124.9578
Station	14A	14C	14F	14I	18J
Depth (m)	228.15	367.68	581.03	1,013.45	1,174.53
Duration (hr)	0.32	0.31	0.39	0.44	0.54
Distance fished (km)	1.20	1.21	1.70	1.74	2.00
Area swept (ha)	1.77	1.67	2.85	2.43	2.85
Net width (m)	14.78	13.81	16.72	13.93	14.23
Performance	0	0	1.1	0	0
Species by weight					
Hagfish				0.48	0.17
Brown cat shark			0.51	0.25	
Spiny dogfish					
Skates	50.67	7.14		0.09	
Other Chondrichthyes	1.81				
Arrowtooth flounder	6.91	4.76			
Petrale sole					
Dover sole	35.73	43.04	1.87		
Deepsea sole			1.37	2.85	
Rex sole	36.49	4.40	0.29		
Other flatfish	13.78	17.99	0.09		
Sablefish	23.67	1.44	1.85	27.90	16.56
Pacific grenadier				8.48	54.30
Giant grenadier				9.32	19.40
Other grenadier					
Pacific flatnose				0.66	3.65
Slickheads				1.98	0.75
Eelpouts		0.92	0.10	1.93	2.29
Snailfish			1.11		0.09
Pacific hake		2.45			
Other roundfish	9.68			0.18	0.28
Shortspine thornyhead	0.52	8.20	1.17	4.79	
Longspine thornyhead			2.22	81.07	17.04
Rougheye rockfish		6.76			
Pacific ocean perch	16.26				
Aurora rockfish					
Darkblotched rockfish	2.66				
Splitnose rockfish	49.29				
Shortbelly rockfish					
Other rockfish	123.70				
Grooved tanner crab	0.72	0.39		38.46	41.09
Other invertebrates	40.59	45.85	3.60	12.29	160.89
Total catch weight (kg)	412.48	143.34	14.18	190.73	316.51

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009016	200101009017	200101009018	200101009019	200101009020
Start date and time	6/29/2001 0926	6/29/2001 1343	6/29/2001 1553	6/29/2001 1802	7/12/2001 0749
Gear latitude (dd)	45.2696	45.3360	45.3345	45.3512	44.6882
Gear longitude (dd)	−124.9399	−124.6529	−124.5055	−124.4035	−124.6212
Station	18I	18D	18C	18B	22A
Depth (m)	1,061.46	461.54	401.69	310.23	255.19
Duration (hr)	0.31	0.39	0.29	0.30	0.37
Distance fished (km)	1.30	1.51	1.25	1.21	1.34
Area swept (ha)	1.84	2.16	1.73	1.57	1.96
Net width (m)	14.17	14.26	13.78	13.02	14.61
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.17			
Brown cat shark	0.58	0.15			
Spiny dogfish					
Skates			3.83	1.96	8.59
Other Chondrichthyes					0.31
Arrowtooth flounder			9.00	3.35	13.23
Petrale sole					
Dover sole		7.18	8.57	37.10	72.06
Deepsea sole	0.25				
Rex sole			2.97	19.42	2.34
Other flatfish			0.62	1.88	9.03
Sablefish	1.67	20.65	7.94	33.32	4.88
Pacific grenadier	10.28				
Giant grenadier	6.21				
Other grenadier					
Pacific flatnose					
Slickheads	0.19				
Eelpouts	0.12	2.18	0.53	3.08	3.31
Snailfish	0.10	0.52			
Pacific hake		4.12	6.67	21.87	1.99
Other roundfish	0.32	0.01	0.13		0.13
Shortspine thornyhead	2.63	29.35	30.28	30.02	22.15
Longspine thornyhead	25.01	7.19			
Rougheye rockfish			1.36		
Pacific ocean perch			1.62		
Aurora rockfish		5.60	1.41		
Darkblotched rockfish			0.57	0.50	
Splitnose rockfish				0.23	53.32
Shortbelly rockfish					
Other rockfish				0.20	0.79
Grooved tanner crab	15.49	0.43	0.95		
Other invertebrates	43.65	20.99	22.22	36.61	1.66
Total catch weight (kg)	106.50	98.54	98.67	189.54	193.79

