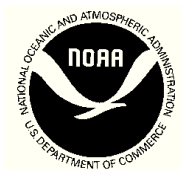


NOAA Technical Memorandum NMFS-NWFSC-75



**The 2002
U.S. West Coast Upper Continental
Slope Trawl Survey
of Groundfish Resources**
off Washington, Oregon, and California:
Estimates of Distribution, Abundance,
and Length Composition

March 2006

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

NOAA Technical Memorandum NMFS Series

The Northwest Fisheries Science Center of the National Marine Fisheries Service, NOAA, uses the NOAA Technical Memorandum NMFS series to issue informal scientific and technical publications when complete formal review and editorial processing are not appropriate or feasible due to time constraints. Documents published in this series may be referenced in the scientific and technical literature.

The NMFS-NWFSC Technical Memorandum series of the Northwest Fisheries Science Center continues the NMFS-F/NWC series established in 1970 by the Northwest & Alaska Fisheries Science Center, which has since been split into the Northwest Fisheries Science Center and the Alaska Fisheries Science Center. The NMFS-AFSC Technical Memorandum series is now being used by the Alaska Fisheries Science Center.

Reference throughout this document to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

This document should be cited as follows:

Keller, A.A., B.H. Horness, V.J. Tuttle, J.R. Wallace, V.H. Simon, E.L. Fruh, K.L. Bosley, and D.J. Kamikawa. 2006. The 2002 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-75, 189 p.



**The 2002
U.S. West Coast Upper Continental
Slope Trawl Survey
of Groundfish Resources**
off Washington, Oregon, and California:
Estimates of Distribution, Abundance,
and Length Composition

Aimee A. Keller, Beth H. Horness, Vanessa J. Tuttle,
John R. Wallace, Victor H. Simon, Erica L. Fruh,
Keith L. Bosley, and Daniel J. Kamikawa

Northwest Fisheries Science Center
Fishery Resource Analysis and Monitoring Division
2725 Montlake Boulevard East
Seattle, Washington 98112

March 2006

U.S. DEPARTMENT OF COMMERCE

Carlos M. Gutierrez, Secretary

National Oceanic and Atmospheric Administration

Vice Admiral Conrad C. Lautenbacher, Jr. USN (Ret), Administrator

National Marine Fisheries Service

William T. Hogarth, Assistant Administrator for Fisheries

**Most NOAA Technical Memorandums NMFS-NWFSC
are available online at the Northwest Fisheries Science
Center web site (<http://www.nwfsc.noaa.gov>)**

Copies are also available from:
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
phone orders (1-800-553-6847)
e-mail orders (orders@ntis.fedworld.gov)

Table of Contents

List of Figures	v
List of Tables	vii
Executive Summary	ix
Acknowledgments.....	xi
Introduction.....	1
Survey Methods	4
Survey Period and Sampling Area.....	4
Vessels and Sampling Gear	4
Trawl Station Allocation	4
Trawling Protocol.....	6
Sampling Procedures and Biological Data Collection.....	8
Survey Analysis	9
Sensor Data.....	9
Net Mensuration	10
Area Estimates.....	11
Temperature.....	12
Relative Density and Biomass Estimates	12
Results.....	14
Haul, Catch, and Biological Data	14
Temperature Data	15
Relative Density and Distribution of Species.....	32
Biomass and Population Estimates.....	32
Size Compositions	56
Analysis Approach and Data Requests.....	56
References.....	87
Appendix A: Haul and Catch Information.....	89

List of Figures

Figure 1. Map showing the extent of the 2002 NWFSC slope survey and location of successful tows.....	3
Figure 2. Detailed diagram of the NWFSC Aberdeen-style sampling trawl	5
Figure 3. Footrope for the NWFSC Aberdeen-style sampling trawl	6
Figure 4. Mean net width for trawls conducted as part of the 2002 NWFSC slope survey.....	15
Figure 5. Near bottom water temperature observed at the mouth of the net for each tow conducted during the 2002 NWFSC slope survey	30
Figure 6. Sea surface temperature observed at the start of each tow during the 2002 NWFSC slope survey, plotted relative to latitude.....	31
Figure 7. Arrowtooth flounder distribution and relative abundance from the 2002 NWFSC slope survey.....	37
Figure 8. Darkblotched rockfish distribution and relative abundance from the 2002 NWFSC slope survey.....	38
Figure 9. Dover sole distribution and relative abundance from the 2002 NWFSC slope survey	39
Figure 10. Giant grenadier distribution and relative abundance from the 2002 NWFSC slope survey.....	40
Figure 11. Longspine thornyhead distribution and relative abundance from the 2002 NWFSC slope survey.....	41
Figure 12. Pacific grenadier distribution and relative abundance from the 2002 NWFSC slope survey.....	42
Figure 13. Pacific hake distribution and relative abundance from the 2002 NWFSC slope survey	43
Figure 14. Pacific ocean perch distribution and relative abundance from the 2002 NWFSC slope survey.....	44
Figure 15. Rex sole distribution and relative abundance from the 2002 NWFSC slope survey.....	45
Figure 16. Sablefish distribution and relative abundance from the 2002 NWFSC slope survey.....	46
Figure 17. Shortspine thornyhead distribution and relative abundance from the 2002 NWFSC slope survey.....	47
Figure 18. Spiny dogfish distribution and relative abundance from the 2002 NWFSC slope survey	48
Figure 19. Splitnose rockfish distribution and relative abundance from the 2002 NWFSC slope survey.....	49
Figure 20. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for all INPFC areas sampled during the 2002 NWFSC slope survey	63
Figure 21. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for the INPFC Conception area from the 2002 NWFSC slope survey	64
Figure 22. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for the INPFC Monterey area from the 2002 NWFSC slope survey	65

Figure 23. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for the INPFC Eureka area from the 2002 NWFSC slope survey	66
Figure 24. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for the INPFC Columbia area from the 2002 NWFSC slope survey	67
Figure 25. Unweighted length-frequency data and mean lengths of Dover sole by depth stratum and by sex for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.....	68
Figure 26. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for all INPFC areas sampled during the 2002 NWFSC slope survey	69
Figure 27. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for INPFC Conception area from the 2002 NWFSC slope survey	70
Figure 28. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for INPFC Monterey area from the 2002 NWFSC slope survey	71
Figure 29. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for INPFC Eureka area from the 2002 NWFSC slope survey	72
Figure 30. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for INPFC Columbia area from the 2002 NWFSC slope survey	73
Figure 31. Unweighted length-frequency data and mean lengths of longspine thornyhead by depth stratum for INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.....	74
Figure 32. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for all INPFC areas sampled during the 2002 NWFSC slope survey.....	75
Figure 33. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for the INPFC Conception area from the 2002 NWFSC slope survey	76
Figure 34. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for the INPFC Monterey area from the 2002 NWFSC slope survey.....	77
Figure 35. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for the INPFC Eureka area from the 2002 NWFSC slope survey	78
Figure 36. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for the INPFC Columbia area from the 2002 NWFSC slope survey.....	79
Figure 37. Unweighted length-frequency data and mean lengths of sablefish by depth stratum and by sex for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey	80
Figure 38. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for all INPFC areas sampled during the 2002 NWFSC slope survey	81
Figure 39. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for the INPFC Conception area sampled during the 2002 NWFSC slope survey	82
Figure 40. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for the INPFC Monterey area sampled during the 2002 NWFSC slope survey	83
Figure 41. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for the INPFC Eureka area sampled during the 2002 NWFSC slope survey	84
Figure 42. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for the INPFC Columbia area sampled during the 2002 NWFSC slope survey	85
Figure 43. Unweighted length-frequency data and mean lengths of shortspine thornyhead by depth stratum for the INPFC U.S.-Vancouver area sampled during the 2002 NWFSC slope survey.....	86

List of Tables

Table 1. Latitude boundaries, depth stratum areas, and sampling densities by INPFC statistical area based on successful tows during the 2002 NWFSC slope survey.....	14
Table 2. Biological data collected during the 2002 NWFSC slope survey.....	16
Table 3. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey	17
Table 4. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for all the INPFC areas combined.....	27
Table 5. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Conception area.....	27
Table 6. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Monterey area	28
Table 7. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Eureka area.....	28
Table 8. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Columbia area	29
Table 9. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC U.S.-Vancouver area	29
Table 10. Mean CPUE of the 20 most abundant groundfish and selected crab species caught in each of the INPFC areas for all strata combined during the 2002 NWFSC slope survey.....	33
Table 11. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in all INPFC areas combined during the 2002 NWFSC slope survey.....	34
Table 12. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in the Conception INPFC area during the 2002 NWFSC slope survey.....	34
Table 13. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in the Monterey INPFC area during the 2002 NWFSC slope survey.....	35
Table 14. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in the Eureka INPFC area during the 2002 NWFSC slope survey.....	35
Table 15. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in the Columbia INPFC area during the 2002 NWFSC slope survey	36
Table 16. Mean CPUE of the 20 most abundant groundfish and selected crab species caught by depth strata in the U.S.-Vancouver INPFC area during the 2002 NWFSC slope survey	36
Table 17. Estimates of fish biomass and CV by stratum for the INPFC U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception areas from the 2002 NWFSC slope survey	50
Table 18. Estimates of fish biomass and CV by stratum for the INPFC Conception area from the 2002 NWFSC slope survey.....	51

Table 19. Estimates of fish biomass and CV by stratum for the INPFC Monterey area from the 2002 NWFSC slope survey.....	52
Table 20. Estimates of fish biomass and CV by stratum for the INPFC Eureka area from the 2002 NWFSC slope survey.....	53
Table 21. Estimates of fish biomass and CV by stratum for the INPFC Columbia area from the 2002 NWFSC slope survey.....	54
Table 22. Estimates of fish biomass and CV by stratum for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.....	55
Table 23. 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 in the INPFC U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception areas from the 2002 NWFSC slope survey	57
Table 24. 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 in the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey	58
Table 25. 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 in the INPFC Columbia area from the 2002 NWFSC slope survey	59
Table 26. 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 in the INPFC Eureka area from the 2002 NWFSC slope survey	60
Table 27. 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 in the INPFC Monterey area from the 2002 NWFSC slope survey	61
Table 28. 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 in the INPFC Conception area from the 2002 NWFSC slope survey	62
Table A-1. Station and catch data from the 2002 NWFSC slope survey.....	90

Executive Summary

The Northwest Fisheries Science Center's Fishery Resource Analysis and Monitoring Division conducted the fifth in a series of groundfish bottom trawl surveys along the U.S. West Coast upper continental slope from 25 June 2002 to 24 September 2002. The survey targeted the commercial groundfish resources inhabiting depths of 183 m to 1,280 m (100 fathoms [fm] to 700 fm) from the area off Cape Flattery, Washington (lat 48°10'N), to the U.S.-Mexican border (lat 32°30'N) using chartered West Coast trawlers. This survey was the fifth year of a relatively new series of annual surveys designed to monitor long-term trends in distribution and abundance of West Coast groundfish species. The objectives of this report are to document survey procedures and analogous field procedures and to provide data for fishery management.

Sampling locations were established along 94 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 2002 a total of 427 successful tows were completed out of 489 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 and then weighed using an electronic, motion-compensated scale. A total of 204 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 cramerii*), 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 crew of the fishing vessels (FVs) *Captain Jack*, *Excalibur*, *Ms. Julie*, and *Sea Eagle* for their effort during the 2002 Northwest Fisheries Science Center West Coast groundfish slope survey. We also thank the biologists who participated in the survey, including Jim Benante, John Harms, Kristen Moynihan, Gillian Stoker, Ian Taylor, Josie Thompson, Shannon Tribble, Teresa Turk, and Tonya Wick. Scott McEntire at the Alaska Fisheries Science Center designed the bottom contact sensors. We also express our appreciation to Mary Breaker, Todd Bridgeman, and Mary Craig for their shoreside logistical support, and Julia Clemons and Curt Whitmire for creating the GIS graphics.

Introduction

The Fishery Resource Analysis and Monitoring (FRAM) Division of the Northwest Fisheries Science Center (NWFSC) conducted the fifth in a series of annual bottom trawl surveys of commercial groundfish resources off the U.S. West Coast between 25 June 2002 and 24 September 2002. The West Coast groundfish fishery includes about 80 commercially fished stocks spanning the area from the Canadian to Mexican borders in nearshore to offshore waters. Multiple vessel types, ranging in size from kayaks to trawlers, participate in the fishery. The fishery uses various types of mobile and fixed gear including bottom trawls, midwater trawls, pots, longlines, and other hook and line gear; however, trawlers take the majority of groundfish. Active management of the fishery began in the early 1980s with the establishment of optimal yields (OYs) and trip limits for several managed species. Management measures include landings limits, size limits, gear restrictions, and time/area closures. The management measures are designed to avoid overfishing and rebuild overfished stocks.

The objective of the annual 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 the U.S.-Mexican border in waters ranging from 183 m to 1,280 m (100 fathoms [fm] to 700 fm). The goal of the 2002 NWFSC groundfish slope survey (hereafter referred to as the 2002 NWFSC slope survey) is to continue the recently established NWFSC slope survey time series, initiated in 1998 (Turk et al. 2001, Builder Ramsey et al. 2002, Keller et al. 2005, Keller et al. 2006). Prior to 1998, surveys conducted by the Alaska Fisheries Science Center (AFSC) were the principal source for fishery-independent data 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 the NOAA research vessel RV *Miller Freeman* to conduct standardized bottom hauls throughout the survey. Spatial coverage varied between years due to constraints imposed by annual budgets and availability of NOAA ship time (Lauth 2001).

The determination that additional data were necessary to support stock assessments of slope groundfish species, as well as the need to reduce uncertainty in assessments of slope species, prompted the initiation of the NWFSC slope survey in 1998. The decline in abundance of five groundfish species to a depleted state in the mid-1990s emphasized this need for additional data (Methot et al. 2000). The NWFSC slope survey was initially designed to cover the same depths and latitudes inherited from the AFSC slope survey. However, the NWFSC slope survey employs chartered 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 2002 NWFSC slope survey spans the U.S. West Coast from lat 48°10'N to lat 32°30'N and is geographically subdivided into the five International North Pacific Fisheries Commission (INPFC) statistical areas: U.S.-Vancouver, Columbia, Eureka, Monterey, and Conception (Figure 1). The objectives of this report are to document the operations, survey design, and initial results of the 2002 NWFSC slope survey. 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 2002 NWFSC slope survey with the intent to provide the indices of groundfish abundance necessary 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.

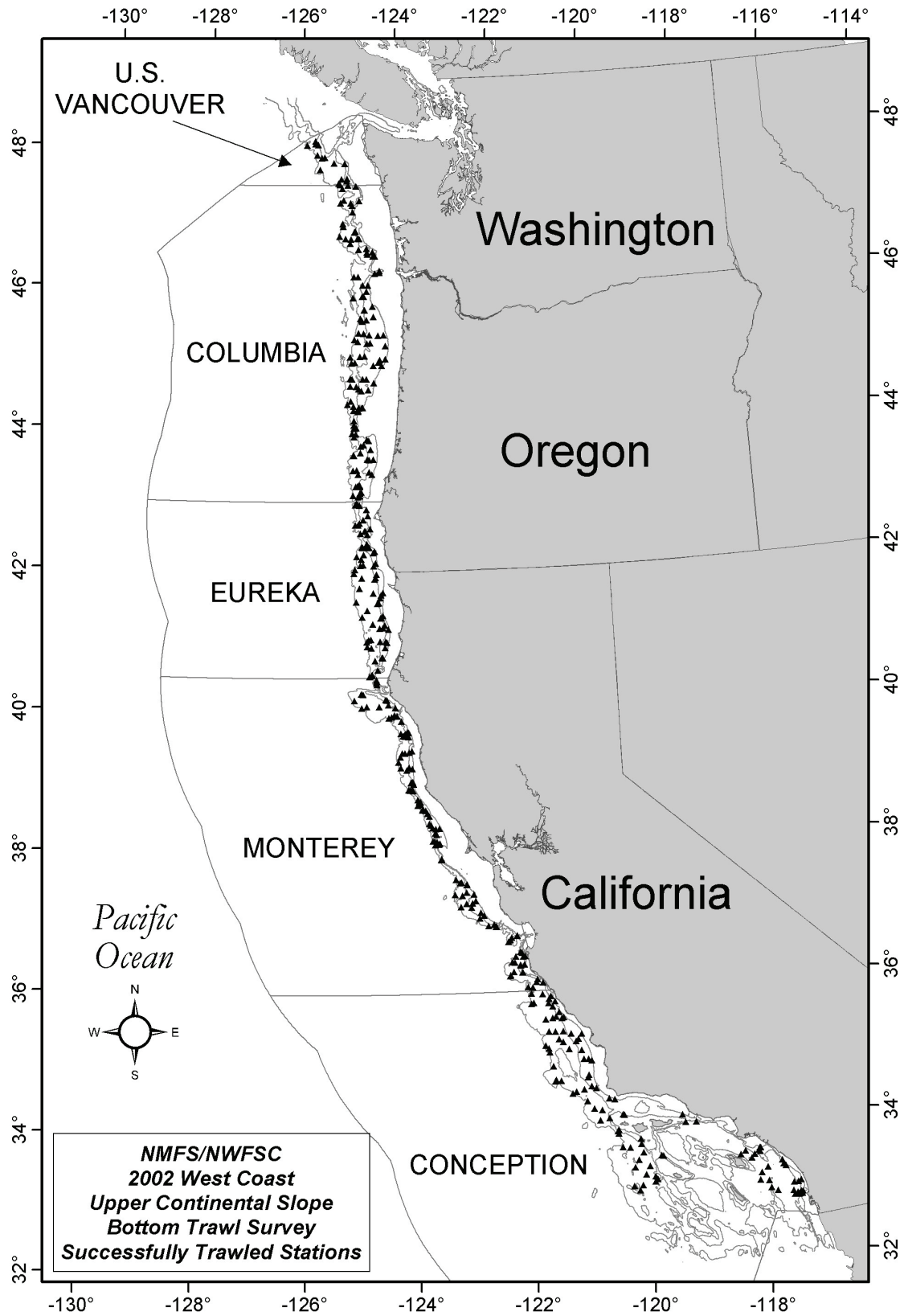


Figure 1. Map showing the extent of the 2002 NWFS slope survey and location (▲) of successful tows.

Survey Methods

Survey Period and Sampling Area

The 2002 NWFSC slope survey was conducted in two passes between 25 June 2002 and 24 September 2002 from the areas off Cape Flattery, Washington (lat 48°10'N), to the U.S.-Mexican border (lat 32°30'N). The geographic region from Point Conception, California (lat 32°15'N), to the U.S.-Mexican border was added to the NWFSC slope survey beginning in 2002. Four West Coast bottom trawlers were chartered through a competitive bid process to conduct the survey. Two fishing vessels, the FV *Captain Jack* and the FV *Ms. Julie*, were used during the first survey period from 25 June 2002 to 30 July 2002. Two additional vessels, the FV *Excalibur* and the FV *Sea Eagle*, were used during the second survey period from 22 August 2002 to 24 September 2002. All vessels started the survey off Cape Flattery and then progressed south along the coast, finishing the survey south of San Diego, California.

Vessels and Sampling Gear

All vessels deployed the standard Aberdeen-style net (Figures 2 and 3). This 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). Each net was outfitted with a small-mesh liner (2" stretched measure or less) in the codend to retain smaller fish. 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.

Trawl Station Allocation

The 2002 NWFSC slope survey used a combined fixed and random sampling strategy. 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 94 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 301–700 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 transects (either 23 or 24 transects) separated by 40' of latitude. By the end of the survey, all 94 transects were sampled.

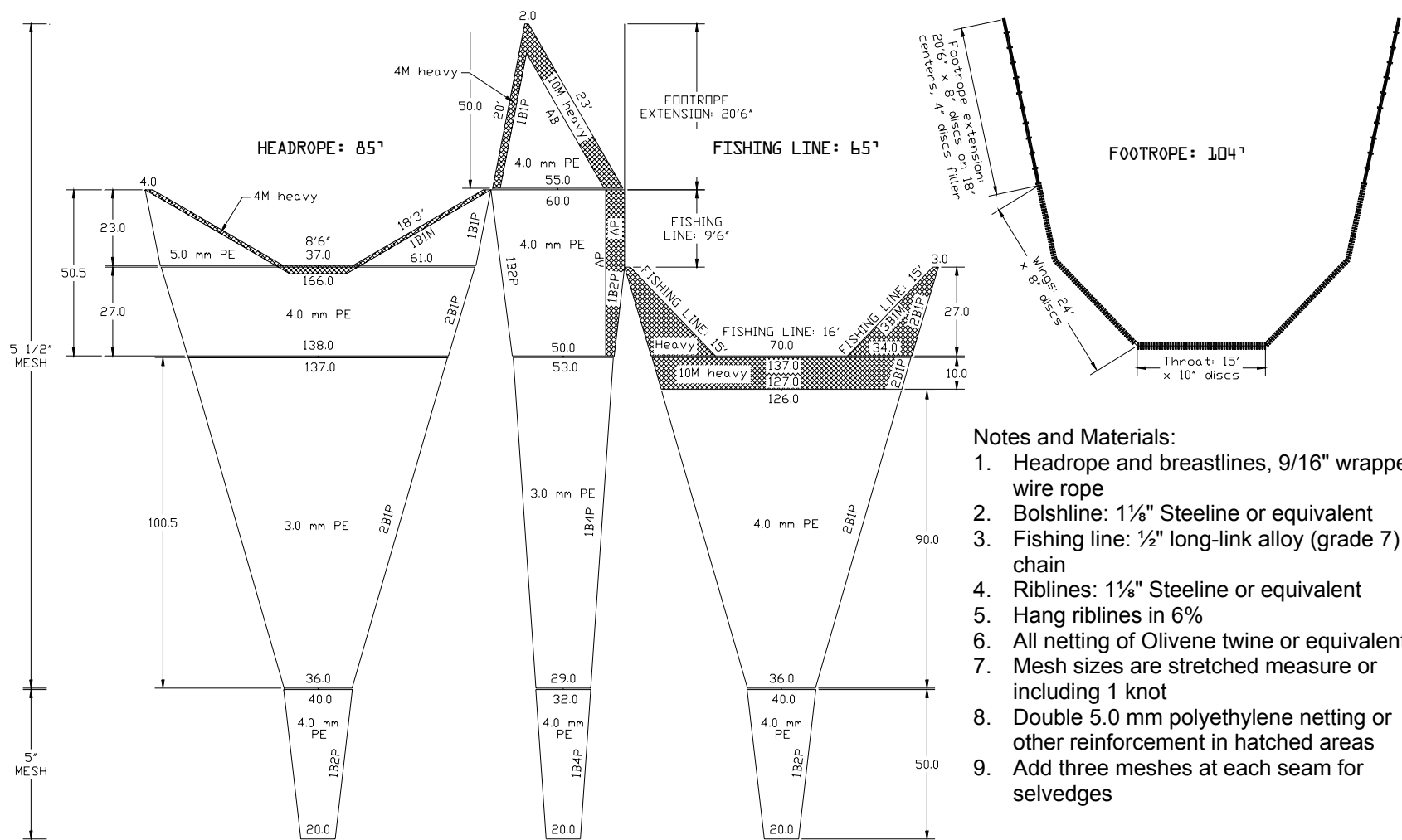


Figure 2. Detailed diagram of the NWFSC Aberdeen-style sampling trawl, including descriptions of dimensions, materials, mesh sizes, and mesh counts. See Figure 3 for a detail of the footrope.

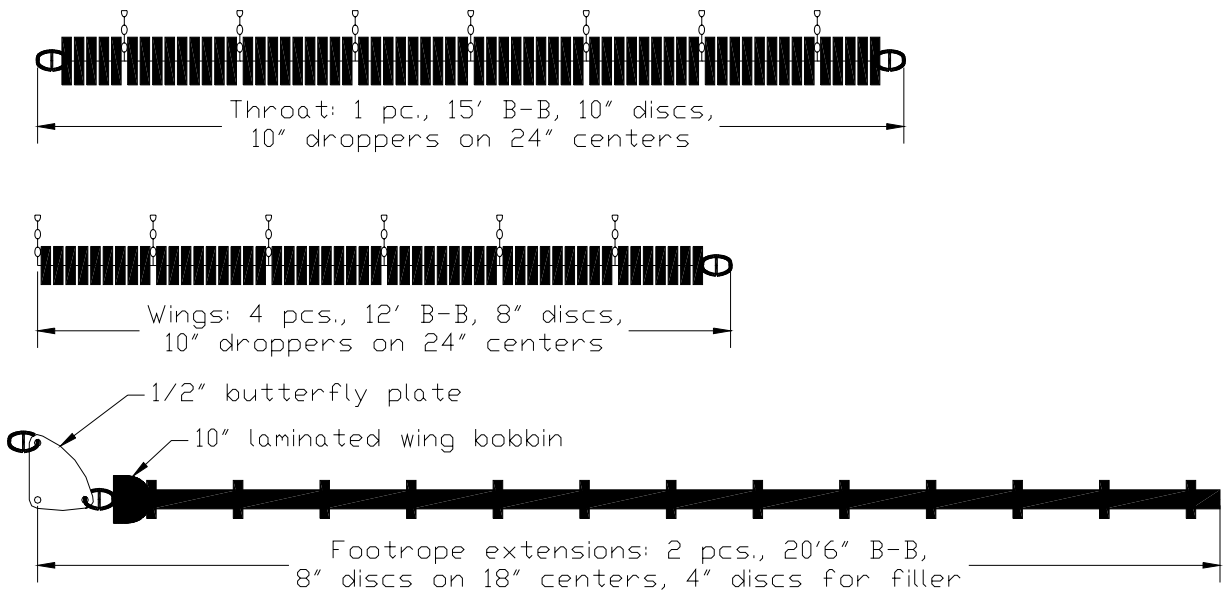


Figure 3. Footrope for the NWFSC Aberdeen-style sampling trawl composed of seven sections with an overall length of 104'. A single section of each component of the footrope is shown in the figure. Notes: Footrope composed of 1/2" long-link alloy (grade 7) chain, with rubber discs (8–10") and dropper chains (10") strung along the length, and section lengths (measured bearing point to bearing point, B-B) connected by 1/2" 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), was responsible for oversight of 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

otherwise 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.

Scope (amount of wire deployed) can significantly impact net performance. With too little scope the gear tends bottom poorly, while too much may impact the proper spread of the doors. The captain, relying on past experience and judgment, determined the initial scope at the start of each tow. Guidelines for initial scope, tailored to local conditions and vessels, were provided for use at the discretion of the captain. During a tow, scope was adjusted as needed based on real-time data from sensors. All hauls were monitored using the Simrad Integrated Trawl Instrumentation or ITI (Kongsberg Simrad Mesotech Ltd., Port Coquitlam, BC). Sensors from the ITI trawl system were attached to 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, and the second instrument was a temperature and depth sensor, which recorded ambient temperature and the depth of the trawl headrope. Paired wing units (one master and one slave) were attached on the port and starboard wings of the net to measure wingspread. Wingspread was an additional indicator of bottom contact and whether there was adequate scope. Extreme or prolonged periods of abnormal spread indicated net performance problems. The trawl instruments displayed gear performance in real time so adjustments to the scope could be made if necessary. Scope was adjusted by deploying additional wire until the gear made stable, consistent bottom contact according to the ITI display.

A pair of bottom contact sensors (BCSs) and a secondary temperature and depth recorder were deployed on every haul. These instruments provided redundancy in the event that the ITI failed to perform adequately. The BCSs were attached on either side of the center point of the footrope. A Vemco temperature and depth sensor (Vemco, Shad Bay, Nova Scotia) was attached to the center of the headrope in an ABS plastic sleeve. The BCSs recorded the angle of incline of the net, indicating when the net landed on and lifted off bottom. The BCS and temperature and depth data were reviewed following every haul to provide additional information on bottom contact and trawl performance.

Tow duration was targeted at 15 minutes. 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 was maintaining 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 BCS. 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, the system also provided an electronic means to download and save information from the BCS and the fish meter board (used to collect individual fish data from the catch).

Sampling Procedures and Biological Data Collection

Catches were sorted to species or other appropriate taxonomic levels and then weighed in aggregate using an electronic, motion-compensated scale (Marel, Reykjavik, Iceland). Biological sampling was 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 were measured (to the nearest cm) 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 other species only total counts and aggregate 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 (DTS complex). Fish targeted for otolith removal were randomly selected from the subset of fish chosen for length determination. When other important commercial species were encountered, such as bocaccio (*Sebastes paucispinis*), darkblotched rockfish (*Sebastes crameri*), or Pacific ocean perch (*Sebastes alutus*), otoliths were collected from these species as well. Individual lengths and weights were collected from all fish selected for otolith removal. Any unidentified species were labeled, frozen or preserved in formalin, and retained for later identification. After all biological data were collected, marketable fish were placed in the hold of the vessel, iced, then delivered to a shoreside processing facility within 5 days. Species with no commercial value or those with catch prohibitions were returned to the sea as soon as possible.

Survey Analysis

Sensor Data

Instrumentation played an important role in monitoring trawl performance with mensuration data used to facilitate detection and correction of gear malfunction and to identify deviation from standardized fishing procedures. In addition to their role in evaluating trawl performance, three sensors—BCS, ITI, and GPS—provided data used to estimate effort following the completion of the survey. Because of the electronic nature of the data, sensor streams were reviewed prior to use. The delivery rate of new readings was at times slower than the recording rate of the computer system receiving the signals, causing some sensor readings to be erroneously repeated multiple times. These readings appeared in the data record as persistent strings of varying lengths with constant values and prompted the review of all sensor streams for spurious readings.

Because persistent strings may distort the overall signal pattern, a variety of techniques were used to remove them, including statistical trimming methods and manual removal of data points. In particular, persistent strings that originated before and extended into the time intervals used for effort estimation were routinely removed manually prior to analysis. But for the most part the phenomena under observation varied little during the on-bottom time period of interest, and the overall pattern of sensor readings was not substantially distorted by moderate periods of data repetition. 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.

Because sensor readings should be consistently present during a tow, recorded values of zero were treated as missing values and filtered prior to estimation of depth, net dimensions, and temperature. Exclusion of extreme points was more difficult: large isolated spikes in the depth, net dimension, and temperature readings were frequent and assumed to be the result of acoustic or electronic noise and were removed prior to processing. When multiple extreme points occurred in sequence, they were more difficult to evaluate because large swings in sensor data are expected during tows over sloped and irregular substrates. Trawl execution problems also produced data sets with large fluctuations in readings. Consequently, extreme values recorded where expected, either as part of a contiguous variation in magnitude or during a particularly variable stretch of readings, were not excluded prior to analysis.

To ensure reliability of on-bottom readings, sensor data used to estimate depth and net width and height were restricted to a subset of values collected from the center 80% of the tow duration. In the vast majority of tows, this criterion 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 sensor readings (depth, net dimension, and temperature) 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 in alignment 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.

Net Mensuration

Tow duration was determined as the simple difference between the times marking touchdown and liftoff of the trawl net. Wherever possible, these times were derived 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, Vemco temperature and depth readings, or FPC observations of net touchdown and liftoff times.

In general, mean net widths and heights 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. Net 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 1999). 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. Net width predictions were made using multiple linear regressions incorporating trawl depth and inverse scope. All net configuration 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 length of the first phase is controlled by the FPC and, unless problems occur, was maintained 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 unreliable. When the fluxgate compass

worked properly, the liftoff lag phase was smoothed along with the normal towing phase. However, if the fluxgate compass proved unreliable or if the ITI system worked poorly, the distance and direction the net moved during the liftoff lag phase was determined by extrapolation.

To start the extrapolation, the trawl's bearing was fixed as the average bearing during the final 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 was connected to the end of the normal towing trackline, and the combined trackline was 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 was applied 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 percentage 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 2006) was used when there was insufficient information for the extrapolation procedure. Within the database, all net configuration estimates were tagged with qualifying information indicating which estimation method was employed.

Wherever possible, gear depth and bottom depth were also estimated from electronically recorded trawl sensor readings of headrope depth and headrope 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 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 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 (32.5 decimal degrees [dd] or the U.S.-Mexican border in the South, and 48.25 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 301–700 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 a 100-fm and 700-fm depth.

Temperature

Water temperature was recorded during each tow using a Simrad ITI temperature sensor (accuracy $\pm 0.2^\circ\text{C}$) 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 (ha) per tow:

$$CPUE = C / A \quad (1)$$

where $CPUE$ is catch-per-unit effort (kg/ha), C is catch per tow (kg) for a given species, and A is area swept (ha).

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 areas within each stratum. Mean biomass estimates (metric tons or mt) were similarly calculated by multiplying the weighted mean CPUE for total area, depth strata, or INPFC region by the appropriate area of the stratum or region:

$$\hat{b} = \sum_{i=1}^n (\overline{CPUE}_i \times A_i) / 1000 \quad (2)$$

where \hat{b} is the mean biomass estimate (mt), \overline{CPUE} is the mean CPUE (kg/ha) calculated as in Equation 2 by weighting the initial mean by area, A is area swept (ha), and $n = 2$ when depth strata (shallow and deep) are combined within an INPFC area or $n = 5$ if individual INPFC areas

are combined or if depth strata for all areas are combined (see Equation 2). Variance for mean biomass estimates (within and among INPFC areas and depth strata) was calculated as:

$$Var(\hat{b}) = \sum_{i=1}^n (Var(\overline{CPUE}_i) \times A_i^2) \quad (3)$$

after first adjusting for differences in units and with symbols as defined in Equation 2. Coefficients of variation (CV) were calculated (%) for biomass estimates using the standard error (Standard deviation / Number sampled) divided by the mean biomass estimate.

Results

Haul, Catch, and Biological Data

The 2002 NWFSC slope survey was designed to incorporate 470 potential sampling locations with sampling subsequently attempted at 489 sites. At stations where sampling was attempted, 427 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 (see Appendix A). Table 1 shows the latitude boundaries, depth stratum areas (km²), 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 time. 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 14.39 m was calculated using data from the 427 hauls that both exhibited good trawl performance and had available net mensuration estimates. The mean net widths ranged from 11.12 m to 16.37 m with a standard deviation of 0.81 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).

Table 1. Latitude boundaries, depth stratum areas (km²), and sampling densities by INPFC statistical area based on successful tows during the 2002 NWFSC slope survey.

INPFC area/ Latitude bounds	Stratum 1 (183–549 m)			Stratum 2 (550–1,280 m)			All strata (183–1,280 m)		
	Area (km ²)	No. hauls	Hauls/ 1,000 km ²	Area (km ²)	No. hauls	Hauls/ 1,000 km ²	Area (km ²)	No. hauls	Hauls/ 1,000 km ²
U.S.-Vancouver 47°30'–Border	2,853	7	2.45	2,286	8	3.50	5,139	15	2.92
Columbia 43°00'–47°30'	8,621	63	7.31	9,804	56	5.71	18,425	119	6.46
Eureka 40°30'–43°00'	2,034	30	14.75	6,365	41	6.44	8,398	71	8.45
Monterey 36°00'–40°30'	3,650	58	15.89	8,646	61	7.06	12,297	119	9.68
Conception 32°30'–36°00'	12,839	48	3.74	42,041	55	1.31	54,880	103	1.88
Entire survey area 32°30'–Border	29,997	206	6.87	69,142	221	3.20	99,139	427	4.31

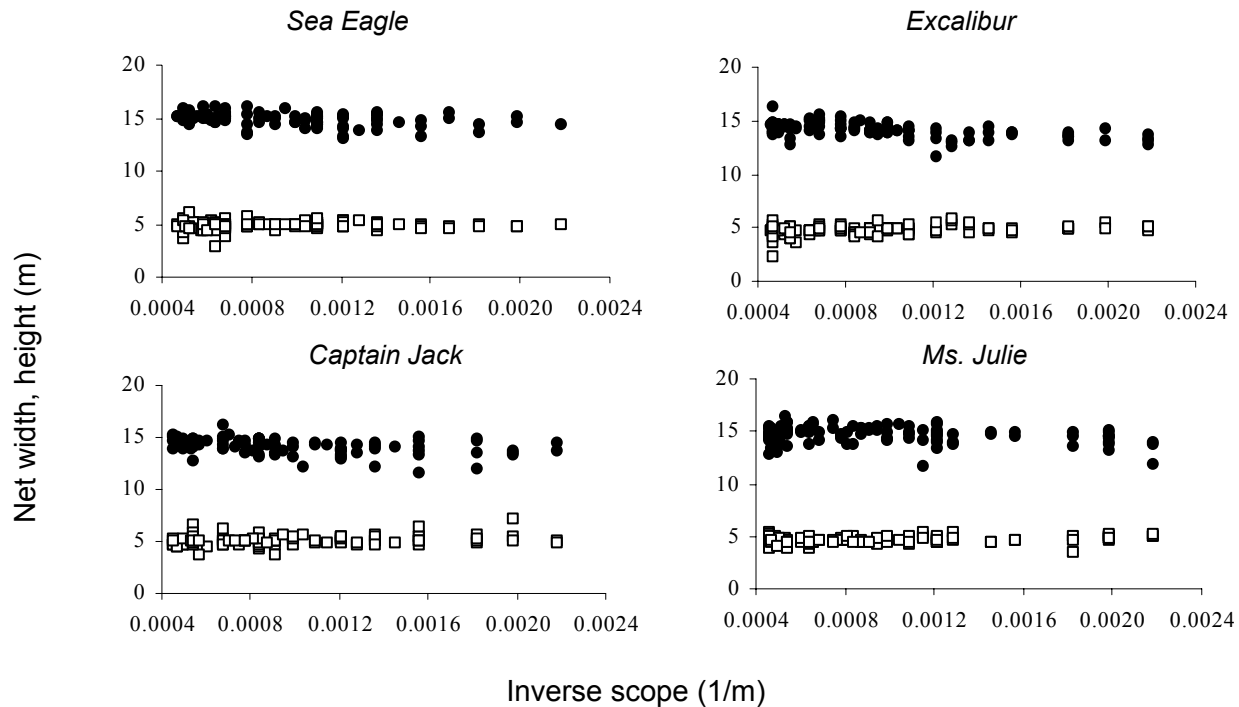


Figure 4. Mean net width for trawls conducted as part of the 2002 NWFSC slope survey. Estimates are grouped by vessel and plotted relative to net width (\bullet) and net height (\square) in meters. Prediction from multiple linear regression of width against net height and inverse scope and factored by vessel was used to estimate net widths for tows lacking direct width observations. (FV *Sea Eagle*: Net width = $18.12 - 0.5812 \times$ Net height $- 524.4 \times$ Inverse scope; FV *Captain Jack*: Net width = $20.40 - 1.209 \times$ Net height $- 300.2 \times$ Inverse scope; FV *Excalibur*: Net width = $18.111 - 0.707 \times$ Net height $- 681.8 \times$ Inverse scope; FV *Ms. Julie*: Net width = $19.62 - 1.029 \times$ Net height $- 248.6 \times$ Inverse scope.)

The number of lengths and age structures that were collected from groundfish species are summarized in Table 2. A total of 204 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 individual and all INPFC areas combined.

Temperature Data

Bottom temperatures ranged from 2.8°C to 10.1°C during the June–July 2002 portion of the survey and from 3.0°C to 9.7°C during the August–September 2002 portion of the survey (Figure 5). The mean bottom temperature was 5.8°C . Sea surface temperatures ranged from 8.8°C to 23.2°C during the June–July 2002 portion of the survey and from 9.4°C to 22.8°C during the August–September 2002 portion of the survey (Figure 6). The mean sea surface temperature was 14.1°C .

Table 2. Biological data collected during the 2002 NWFSC slope survey.

Common name	Number of lengths	Number of age structures
Sixgill shark	1	0
Pacific halibut	4	0
Petrale sole	197	197
Dover sole	25,321	2,368
Sablefish	4,231	1,665
Lingcod	182	0
Shortspine thornyhead	11,980	847
Longspine thornyhead	35,191	764
Pacific ocean perch	397	388
Darkblotched rockfish	1,528	1,110
Shortbelly rockfish	175	109
Cowcod	178	178
Bocaccio	54	54
Canary rockfish	4	4

Table 3. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 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								
	<i>Eptatretus</i> sp.	Hagfish unident.	177	189	1,239	793	32.86	48.12
Scyliorhinidae								
	<i>Apristurus brunneus</i>	Brown cat shark	299	205	1,225	678	32.86	48.09
	<i>Apristurus kampae</i>	Longnose cat shark	10	375	1,189	878	32.87	46.58
	<i>Parmaturus xaniurus</i>	Filetail cat shark	56	273	1,010	521	32.86	37.91
Squalidae								
	<i>Squalus acanthias</i>	Spiny dogfish	57	196	574	338	33.04	45.76
	<i>Somniosus pacificus</i>	Pacific sleeper shark	2	1,170	1,189	1,179	35.81	36.51
Rajidae								
	<i>Bathyraja abyssicola</i>	Deepsea skate	7	1,054	1,220	1,147	35.13	47.28
	<i>Bathyraja aleutica</i>	Aleutian skate	1	422	422	422	47.59	47.59
	<i>Bathyraja interrupta</i>	Bering skate	161	189	858	390	32.86	48.12
	<i>Bathyraja trachura</i>	Roughtail skate	108	454	1,294	970	33.09	48.09
	<i>Raja binoculata</i>	Big skate	2	187	196	192	34.96	42.90
	<i>Raja rhina</i>	Longnose skate	215	175	1,294	437	32.86	48.12
	Rajidae	Skate egg case unident.	11	220	1,173	863	33.48	44.94
Torpedinidae								
	<i>Torpedo californica</i>	Pacific electric ray	13	199	432	284	32.88	37.55
Chimaeridae								
	<i>Hydrolagus colliei</i>	Spotted ratfish	102	175	629	329	32.86	47.59
Nemichthyidae								
	<i>Avocettina infans</i>	Blackline snipe eel	14	573	1,165	846	32.89	47.72
	<i>Nemichthys scolopaceus</i>	Slender snipe eel	4	424	1,134	786	32.86	46.93
Serrivomeridae								
	<i>Serrivomer sector</i>	Sawtooth eel	8	536	1,240	965	32.92	40.09
Argentinidae								
	<i>Argentina sialis</i>	Pacific argentine	18	194	665	264	32.86	36.50

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name		Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
Scientific name	Common name		Min.	Max.	Mean	South	North
Bathylagidae							
<i>Leuroglossus stilbius</i>	California smoothtongue	13	370	773	639	32.86	41.58
Bathylagidae	Deepsea smelt unident.	180	516	1,294	953	32.92	48.09
Opisthoproctidae							
<i>Macropinna microstoma</i>	Barreleye	6	726	1,225	997	34.52	44.96
Platyroctidae							
<i>Sagamichthys abei</i>	Shining tubeshoulder	4	349	1,240	810	36.25	46.75
Platyroctidae	Tubeshoulder unident.	2	1,010	1,054	1,032	33.69	35.13
Alepocephalidae							
<i>Alepocephalus tenebrosus</i>	California slickhead	175	571	1,240	946	32.86	48.09
<i>Talismania bifurcata</i>	Threadfin slickhead	55	203	1,189	870	32.86	48.09
Osmeridae							
<i>Thaleichthys pacificus</i>	Eulachon	9	189	390	250	44.69	46.28
Gonostomatidae							
Gonostomatidae	Bristlemouth unident.	2	604	744	674	41.57	41.58
Sternoptychidae							
<i>Argyropelecus affinis</i>	Slender hatchetfish	3	622	1,116	878	33.48	41.59
<i>Sternoptyx diaphana</i>	Diaphonous hatchetfish	1	876	876	876	33.39	33.39
<i>Sternoptyx</i> sp.	Hatchetfish unident.	1	896	896	896	33.48	33.48
Sternoptychidae	Hatchetfish unident.	16	247	1,225	785	32.86	38.43
Stomiidae							
<i>Borostomias panamensis</i>	Panama snaggletooth	2	719	1,021	870	34.92	47.91
<i>Chauliodus macouni</i>	Pacific viperfish	75	372	1,240	904	34.69	48.09
<i>Idiacanthus antrostomus</i>	Pacific blackdragon	5	282	915	701	33.13	41.73
<i>Tactostoma macropus</i>	Longfin dragonfish	37	361	1,294	905	35.31	47.56
Scopelarchidae							
<i>Benthalbella dentata</i>	Northern pearleye	2	611	884	748	46.17	47.56

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name	Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
				Min.	Max.	Mean	South	North
Neoscopelidae								
	<i>Scopelogadus</i> <i>tristis</i>	Pacific blackchin	4	668	1,114	909	33.13	42.23
Myctophidae								
	<i>Diaphus</i> <i>theta</i>	California headlightfish	2	505	1,046	776	42.92	46.84
	<i>Lampanyctus</i> sp.	Lampfish unident.	109	282	1,240	871	33.09	48.09
	<i>Tarletonbeania</i> <i>crenularis</i>	Blue lanternfish	2	505	1,134	820	46.84	46.93
	Myctophidae	Lanternfish unident.	94	175	1,202	759	32.86	48.08
Ophidiidae								
	<i>Chilara</i> <i>taylori</i>	Spotted cusk-eel	13	175	510	233	34.12	40.08
Bythitidae								
	<i>Cataetyx</i> <i>rubrirostris</i>	Rubynose brotula	4	212	746	549	33.27	41.58
Macrouridae								
	<i>Albatrossia</i> <i>pectoralis</i>	Giant grenadier	188	461	1,294	909	33.31	48.09
	<i>Coryphaenoides</i> <i>acrolepis</i>	Pacific grenadier	183	436	1,294	934	33.09	48.09
	<i>Coryphaenoides</i> <i>cinereus</i>	Popeye grenadier	7	660	1,220	983	37.58	47.81
	<i>Coryphaenoides</i> <i>filifer</i>	Filamented grenadier	1	1,094	1,094	1,094	34.13	34.13
	<i>Nezumia</i> <i>liolepis</i>	Smooth grenadier	15	642	1,091	859	32.86	36.75
	<i>Nezumia</i> <i>stelgidolepis</i>	California grenadier	39	420	1,043	603	32.86	41.91
Moridae								
	<i>Antimora</i> <i>microlepis</i>	Pacific flatnose	225	417	1,294	850	32.91	48.09
Merlucciidae								
	<i>Merluccius</i> <i>productus</i>	Pacific hake	226	175	1,294	428	32.86	48.12
Gadidae								
	<i>Gadus</i> <i>macrocephalus</i>	Pacific cod	2	192	211	201	47.27	47.49
Batrachoididae								
	<i>Porichthys</i> <i>notatus</i>	Plainfin midshipman	5	196	214	205	33.56	36.50
Malacosteidae								
	<i>Aristostomias</i> <i>scintillans</i>	Shiny loosejaw	15	433	1,225	871	34.52	47.48

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name		Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
Scientific name	Common name		Min.	Max.	Mean	South	North
Melanocetidae							
<i>Melanocetus johnsonii</i>	Common blackdevil	1	1,005	1,005	1,005	34.53	34.53
Oneirodidae							
<i>Oneirodes</i> sp.	Dreamer	1	1,151	1,151	1,151	40.16	40.16
Oneirodidae	Dreamer unident.	7	496	1,134	912	32.98	47.56
Melamphaidae							
<i>Melamphaes lugubris</i>	Highsnout bigscale	1	1,165	1,165	1,165	34.69	34.69
<i>Poromitra crassiceps</i>	Crested bigscale	25	517	1,294	980	32.91	47.28
Anoplogastridae							
<i>Anoplogaster cornuta</i>	Fangtooth	13	798	1,170	1,020	33.09	44.76
Scorpaenidae							
<i>Sebastolobus alascanus</i>	Shortspine thornyhead	390	187	1,236	663	32.86	48.12
<i>Sebastolobus altivelis</i>	Longspine thornyhead	297	275	1,294	799	32.86	48.12
<i>Sebastes aleutianus</i>	Rougheye rockfish	15	211	449	378	35.13	48.12
<i>Sebastes alutus</i>	Pacific ocean perch	25	187	520	339	40.19	48.12
<i>Sebastes aurora</i>	Aurora rockfish	102	209	620	442	32.86	48.12
<i>Sebastes chlorostictus</i>	Greenspotted rockfish	16	194	295	229	32.88	40.19
<i>Sebastes cramerii</i>	Darkblotched rockfish	58	175	437	282	34.78	48.12
<i>Sebastes diploproa</i>	Splitnose rockfish	116	175	629	310	32.86	48.12
<i>Sebastes elongatus</i>	Greenstriped rockfish	35	187	289	216	33.22	47.49
<i>Sebastes entomelas</i>	Widow rockfish	5	192	302	253	35.62	47.49
<i>Sebastes eos</i>	Pink rockfish	1	175	175	175	35.35	35.35
<i>Sebastes goodei</i>	Chilipepper	40	175	406	264	33.04	44.34
<i>Sebastes helvomaculatus</i>	Rosethorn rockfish	27	192	375	285	32.86	48.12
<i>Sebastes jordani</i>	Shortbelly rockfish	24	175	441	258	32.86	39.46
<i>Sebastes levis</i>	Cowcod	8	194	300	225	33.82	41.71
<i>Sebastes melanostomus</i>	Blackgill rockfish	38	248	535	405	32.86	48.12
<i>Sebastes paucispinis</i>	Bocaccio	19	190	413	243	32.88	42.81
<i>Sebastes pinniger</i>	Canary rockfish	3	190	209	201	42.81	44.92

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name		Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Scientific name	Common name						
Scorpaenidae (continued)							
<i>Sebastes proriger</i>	Redstripe rockfish	4	201	223	209	40.08	46.08
<i>Sebastes ruberrimus</i>	Yelloweye rockfish	2	192	209	200	43.39	47.49
<i>Sebastes babcocki</i>	Redbanded rockfish	43	190	437	303	34.42	48.12
<i>Sebastes saxicola</i>	Stripetail rockfish	62	175	441	245	32.86	47.49
<i>Sebastes semicinctus</i>	Halfbanded rockfish	3	194	282	225	34.12	34.42
<i>Sebastes wilsoni</i>	Pygmy rockfish	1	251	251	251	43.88	43.88
<i>Sebastes zacentrus</i>	Sharpchin rockfish	20	190	299	232	37.55	47.49
<i>Sebastes rufus</i>	Bank rockfish	6	244	363	326	34.74	40.19
<i>Sebastes borealis</i>	Shortraker rockfish	4	372	422	407	47.59	48.12
<i>Sebastes (Sebastomus) sp.</i>	–	2	196	203	200	44.69	46.08
Anoplopomatidae							
<i>Anoplopoma fimbria</i>	Sablefish	401	175	1,294	644	32.86	48.12
Zaniolepididae							
<i>Zaniolepis latipinnis</i>	Longspine combfish	1	199	199	199	33.56	33.56
Hexagrammidae							
<i>Ophiodon elongatus</i>	Lingcod	35	189	362	245	32.86	47.49
Cottidae							
<i>Icelinus burchami</i>	Dusky sculpin	1	375	375	375	33.48	33.48
<i>Icelinus filamentosus</i>	Threadfin sculpin	16	189	891	304	33.22	46.08
<i>Psychrolutes phrictus</i>	Blob sculpin	2	1,172	1,220	1,196	40.52	41.98
Cottidae	Sculpin unident.	1	247	247	247	33.56	33.56
Agonidae							
<i>Bathyagonus nigripinnis</i>	Blackfin poacher	39	199	894	503	41.37	48.08
<i>Bathyagonus pentacanthus</i>	Bigeye poacher	8	196	436	306	36.79	48.12
<i>Xeneretmus latifrons</i>	Blacktip poacher	7	192	419	261	33.25	47.49
Liparidae							
<i>Careproctus colletti</i>	Alaska snailfish	1	895	895	895	40.54	40.54
<i>Careproctus cypselurus</i>	Blackfin snailfish	24	442	1,294	1,016	35.13	47.55

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name	Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
				Min.	Max.	Mean	South	North
Liparidae (continued)								
	<i>Careproctus gilberti</i>	Smalldisk snailfish	7	289	891	472	35.59	46.26
	<i>Careproctus melanurus</i>	Blacktail snailfish	231	190	1,193	590	32.86	48.09
	<i>Elassodiscus caudatus</i>	Humpback snailfish	6	574	736	643	36.52	38.17
	<i>Paraliparis cephalus</i>	Swellhead snailfish	8	880	1,047	975	32.92	42.21
	<i>Paraliparis dactylosus</i>	Red snailfish	6	469	905	686	34.58	43.95
	Liparidinae	Snailfish unident.	28	433	1,294	919	33.09	47.81
Embiotocidae								
	<i>Zalembeus rosaceus</i>	Pink seaperch	1	194	194	194	34.12	34.12
Zoarcidae								
	<i>Bothrocara brunneum</i>	Twoline eelpout	156	441	1,239	881	32.91	48.09
	<i>Lycenchelys crotalinus</i>	Snakehead eelpout	133	435	1,236	873	34.53	48.09
	<i>Lycodapus endemoscotus</i>	Deepwater eelpout	1	442	442	442	43.39	43.39
	<i>Lycodapus fierasfer</i>	Blackmouth eelpout	1	993	993	993	47.55	47.55
	<i>Lycodapus mandibularis</i>	Pallid eelpout	4	777	1,173	1,044	34.69	41.25
	<i>Lycodes cortezianus</i>	Bigfin eelpout	196	175	915	379	32.86	48.12
	<i>Lycodes diapterus</i>	Black eelpout	159	203	1,174	481	32.86	48.08
	<i>Lycodes pacificus</i>	Blackbelly eelpout	18	189	432	260	32.86	47.27
	Zoarcidae	Eelpout unident.	1	725	725	725	33.43	33.43
Chiasmodontidae								
	<i>Chiasmodon niger</i>	Black swallower	1	1,050	1,050	1,050	37.24	37.24
Icosteidae								
	<i>Icosteus aenigmaticus</i>	Ragfish	3	714	1,116	907	41.59	44.28
Centrolophidae								
	<i>Icichthys lockingtoni</i>	Medusafish	6	296	1,140	886	34.69	41.59
Paralichthyidae								
	<i>Citharichthys sordidus</i>	Pacific sanddab	13	194	275	214	32.86	47.27
Pleuronectidae								
	<i>Atheresthes stomias</i>	Arrowtooth flounder	74	187	522	321	37.92	48.12

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name		Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
			Min.	Max.	Mean	South	North
Scientific name	Common name						
Pleuronectidae (continued)							
<i>Hippoglossus stenolepis</i>	Pacific halibut	5	187	419	269	41.71	47.27
<i>Hippoglossoides elassodon</i>	Flathead sole	5	189	223	205	44.69	47.27
<i>Lyopsetta exilis</i>	Slender sole	135	175	583	323	32.86	48.12
<i>Eopsetta jordani</i>	Petrale sole	31	175	437	248	33.22	45.76
<i>Parophrys vetulus</i>	English sole	49	190	382	257	32.86	46.08
<i>Microstomus pacificus</i>	Dover sole	381	175	1,220	579	32.86	48.12
<i>Embassichthys bathybius</i>	Deepsea sole	193	332	1,294	897	32.91	48.12
<i>Glyptocephalus zachirus</i>	Rex sole	213	175	796	379	32.86	48.12
<i>Lepidopsetta</i> sp.	Rock sole unident.	1	208	208	208	34.14	34.14
<i>Lepidopsetta bilineata</i>	Southern rock sole	1	248	248	248	33.22	33.22
<i>Pleuronichthys decurrens</i>	Curlfin sole	3	208	231	218	32.86	36.50
Porifera (phylum)							
Porifera	Sponge unident.	128	175	1,294	644	32.86	48.12
Scyphozoa (class)							
Scyphozoa	Jellyfish unident.	252	175	1,240	698	32.86	48.12
Actiniaria (order)							
Actiniaria	Sea anemone unident.	402	175	1,294	669	32.86	48.12
Alcyonacea (order)							
Gorgonacea	Gorgonian coral unident.	18	212	1,239	774	32.86	47.48
Pennnatulacea (order)							
Pennatulacea	Sea pen or sea whip unident.	81	214	1,294	831	33.22	47.91
Virgularidae							
<i>Stylatula</i> sp.	Slender sea whip unident.	4	637	1,106	968	33.39	47.72
Polychaeta (class)							
<i>Aphrodita</i> sp.	Sea mouse unident.	58	187	1,240	587	32.92	47.27
Malacostraca (class)							
Malacostraca	Shrimp unident.	4	660	1,215	936	33.43	47.81

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name	Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
				Min.	Max.	Mean	South	North
Mysidacea (order)								
	<i>Gnathophausia ingens</i>	Giant red mysid	26	668	1,202	990	32.86	41.73
Sergestidae								
	<i>Sergestes</i> sp.	Sergestid shrimp unident.	35	290	1,151	613	32.86	47.81
Pandalidae								
	<i>Pandalus jordani</i>	Ocean shrimp	26	187	786	313	32.86	48.12
	<i>Pandalus platyceros</i>	Spot shrimp	21	175	375	243	33.25	47.91
	<i>Pandalopsis dispar</i>	Sidestripe shrimp	6	251	367	300	40.79	44.97
	<i>Pandalopsis ampla</i>	Deepwater bigeye	37	192	1,240	1,047	32.92	47.91
Hippolytidae								
	<i>Eualus</i> sp.	Eualid unident.	5	433	1,144	628	36.78	46.53
	<i>Eualus macrophthalmus</i>	Bigeye eualid	34	372	1,239	572	32.91	47.81
Pasiphaeiidae								
	<i>Pasiphaea pacifica</i>	Pacific glass shrimp	97	290	1,144	538	32.86	48.12
	<i>Pasiphaea tarda</i>	Crimson pasiphaeid	94	471	1,240	963	32.86	47.55
Oplophoridae								
	<i>AcanthePHYra curtirostris</i>	Peaked shrimp	11	461	1,165	956	32.98	47.48
Canceridae								
	<i>Cancer magister</i>	Dungeness crab	6	187	372	283	42.90	46.47
	<i>Cancer productus</i>	Red rock crab	6	175	286	224	34.12	36.28
Calappidae								
	<i>Mursia gaudichaudii</i>	Armored box crab	4	194	241	216	34.12	37.55
Majidae								
	<i>Chionoecetes tanneri</i>	Grooved tanner crab	292	196	1,294	773	32.91	48.09
	<i>Chorilia longipes</i>	Longhorned decorator crab	68	198	1,236	672	32.86	46.92
	<i>Hyas lyratus</i>	Pacific lyre crab	1	371	371	371	36.79	36.79
Paguridae								
	Paguridae	Hermit crab unident.	110	190	1,225	618	32.92	47.81

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 NWFSC slope survey.