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009021	200101009022	200101009023	200101009024	200101009025
Start date and time	7/12/2001 1025	7/12/2001 1306	7/12/2001 1621	7/12/2001 1908	7/13/2001 0644
Gear latitude (dd)	44.7114	44.7247	44.7110	44.6135	44.0510
Gear longitude (dd)	−124.6590	−124.7671	−125.0313	−125.0430	−124.9513
Station	22B	22C	22I	22J	26C
Depth (m)	287.86	395.85	1,072.53	1,207.01	350.28
Duration (hr)	0.32	0.31	0.36		0.31
Distance fished (km)	1.29	1.39	1.34		1.11
Area swept (ha)	1.85	1.97	1.90		1.57
Net width (m)	14.39	14.18	14.18		14.13
Performance	0	0	0	−5.1	0
Species by weight					
Hagfish			0.10		
Brown cat shark			1.12		
Spiny dogfish					
Skates	14.56		17.16		24.77
Other Chondrichthyes	1.71	5.50			14.72
Arrowtooth flounder	6.89				4.68
Petrale sole					
Dover sole	30.10	7.45			24.56
Deepsea sole			1.26	0.62	
Rex sole	1.62	0.76			4.04
Other flatfish	5.54				
Sablefish	31.69	17.38	2.43	17.58	47.07
Pacific grenadier			55.70	11.66	
Giant grenadier			15.29	24.89	
Other grenadier					
Pacific flatnose			2.42	0.60	
Slickheads			2.52	1.60	
Eelpouts	3.79	6.10	0.17		18.04
Snailfish					0.54
Pacific hake	25.31	3.25			4.54
Other roundfish	0.02		0.99	0.63	
Shortspine thornyhead	24.82	12.00	9.48		2.13
Longspine thornyhead			44.30	16.11	
Rougheye rockfish		1.64			2.33
Pacific ocean perch					
Aurora rockfish		0.33			
Darkblotched rockfish	1.18	0.64			0.84
Splitnose rockfish	14.06				0.92
Shortbelly rockfish					
Other rockfish	2.18		1.29		0.26
Grooved tanner crab		0.54	7.49	4.59	0.77
Other invertebrates	22.12	7.79	27.83	11.44	20.69
Total catch weight (kg)	185.59	63.38	189.55	89.72	170.90

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009026	200101009027	200101009028	200101009029	200101009030
Start date and time	7/13/2001 0922	7/13/2001 1126	7/13/2001 1332	7/14/2001 0838	7/14/2001 1233
Gear latitude (dd)	44.0636	44.0193	43.9776	43.3688	43.3618
Gear longitude (dd)	−124.9683	−124.9943	−125.0160	−125.0705	−124.9352
Station	26D	26H	26I	30I	30G
Depth (m)	455.86	914.40	1,060.70	1,042.20	768.10
Duration (hr)	0.33			0.43	
Distance fished (km)	1.39			1.68	
Area swept (ha)	1.90			2.40	
Net width (m)	13.63			14.31	
Performance	0	−5.4	−5	0	−1.2
Species by weight					
Hagfish	0.19		1.53		
Brown cat shark	2.73				
Spiny dogfish					
Skates	9.63			7.42	
Other Chondrichthyes	0.50				
Arrowtooth flounder					
Petrale sole					
Dover sole	104.07		65.14	4.29	
Deepsea sole			13.14	5.27	
Rex sole	27.55				
Other flatfish	1.25				
Sablefish	13.75		9.29		
Pacific grenadier			79.52	41.49	
Giant grenadier			44.61	38.98	
Other grenadier			0.10		
Pacific flatnose	1.07		0.40	3.32	
Slickheads			1.49	0.28	
Eelpouts	4.07		4.58	0.44	
Snailfish	0.74		0.01		
Pacific hake					
Other roundfish	0.02		0.04	0.41	
Shortspine thornyhead	4.40		49.07	24.60	
Longspine thornyhead	0.15		107.41	47.58	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	1.12				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	0.50		26.81	15.61	
Other invertebrates	29.62		18.34	20.82	
Total catch weight (kg)	201.36		421.48	210.51	

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009031	200101009032	200101009033	200101009034	200101009035
Start date and time	7/14/2001 1633	7/14/2001 1850	7/15/2001 0751	7/15/2001 1026	7/15/2001 1853
Gear latitude (dd)	43.3833	43.3761	42.0660	42.0619	42.0594
Gear longitude (dd)	−124.7175	−124.7066	−124.5961	−124.6452	−124.6958
Station	30D	30C	38B	38E	38F
Depth (m)	446.45	371.92	291.55	497.04	593.32
Duration (hr)	0.37	0.30	0.31	0.39	0.35
Distance fished (km)	1.45	1.24	1.30	1.40	1.32
Area swept (ha)	2.02	1.66	1.84	2.01	1.85
Net width (m)	13.94	13.40	14.09	14.37	14.03
Performance	1.1	0	0	0	0
Species by weight					
Hagfish	0.10			0.88	
Brown cat shark	0.66	0.36	1.27	4.87	1.48
Spiny dogfish			2.31		
Skates	3.72	13.02	9.77	4.99	2.89
Other Chondrichthyes			1.19		
Arrowtooth flounder	5.10		1.07		
Petrale sole					
Dover sole	54.72	23.29	103.02	31.13	42.93
Deepsea sole					0.40
Rex sole	14.50	12.23	85.93	42.81	21.15
Other flatfish			0.66	0.77	
Sablefish	0.00	15.91	23.06	17.10	13.83
Pacific grenadier					
Giant grenadier					1.03
Other grenadier					0.09
Pacific flatnose				0.72	0.57
Slickheads					
Eelpouts	3.60	1.50	13.64	15.44	7.13
Snailfish		0.32	1.47	0.00	0.41
Pacific hake			32.53		0.34
Other roundfish			8.50		0.49
Shortspine thornyhead	6.17	3.97	2.96	7.40	8.77
Longspine thornyhead				12.30	28.64
Rougheye rockfish		8.11			
Pacific ocean perch					
Aurora rockfish	0.33	0.58		0.93	
Darkblotched rockfish		1.77			
Splitnose rockfish		1.13	2.55	1.03	
Shortbelly rockfish					
Other rockfish			1.59		
Grooved tanner crab	0.20		27.62	3.85	11.02
Other invertebrates	131.66	121.20	69.34	61.34	14.14
Total catch weight (kg)	220.76	203.39	388.48	205.56	155.31

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009036	200101009037	200101009038	200101009039	200101009040
Start date and time	7/16/2001 0529	7/16/2001 1038	7/16/2001 1224	7/16/2001 1357	7/19/2001 0613
Gear latitude (dd)	41.3800	41.3675	41.3129	41.3144	40.6955
Gear longitude (dd)	−124.5775	−124.5342	−124.4929	−124.4385	−124.7537
Station	42I	42F	42E	42A	46J
Depth (m)	1,075.93	618.70	516.58	222.18	1,161.04
Duration (hr)	0.62	0.33	0.38	0.33	0.40
Distance fished (km)	1.02	1.21	1.48	1.21	1.65
Area swept (ha)	1.13	1.51	2.08	1.62	2.37
Net width (m)	11.09	12.45	14.09	13.38	14.33
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.64		0.23		0.16
Brown cat shark	0.10	2.03	2.07		0.50
Spiny dogfish				1.58	
Skates			4.59	7.96	8.95
Other Chondrichthyes					
Arrowtooth flounder				1.20	
Petrale sole					
Dover sole	7.37	5.30	75.34	35.15	1.23
Deepsea sole	9.93				14.30
Rex sole			55.75	17.65	
Other flatfish				0.52	
Sablefish	2.22	6.15	8.88	19.74	20.90
Pacific grenadier	1.16	0.24			140.69
Giant grenadier	24.38	9.70			88.53
Other grenadier					
Pacific flatnose	0.24	0.10	1.43		4.08
Slickheads					4.73
Eelpouts	1.81	1.29	10.00		1.84
Snailfish		0.05	0.21		0.70
Pacific hake		0.55		226.76	
Other roundfish	0.03	0.10		2.80	0.93
Shortspine thornyhead		5.09	7.23	2.81	10.55
Longspine thornyhead	33.61	20.00	0.54		43.39
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish				3.60	
Splitnose rockfish				5.63	
Shortbelly rockfish				0.26	
Other rockfish				33.08	
Grooved tanner crab	17.00	5.19	1.80		39.51
Other invertebrates	40.79	14.33	41.50	2.34	13.35
Total catch weight (kg)	139.28	70.12	209.57	361.08	394.34