Family name	Scientific name	Common name	Frequency of occurrence (No. hauls)	Depth (m)			Latitudinal range (dd)	
				Min.	Max.	Mean	South	North
Lithodidae								
	<i>Lopholithodes</i> sp.	Box crab unident.	12	196	326	231	33.22	44.69
	<i>Lithodes couesi</i>	Scarlet king crab	38	454	1,193	928	32.91	47.81
	<i>Paralithodes californiensis</i>	California king crab	11	194	665	285	32.86	34.39
	<i>Paralithodes rathbuni</i>	Spiny king crab	16	198	1,106	389	32.88	48.09
	<i>Paralomis multispina</i>	Hair crab	51	536	1,294	1,099	32.92	47.44
Galatheidae								
	<i>Munida quadrispina</i>	Pinchbug	19	194	1,224	552	32.86	45.37
	<i>Stereomastus sculpta</i>	Deepsea lobster	25	536	1,224	1,045	32.91	40.97
Gastropoda (class)								
	Gastropod eggs	Snail eggs	21	274	1,210	782	32.86	47.81
	Gastropod	Snail unident.	301	196	1,294	747	32.86	48.12
	Nudibranchia (order)	Nudibranch unident.	146	175	1,200	617	32.86	48.09
	Heteropoda (order)	Pelagic gastropod unident.	1	1,108	1,108	1,108	35.81	35.81
Cephalopoda (class)								
	Octopodidae	Octopus unident.	12	526	1,174	880	33.55	47.48
	<i>Japatella heathi</i>	Yellowring octopus	19	671	1,294	1,005	33.09	48.09
	<i>Opisthoteuthis californiana</i>	Flapjack devilfish	65	367	1,215	712	33.31	48.12
	<i>Graneledone boreopacifica</i>	Ghost octopus	5	1,054	1,294	1,190	33.73	45.04
	<i>Octopus dofleini</i>	Giant octopus	54	198	1,200	463	33.03	47.81
	<i>Octopus rubescens</i>	Red octopus	27	175	1,202	404	32.86	36.08
	<i>Benthoctopus</i> sp.	Smooth octopus	64	192	1,225	638	33.02	47.91
	<i>Vampyroteuthis infernalis</i>	Vampire squid	47	512	1,228	972	32.89	47.28
	Teuthida (order)	Squid unident.	10	369	1,181	733	33.02	48.12
	<i>Rossia pacifica</i>	Eastern Pacific bobtail	12	189	517	260	34.18	47.27
	<i>Loligo opalescens</i>	California market squid	29	194	1,174	525	32.86	48.12
	<i>Gonatus</i> sp.	Armhook squid unident.	3	524	1,240	880	33.39	40.12
	<i>Gonatus onyx</i>	Clawed armhook squid	44	361	1,170	610	32.89	47.91
	<i>Berryteuthis magister</i>	Magistrate armhook squid	19	211	1,049	478	32.86	48.12

Table 3 continued. Frequency of occurrence, depth, and latitudinal ranges for fish and invertebrate species, grouped by family, caught during the 2002 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)								
	<i>Gonatopsis borealis</i>	Boreopacific armhook squid	21	276	1,240	696	33.55	44.76
	<i>Moroteuthis robusta</i>	Robust clubhook squid	11	280	705	470	37.23	46.54
	<i>Galiteuthis phyllura</i>	Arrow squid	3	958	1,200	1,071	36.25	43.72
	<i>Chiroteuthis calyx</i>	Glass squid	14	203	1,202	716	33.09	47.56
	<i>Taonius pavo</i>	Cone squid	6	510	958	730	36.78	47.91
	<i>Octopoteuthis deletron</i>	Octopus squid	107	433	1,294	842	33.22	47.91
	<i>Histioteuthis heteropsis</i>	Cockeyed squid	37	367	1,144	647	32.86	44.94
	<i>Histioteuthis hoylei</i>	Long-armed cockeyed squid	4	275	904	651	37.58	45.97
Stelleroidea (class)								
	Asteroidea	Sea star unident.	427	175	1,294	655	32.86	48.12
	Ophiuroidea	Brittle starfish unident.	86	175	1,224	712	32.92	47.72
	<i>Gorgonocephalus eucnemis</i>	Basket star	11	208	1,206	533	32.86	46.42
	<i>Asteronyx loveni</i>	Serpent sea star	2	1,079	1,106	1,092	33.39	36.06
Echinoidea (class)								
	Echinacea	Sea urchin unident.	291	175	1,225	515	32.86	48.12
Holothuroidea (class)								
	Holothuroidea	Sea cucumber unident.	226	175	1,294	613	32.86	48.12
	<i>Scotoplanes theeli</i>	Sea pig	20	1,035	1,240	1,146	33.31	47.28
Tunicata (subphylum)								
	Thaliacea	Salps unident.	198	189	1,294	669	32.86	47.91
	<i>Styela rustica</i>	Sea potato	11	469	1,239	764	33.09	46.54
Invertebrate								
		Invertebrate unident.	18	220	1,225	561	33.21	46.80
	—	Unsorted shab	1	813	813	813	40.11	40.11

Table 4. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for all the INPFC areas combined.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	1	0	1
Pacific halibut	4	0	4
Petrale sole	197	0	197
Dover sole	18,466	6,855	25,321
Sablefish	2,453	1,778	4,231
Lingcod	182	0	182
Shortspine thornyhead	9,012	2,968	11,980
Longspine thornyhead	3,516	31,675	35,191
Pacific ocean perch	397	0	397
Darkblotched rockfish	1,528	0	1,528
Shortbelly rockfish	175	0	175
Cowcod	178	0	178
Bocaccio	54	0	54
Canary rockfish	4	0	4

Table 5. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Conception area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	0	0	0
Pacific halibut	0	0	0
Petrale sole	79	0	79
Dover sole	2,772	1,659	4,431
Sablefish	461	388	849
Lingcod	15	0	15
Shortspine thornyhead	1,822	1,186	3,008
Longspine thornyhead	1,138	7,446	8,584
Pacific ocean perch	4	0	4
Darkblotched rockfish	336	0	336
Shortbelly rockfish	10	0	10
Cowcod	173	0	173
Bocaccio	0	0	0
Canary rockfish	0	0	0

Table 6. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Monterey area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	1	0	1
Pacific halibut	0	0	0
Petrale sole	109	0	109
Dover sole	5,954	2,939	8,893
Sablefish	850	590	1,440
Lingcod	51	0	51
Shortspine thornyhead	1,067	883	1,950
Longspine thornyhead	878	8,118	8,996
Pacific ocean perch	1	0	1
Darkblotched rockfish	101	0	101
Shortbelly rockfish	165	0	165
Cowcod	5	0	5
Bocaccio	53	0	53
Canary rockfish	0	0	0

Table 7. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Eureka area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	0	0	0
Pacific halibut	4	0	4
Petrale sole	4	0	4
Dover sole	3,631	1,120	4,751
Sablefish	405	327	732
Lingcod	15	0	15
Shortspine thornyhead	898	229	1,127
Longspine thornyhead	234	6,123	6,357
Pacific ocean perch	56	0	56
Darkblotched rockfish	665	0	665
Shortbelly rockfish	0	0	0
Cowcod	0	0	0
Bocaccio	1	0	1
Canary rockfish	2	0	2

Table 8. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC Columbia area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	0	0	0
Pacific halibut	0	0	0
Petrale sole	5	0	5
Dover sole	5,293	989	6,282
Sablefish	700	424	1,124
Lingcod	101	0	101
Shortspine thornyhead	4,508	585	5,093
Longspine thornyhead	926	8,617	9,543
Pacific ocean perch	186	0	186
Darkblotched rockfish	403	0	403
Shortbelly rockfish	0	0	0
Cowcod	0	0	0
Bocaccio	0	0	0
Canary rockfish	2	0	2

Table 9. Number of length-frequency measurements collected by stratum during the 2002 NWFSC slope survey for the INPFC U.S.-Vancouver area.

Species	Stratum 1 (183–549 m)	Stratum 2 (550–1,280 m)	Total
Sixgill shark	0	0	0
Pacific halibut	0	0	0
Petrale sole	0	0	0
Dover sole	816	148	964
Sablefish	37	49	86
Lingcod	0	0	0
Shortspine thornyhead	717	85	802
Longspine thornyhead	340	1,371	1,711
Pacific ocean perch	150	0	150
Darkblotched rockfish	23	0	23
Shortbelly rockfish	0	0	0
Cowcod	0	0	0
Bocaccio	0	0	0
Canary rockfish	0	0	0

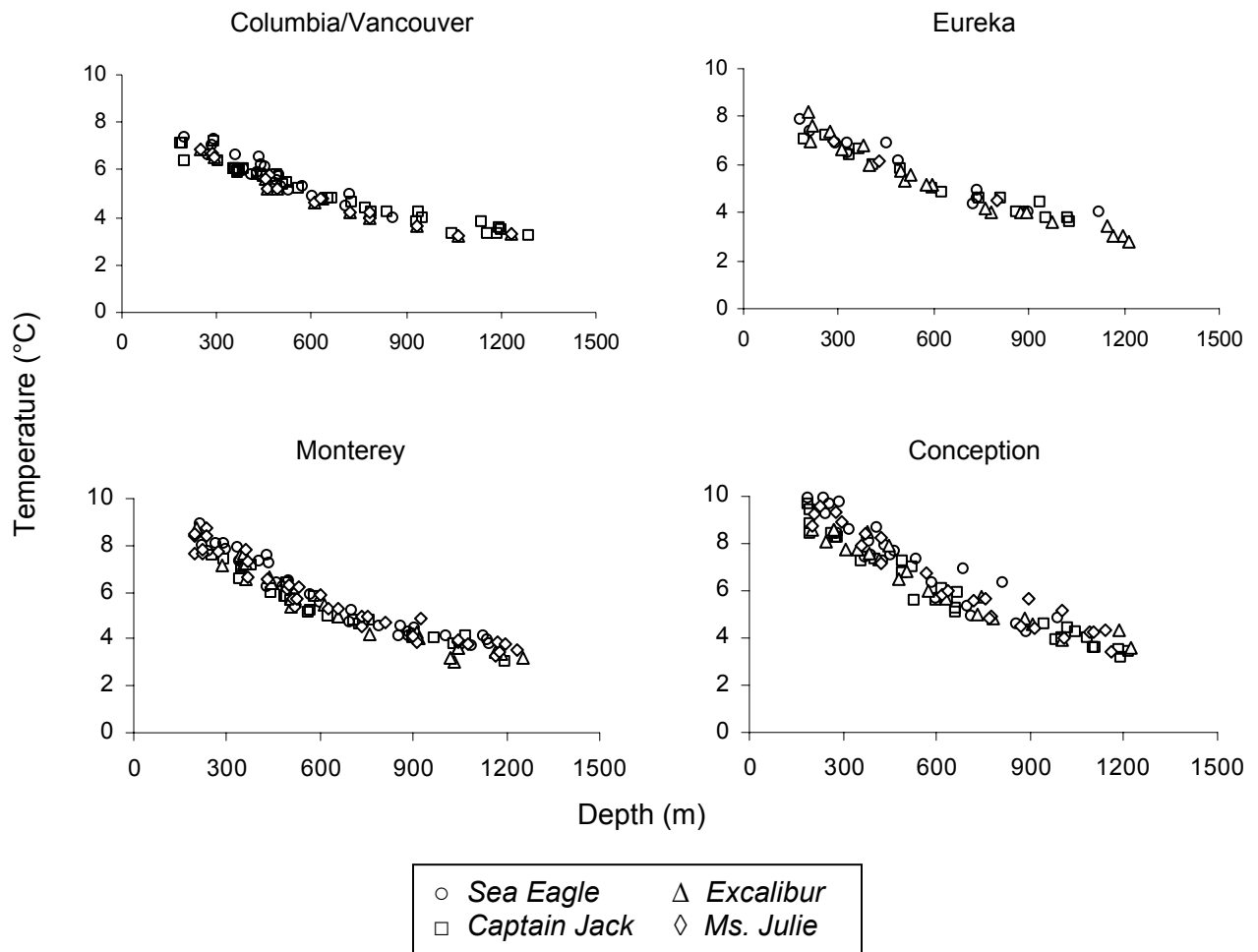


Figure 5. Near bottom water temperature observed at the mouth of the net for each tow conducted during the 2002 NWFSC slope survey. Observations are grouped by INPFC area and plotted relative to haul depth.

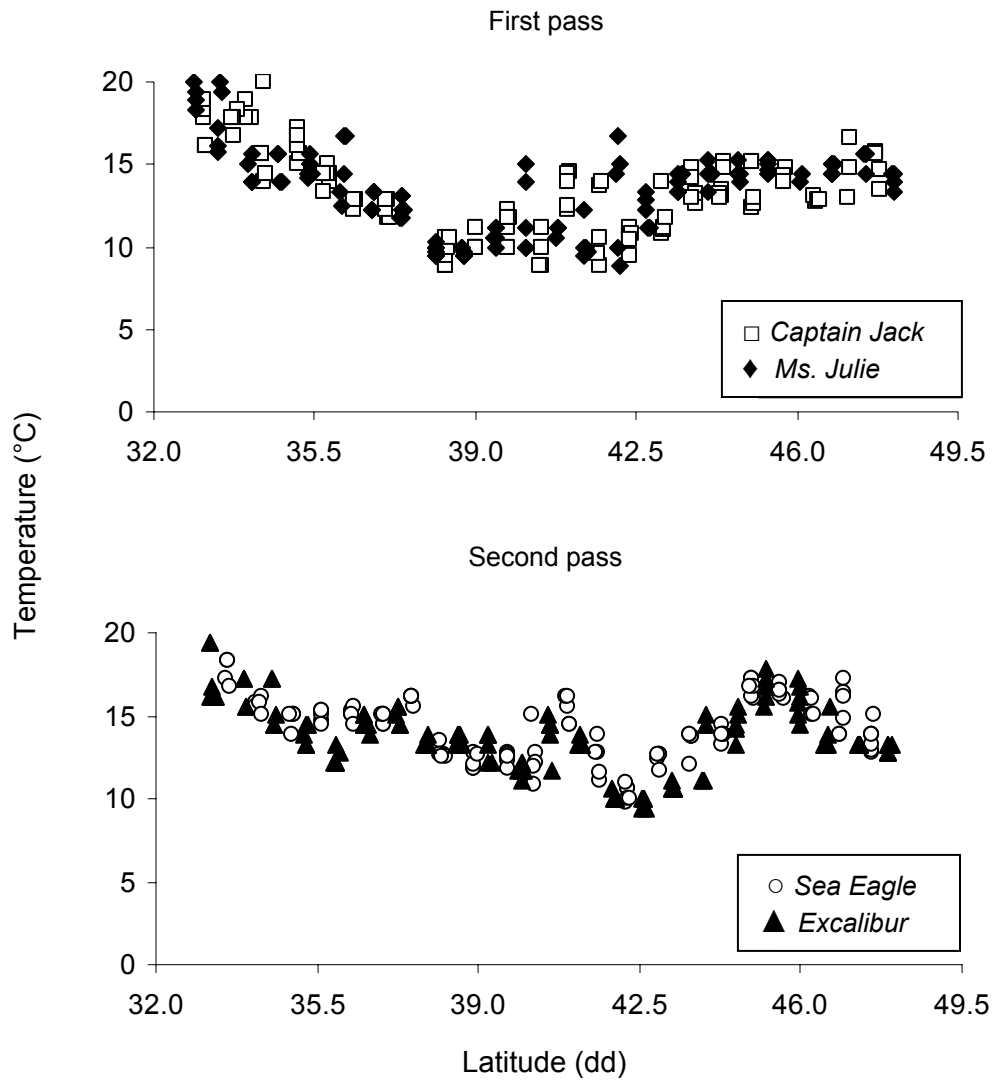


Figure 6. Sea surface temperature observed at the start of each tow during the 2002 NWFSC slope survey, plotted relative to latitude. Observations are grouped by date (first pass from 25 June 2002 to 30 July 2002; second pass from 22 August 2002 to 24 September 2002).

Relative Density and Distribution of Species

Information on the relative density and distribution of the 20 most abundant groundfish and select 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 thornyheads 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 Columbia INPFC area, Dover sole and longspine thornyheads 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). With the exception of the Conception INPFC area, Dover sole was the predominant species in the shallow stratum in all other INPFC areas. Shortbelly rockfish was the predominant species in the shallow stratum in the Conception INPFC area (Table 12). For the deep stratum, longspine thornyhead was the dominant species in the U.S.-Vancouver, Eureka, and Conception INPFC areas, while Dover sole was the dominant species in the Monterey INPFC area and Pacific grenadier was most abundant in the Columbia INPFC area.

Figures 7–19 are maps showing the geographical distributions and relative abundances of select 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 associated CV are presented for the 20 most abundant groundfish and crab species for all areas combined by depth strata and INPFC areas (Tables 17–22). Dover sole had the highest biomass in the shallow depth stratum and in all depth strata for the combined INPFC areas (Table 17). Longspine thornyhead, Pacific grenadier, shortspine thornyhead, sablefish, giant grenadier, and grooved tanner crab followed Dover sole in decreasing order of biomass in all strata for the combined INPFC areas. Unlike Dover sole these species all exhibited higher biomass in the deeper depth stratum. With the exception of California slickhead and brown cat shark, the remaining top 15 species had higher biomass in the shallower depth stratum (Table 17). Within individual INPFC areas (Tables 18–22) Dover sole and longspine thornyhead shared the top biomass positions for all regions except the INPFC Columbia area. In the Columbia area Dover sole and Pacific grenadier had the

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 2002 NWFSC slope survey.

All areas Total hauls = 427		U.S.-Vancouver area Total hauls = 15		Columbia area Total hauls = 119	
Dover sole	21.07	Dover sole	27.57	Dover sole	17.99
Longspine thornyhead	15.05	Longspine thornyhead	8.59	Pacific grenadier	13.15
Pacific grenadier	8.98	Shortspine thornyhead	8.20	Longspine thornyhead	11.81
Shortspine thornyhead	7.50	Sablefish	7.51	Giant grenadier	9.79
Sablefish	6.96	Grooved tanner crab	6.61	Sablefish	8.52
Giant grenadier	5.76	Pacific ocean perch	6.44	Shortspine thornyhead	6.37
Grooved tanner crab	3.65	Longnose skate	3.66	Grooved tanner crab	5.60
Pacific hake	3.55	Giant grenadier	3.59	Longnose skate	3.36
California slickhead	3.05	Arrowtooth flounder	2.07	Rex sole	2.99
Longnose skate	2.82	Pacific grenadier	1.58	Pacific hake	2.85
Shortbelly rockfish	2.61	Rex sole	1.34	Arrowtooth flounder	2.37
Splitnose rockfish	2.58	Deepsea sole	1.31	Lingcod	1.98
Rex sole	2.33	Shortraker rockfish	1.28	Splitnose rockfish	1.04
Chilipepper	2.16	Rougheye rockfish	1.24	Deepsea sole	0.98
Brown cat shark	1.27	Bigfin eelpout	1.23	Bering skate	0.79
Deepsea sole	0.95	Brown cat shark	1.00	Brown cat shark	0.75
Spotted ratfish	0.94	Aleutian skate	0.97	Roughtail skate	0.72
Stripetail rockfish	0.91	Pacific hake	0.92	Pacific flatnose	0.65
Roughtail skate	0.73	Twoline eelpout	0.62	Bigfin eelpout	0.62
Filetail cat shark	0.70	Bering skate	0.61	Darkblotched rockfish	0.62
Eureka area Total hauls = 71		Monterey area Total hauls = 119		Conception area Total hauls = 103	
Longspine thornyhead	25.99	Dover sole	55.28	Longspine thornyhead	14.22
Dover sole	24.03	Longspine thornyhead	18.85	Dover sole	13.37
Giant grenadier	18.37	Pacific grenadier	15.56	Shortspine thornyhead	8.54
Grooved tanner crab	13.13	Giant grenadier	12.10	Pacific grenadier	6.70
Pacific grenadier	9.58	Sablefish	9.26	Sablefish	5.51
Sablefish	9.33	Shortspine thornyhead	6.91	Shortbelly rockfish	4.46
Pacific hake	8.11	Grooved tanner crab	6.27	California slickhead	4.34
Rex sole	5.73	Rex sole	4.59	Chilipepper	3.85
Shortspine thornyhead	3.52	Longnose skate	4.00	Pacific hake	3.77
Longnose skate	3.13	Spotted ratfish	3.50	Splitnose rockfish	3.56
Deepsea sole	2.44	California slickhead	3.27	Longnose skate	2.24
California slickhead	1.72	Splitnose rockfish	3.08	Giant grenadier	1.25
Brown cat shark	1.48	Brown cat shark	2.32	Brown cat shark	1.20
Roughtail skate	1.26	Deepsea sole	1.85	Filetail cat shark	1.19
Darkblotched rockfish	1.26	Pacific hake	1.57	Stripetail rockfish	1.17
Pacific flatnose	0.75	Stripetail rockfish	1.51	Rex sole	1.16
Stripetail rockfish	0.71	Bigfin eelpout	1.34	Spiny dogfish	0.82
Black eelpout	0.70	Roughtail skate	1.20	Spotted ratfish	0.81
Bigfin eelpout	0.62	Shortbelly rockfish	1.12	Grooved tanner crab	0.68
Bering skate	0.59	Bering skate	0.95	Bocaccio	0.68

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 206		Number of hauls = 221	
Dover sole	35.63	Longspine thornyhead	20.90
Pacific hake	11.31	Dover sole	14.75
Shortbelly rockfish	8.62	Pacific grenadier	12.86
Splitnose rockfish	8.52	Giant grenadier	8.11
Longnose skate	8.08	Shortspine thornyhead	7.82
Sablefish	7.84	Sablefish	6.58
Rex sole	7.56	Grooved tanner crab	5.00
Chilipepper	7.15	California slickhead	4.38
Shortspine thornyhead	6.76	Brown cat shark	1.42
Spotted ratfish	3.11	Deepsea sole	1.32
Stripetail rockfish	3.02	Roughtail skate	1.04
Arrowtooth flounder	1.93	Pacific flatnose	0.75
Bigfin eelpout	1.72	Filetail cat shark	0.73
Lingcod	1.70	Longnose skate	0.53
Spiny dogfish	1.62	Twoline eelpout	0.52
Longspine thornyhead	1.57	Pacific hake	0.18
Pacific ocean perch	1.49	Snakehead eelpout	0.17
Bering skate	1.35	Threadfin slickhead	0.16
Bocaccio	1.32	Hagfish unident.	0.14
Aurora rockfish	1.28	Deepsea skate	0.13

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 48		Number of hauls = 55	
Shortbelly rockfish	19.06	Longspine thornyhead	18.04
Chilipepper	16.44	Dover sole	12.79
Pacific hake	15.31	Shortspine thornyhead	9.20
Dover sole	15.29	Pacific grenadier	8.74
Splitnose rockfish	15.21	California slickhead	5.66
Longnose skate	7.63	Sablefish	5.64
Shortspine thornyhead	6.41	Giant grenadier	1.63
Sablefish	5.08	Brown cat shark	1.35
Stripetail rockfish	4.99	Filetail cat shark	1.16
Rex sole	4.97	Grooved tanner crab	0.88
Spiny dogfish	3.49	Roughtail skate	0.74
Spotted ratfish	3.48	Deepsea sole	0.63
Bocaccio	2.92	Longnose skate	0.59
Aurora rockfish	1.87	Pacific flatnose	0.57
Blackgill rockfish	1.72	Twoline eelpout	0.45
Longspine thornyhead	1.72	Pacific hake	0.25
Pacific electric ray	1.59	Threadfin slickhead	0.23
Filetail cat shark	1.27	Bigfin eelpout	0.10
Bigfin eelpout	1.11	Deepsea smelt unident.	0.10
Pacific sanddab	0.76	Hagfish unident.	0.09

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 58		Number of hauls = 61	
Dover sole	95.66	Dover sole	38.23
Rex sole	15.27	Longspine thornyhead	26.32
Spotted ratfish	11.80	Pacific grenadier	22.13
Longnose skate	11.03	Giant grenadier	16.98
Splitnose rockfish	10.36	Sablefish	9.28
Sablefish	9.19	Grooved tanner crab	8.77
Stripetail rockfish	5.10	Shortspine thornyhead	8.38
Pacific hake	5.06	California slickhead	4.65
Bigfin eelpout	3.94	Deepsea sole	2.61
Shortbelly rockfish	3.78	Brown cat shark	2.43
Shortspine thornyhead	3.45	Roughtail skate	1.70
English sole	3.00	Pacific flatnose	1.23
Bering skate	2.84	Longnose skate	1.03
Brown cat shark	2.05	Twoline eelpout	0.48
Aurora rockfish	1.97	Deepsea skate	0.33
Lingcod	1.22	Snakehead eelpout	0.29
Longspine thornyhead	1.14	Hagfish unident.	0.28
Slender sole	0.93	Bigfin eelpout	0.25
Chilipepper	0.84	Blacktail snailfish	0.21
Filetail cat shark	0.68	Filetail cat shark	0.19

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 30		Number of hauls = 41	
Dover sole	62.14	Longspine thornyhead	34.13
Pacific hake	33.05	Giant grenadier	24.23
Rex sole	22.91	Grooved tanner crab	17.13
Longnose skate	11.96	Pacific grenadier	12.64
Sablefish	11.30	Dover sole	11.85
Darkblotched rockfish	5.21	Sablefish	8.70
Stripetail rockfish	2.93	Shortspine thornyhead	3.82
Shortspine thornyhead	2.61	Deepsea sole	3.22
Bigfin eelpout	2.55	California slickhead	2.28
Bering skate	2.42	Roughtail skate	1.67
Black eelpout	1.85	Brown cat shark	1.43
Splitnose rockfish	1.61	Pacific flatnose	0.95
Brown cat shark	1.61	Twoline eelpout	0.66
Sharpchin rockfish	1.55	Snakehead eelpout	0.57
Spotted ratfish	1.34	Black eelpout	0.33
Arrowtooth flounder	1.32	Longnose skate	0.31
Slender sole	1.09	Blob sculpin	0.27
English sole	1.01	Rex sole	0.24
Pacific halibut	0.91	Hagfish unident.	0.17
Aurora rockfish	0.89	Pacific hake	0.14

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 63		Number of hauls = 56	
Dover sole	31.47	Pacific grenadier	24.66
Sablefish	10.47	Longspine thornyhead	21.49
Shortspine thornyhead	8.62	Giant grenadier	17.79
Longnose skate	7.12	Grooved tanner crab	9.49
Rex sole	6.25	Sablefish	6.81
Pacific hake	6.04	Dover sole	6.15
Arrowtooth flounder	5.06	Shortspine thornyhead	4.40
Lingcod	4.24	Deepsea sole	1.82
Splitnose rockfish	2.22	Roughtail skate	1.33
Bering skate	1.69	California slickhead	0.98
Bigfin eelpout	1.33	Pacific flatnose	0.94
Darkblotched rockfish	1.33	Brown cat shark	0.79
Grooved tanner crab	1.19	Twoline eelpout	0.64
Pacific ocean perch	1.18	Snakehead eelpout	0.33
Slender sole	0.94	Ragfish	0.30
Sharpchin rockfish	0.84	Deepsea skate	0.26
Longspine thornyhead	0.81	Blacktail snailfish	0.17
Brown cat shark	0.71	Black eelpout	0.15
Giant grenadier	0.69	Hagfish unident.	0.14
Black eelpout	0.63	Rex sole	0.13

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 2002 NWFSC slope survey.

Stratum 1 (183–549 m)		Stratum 2 (550–1,280 m)	
Number of hauls = 7		Number of hauls = 8	
Dover sole	44.00	Longspine thornyhead	13.70
Pacific ocean perch	11.59	Grooved tanner crab	13.55
Shortspine thornyhead	9.91	Giant grenadier	7.30
Sablefish	8.15	Dover sole	7.06
Longnose skate	6.48	Sablefish	6.72
Longspine thornyhead	4.50	Shortspine thornyhead	6.06
Arrowtooth flounder	3.73	Pacific grenadier	3.56
Rex sole	2.40	Deepsea sole	1.66
Shortraker rockfish	2.31	Brown cat shark	1.61
Rougheye rockfish	2.23	Twoline eelpout	1.12
Bigfin eelpout	2.19	Roughtail skate	1.07
Aleutian skate	1.74	Pacific flatnose	0.85
Pacific hake	1.66	Blacktail snailfish	0.51
Grooved tanner crab	1.06	Snakehead eelpout	0.46
Deepsea sole	1.02	Black eelpout	0.39
Bering skate	0.93	California slickhead	0.25
Black eelpout	0.73	Hagfish unident.	0.22
Blackgill rockfish	0.67	Bering skate	0.21
Aurora rockfish	0.64	Longnose skate	0.15
Giant grenadier	0.62	Deepsea smelt unident.	0.08

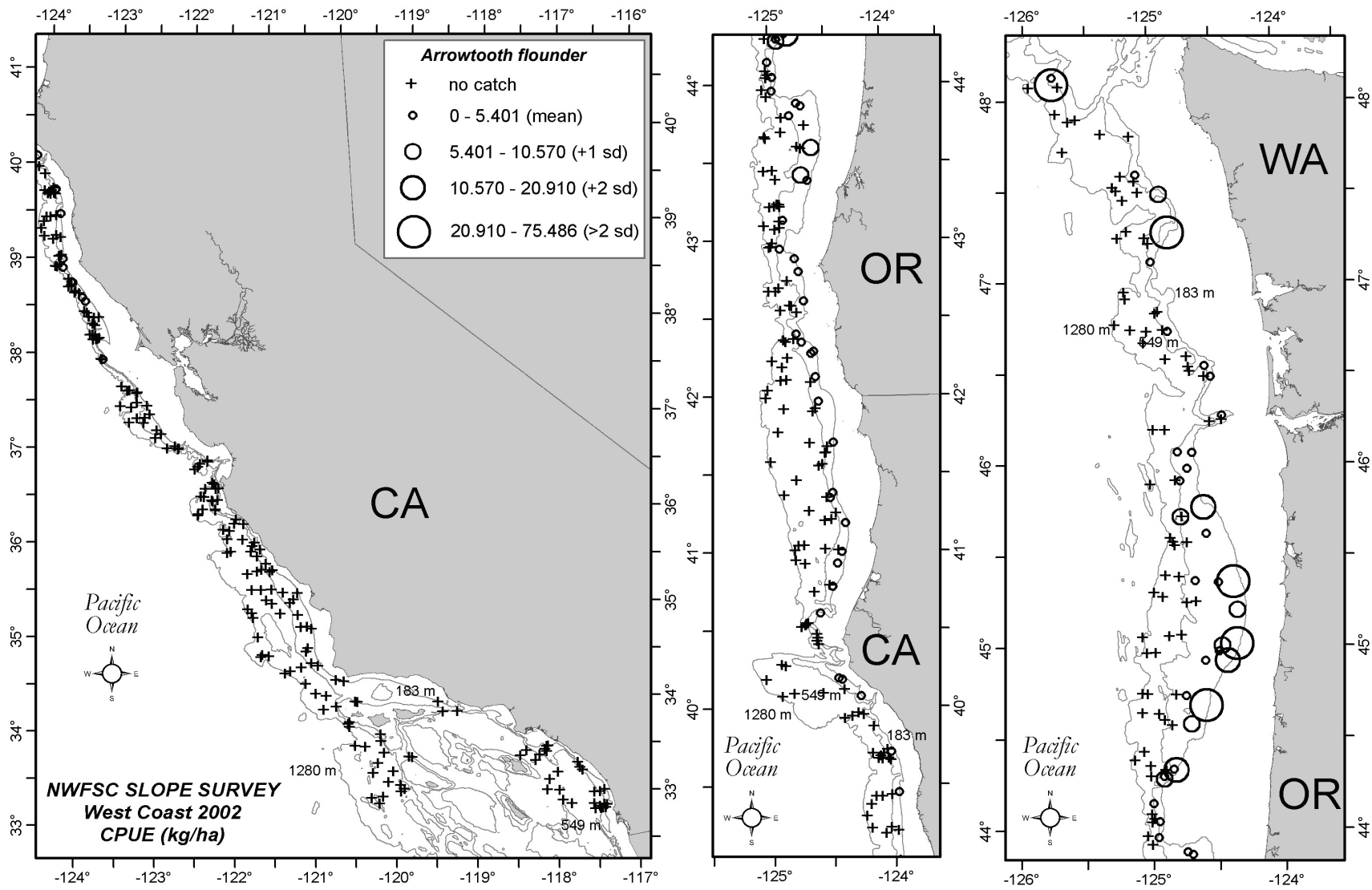


Figure 7. Arrowtooth flounder distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

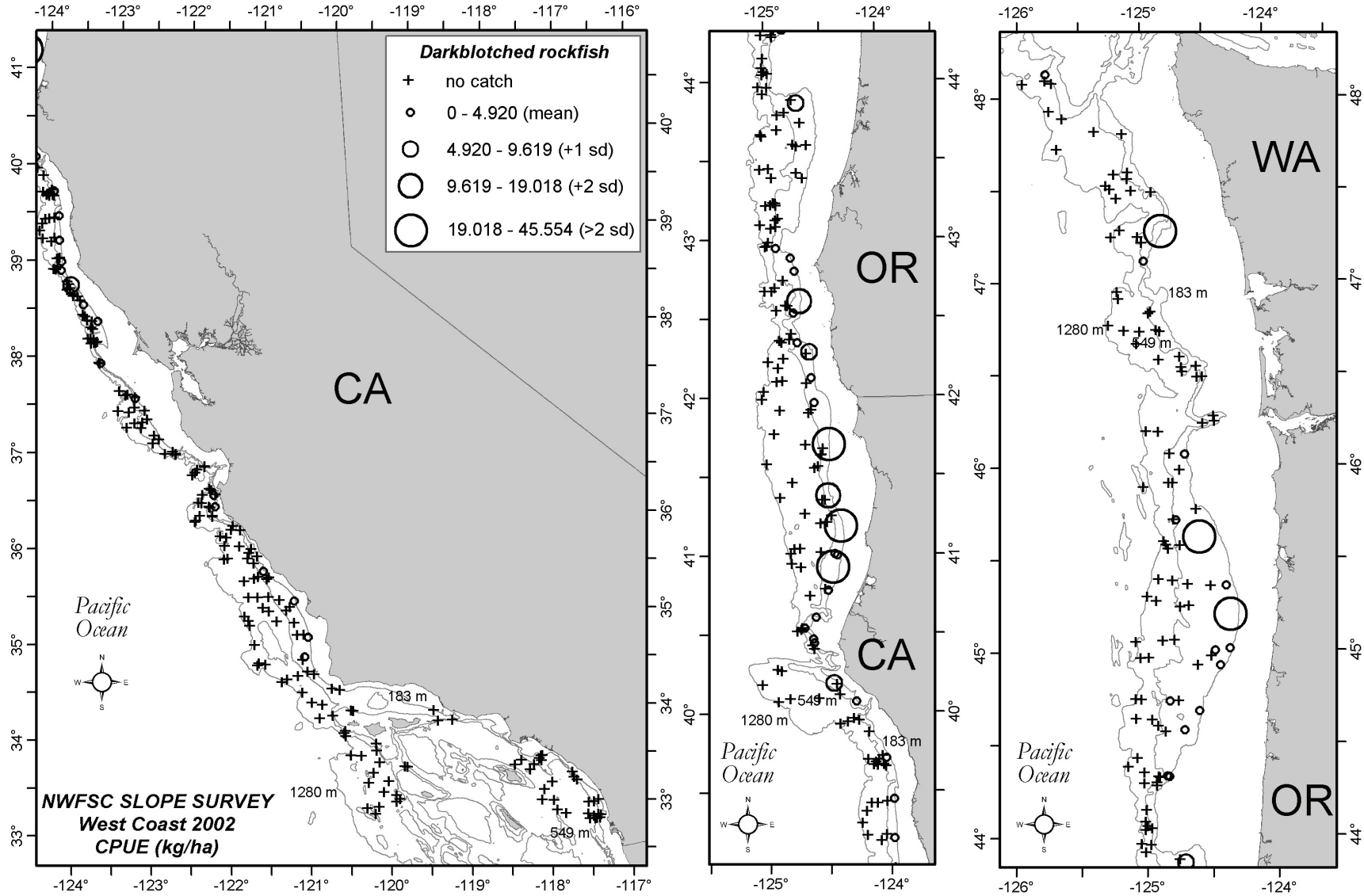


Figure 8. Darkblotched rockfish distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

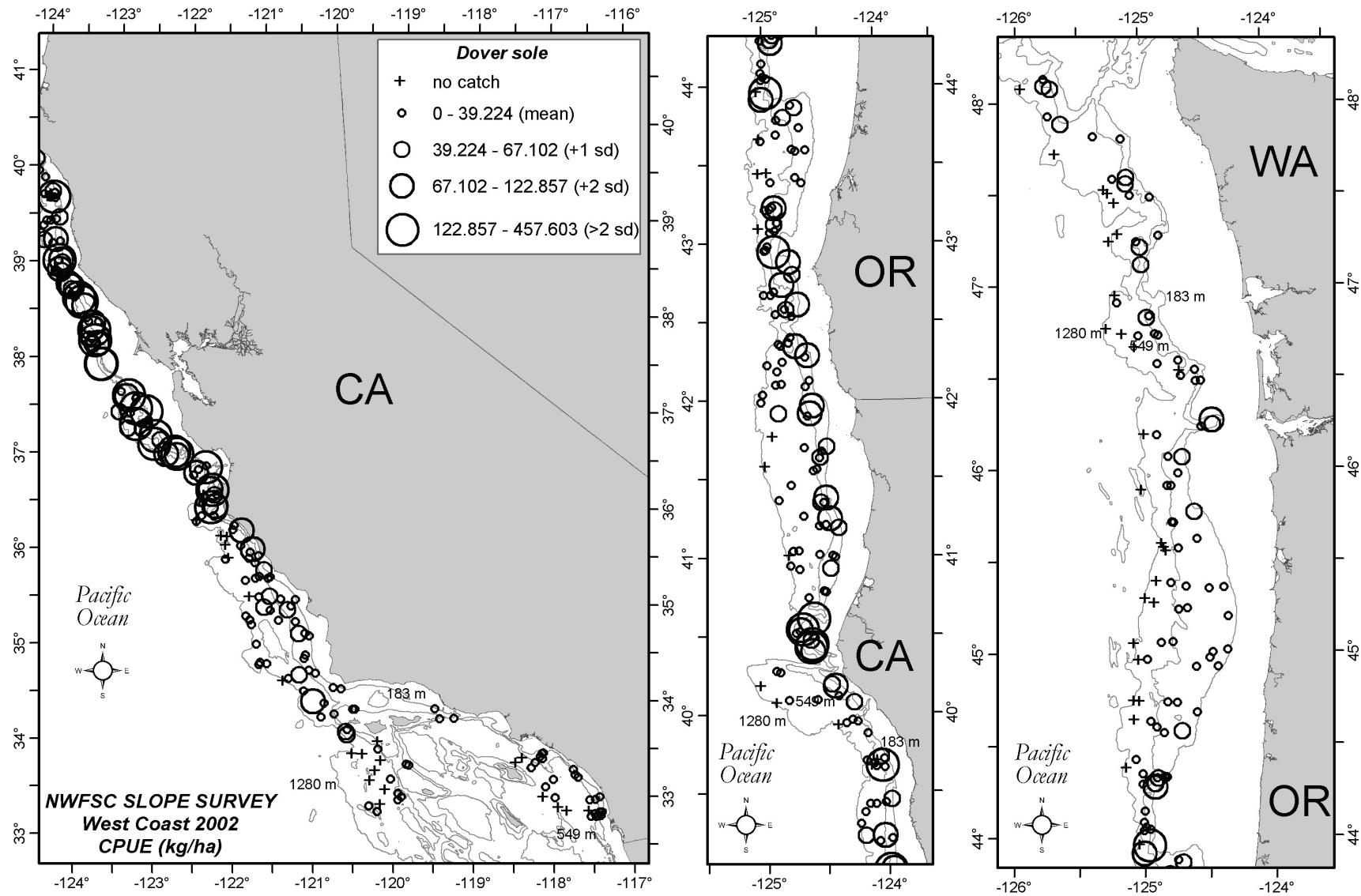


Figure 9. Dover sole distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

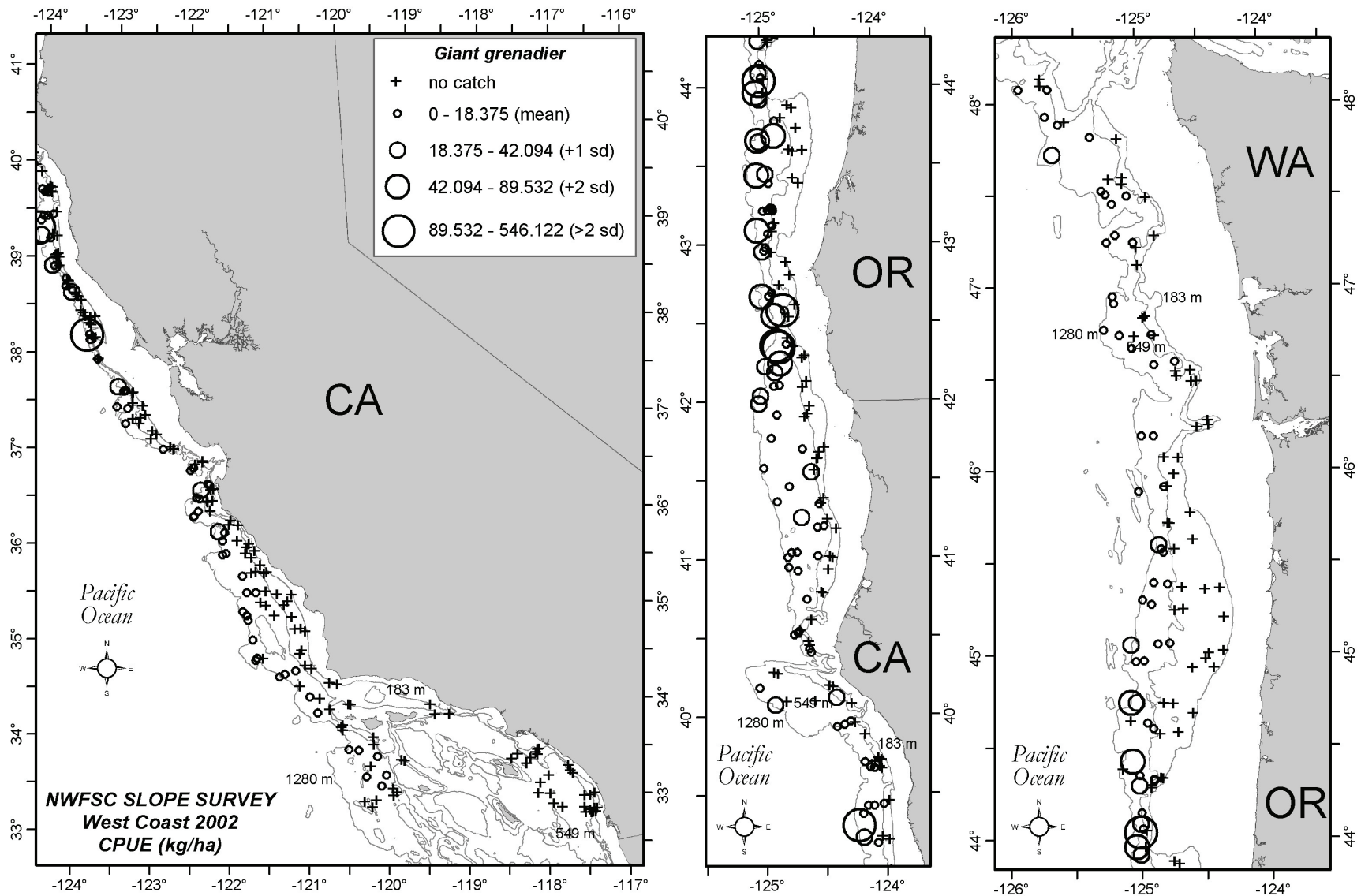


Figure 10. Giant grenadier distribution and relative abundance (kg/ha) from the 2022 NWFSC slope survey.

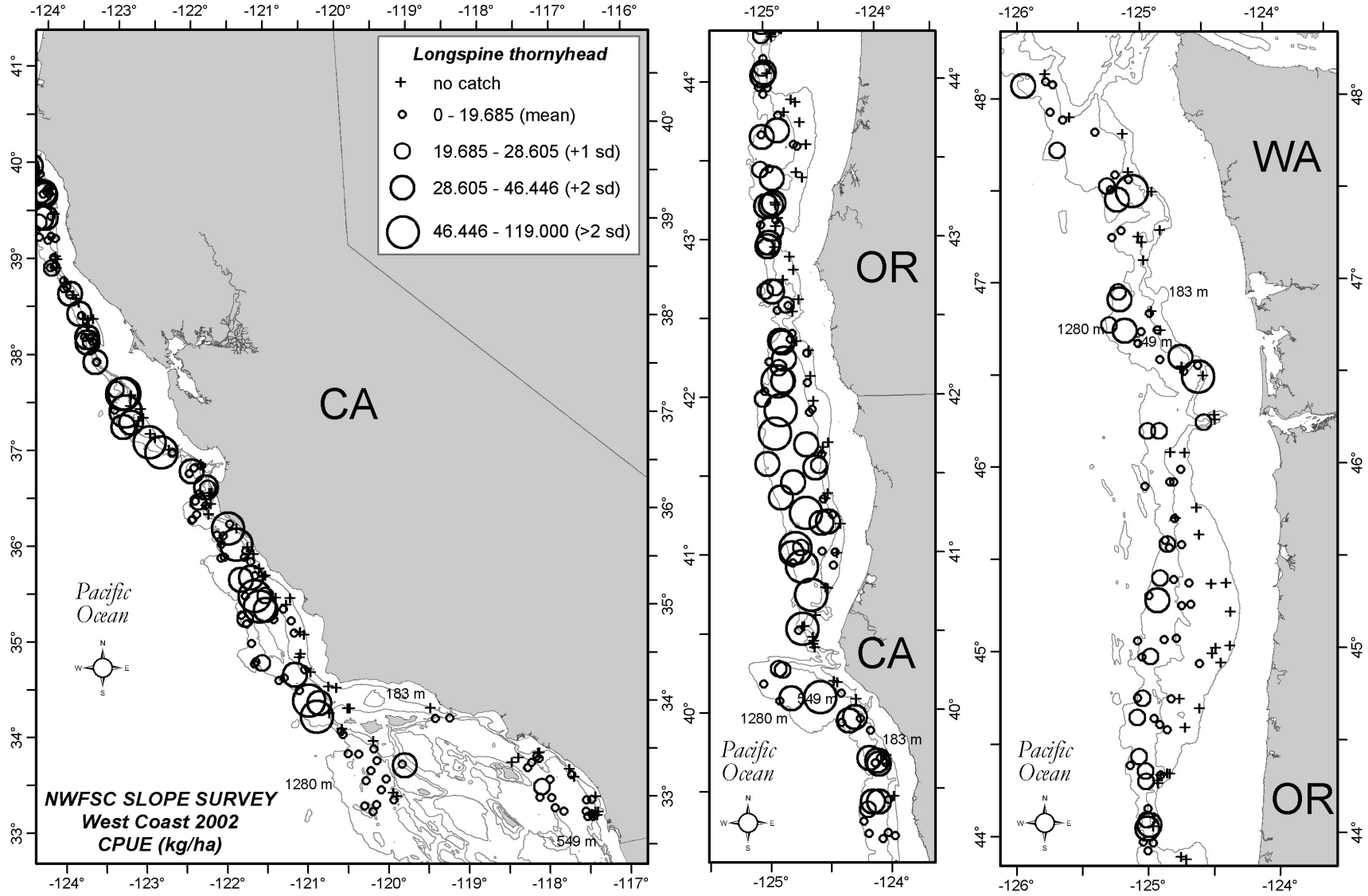


Figure 11. Longspine thornyhead distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

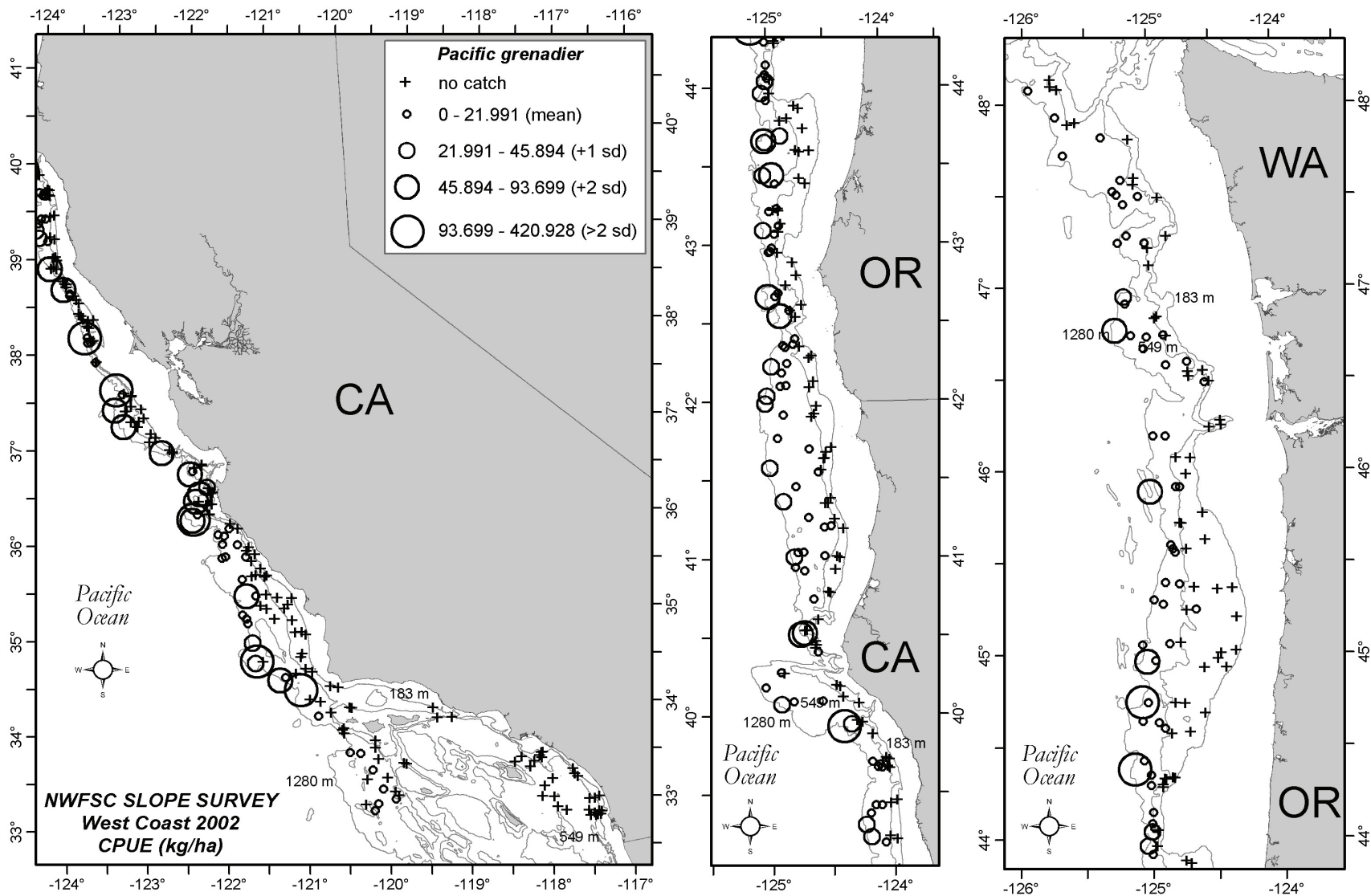


Figure 12. Pacific grenadier distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

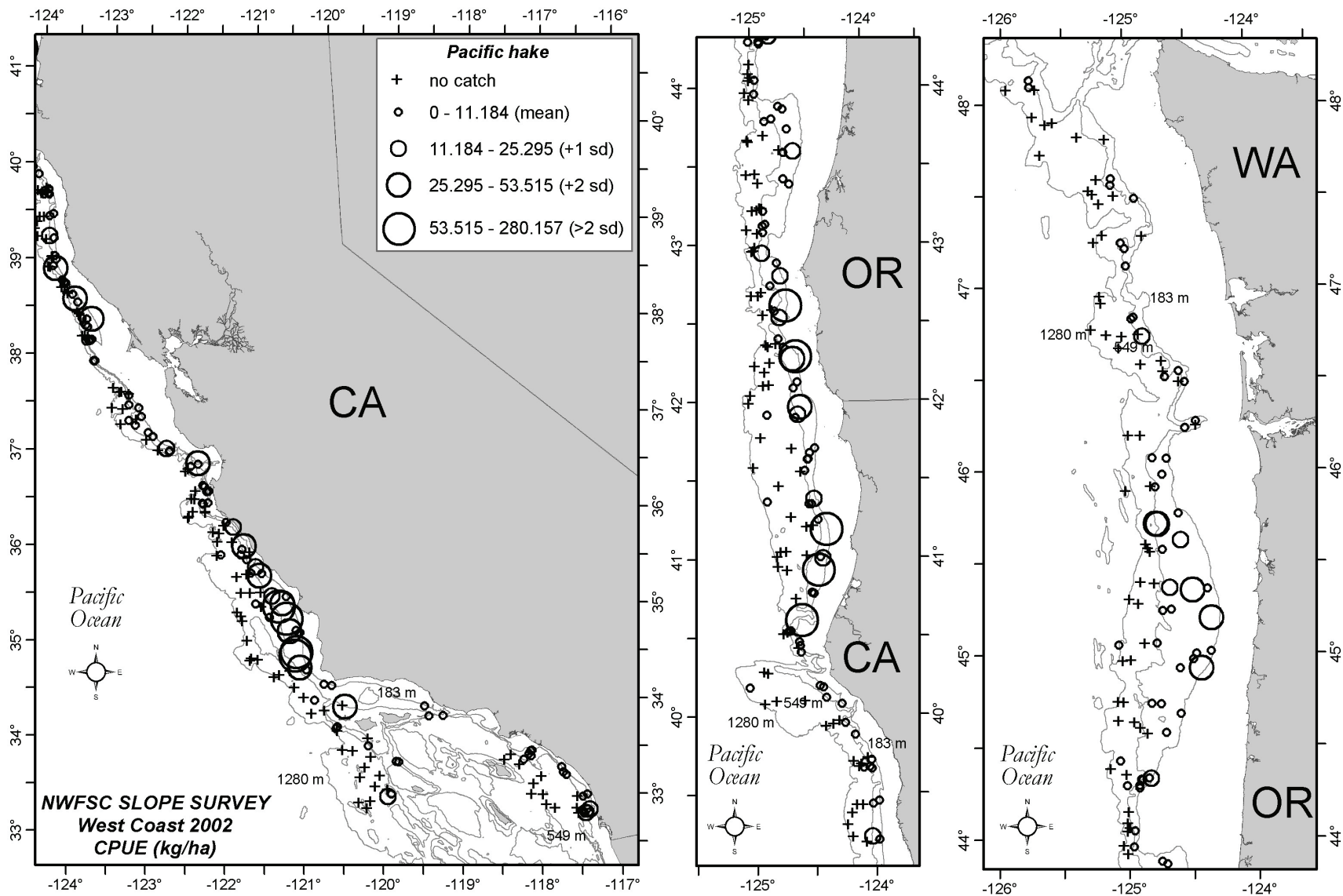


Figure 13. Pacific hake distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

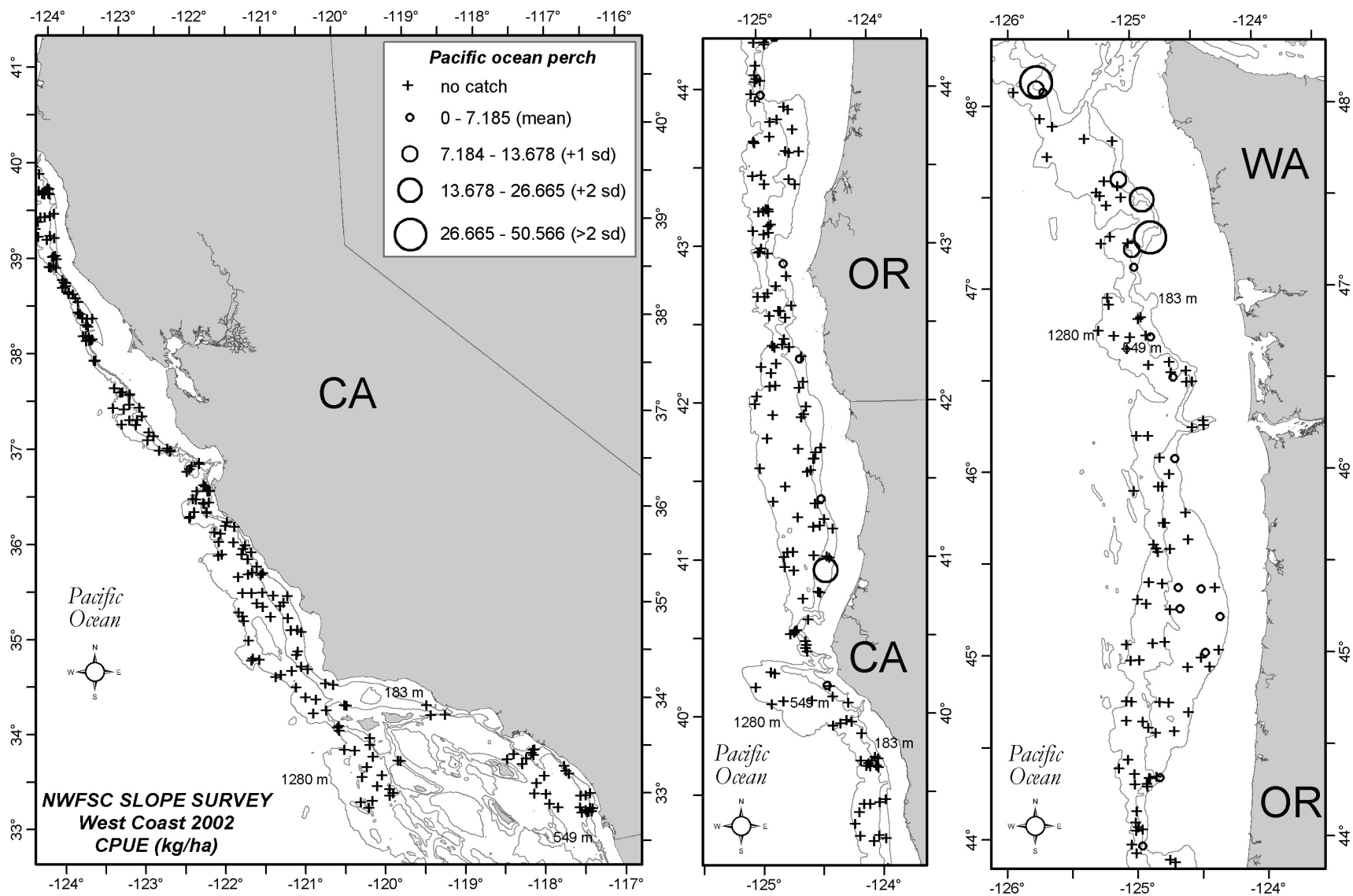


Figure 14. Pacific ocean perch distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