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009041	200101009042	200101009043	200101009044	200101009045
Start date and time	7/19/2001 0955	7/19/2001 1314	7/19/2001 1636	7/19/2001 1925	7/20/2001 0611
Gear latitude (dd)	40.7133	40.7040	40.7097	40.7053	40.0690
Gear longitude (dd)	−124.7051	−124.6921	−124.5499	−124.5228	−124.2676
Station	46I	46H	46D	46B	50A
Depth (m)	1,020.73	894.02	480.73	274.78	219.04
Duration (hr)	0.44	0.32	0.36	0.32	0.29
Distance fished (km)	1.53	1.13	1.39	1.33	1.26
Area swept (ha)	2.19	1.68	1.95	1.77	1.76
Net width (m)	14.30	14.89	14.03	13.34	13.94
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.10	0.10		
Brown cat shark	0.70	0.15	0.47		
Spiny dogfish				2.07	
Skates	7.02	2.31	10.17	47.98	2.00
Other Chondrichthyes					1.47
Arrowtooth flounder				0.89	0.30
Petrale sole					
Dover sole	49.09	41.84	35.69	214.61	120.75
Deepsea sole	7.82	5.28			
Rex sole			19.97	39.11	1.96
Other flatfish				0.01	0.49
Sablefish	19.43	40.84	10.71	13.29	9.85
Pacific grenadier	158.50	5.87			
Giant grenadier	55.35	36.37	2.99		
Other grenadier					
Pacific flatnose	4.14	0.35	1.16		
Slickheads	10.11	5.66			
Eelpouts	8.21	1.07	6.67	13.59	1.41
Snailfish	0.65	0.37	0.09	0.23	
Pacific hake			0.83	134.39	18.38
Other roundfish	0.63	0.36	0.05		9.17
Shortspine thornyhead	17.30	16.55	2.16	7.03	1.00
Longspine thornyhead	66.56	77.59	0.69		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			6.56	1.69	
Darkblotched rockfish			0.27	1.68	0.50
Splitnose rockfish			0.10	7.77	46.05
Shortbelly rockfish					0.37
Other rockfish				0.67	26.02
Grooved tanner crab	42.11	24.56	0.55		
Other invertebrates	15.82	6.78	192.57	53.54	3.57
Total catch weight (kg)	463.44	266.05	291.80	538.55	243.29

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009046	200101009047	200101009048	200101009049	200101009050
Start date and time	7/20/2001 0759	7/20/2001 1015	7/20/2001 1304	7/20/2001 1635	7/21/2001 0556
Gear latitude (dd)	40.0643	40.0604	40.0155	39.9417	39.3749
Gear longitude (dd)	−124.3073	−124.3198	−124.4168	−124.5647	−124.2283
Station	50E	50F	50H	50J	54J
Depth (m)	515.19	597.73	872.20	1,137.36	1,189.01
Duration (hr)	0.35	0.32	0.38	0.40	0.48
Distance fished (km)	0.93	1.16	1.44	1.34	2.04
Area swept (ha)	1.29	1.62	2.04	1.90	2.95
Net width (m)	13.85	14.01	14.12	14.19	14.49
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.30		0.10	0.18	
Brown cat shark	2.75	2.11	3.93		0.59
Spiny dogfish					
Skates	0.86	2.51	2.43	0.10	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	64.45	28.14	8.36		
Deepsea sole			2.79	3.07	3.09
Rex sole	4.33				
Other flatfish					
Sablefish	4.44	10.90	6.96	12.53	5.62
Pacific grenadier		0.20	2.96	37.52	34.92
Giant grenadier		53.10		26.28	196.34
Other grenadier		0.05			
Pacific flatnose	1.10	0.79	0.49	7.11	6.84
Slickheads			23.46	2.46	4.48
Eelpouts	1.16	0.71	4.35	0.11	0.68
Snailfish	0.30	0.97			
Pacific hake	1.02	0.65	0.28		
Other roundfish	0.10	0.07	0.22	0.71	0.27
Shortspine thornyhead	4.48	4.34	6.34	28.81	11.65
Longspine thornyhead	5.39	18.55	89.67	32.50	24.34
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish	0.20				
Other rockfish	0.61				
Grooved tanner crab		0.60	10.44	20.33	14.08
Other invertebrates	10.64	12.43	43.17	98.34	20.71
Total catch weight (kg)	102.13	136.12	205.95	270.05	323.61

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009051	200101009052	200101009053	200101009054	200101009055
Start date and time	7/21/2001 0914	7/21/2001 1218	7/21/2001 1447	7/21/2001 1706	7/22/2001 0945
Gear latitude (dd)	39.3460	39.3725	39.3771	39.3334	38.7367
Gear longitude (dd)	−124.1966	−124.1200	−123.9871	−123.9660	−123.8247
Station	54I	54G	54C	54B	58B
Depth (m)	1,034.07	768.14	370.26	286.46	282.94
Duration (hr)	0.35	0.37	0.30	0.31	0.31
Distance fished (km)	1.22	1.33	1.13	1.14	1.15
Area swept (ha)	1.71	1.90	1.45	1.57	1.58
Net width (m)	14.07	14.27	12.89	13.68	13.73
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.22			
Brown cat shark	0.63	7.11	2.10	0.93	
Spiny dogfish					
Skates			13.88	27.15	8.41
Other Chondrichthyes			2.16	0.73	3.53
Arrowtooth flounder					
Petrale sole					
Dover sole	9.23	9.85	10.29	86.99	79.88
Deepsea sole	2.66	1.69			
Rex sole			6.20	14.68	25.41
Other flatfish				13.59	7.66
Sablefish	1.96	1.84	30.31	46.20	3.30
Pacific grenadier	20.18				
Giant grenadier	20.03				
Other grenadier					
Pacific flatnose	0.80				
Slickheads	11.33	1.38			
Eelpouts	1.90	0.58	5.44	3.30	1.63
Snailfish			0.40		
Pacific hake			4.27	7.19	63.65
Other roundfish	0.11	0.40	0.20		8.40
Shortspine thornyhead	10.97	1.05	7.02	4.80	3.53
Longspine thornyhead	27.09	42.52			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			1.45		
Darkblotched rockfish			0.32		16.11
Splitnose rockfish			1.65	6.55	61.25
Shortbelly rockfish					
Other rockfish			0.39	1.88	35.09
Grooved tanner crab	6.04	17.19	5.26	0.19	
Other invertebrates	8.19	13.82	70.55	110.42	6.57
Total catch weight (kg)	121.12	97.65	161.89	324.60	324.42

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009056	200101009057	200101009058	200101009059	200101009060
Start date and time	7/22/2001 1228	7/23/2001 0621	7/26/2001 0556	7/26/2001 0823	7/26/2001 1147
Gear latitude (dd)	38.6606	38.0385	37.3596	37.3651	37.3958
Gear longitude (dd)	−123.7939	−123.5390	−123.2246	−123.2208	−123.1021
Station	58D	62G	66J	66J	66G
Depth (m)	453.98	768.10	1,207.01	1,184.61	754.51
Duration (hr)	0.32			0.47	0.46
Distance fished (km)	1.15			1.51	1.83
Area swept (ha)	1.79			2.15	2.57
Net width (m)	15.62			14.21	14.09
Performance	0	−5.1	−5.4	0	0
Species by weight					
Hagfish					
Brown cat shark				6.26	5.45
Spiny dogfish					
Skates	11.04			13.15	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	111.56			180.37	147.57
Deepsea sole	3.05			9.71	2.36
Rex sole	13.69				
Other flatfish					
Sablefish	27.81			23.48	20.58
Pacific grenadier				217.01	2.35
Giant grenadier				100.62	
Other grenadier					
Pacific flatnose	0.21			11.37	0.01
Slickheads				106.75	2.60
Eelpouts	4.41				2.13
Snailfish	0.08			0.30	
Pacific hake	7.72				
Other roundfish				0.91	
Shortspine thornyhead	12.51			9.17	17.75
Longspine thornyhead	45.43			14.89	102.12
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	62.53				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	62.50				
Grooved tanner crab				0.48	4.09
Other invertebrates	25.40			21.46	3.98
Total catch weight (kg)	387.94			715.93	310.99