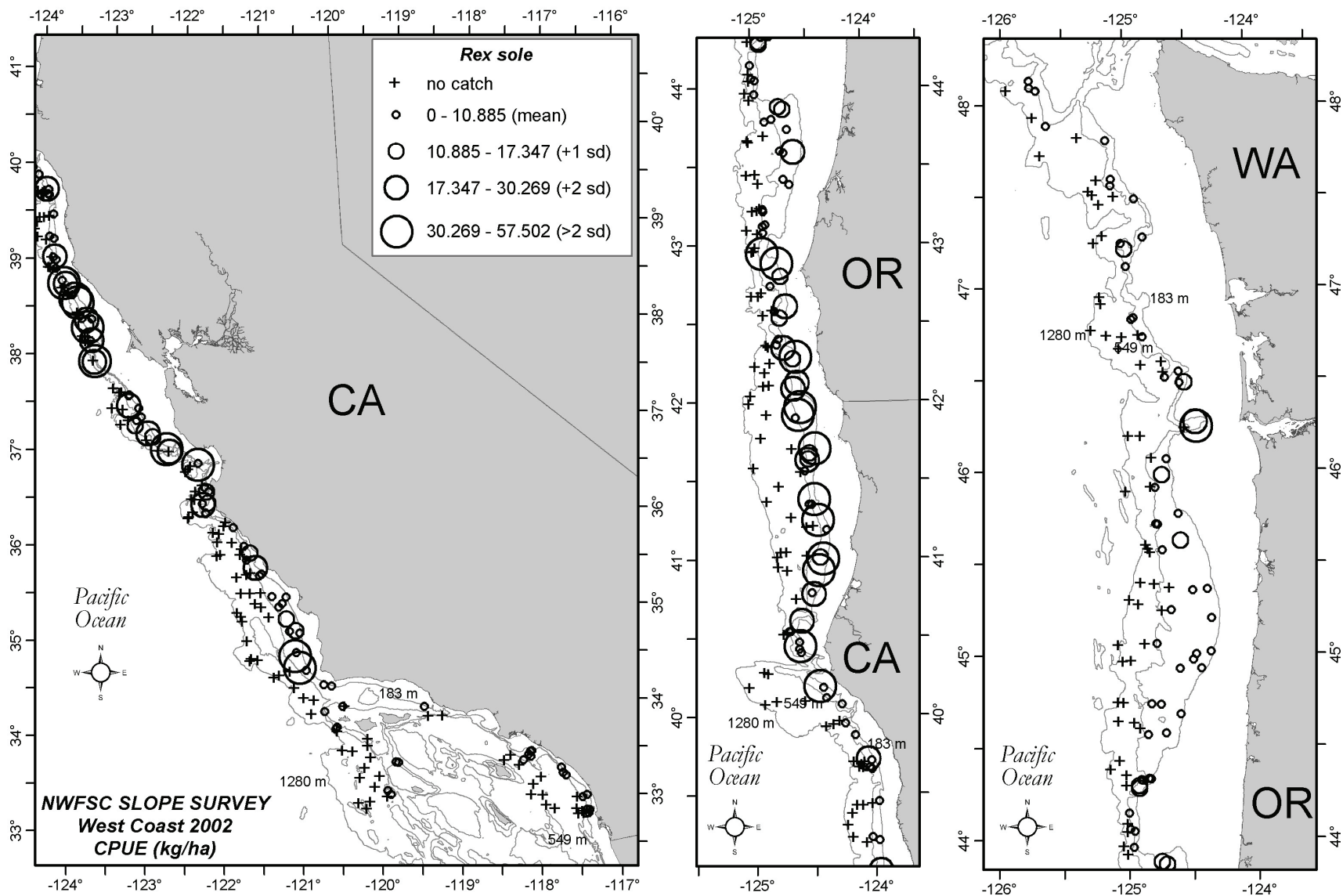


Figure 15. Rex sole distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

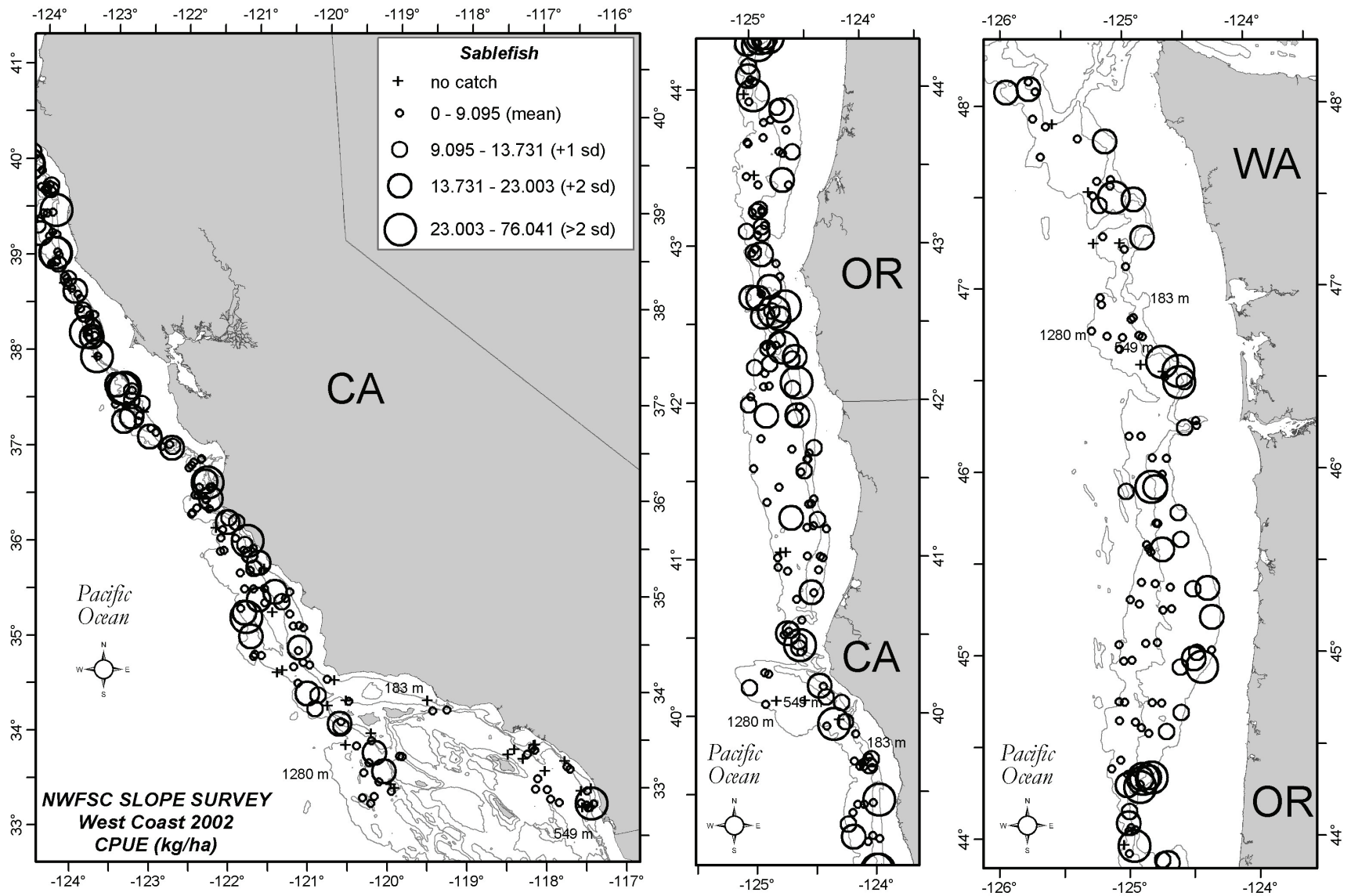


Figure 16. Sablefish distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

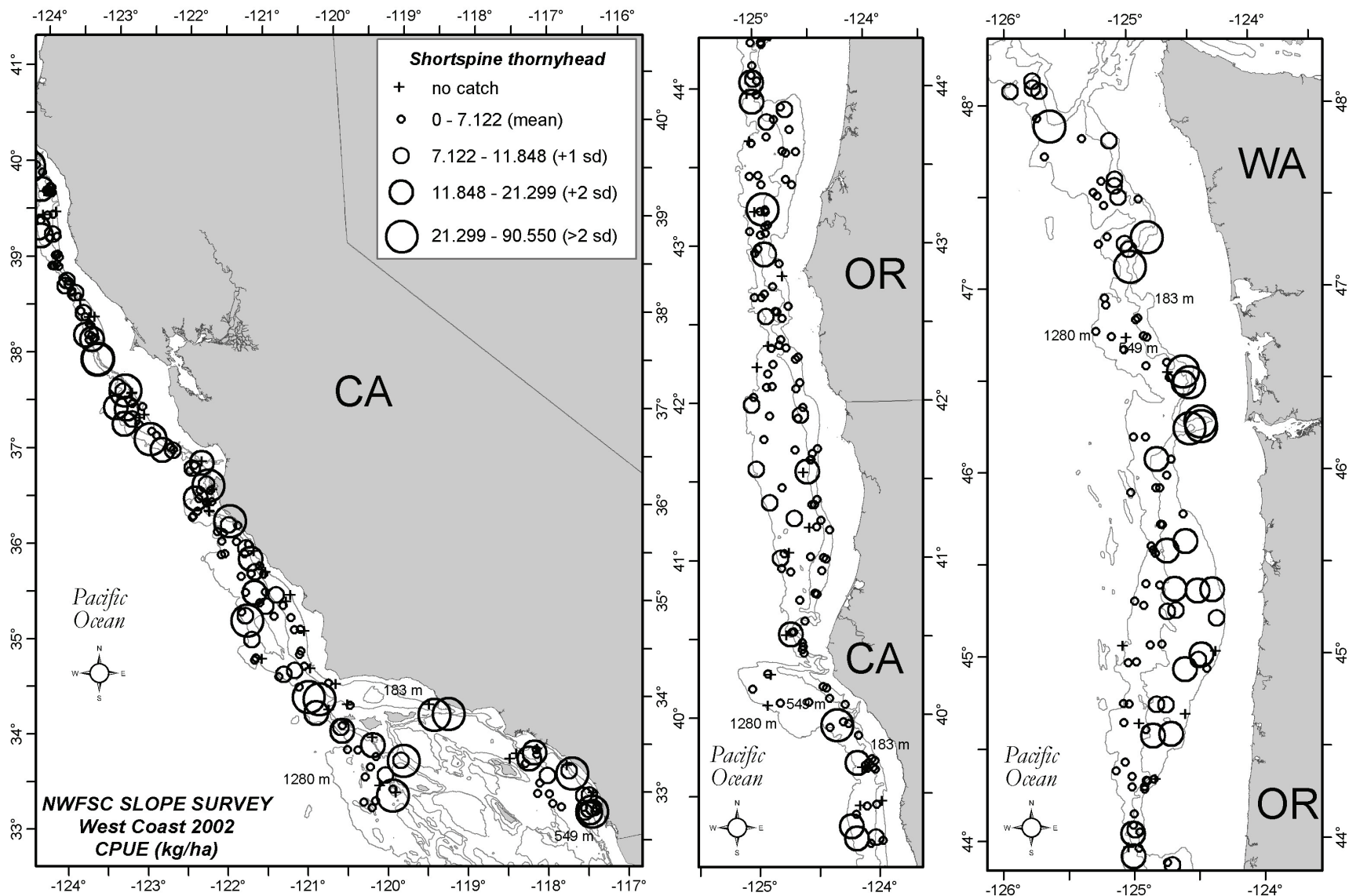


Figure 17. Shortspine thornyhead distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

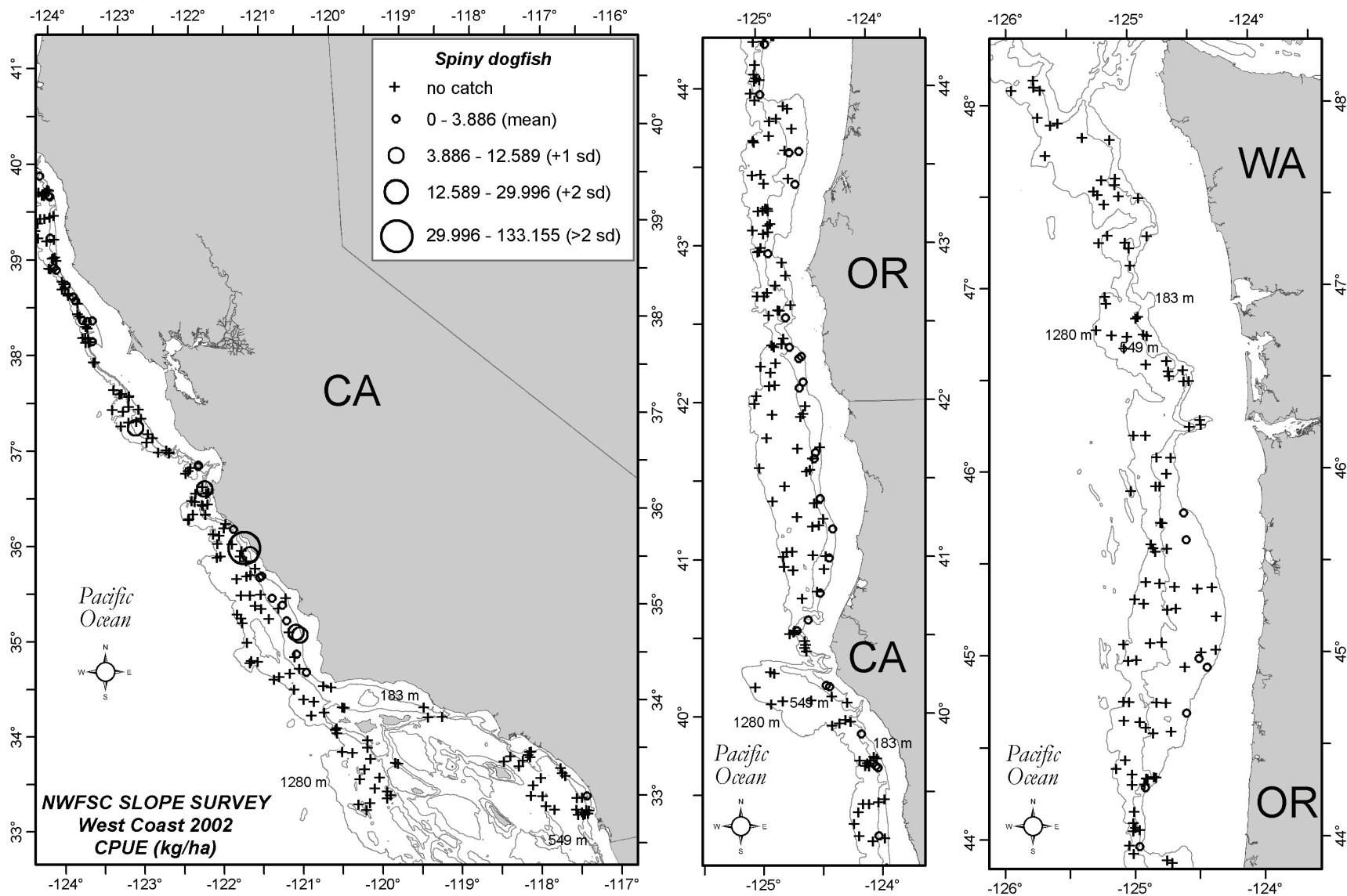


Figure 18. Spiny dogfish distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

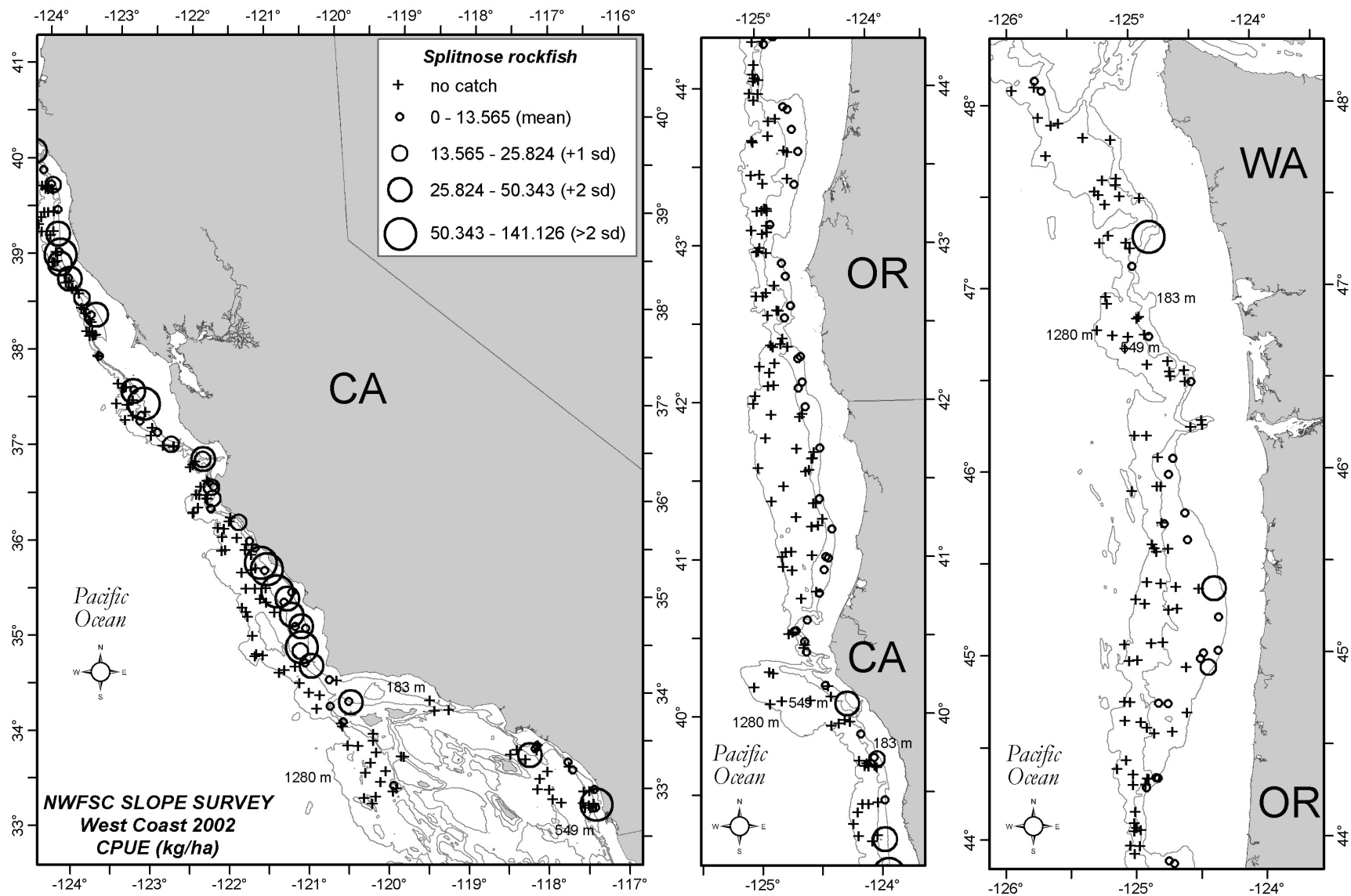


Figure 19. Splitnose rockfish distribution and relative abundance (kg/ha) from the 2002 NWFSC slope survey.

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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	106,870	22	101,992	29	208,861	21
Longspine thornyhead	4,709	37	144,502	12	149,211	12
Pacific grenadier	68	104	88,910	45	88,978	17
Shortspine thornyhead	20,273	16	54,040	17	74,314	42
Sablefish	23,531	19	45,474	17	69,006	26
Giant grenadier	981	97	56,083	71	57,063	18
Grooved tanner crab	1,624	42	34,594	40	36,218	24
Pacific hake	33,913	43	1,253	35	35,166	58
California slickhead	0	–	30,287	16	30,287	57
Longnose skate	24,242	28	3,673	38	27,915	42
Shortbelly rockfish	25,852	107	0	–	25,852	77
Splitnose rockfish	25,572	31	4	420	25,576	76
Rex sole	22,683	22	377	193	23,060	131
Chilipepper	21,444	96	0	–	21,444	251
Brown cat shark	2,768	38	9,821	24	12,589	108
Deepsea sole	333	112	9,131	29	9,464	180
Spotted ratfish	9,330	80	4	420	9,334	171
Stripetail rockfish	9,067	40	0	–	9,067	21
Roughtail skate	32	164	7,194	44	7,226	376
Filetail cat shark	1,874	41	5,055	35	6,928	36

Table 18. Estimates of fish biomass (mt) and CV by stratum for the INPFC Conception area from the 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	19,629	20	53,760	17	73,388	20
Longspine thornyhead	2,203	31	75,824	12	78,027	12
Pacific grenadier	11	75	36,738	36	36,749	34
Shortspine thornyhead	8,225	24	38,670	20	46,894	20
Sablefish	6,526	25	23,700	15	30,226	19
Giant grenadier	0	–	6,873	24	6,873	23
Grooved tanner crab	48	59	3,711	27	3,758	25
Pacific hake	19,663	22	1,039	37	20,702	62
California slickhead	0	–	23,795	17	23,795	16
Longnose skate	9,797	19	2,492	35	12,289	44
Shortbelly rockfish	24,470	98	0	–	24,470	285
Splitnose rockfish	19,527	29	0	–	19,527	86
Rex sole	6,378	29	12	100	6,390	83
Chilipepper	21,103	86	0	–	21,103	251
Brown cat shark	937	36	5,660	20	6,598	22
Deepsea sole	0	–	2,660	22	2,660	21
Spotted ratfish	4,471	33	0	–	4,471	96
Stripetail rockfish	6,409	33	0	–	6,409	96
Roughtail skate	0	–	3,114	29	3,114	28
Filetail cat shark	1,626	33	4,893	41	6,519	38

Table 19. Estimates of fish biomass (mt) and CV by stratum for the INPFC Monterey area from the 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	34,921	13	33,052	19	67,973	18
Longspine thornyhead	418	37	22,756	9	23,173	9
Pacific grenadier	0	–	19,133	21	19,133	22
Shortspine thornyhead	1,260	26	7,243	16	8,503	16
Sablefish	3,355	17	8,026	13	11,381	15
Giant grenadier	206	81	14,678	53	14,884	53
Grooved tanner crab	125	46	7,582	18	7,706	18
Pacific hake	1,848	20	79	34	1,926	45
California slickhead	0	–	4,024	17	4,024	18
Longnose skate	4,027	26	892	29	4,920	50
Shortbelly rockfish	1,382	97	0	–	1,382	228
Splitnose rockfish	3,781	25	4	100	3,786	58
Rex sole	5,572	13	76	80	5,648	30
Chilipepper	305	51	0	–	305	119
Brown cat shark	748	24	2,102	16	2,851	19
Deepsea sole	22	70	2,256	18	2,278	18
Spotted ratfish	4,306	38	4	100	4,310	90
Stripetail rockfish	1,860	28	0	–	1,860	66
Roughtail skate	10	92	1,468	34	1,478	34
Filetail cat shark	248	44	161	80	409	70

Table 20. Estimates of fish biomass (mt) and CV by stratum for the INPFC Eureka area from the 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	12,638	13	7,542	19	20,180	23
Longspine thornyhead	103	46	21,724	10	21,826	10
Pacific grenadier	2	100	8,047	24	8,048	24
Shortspine thornyhead	530	21	2,430	17	2,960	17
Sablefish	2,299	15	5,536	15	7,835	16
Giant grenadier	4	100	15,421	26	15,425	26
Grooved tanner crab	128	45	10,901	20	11,029	20
Pacific hake	6,721	35	89	62	6,810	93
California slickhead	0	–	1,448	22	1,448	22
Longnose skate	2,431	31	199	51	2,631	78
Shortbelly rockfish	0	–	0	–	0	–
Splitnose rockfish	328	30	0	–	328	82
Rex sole	4,660	11	156	79	4,815	30
Chilipepper	32	90	0	–	32	243
Brown cat shark	327	27	912	16	1,239	22
Deepsea sole	0	–	2,047	18	2,047	18
Spotted ratfish	273	55	0	–	273	147
Stripetail rockfish	596	43	0	–	596	116
Roughtail skate	0	–	1,062	35	1,062	35
Filetail cat shark	0	–	0	–	0	–

Table 21. Estimates of fish biomass (mt) and CV by stratum for the INPFC Columbia area from the 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	27,128	12	6,025	26	33,153	16
Longspine thornyhead	701	34	21,067	7	21,768	9
Pacific grenadier	56	65	24,178	38	24,234	49
Shortspine thornyhead	7,431	13	4,314	19	11,745	16
Sablefish	9,026	13	6,676	13	15,702	13
Giant grenadier	595	45	17,443	19	18,038	24
Grooved tanner crab	1,023	24	9,304	13	10,327	15
Pacific hake	5,207	20	47	68	5,254	31
California slickhead	0	–	961	28	961	36
Longnose skate	6,137	15	56	62	6,192	23
Shortbelly rockfish	0	–	0	–	0	–
Splitnose rockfish	1,917	44	0	–	1,917	69
Rex sole	5,387	13	129	81	5,515	20
Chilipepper	4	100	0	–	4	156
Brown cat shark	609	26	778	24	1,387	25
Deepsea sole	20	74	1,788	11	1,808	14
Spotted ratfish	249	37	0	–	249	58
Stripetail rockfish	201	84	0	–	201	130
Roughtail skate	22	80	1,306	26	1,329	33
Filetail cat shark	0	–	0	–	0	–

Table 22. Estimates of fish biomass (mt) and CV by stratum for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m		Stratum 2 550–1,280 m		All strata 183–1,280 m	
	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)	Biomass (mt)	CV (%)
Dover sole	12,554	18	1,613	74	14,167	23
Longspine thornyhead	1,285	55	3,131	28	4,416	39
Pacific grenadier	0	–	814	67	814	113
Shortspine thornyhead	2,827	5	1,385	44	4,212	25
Sablefish	2,325	42	1,536	33	3,862	37
Giant grenadier	176	100	1,668	32	1,844	51
Grooved tanner crab	302	46	3,096	32	3,398	49
Pacific hake	474	35	0	–	474	41
California slickhead	0	–	58	75	58	127
Longnose skate	1,849	27	34	100	1,883	31
Shortbelly rockfish	0	–	0	–	0	–
Splitnose rockfish	20	70	0	–	20	83
Rex sole	686	56	5	100	691	65
Chilipepper	0	–	0	–	0	–
Brown cat shark	147	48	368	65	515	80
Deepsea sole	291	70	380	24	671	43
Spotted ratfish	30	100	0	–	30	118
Stripetail rockfish	0	–	0	–	0	–
Roughtail skate	0	–	244	54	244	92
Filetail cat shark	0	–	0	–	0	–

highest biomass values. In all INPFC areas longspine thornyhead biomass was consistently higher in the deeper depth stratum while Dover sole biomass tended to be greater in the shallower stratum (except in the Conception INPFC area).

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 depends 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.

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.

Size Compositions

Figures 20–43 show the estimated population length frequencies for the four 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 in this document 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.

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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 206			Stratum 2 550–1,280 m Total hauls = 221		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	204	204	204	162	163	163
Longspine thornyhead	64	66	66	218	218	218
Pacific grenadier	9	9	0	162	162	0
Shortspine thornyhead	174	174	173	200	202	201
Sablefish	187	188	188	197	198	198
Giant grenadier	15	15	0	162	162	0
Grooved tanner crab	76	76	0	204	204	0
Pacific hake	183	183	0	34	34	0
California slickhead	0	0	0	165	165	0
Longnose skate	168	168	0	38	38	0
Shortbelly rockfish	23	23	23	0	0	0
Splitnose rockfish	111	111	0	1	1	0
Rex sole	192	192	0	14	14	0
Chilipepper	37	37	0	0	0	0
Brown cat shark	119	119	0	172	172	0
Deepsea sole	8	8	0	174	174	0
Spotted ratfish	100	100	0	1	1	0
Stripetail rockfish	61	61	0	0	0	0
Roughtail skate	4	4	0	95	95	0
Filetail cat shark	32	32	0	20	20	0
Bigfin eelpout	177	177	0	12	12	0
Arrowtooth flounder	73	73	0	0	0	0
Pacific flatnose	45	45	0	168	168	0
Lingcod	34	34	20	0	0	0
Spiny dogfish	56	56	0	1	1	0
Pacific ocean perch	24	24	24	0	0	0
Bering skate	143	143	0	14	14	0
Aurora rockfish	92	92	0	6	6	0
Bocaccio	19	19	18	0	0	0
Twoline eelpout	18	18	0	132	132	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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 7			Stratum 2 550–1,280 m Total hauls = 8		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	7	7	7	4	4	4
Longspine thornyhead	3	3	3	8	8	8
Pacific grenadier	0	0	0	7	7	0
Shortspine thornyhead	7	7	7	8	8	8
Sablefish	6	6	6	7	7	7
Giant grenadier	1	1	0	7	7	0
Grooved tanner crab	3	3	0	8	8	0
Pacific hake	4	4	0	0	0	0
California slickhead	0	0	0	3	3	0
Longnose skate	6	6	0	1	1	0
Shortbelly rockfish	0	0	0	0	0	0
Splitnose rockfish	2	2	0	0	0	0
Rex sole	7	7	0	1	1	0
Chilipepper	0	0	0	0	0	0
Brown cat shark	5	5	0	7	7	0
Deepsea sole	3	3	0	8	8	0
Spotted ratfish	1	1	0	0	0	0
Stripetail rockfish	0	0	0	0	0	0
Roughtail skate	0	0	0	5	5	0
Filetail cat shark	0	0	0	0	0	0
Bigfin eelpout	6	6	0	1	1	0
Arrowtooth flounder	3	3	0	0	0	0
Pacific flatnose	2	2	0	7	7	0
Lingcod	0	0	0	0	0	0
Spiny dogfish	0	0	0	0	0	0
Pacific ocean perch	5	5	5	0	0	0
Bering skate	4	4	0	1	1	0
Aurora rockfish	5	5	0	0	0	0
Bocaccio	0	0	0	0	0	0
Twoline eelpout	2	2	0	7	7	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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 63			Stratum 2 550–1,280 m Total hauls = 56		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	62	62	62	30	31	31
Longspine thornyhead	20	20	20	56	56	56
Pacific grenadier	6	6	0	52	52	0
Shortspine thornyhead	59	59	58	50	50	49
Sablefish	61	61	61	52	52	52
Giant grenadier	9	9	0	50	50	0
Grooved tanner crab	39	39	0	56	56	0
Pacific hake	56	56	0	4	4	0
California slickhead	0	0	0	35	35	0
Longnose skate	53	53	0	3	3	0
Shortbelly rockfish	0	0	0	0	0	0
Splitnose rockfish	26	26	0	0	0	0
Rex sole	58	58	0	4	4	0
Chilipepper	1	1	0	0	0	0
Brown cat shark	35	35	0	38	38	0
Deepsea sole	2	2	0	53	53	0
Spotted ratfish	13	13	0	0	0	0
Stripetail rockfish	9	9	0	0	0	0
Roughtail skate	2	2	0	30	30	0
Filetail cat shark	0	0	0	0	0	0
Bigfin eelpout	54	54	0	0	0	0
Arrowtooth flounder	40	40	0	0	0	0
Pacific flatnose	23	23	0	49	49	0
Lingcod	9	9	3	0	0	0
Spiny dogfish	10	10	0	0	0	0
Pacific ocean perch	14	14	14	0	0	0
Bering skate	44	44	0	0	0	0
Aurora rockfish	21	21	0	1	1	0
Bocaccio	0	0	0	0	0	0
Twoline eelpout	10	10	0	38	38	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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 30			Stratum 2 550–1,280 m Total hauls = 41		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	30	30	30	38	38	38
Longspine thornyhead	8	8	8	41	41	41
Pacific grenadier	1	1	0	37	37	0
Shortspine thornyhead	29	29	29	34	35	35
Sablefish	30	30	30	39	39	39
Giant grenadier	1	1	0	39	39	0
Grooved tanner crab	9	9	0	41	41	0
Pacific hake	30	30	0	6	6	0
California slickhead	0	0	0	29	29	0
Longnose skate	27	27	0	5	5	0
Shortbelly rockfish	0	0	0	0	0	0
Splitnose rockfish	19	19	0	0	0	0
Rex sole	30	30	0	5	5	0
Chilipepper	3	3	0	0	0	0
Brown cat shark	20	20	0	35	35	0
Deepsea sole	0	0	0	40	40	0
Spotted ratfish	12	12	0	0	0	0
Stripetail rockfish	9	9	0	0	0	0
Roughtail skate	0	0	0	18	18	0
Filetail cat shark	0	0	0	0	0	0
Bigfin eelpout	27	27	0	2	2	0
Arrowtooth flounder	18	18	0	0	0	0
Pacific flatnose	5	5	0	30	30	0
Lingcod	5	5	4	0	0	0
Spiny dogfish	15	15	0	0	0	0
Pacific ocean perch	4	4	4	0	0	0
Bering skate	25	25	0	2	2	0
Aurora rockfish	13	13	0	0	0	0
Bocaccio	1	1	1	0	0	0
Twoline eelpout	1	1	0	25	25	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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 58			Stratum 2 550–1,280 m Total hauls = 61		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	58	58	58	52	52	52
Longspine thornyhead	17	18	18	60	60	60
Pacific grenadier	0	0	0	43	43	0
Shortspine thornyhead	46	46	46	57	57	57
Sablefish	55	56	56	54	55	55
Giant grenadier	4	4	0	43	43	0
Grooved tanner crab	20	20	0	61	61	0
Pacific hake	51	51	0	13	13	0
California slickhead	0	0	0	52	52	0
Longnose skate	48	48	0	17	17	0
Shortbelly rockfish	8	8	8	0	0	0
Splitnose rockfish	32	32	0	1	1	0
Rex sole	55	55	0	3	3	0
Chilipepper	12	12	0	0	0	0
Brown cat shark	38	38	0	51	51	0
Deepsea sole	3	3	0	47	47	0
Spotted ratfish	35	35	0	1	1	0
Stripetail rockfish	20	20	0	0	0	0
Roughtail skate	2	2	0	24	24	0
Filetail cat shark	13	13	0	4	4	0
Bigfin eelpout	54	54	0	8	8	0
Arrowtooth flounder	12	12	0	0	0	0
Pacific flatnose	15	15	0	47	47	0
Lingcod	10	10	6	0	0	0
Spiny dogfish	19	19	0	1	1	0
Pacific ocean perch	1	1	1	0	0	0
Bering skate	49	49	0	7	7	0
Aurora rockfish	31	31	0	1	1	0
Bocaccio	8	8	8	0	0	0
Twoline eelpout	5	5	0	30	30	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 2002 NWFSC slope survey.