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009061	200101009062	200101009063	200101009064	200101009065
Start date and time	7/26/2001 1525	7/26/2001 1735	7/26/2001 1912	7/27/2001 0551	7/27/2001 0910
Gear latitude (dd)	37.3583	37.3335	37.3483	36.7208	36.7109
Gear longitude (dd)	−122.9472	−122.9027	−122.8729	−122.2316	−122.1831
Station	66F	66B	66A	70I	70H
Depth (m)	601.60	297.87	220.17	1,095.06	954.27
Duration (hr)	0.34	0.33	0.31	0.47	0.48
Distance fished (km)	1.31	1.43	1.15	1.66	2.07
Area swept (ha)	1.75	1.87	1.56	2.36	2.94
Net width (m)	13.31	13.02	13.63	14.20	14.23
Performance	0	0	1.1	0	0
Species by weight					
Hagfish	0.21			0.41	1.13
Brown cat shark	3.96			7.19	2.96
Spiny dogfish					
Skates	0.75	4.80	0.86	34.41	
Other Chondrichthyes	2.50	0.66			
Arrowtooth flounder					
Petrale sole					
Dover sole	56.77	89.72	39.38	162.76	89.98
Deepsea sole				7.74	8.71
Rex sole		0.84	42.57		
Other flatfish		4.13	2.74		
Sablefish	22.66	17.28	2.60	31.02	34.74
Pacific grenadier				332.11	119.24
Giant grenadier				15.01	7.98
Other grenadier					
Pacific flatnose	0.16			9.59	15.02
Slickheads	8.97			49.01	28.83
Eelpouts	5.14	13.34	2.45	1.00	4.50
Snailfish	1.36	0.10		0.45	0.78
Pacific hake		2.41	0.76		
Other roundfish		0.10	0.25	2.23	26.60
Shortspine thornyhead	12.60	2.72		18.64	30.05
Longspine thornyhead	49.13	0.74		15.97	51.73
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.26				
Darkblotched rockfish		0.46	0.33		
Splitnose rockfish		103.12	1.23		
Shortbelly rockfish		1.13	0.68		
Other rockfish		38.53	48.43		
Grooved tanner crab	2.12			33.23	42.48
Other invertebrates	13.69	5.13	10.71	19.92	24.31
Total catch weight (kg)	180.28	285.21	152.99	740.69	489.04

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009066	200101009067	200101009068	200101009069	200101009070
Start date and time	7/27/2001 1539	7/28/2001 0620	7/28/2001 0952	7/28/2001 1329	7/28/2001 1919
Gear latitude (dd)	36.6662	36.0487	36.0558	36.0148	36.0088
Gear longitude (dd)	−122.0117	−121.8488	−121.7398	−121.6691	−121.6335
Station	70B	74I	74G	70F	74D
Depth (m)	314.44	1,037.77	744.49	653.85	440.80
Duration (hr)	0.33	0.57	0.46	0.29	0.27
Distance fished (km)	1.22	1.83	1.57	1.04	1.10
Area swept (ha)	1.56	2.35	2.43	1.54	1.56
Net width (m)	12.78	12.80	15.43	14.74	14.11
Performance	0	0	5.4	0	0
Species by weight					
Hagfish		2.09	0.56		
Brown cat shark		0.76	2.50	2.04	
Spiny dogfish					1.64
Skates	1.69		5.32		21.22
Other Chondrichthyes	1.96		7.23	7.40	50.35
Arrowtooth flounder					
Petrale sole					
Dover sole	16.56		43.22	5.40	70.59
Deepsea sole		14.06	1.73		
Rex sole	15.21				4.59
Other flatfish	41.58				
Sablefish	0.37	27.37	35.59	19.53	11.20
Pacific grenadier		22.90			
Giant grenadier		25.07			
Other grenadier					
Pacific flatnose		0.78			
Slickheads		22.67	1.12		
Eelpouts	5.10	0.83			1.49
Snailfish			0.15	0.26	
Pacific hake				0.23	41.08
Other roundfish	0.98	0.42			1.95
Shortspine thornyhead	0.90	30.35	9.18	11.52	10.11
Longspine thornyhead		51.51	94.29	41.30	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					13.44
Darkblotched rockfish	0.60				
Splitnose rockfish	58.54				0.57
Shortbelly rockfish					
Other rockfish	45.28				21.93
Grooved tanner crab		1.76	0.21	0.15	
Other invertebrates	102.28	62.04	73.60	120.28	11.15
Total catch weight (kg)	291.05	262.61	274.70	208.11	261.31