Species	Stratum 1 183–549 m Total hauls = 48			Stratum 2 550–1,280 m Total hauls = 55		
	Hauls with:			Hauls with:		
	Wt.	No.	Len.	Wt.	No.	Len.
Dover sole	47	47	47	38	38	38
Longspine thornyhead	16	17	17	53	53	53
Pacific grenadier	2	2	0	23	23	0
Shortspine thornyhead	33	33	33	51	52	52
Sablefish	35	35	35	45	45	45
Giant grenadier	0	0	0	23	23	0
Grooved tanner crab	5	5	0	38	38	0
Pacific hake	42	42	0	11	11	0
California slickhead	0	0	0	46	46	0
Longnose skate	34	34	0	12	12	0
Shortbelly rockfish	15	15	15	0	0	0
Splitnose rockfish	32	32	0	0	0	0
Rex sole	42	42	0	1	1	0
Chilipepper	21	21	0	0	0	0
Brown cat shark	21	21	0	41	41	0
Deepsea sole	0	0	0	26	26	0
Spotted ratfish	39	39	0	0	0	0
Stripetail rockfish	23	23	0	0	0	0
Roughtail skate	0	0	0	18	18	0
Filetail cat shark	19	19	0	16	16	0
Bigfin eelpout	36	36	0	1	1	0
Arrowtooth flounder	0	0	0	0	0	0
Pacific flatnose	0	0	0	35	35	0
Lingcod	10	10	7	0	0	0
Spiny dogfish	12	12	0	0	0	0
Pacific ocean perch	0	0	0	0	0	0
Bering skate	21	21	0	4	4	0
Aurora rockfish	22	22	0	4	4	0
Bocaccio	10	10	9	0	0	0
Twoline eelpout	0	0	0	32	32	0

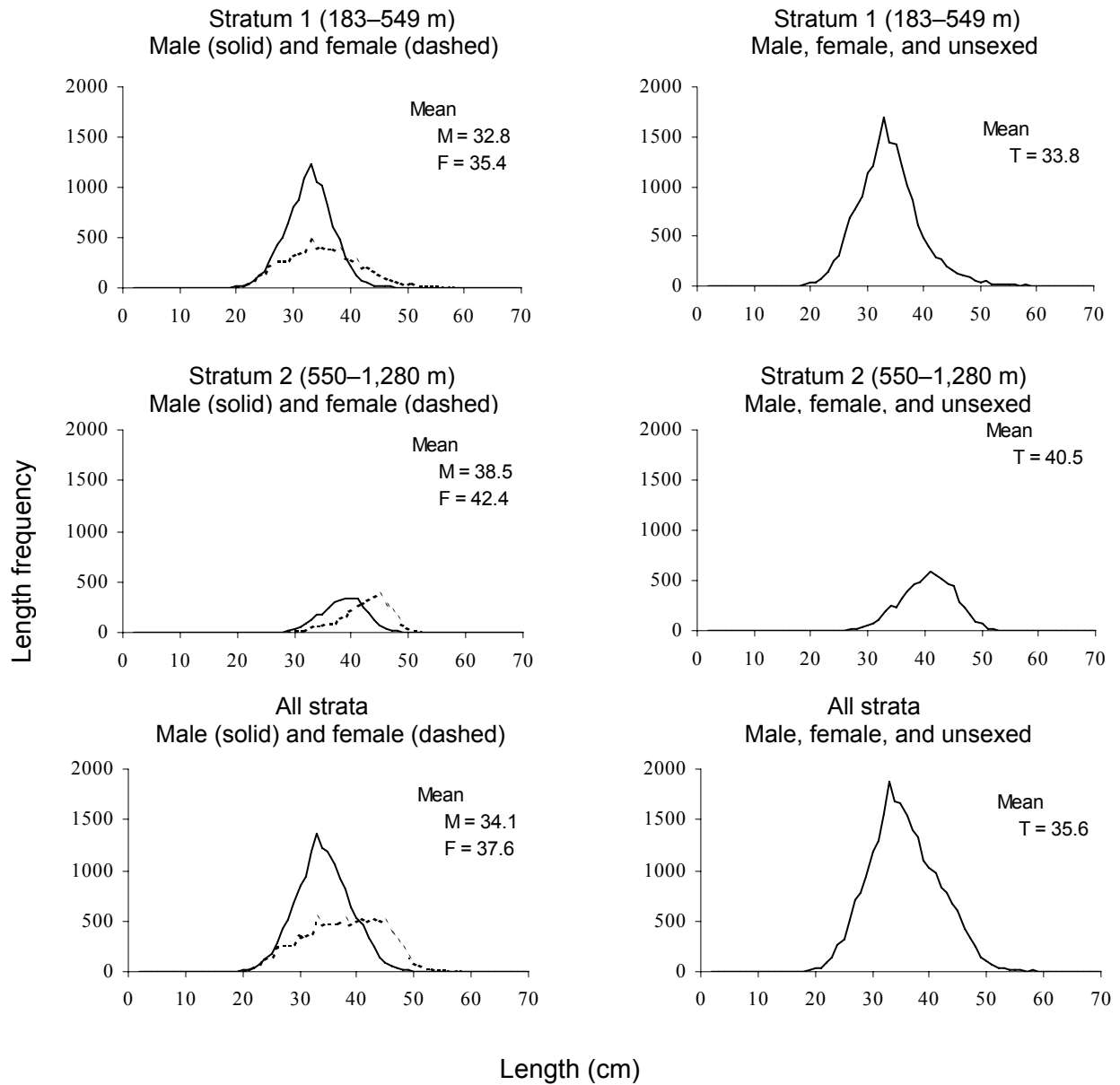


Figure 20. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for all INPFC areas sampled during the 2002 NWFSC slope survey.

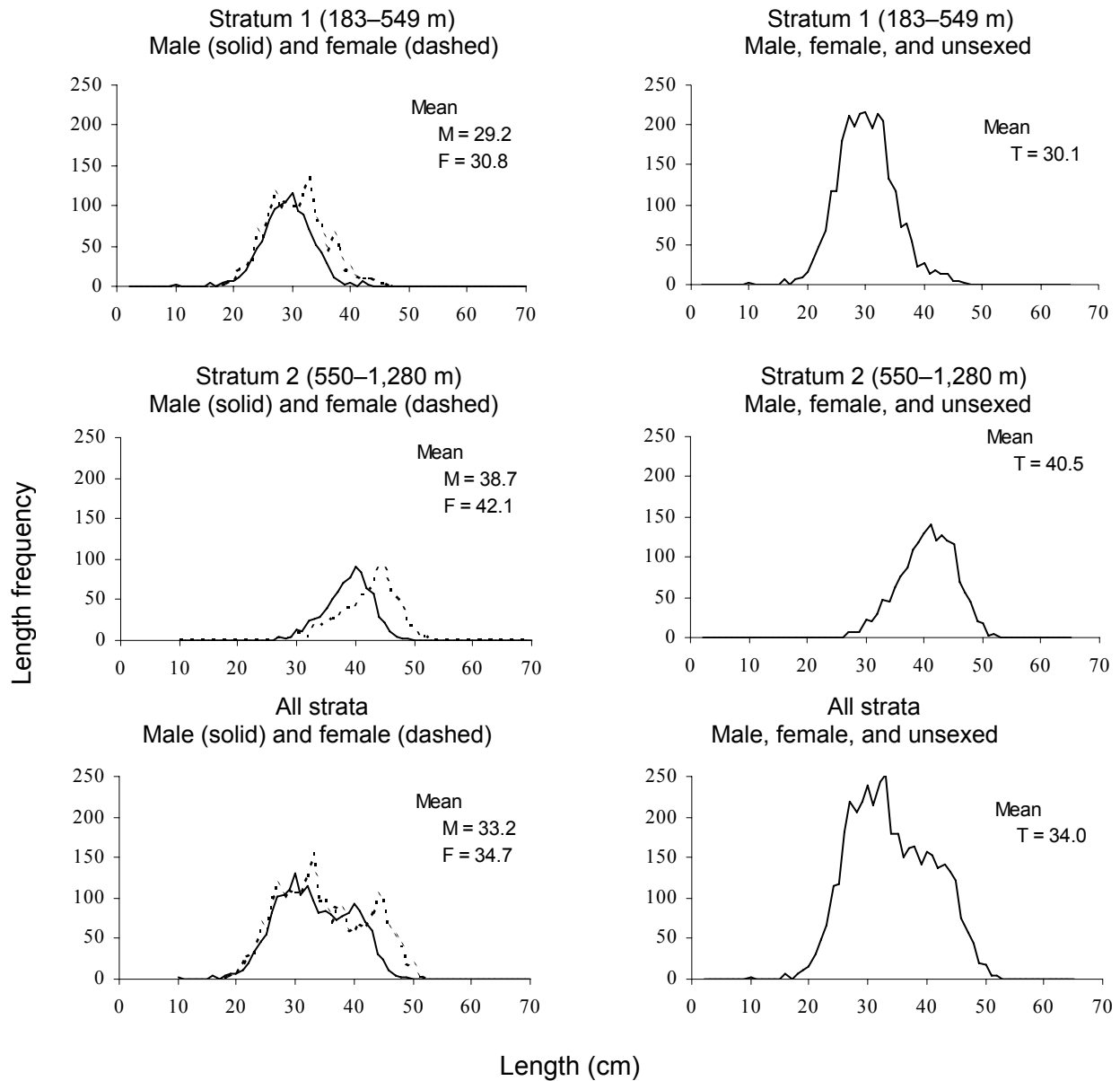


Figure 21. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Conception area from the 2002 NWFSC slope survey.

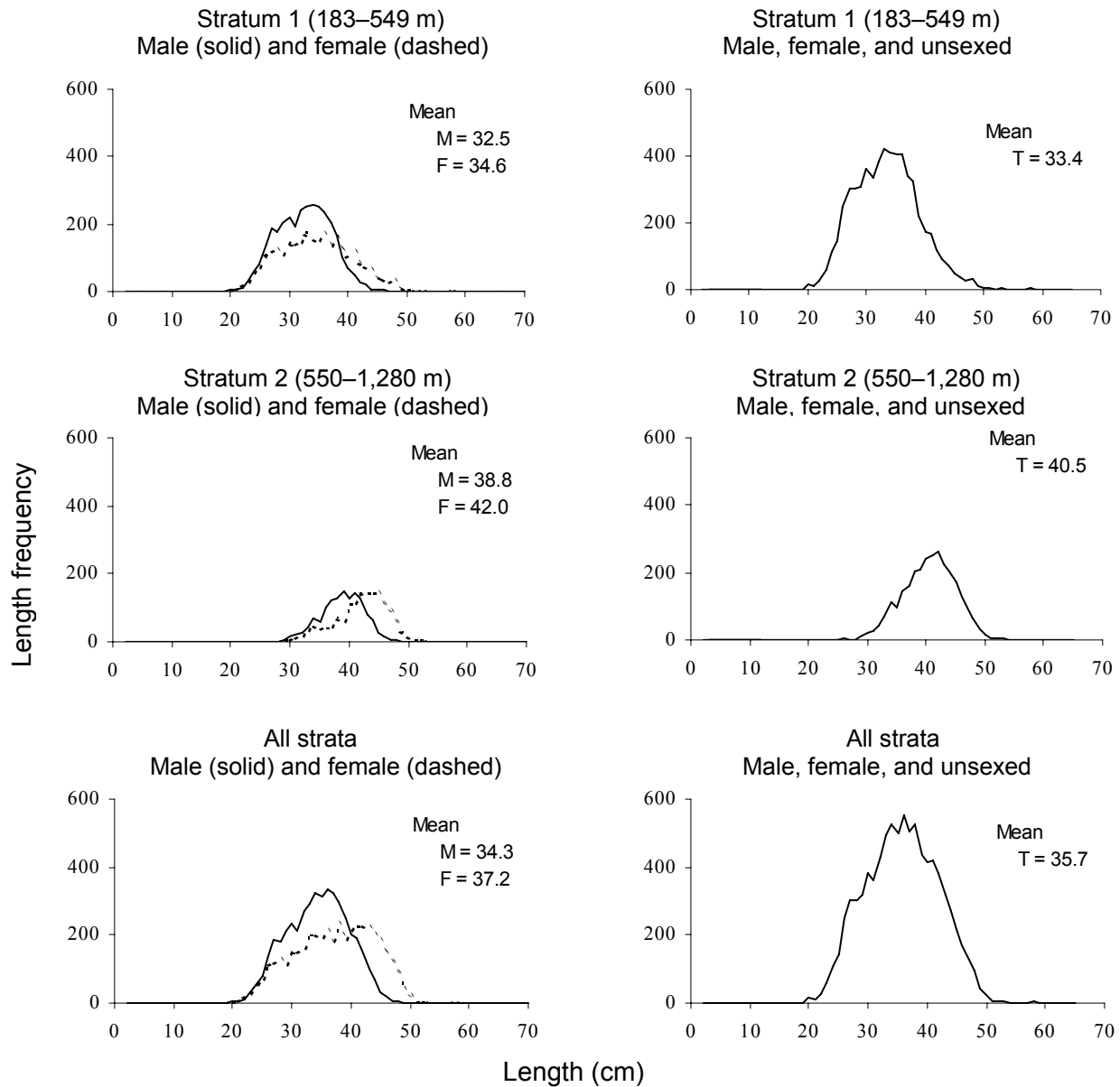


Figure 22. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Monterey area from the 2002 NWFSC slope survey.

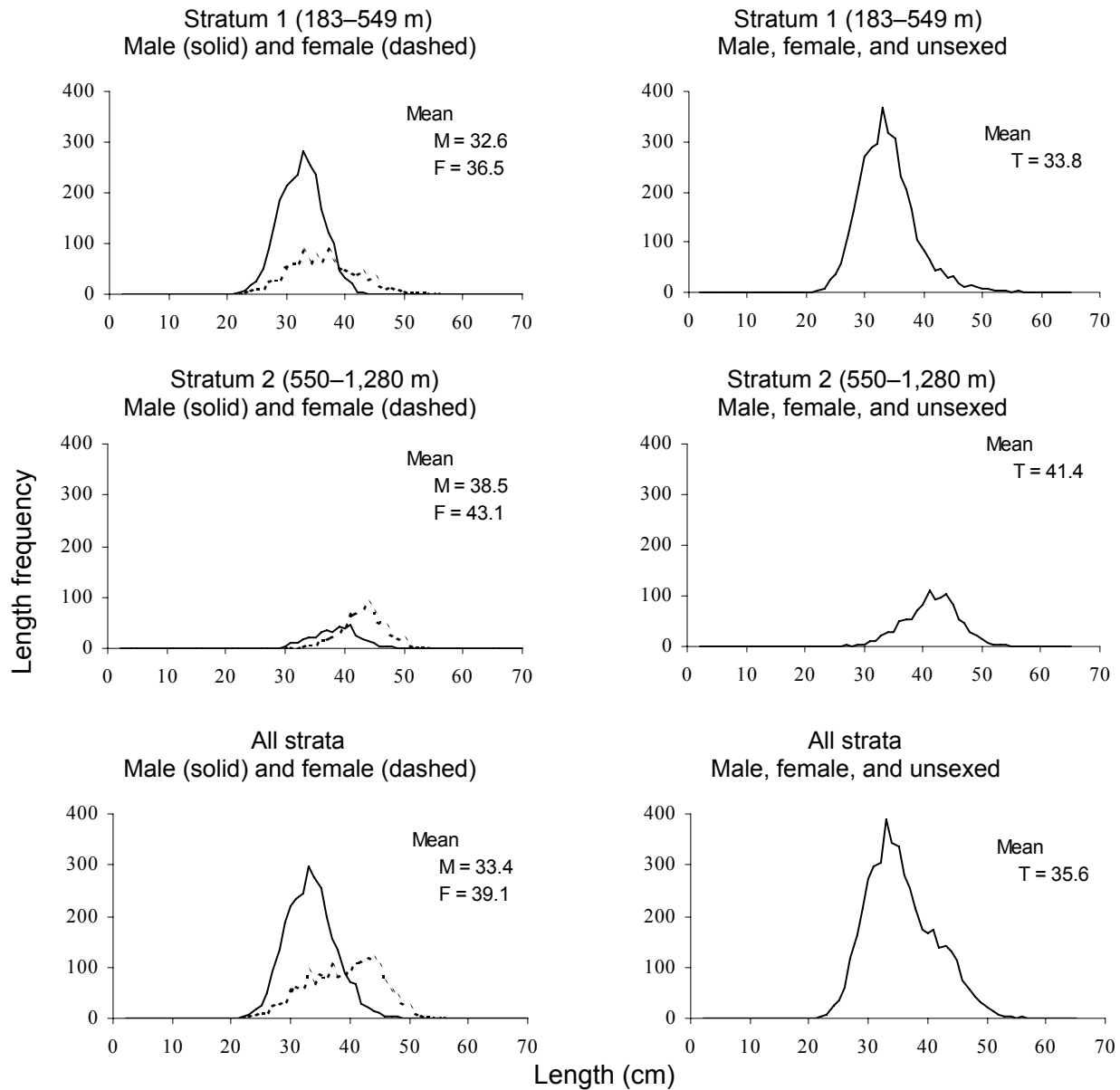


Figure 23. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Eureka area from the 2002 NWFSC slope survey.

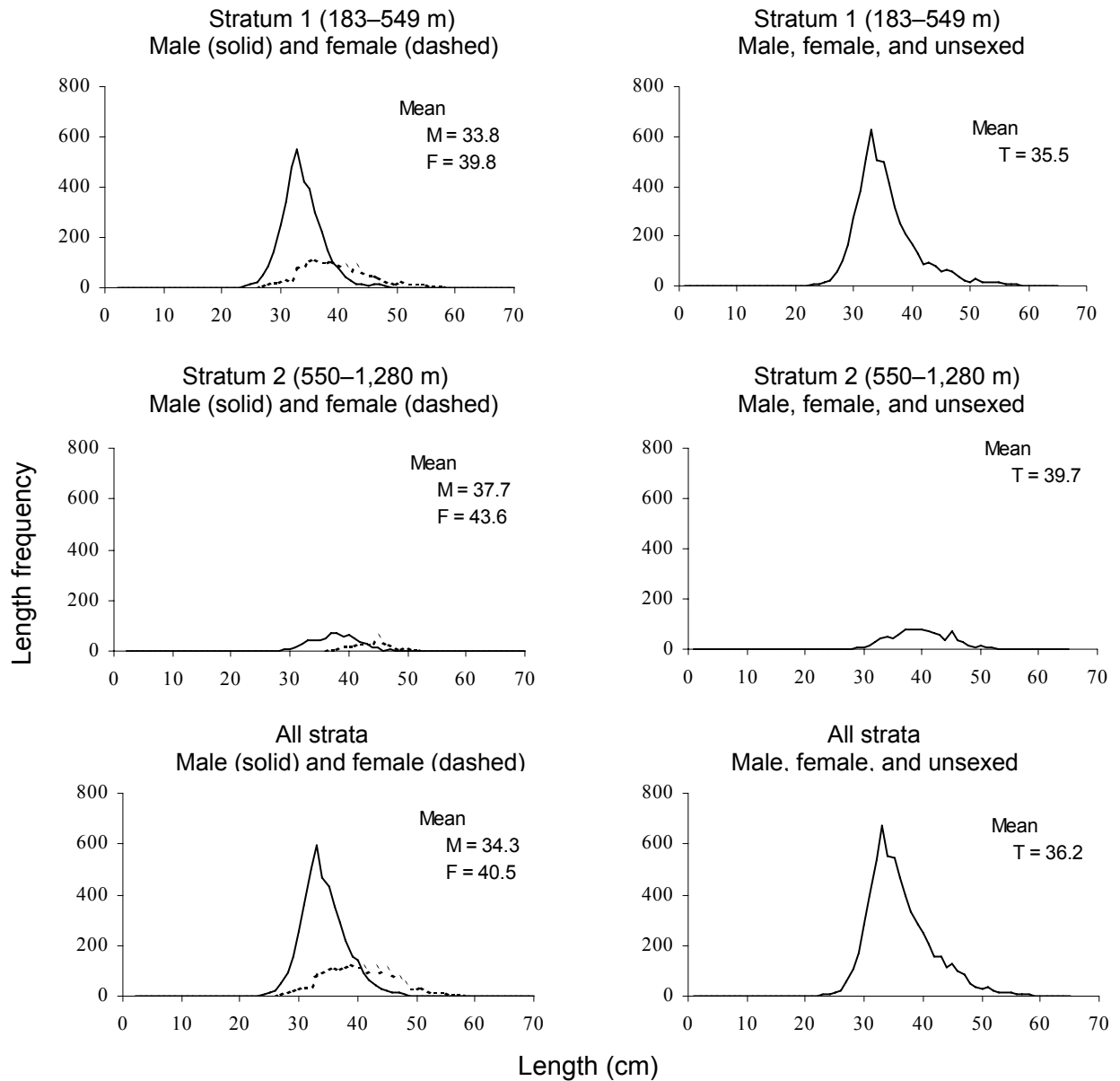


Figure 24. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC Columbia area from the 2002 NWFSC slope survey.

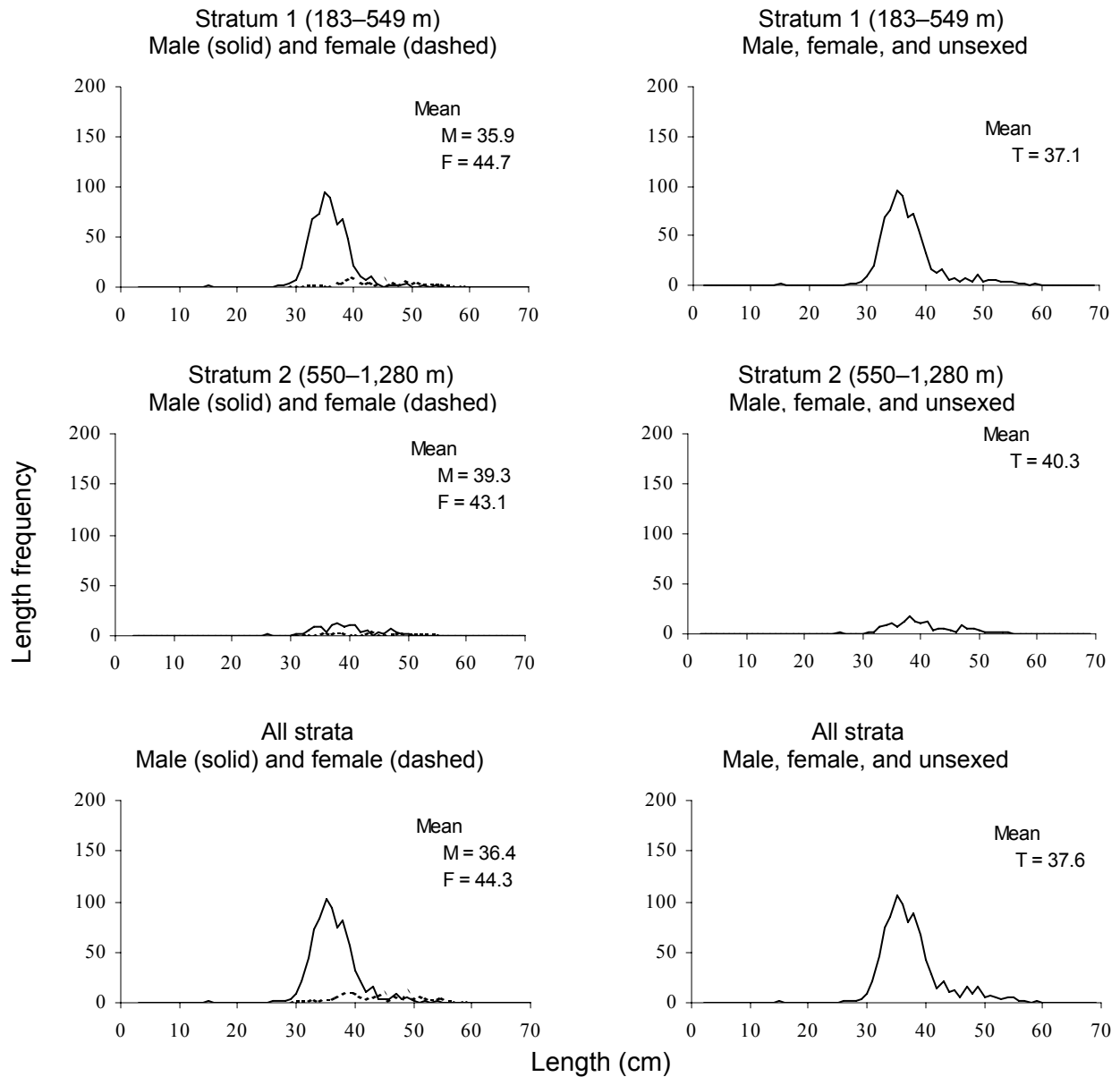


Figure 25. Unweighted length-frequency data and mean lengths (cm) of Dover sole by depth stratum (m) and by sex (M = males, F = females, and T = males, females, and unsexed) for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.

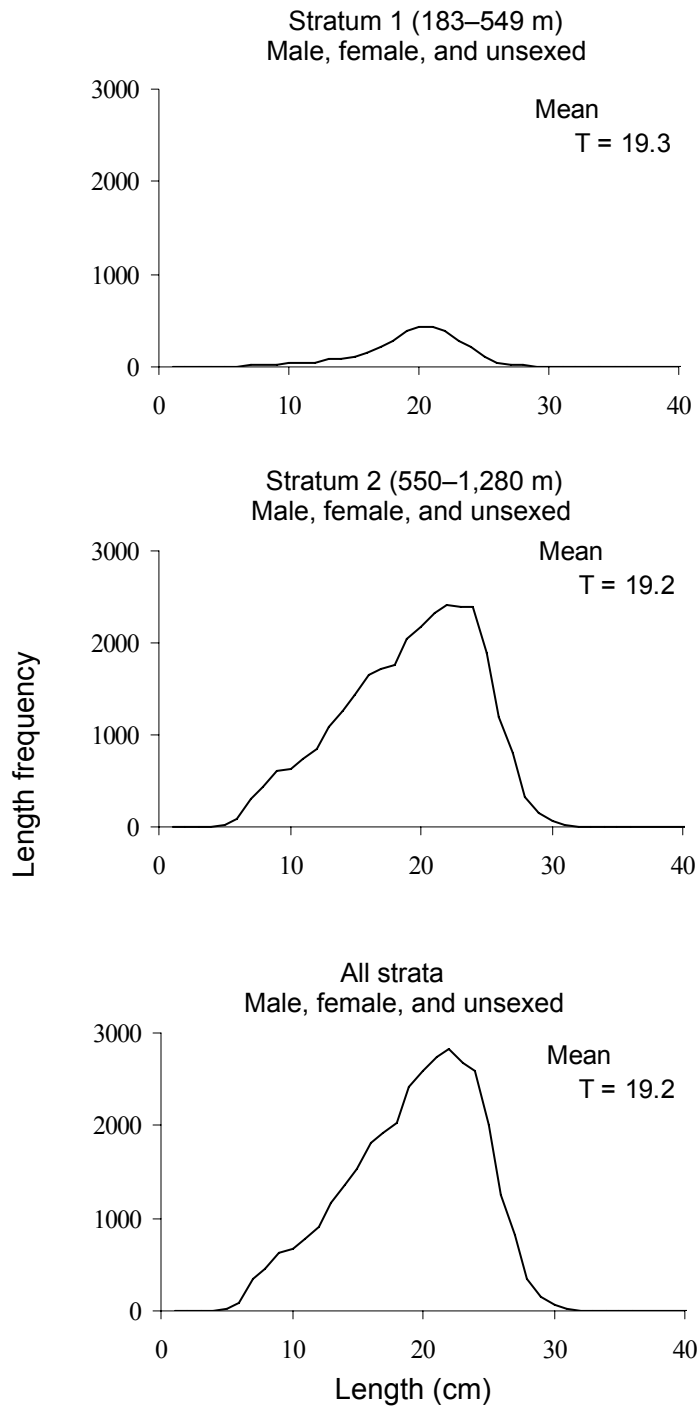


Figure 26. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for all INPFC areas sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

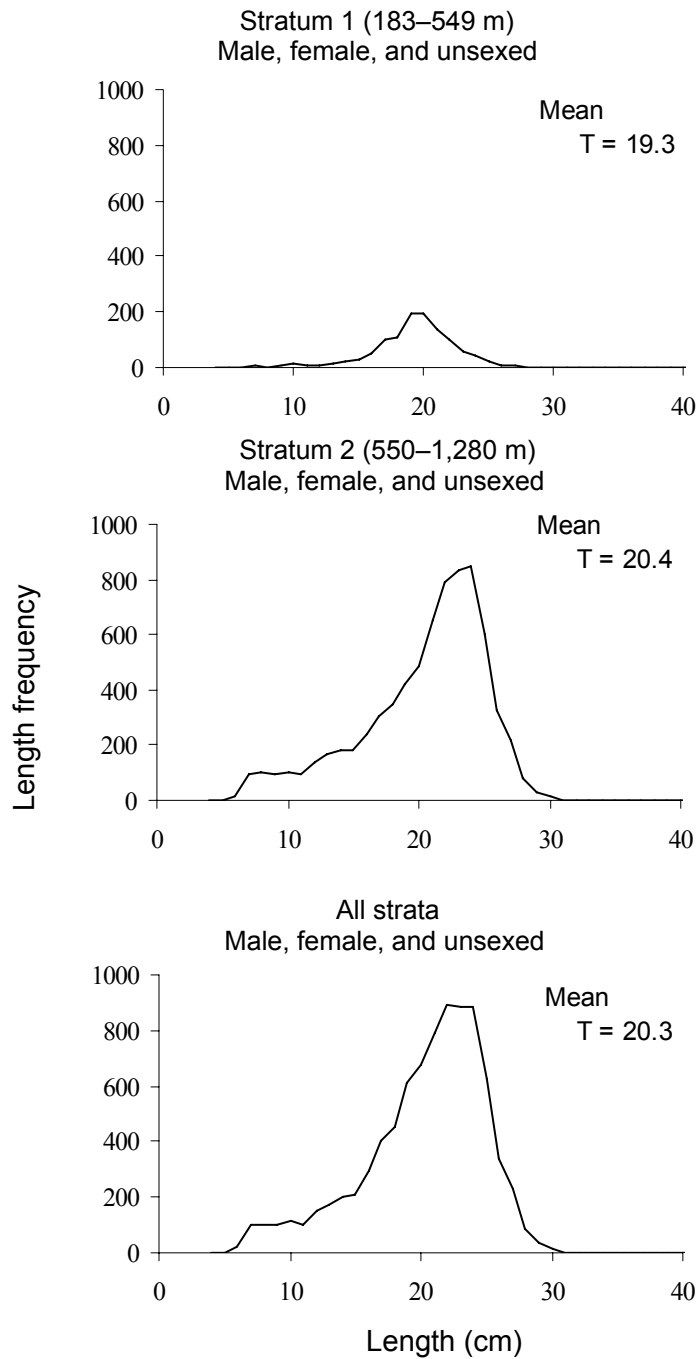


Figure 27. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Conception area from the 2002 NWFS slope survey (T = males, females, and unsexed).

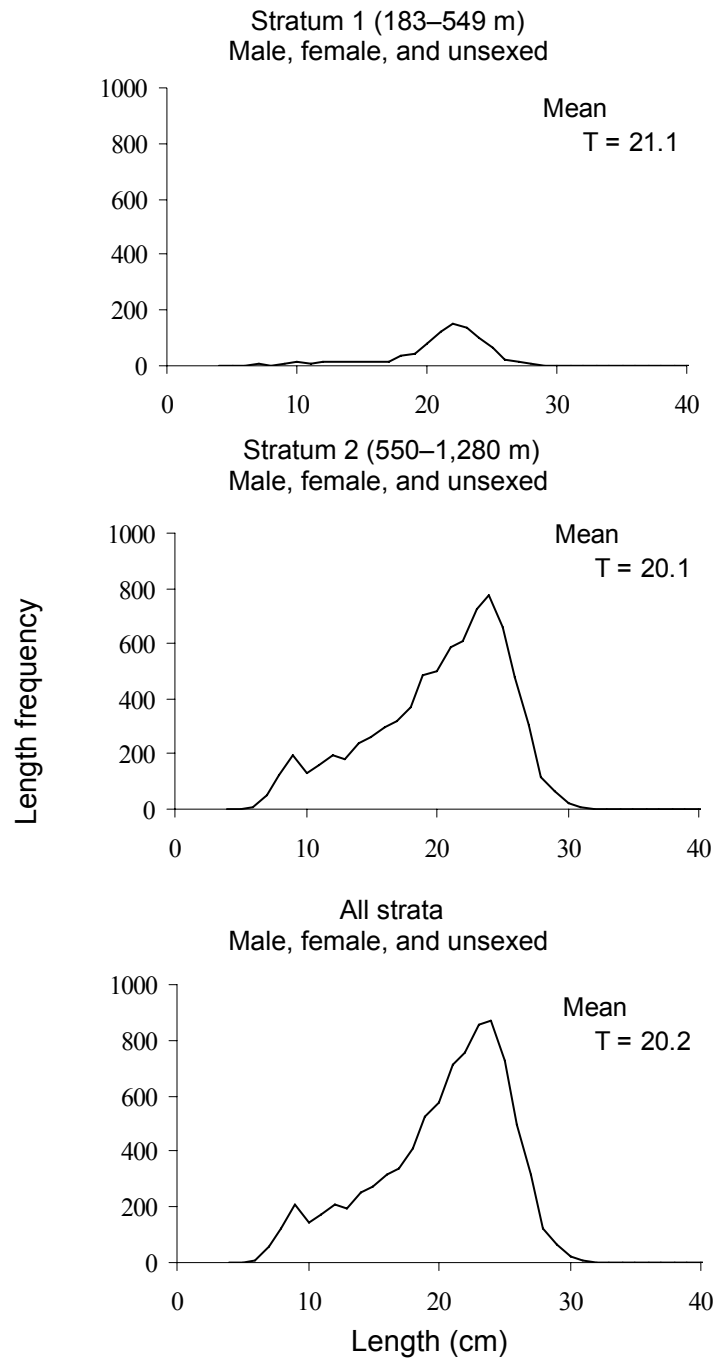


Figure 28. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Monterey area from the 2002 NWFSC slope survey (T = males, females, and unsexed).

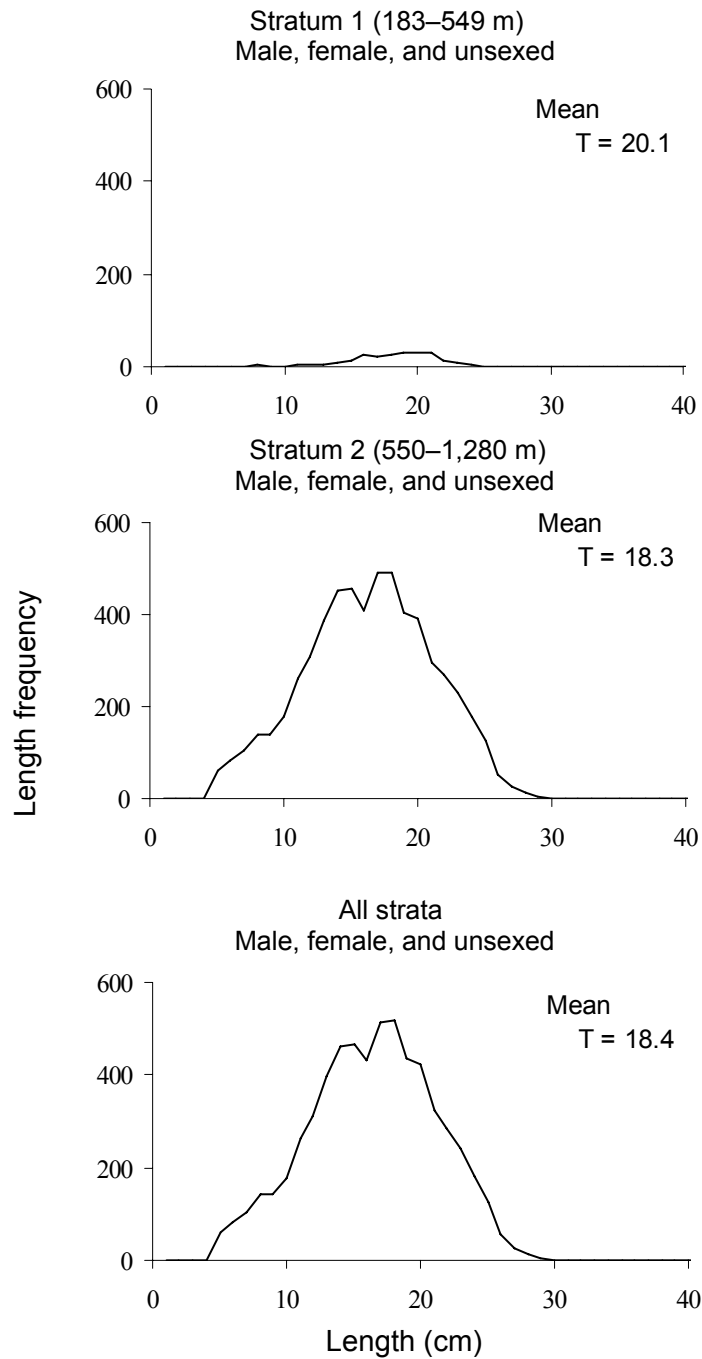


Figure 29. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Eureka area from the 2002 NWFSC slope survey (T = males, females, and unsexed).

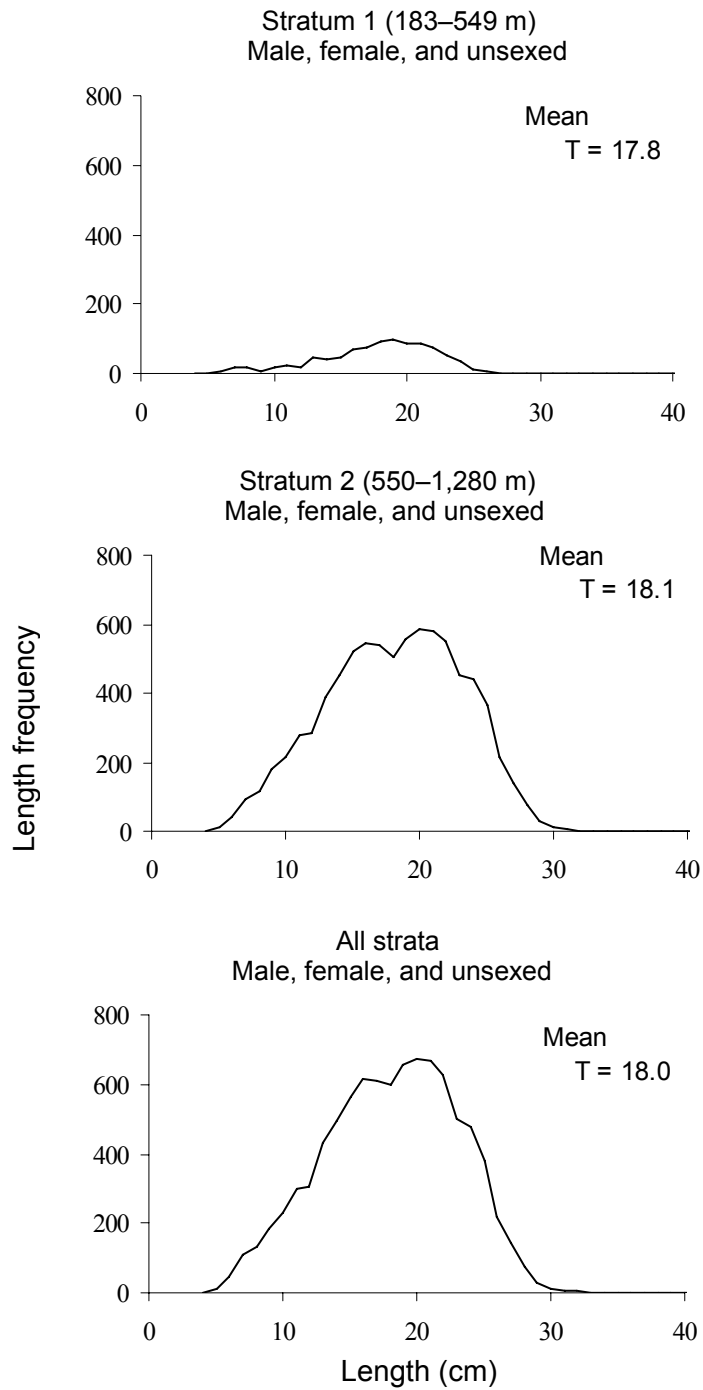


Figure 30. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC Columbia area from the 2002 NWFSC slope survey (T = males, females, and unsexed).

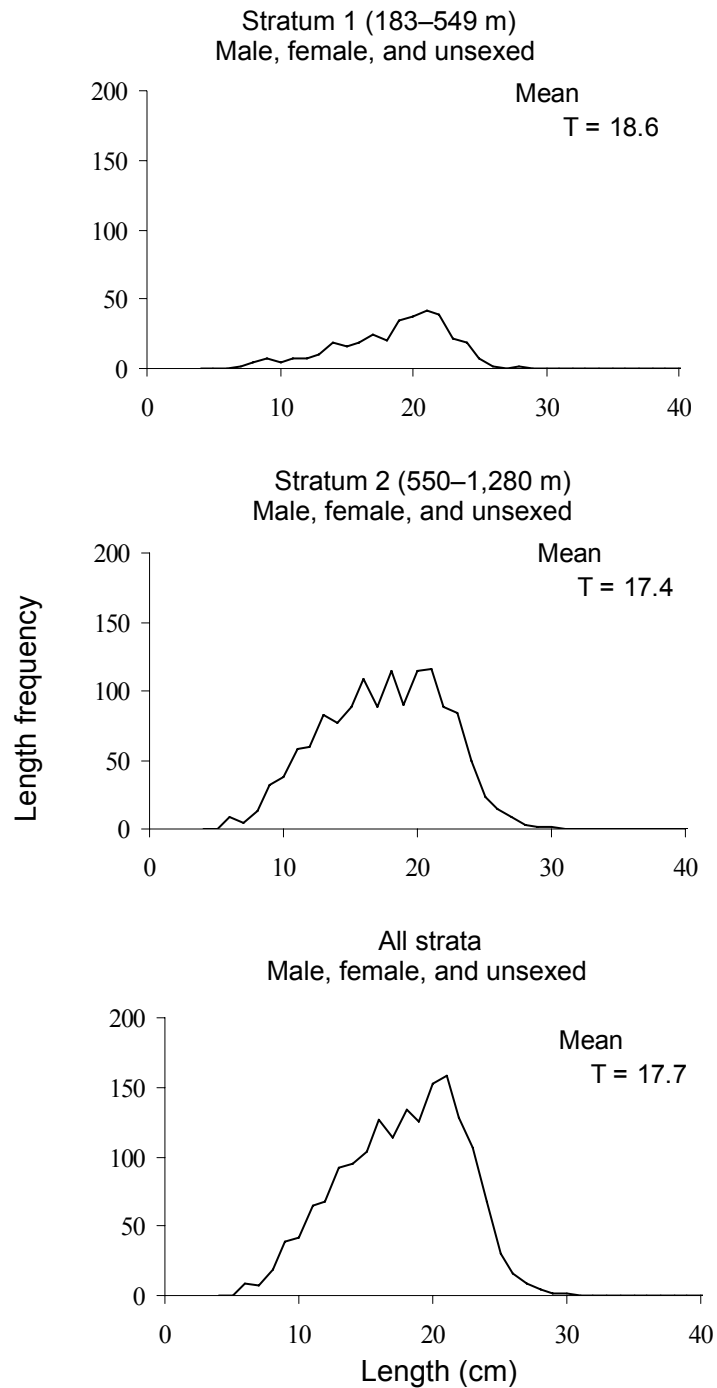


Figure 31. Unweighted length-frequency data and mean lengths (cm) of longspine thornyhead by depth stratum (m) for INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey (T = males, females, and unsexed).

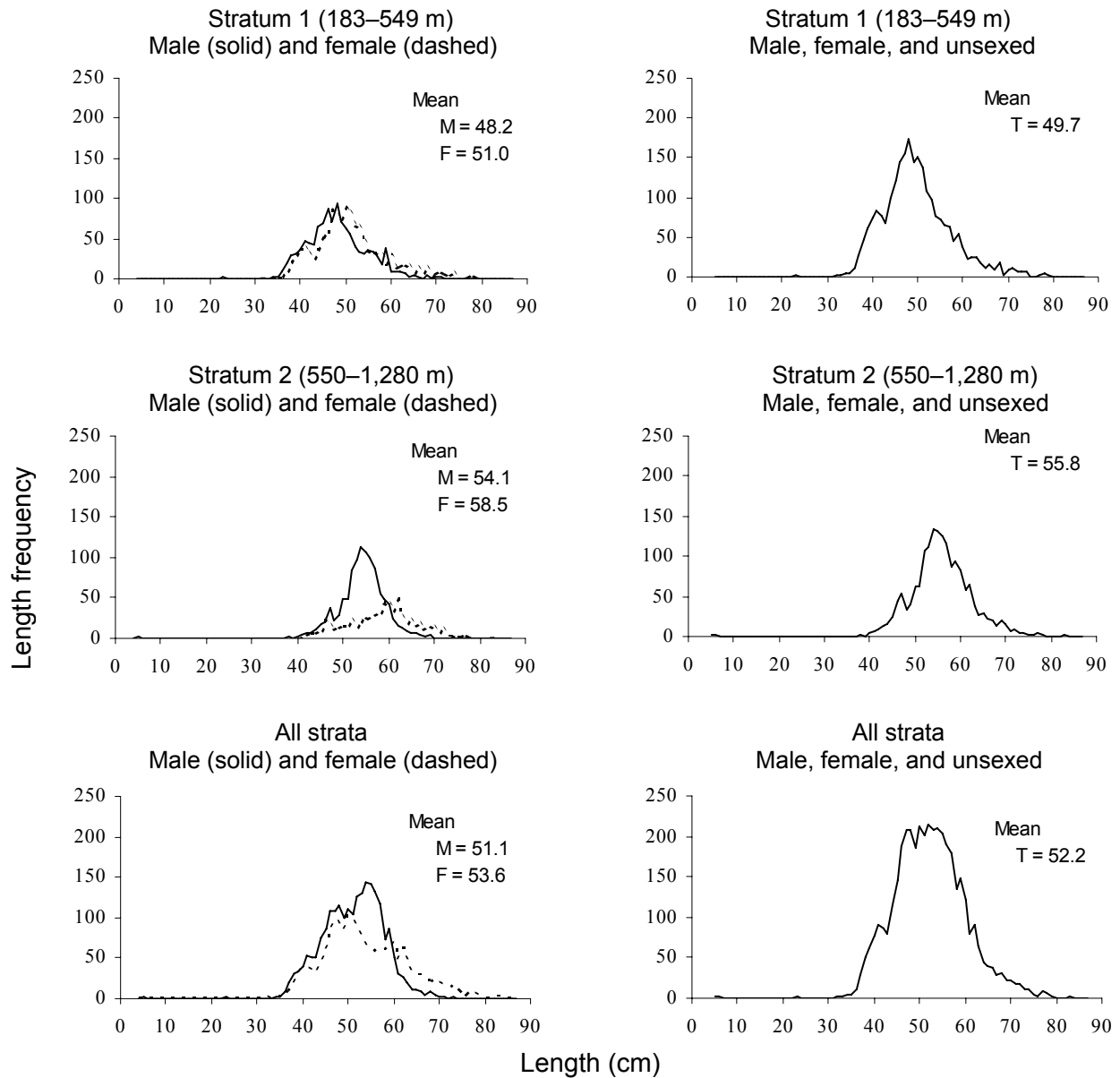


Figure 32. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for all INPFC areas sampled during the 2002 NWFSC slope survey.

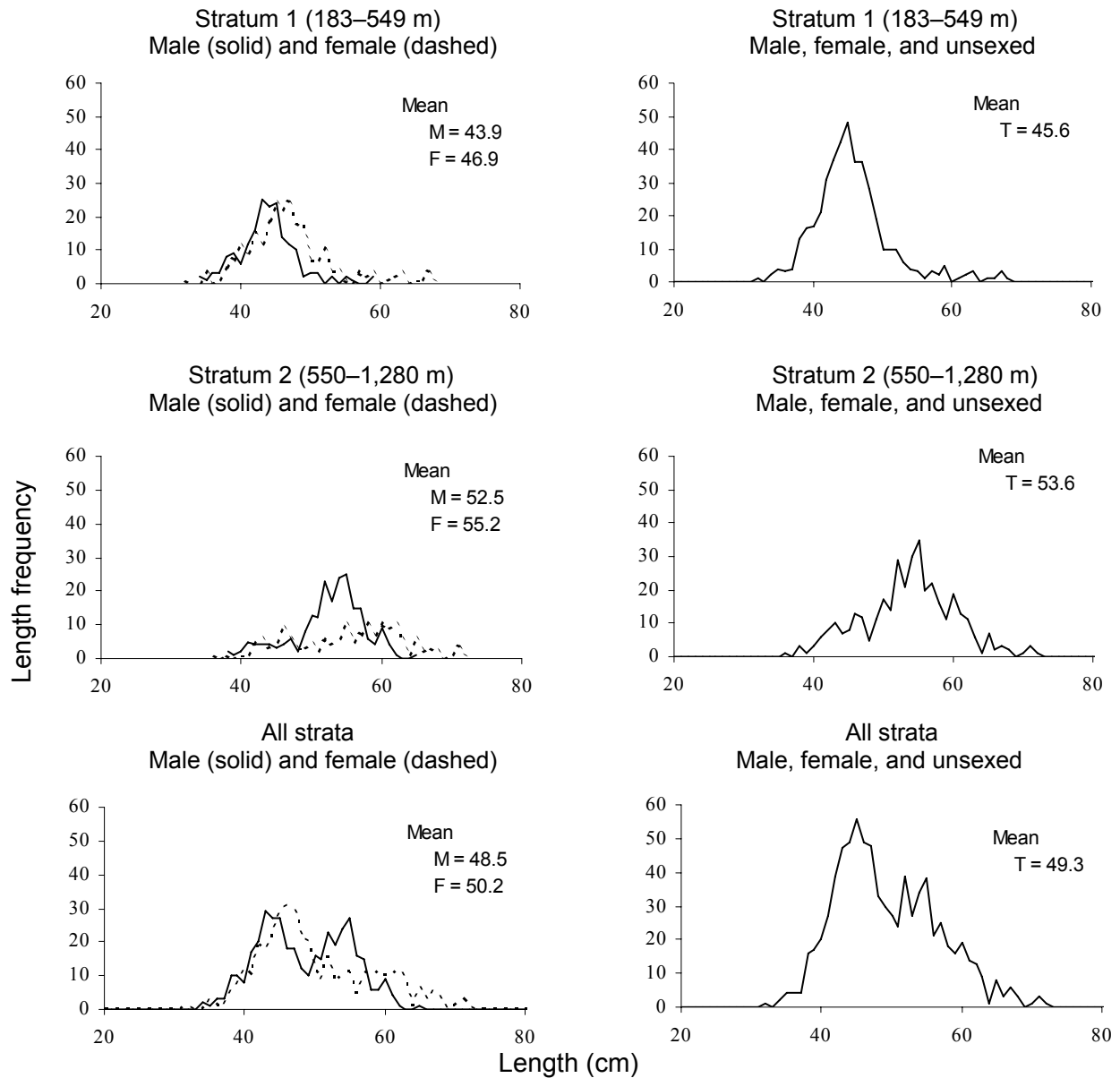


Figure 33. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Conception area from the 2002 NWFSC slope survey.

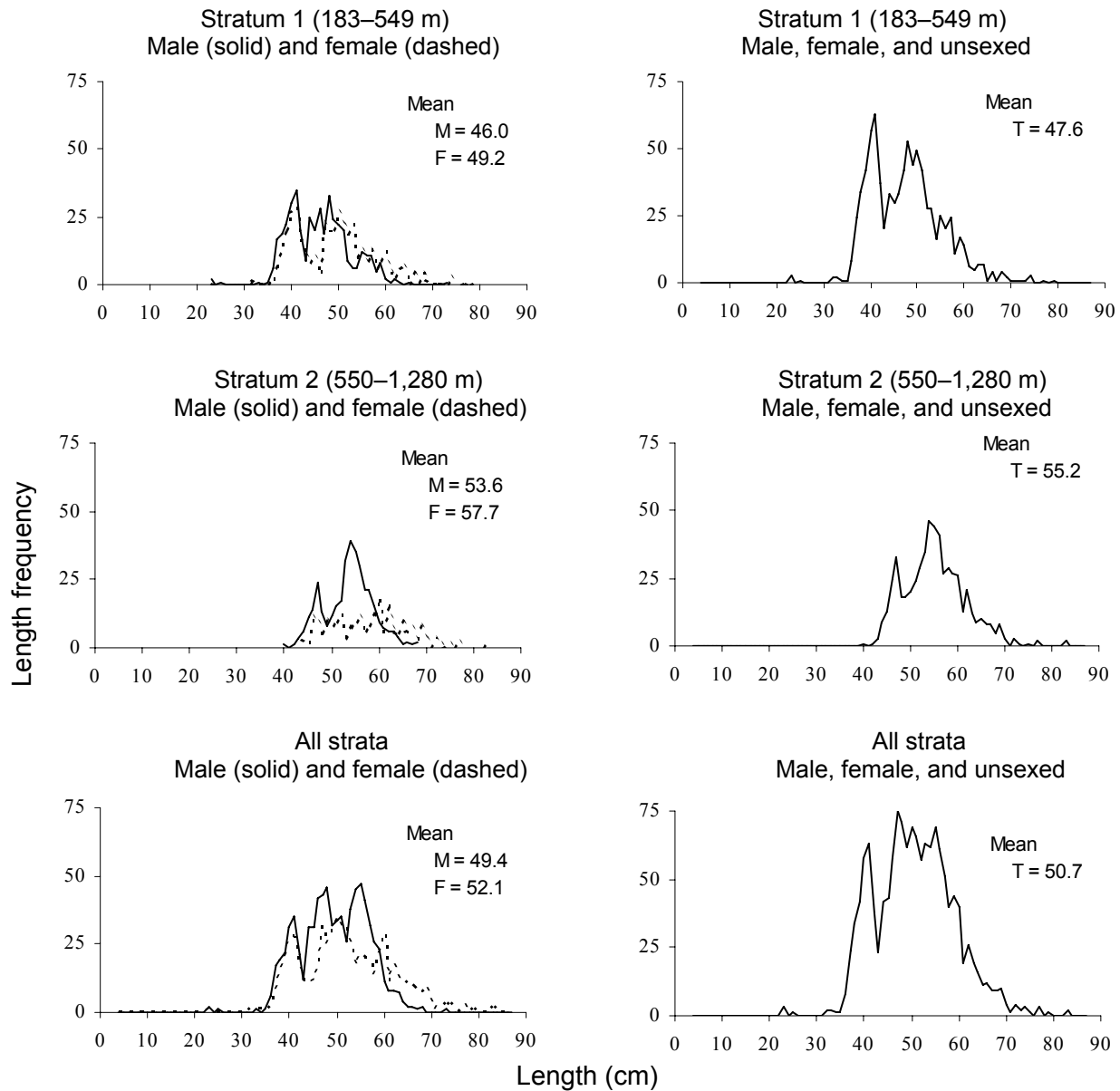


Figure 34. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Monterey area from the 2002 NWFSC slope survey.

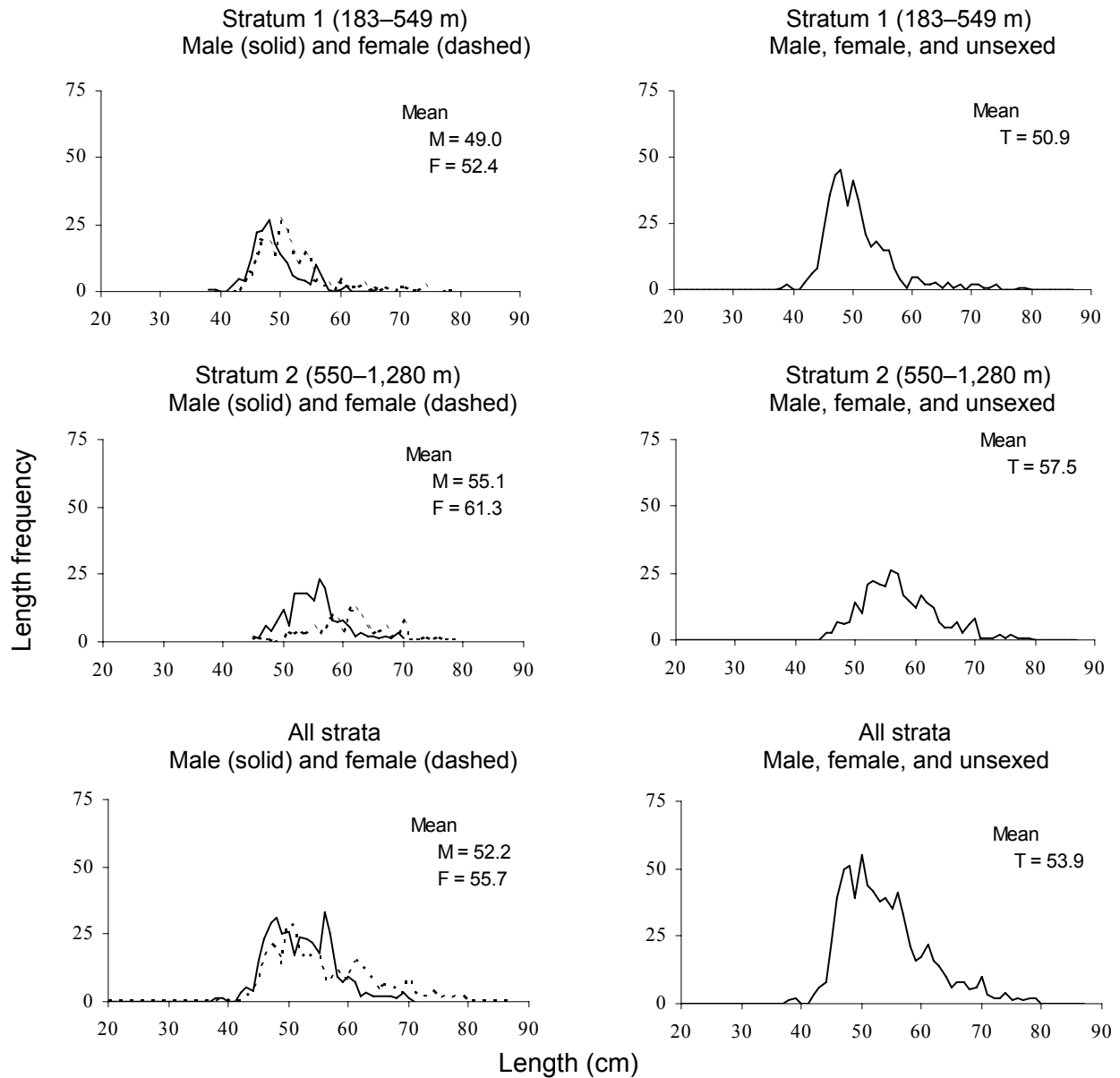


Figure 35. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Eureka area from the 2002 NWFSC slope survey.

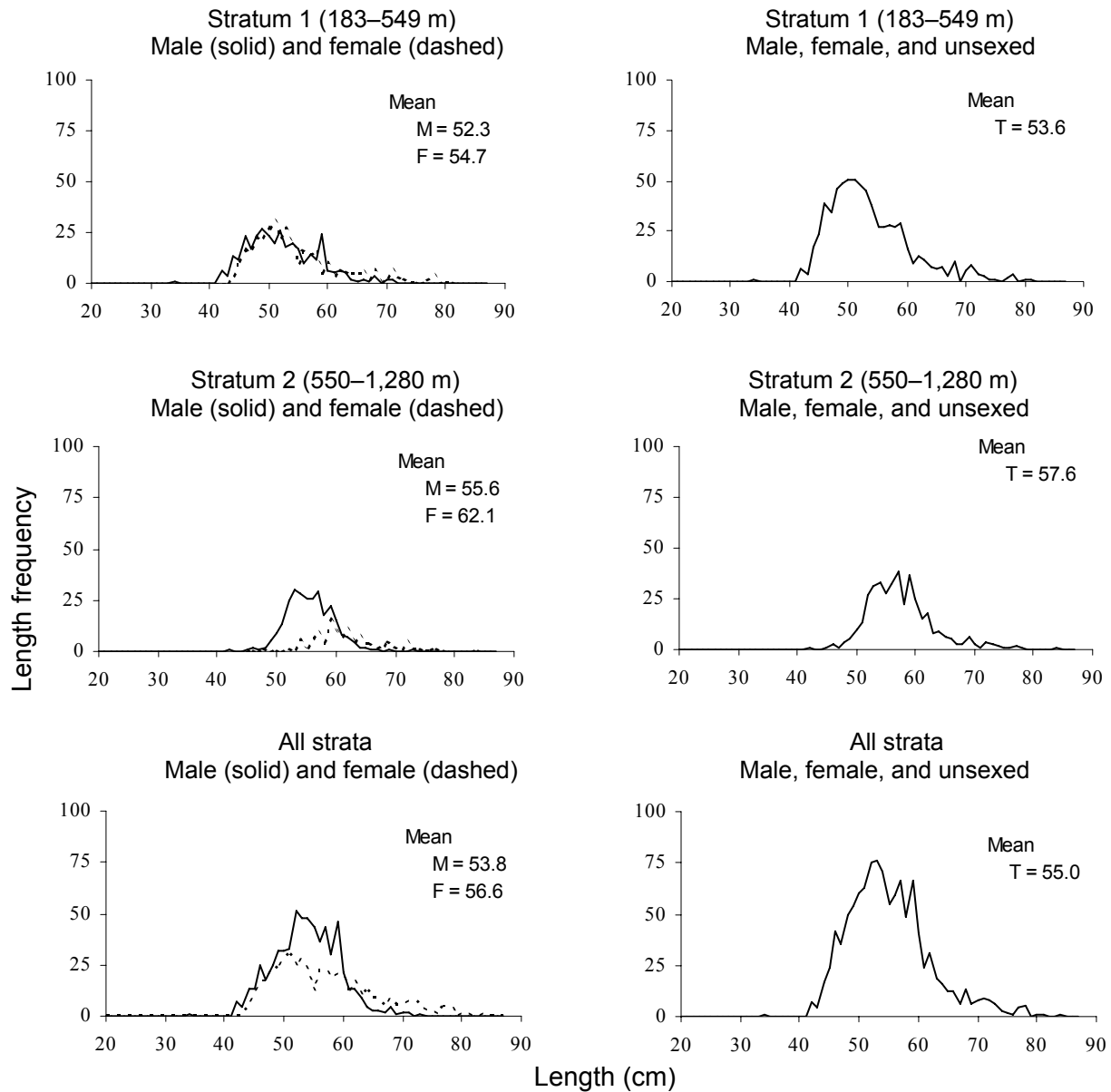


Figure 36. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC Columbia area from the 2002 NWFSC slope survey.