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number				
Haul specifications	200101009071	200101009072	200101009073	200101009074	200101009075
Start date and time	7/29/2001 0617	7/29/2001 0849	7/29/2001 1216	7/29/2001 1458	7/29/2001 1813
Gear latitude (dd)	35.4046	35.4045	35.2978	35.2812	35.2884
Gear longitude (dd)	−121.5155	−121.5048	−121.4897	−121.3268	−121.0970
Station	78H	78H	78G	78F	78C
Depth (m)	914.40	923.16	790.92	673.73	372.49
Duration (hr)		0.65	0.42	0.48	0.33
Distance fished (km)		2.35	1.64	1.67	1.22
Area swept (ha)		3.38	2.29	2.35	1.62
Net width (m)		14.36	13.98	14.07	13.28
Performance	−4	0	0	0	0
Species by weight					
Hagfish		0.44		0.25	
Brown cat shark		0.71		0.93	3.05
Spiny dogfish					
Skates		5.77		2.90	9.32
Other Chondrichthyes			0.70	3.80	3.78
Arrowtooth flounder					
Petrale sole					
Dover sole		9.04	15.67	83.14	6.39
Deepsea sole		9.26		1.08	
Rex sole					0.40
Other flatfish					
Sablefish		37.08	17.44	12.10	7.27
Pacific grenadier		5.04	0.10		
Giant grenadier		13.30	1.24		
Other grenadier				0.26	
Pacific flatnose		0.76	0.26		
Slickheads		7.54	3.46	4.39	
Eelpouts		16.74	0.78		1.61
Snailfish		0.53	0.28	0.30	
Pacific hake					10.98
Other roundfish		0.08	0.37	0.04	0.74
Shortspine thornyhead		23.06	20.71	9.93	0.37
Longspine thornyhead		119.52	112.44	82.78	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					13.19
Darkblotched rockfish					
Splitnose rockfish					136.65
Shortbelly rockfish					
Other rockfish					0.84
Grooved tanner crab		7.09	16.07	1.15	
Other invertebrates		38.05	14.73	206.73	55.09
Total catch weight (kg)		294.01	204.25	409.78	249.68

Table A-1 continued. Station and catch (kg) data from the 2001 NWFSC slope survey.

	Haul number		
Haul specifications	200101009076	200101009077	200101009078
Start date and time	7/29/2001 1951	7/30/2001 0803	7/30/2001 1921
Gear latitude (dd)	35.3514	34.6845	34.7282
Gear longitude (dd)	−121.0721	−121.4834	−121.0679
Station	78A	82I	82E
Depth (m)	244.83	1,060.70	522.08
Duration (hr)	0.30		0.37
Distance fished (km)	1.15		1.26
Area swept (ha)	1.48		1.78
Net width (m)	12.86		14.09
Performance	0	−5.4	0
Species by weight			
Hagfish			
Brown cat shark			2.51
Spiny dogfish			
Skates	4.50		35.57
Other Chondrichthyes	1.25		
Arrowtooth flounder			
Petrale sole			
Dover sole	2.22		144.65
Deepsea sole			
Rex sole	0.09		0.16
Other flatfish	6.63		
Sablefish	33.20		8.76
Pacific grenadier			
Giant grenadier			
Other grenadier			
Pacific flatnose			
Slickheads			
Eelpouts	0.58		5.17
Snailfish			0.25
Pacific hake	16.40		10.19
Other roundfish	9.39		
Shortspine thornyhead			21.48
Longspine thornyhead			19.27
Rougheye rockfish			
Pacific ocean perch			
Aurora rockfish			19.99
Darkblotched rockfish			
Splitnose rockfish	9.67		
Shortbelly rockfish	9.23		
Other rockfish	41.07		0.43
Grooved tanner crab			
Other invertebrates	16.13		32.27
Total catch weight (kg)	150.36		300.70

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