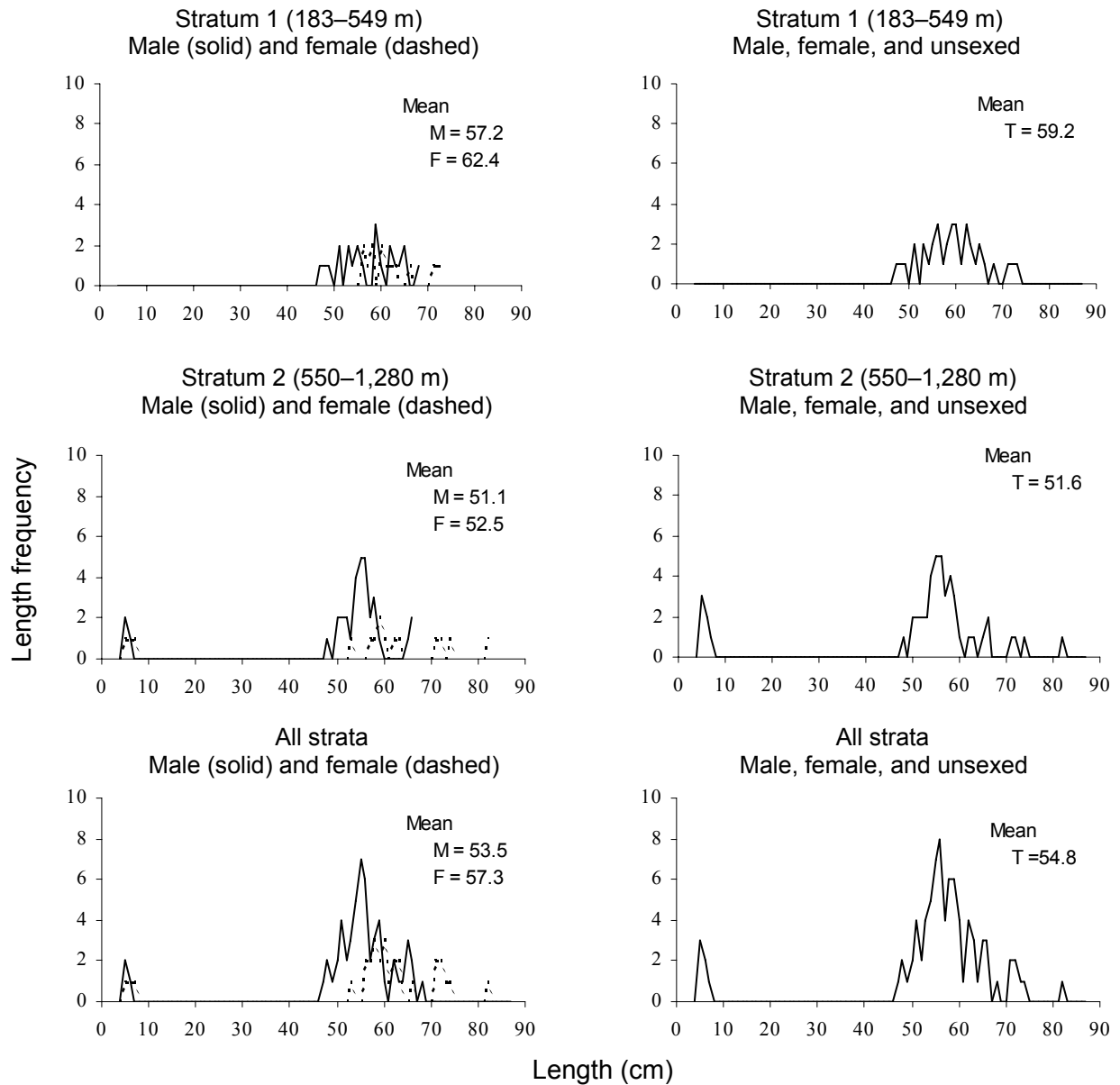


Figure 37. Unweighted length-frequency data and mean lengths (cm) of sablefish by depth stratum (m) and by sex (M = male, F = female, and T = males, females, and unsexed) for the INPFC U.S.-Vancouver area from the 2002 NWFSC slope survey.

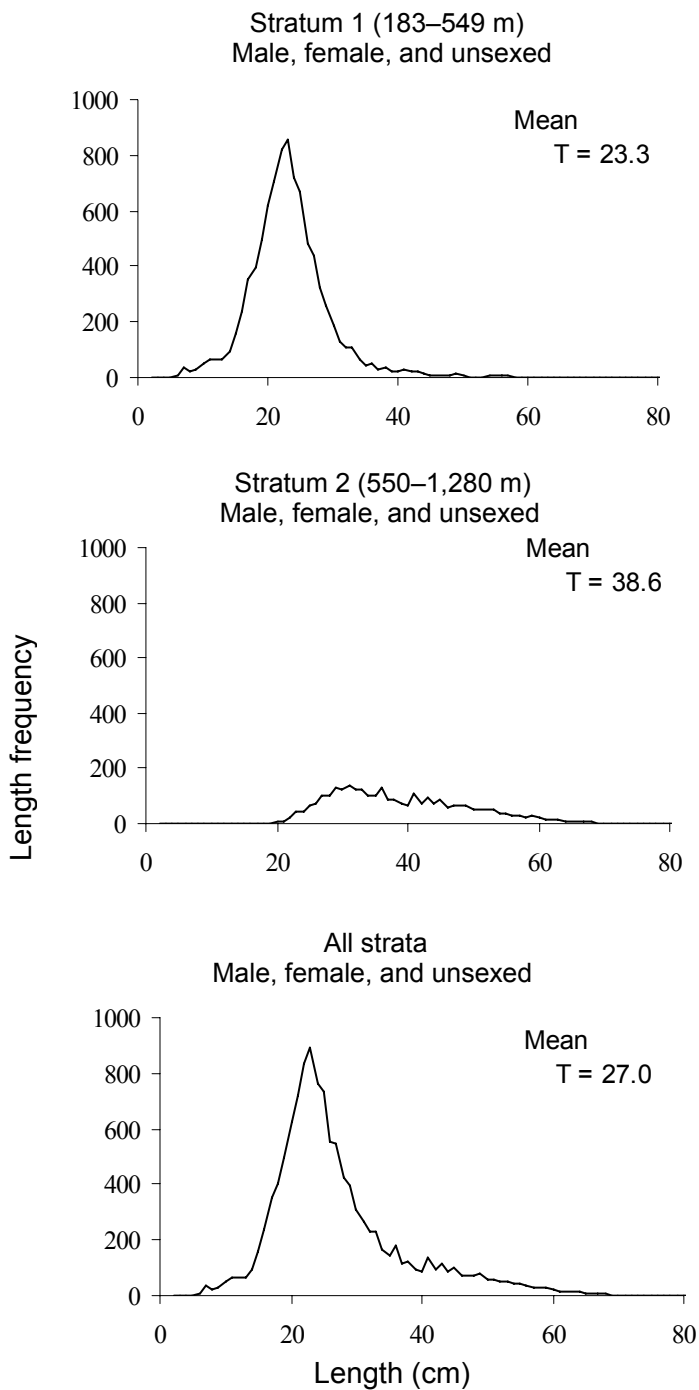


Figure 38. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for all INPFC areas sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

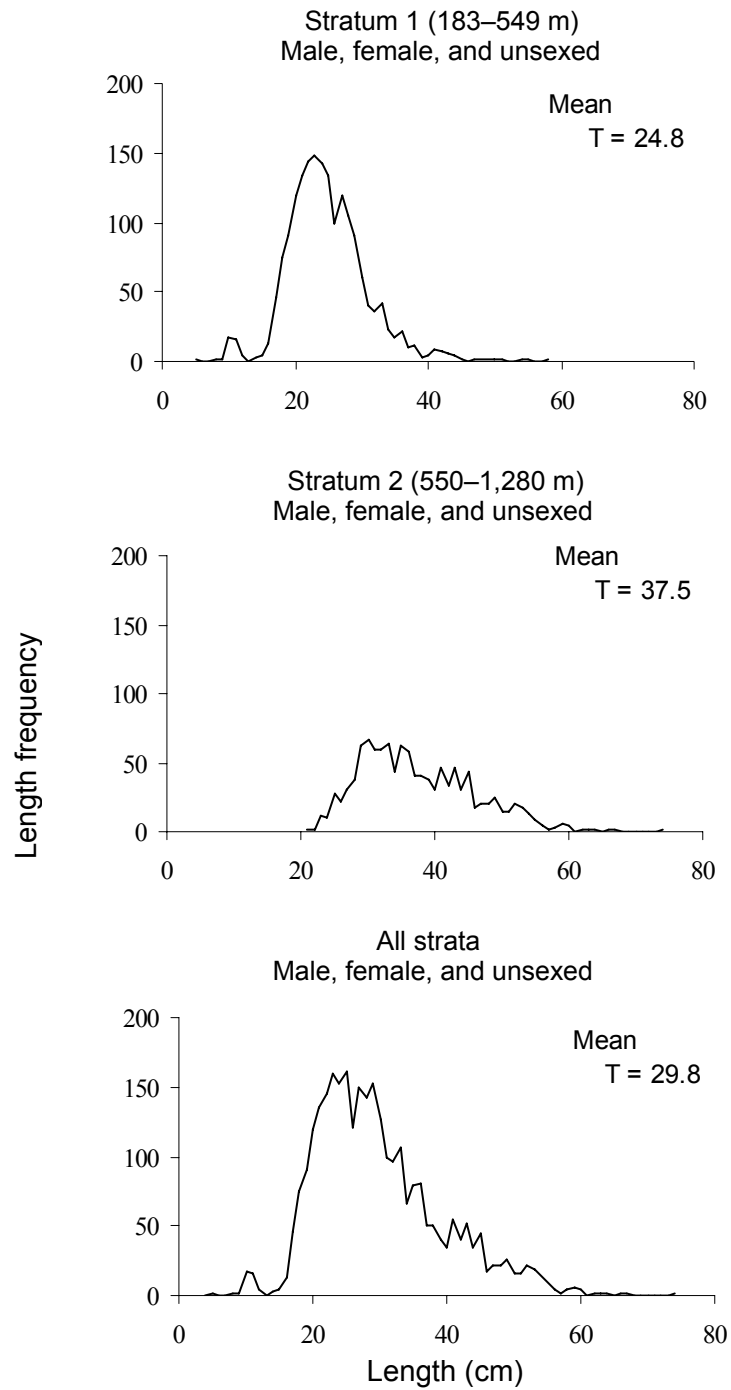


Figure 39. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Conception area sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

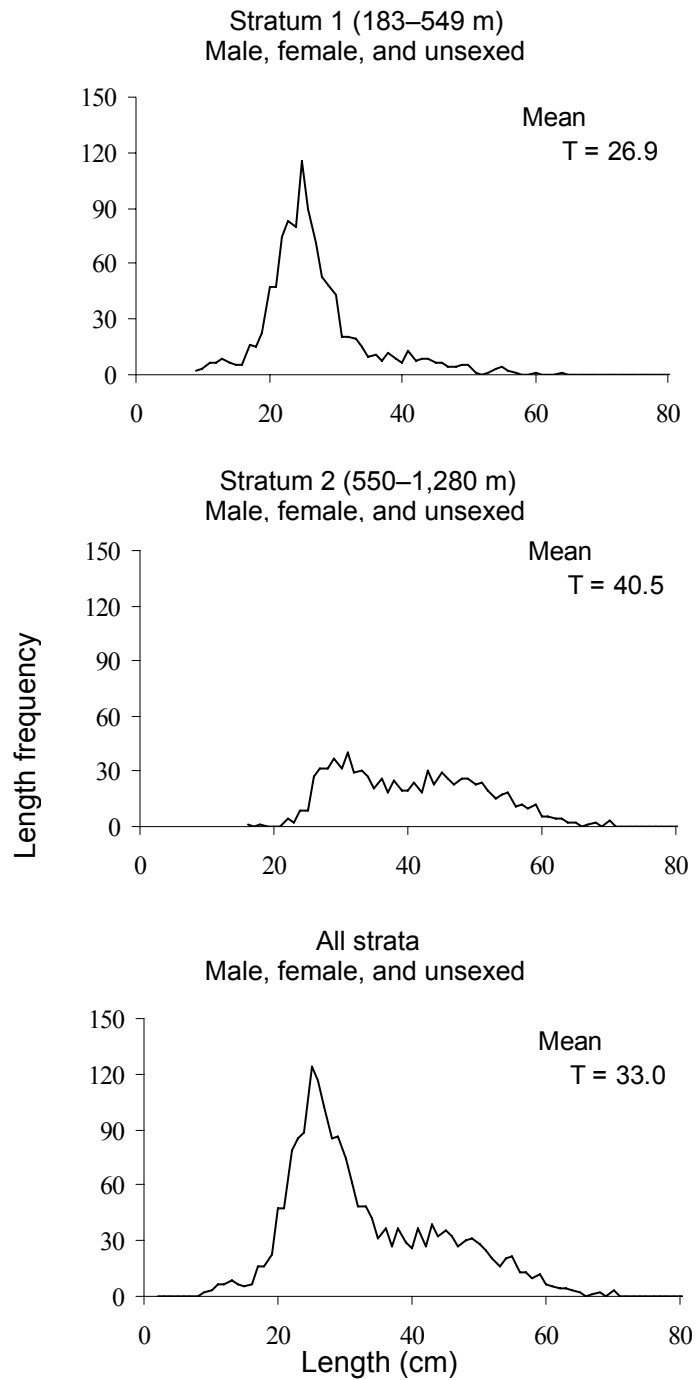


Figure 40. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Monterey area sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

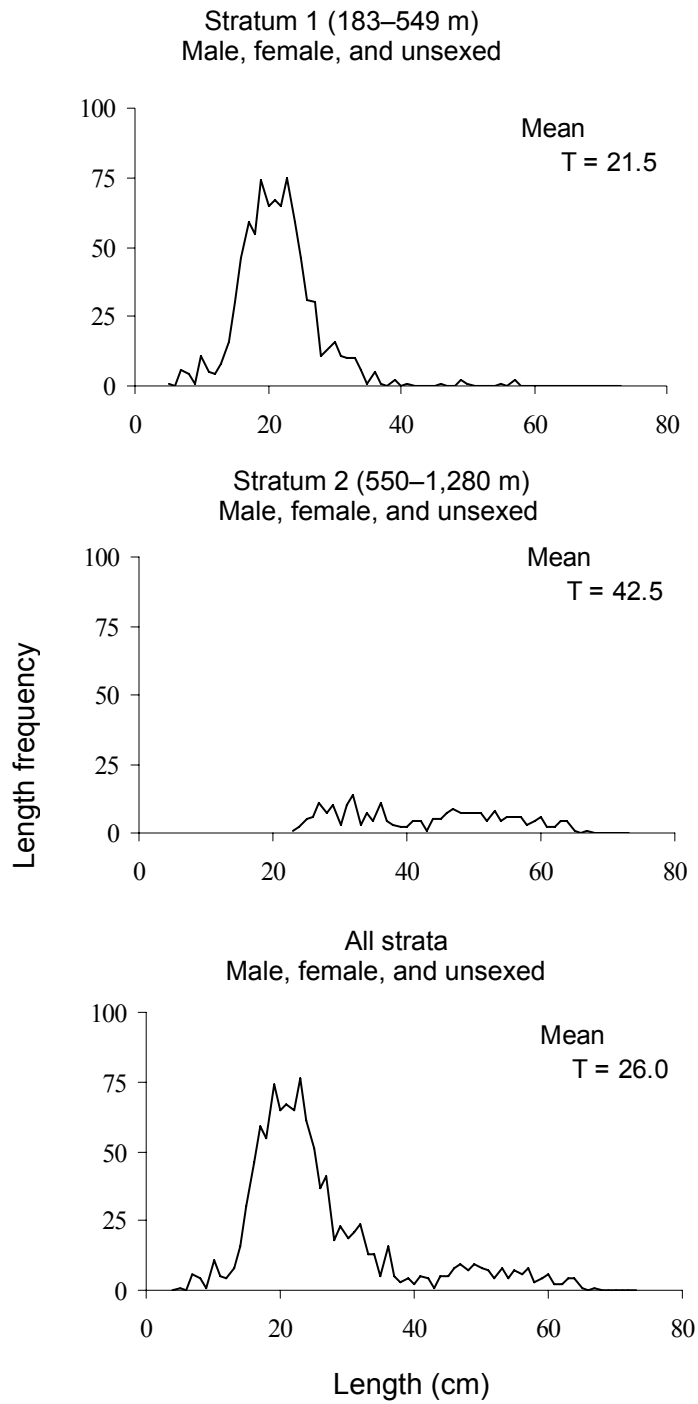


Figure 41. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Eureka area sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

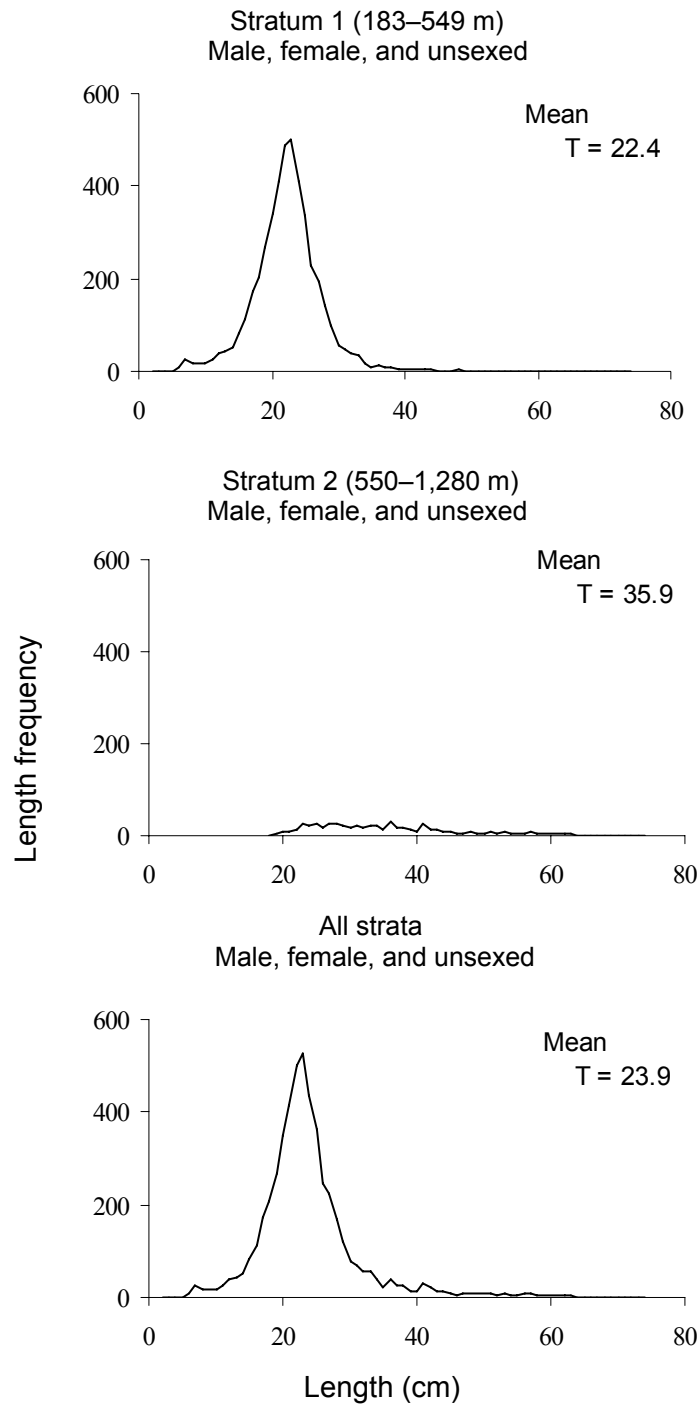


Figure 42. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC Columbia area sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

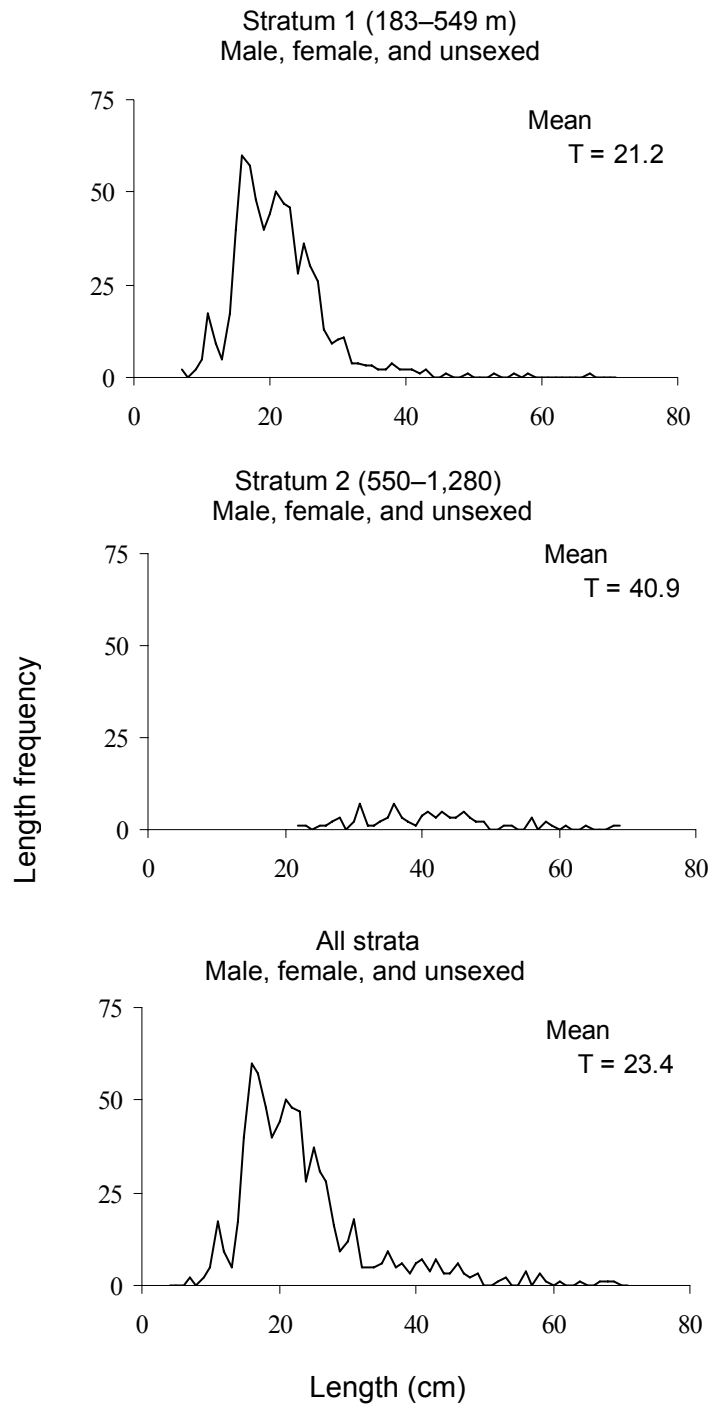


Figure 43. Unweighted length-frequency data and mean lengths (cm) of shortspine thornyhead by depth stratum (m) for the INPFC U.S.-Vancouver area sampled during the 2002 NWFSC slope survey (T = males, females, and unsexed).

References

- Builder Ramsey, T., T. A. Turk, E. L. Fruh, J. R. Wallace, B. H. Horness, A. J. Cook, K. L. Bosley, D. J. Kamikawa, L. C. Hufnagle Jr., and K. Piner. 2002. The 1999 Northwest Fisheries Science Center Pacific 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-55.
- Gunderson, D. R. 1993. Surveys of fisheries resources. John Wiley, New York.
- Helser, T. E., A. E. Punt, and R. D. Methot. 2004. A generalized linear model analysis of a multi-vessel fishery resource survey. *Fish. Res.* 70:239–250.
- Keller, A. A., T. L. Wick, E. L. Fruh, K. L. Bosley, D. J. Kamikawa, J. R. Wallace, and B. H. Horness. 2005. The 2000 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-70.
- 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.
- Lauth, R. R. 1999. The 1997 Pacific West Coast upper continental slope trawl survey of groundfish resources off Washington, Oregon, and California: Estimates of distribution, abundance, and composition. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-AFSC-98.
- Lauth, R. R. 2001. The 2000 Pacific West Coast upper continental slope trawl survey of groundfish resources off Washington, Oregon, and California: Estimates of distribution, abundance, and composition. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-AFSC-120.
- Methot, R. D., J. R. Wallace, and C. W. West. 2000. Introducing a new trawl survey for U.S. West Coast slope groundfish. Presented at ICES Annual Science Conference, Brugge, Belgium, September, 2000. (Available from R. Methot, NWFSC, Fishery Resource Analysis and Monitoring Division, 2725 Montlake Blvd. E., Seattle, WA 98112.)
- Naval Oceanographic Office. No date. DBDB-V Version 4.3 (Digital Bathymetric Database-Variable resolution). Naval Oceanographic Office, Stennis Space Center, MS.
- S-Plus. 1999. S-Plus 2000 User's Guide. Mathsoft, Inc., Data Analysis Products Division, Seattle, WA.
- Turk, T. A., T. L. Builder, C. W. West, D. J. Kamikawa, J. R. Wallace, R. D. Methot, A. R. Bailey, K. L. Bosley, A. J. Cook, E. L. Fruh, B. H. Horness, K. Piner, H. R. Sanborn, and W. W. Wakefield. 2001. The 1998 Northwest Fisheries Science Center Pacific West Coast upper continental slope trawl survey of groundfish resources off Washington, Oregon, and California: Estimates of distribution, abundance, and composition. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-50.

- Wallace, J. R. 2000a. Calculating tow position and distance from FRAMD 2000 slope survey data. Unpubl. manuscript. (Available from J. Wallace, NWFSC, Fishery Resource Analysis and Monitoring Division, 2725 Montlake Blvd. E., Seattle, WA 98112.)
- Wallace, J. R. 2000b. Calculating tow position and distance from FRAMD 1999 slope survey data. Unpubl. manuscript. (Available from J. Wallace, NWFSC, Fishery Resource Analysis and Monitoring Division, 2725 Montlake Blvd. E., Seattle, WA 98112.)
- Wallace, J. R. and C. W. West. 2006. Measurements of distance fished during the trawl retrieval period. *Fish. Res.* 77:285–292.
- West, C. W., D. R. Gunderson, and R. D. Methot. 1998. Evaluation of West Coast slope survey methodology. Unpubl. manuscript. (Available from J. Wallace, NWFSC, Fishery Resource Analysis and Monitoring Division, 2725 Montlake Blvd. E., Seattle, WA 98112.)

Appendix A: Haul and Catch Information

Appendix A consists of Table A-1, listing station and catch data for all hauls from the 2002 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 in kilograms (kg). Geodetic positions are displayed as decimal degrees (e.g., lat 45.3350 is lat 45°20'30"N). 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. Hauls are presented sequentially by vessel; a gap in "Haul number" columns indicates a change in vessel beginning on the next page in the table. Performance codes are as follows:

<u>Code</u>	<u>Explanation</u>
0	Good performance
1	Satisfactory performance, hung up
1.1	Satisfactory performance, minor hangs
1.11	Satisfactory performance, completed tow
2.4	Satisfactory performance, belly damaged
3.3	Satisfactory performance, caught trawl gear
4	Satisfactory performance, caught unspecified object
4.1	Satisfactory performance, caught large rock
4.2	Satisfactory performance, caught large quantity of mud
4.3	Satisfactory performance, caught debris or wreckage
4.5	Satisfactory performance, large invertebrate catch affected net performance
5	Satisfactory performance, unspecified gear performance problem
5.1	Satisfactory performance, net came off bottom
5.41	Satisfactory performance, net crabbing severely
5.8	Satisfactory performance, light footrope contact
6	Satisfactory performance, unspecified problems
6.1	Satisfactory performance, depth change over tow exceeds survey defined limits
6.24	Satisfactory performance, scope changed during tow
6.31	Satisfactory performance, haul back delayed due to mechanical problems
7	Satisfactory performance, on deck sampling error

-6	Unsatisfactory performance, unspecified problems
-5.8	Unsatisfactory performance, light footrope contact
-5.42	Unsatisfactory performance, doors crossed
-5.23	Unsatisfactory performance, headrope/footrope tangled
-5.1	Unsatisfactory performance, net came off bottom
-5	Unsatisfactory performance, unspecified gear performance problem
-4.1	Unsatisfactory performance, caught large rock
-3.11	Unsatisfactory performance, sablefish pot
-2.4	Unsatisfactory performance, belly damaged
-1.2	Unsatisfactory performance, major hang
-1.11	Unsatisfactory performance, completed tow
-1	Unsatisfactory performance, hung up

Table A-1. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001001	200201001002	200201001003	200201001004	200201001005
Start date and time	8/22/02 0622	8/22/02 0857	8/22/02 1005	8/22/02 1301	8/22/02 1501
Latitude (dd)	47.5855	47.5616	47.5617	47.5617	47.5569
Longitude (dd)	-125.0918	-125.1197	-125.1157	-125.2223	-125.2557
Station	4D	4E	4E	4F	4G
Avg. bottom depth (m)	421.73	493.64	496.12	611.17	775.81
Duration (hr)	0.30	0.24	0.27	0.25	0.32
Distance fished (km)	1.28	0.91	1.09	1.02	
Area swept (ha)	1.81	1.35	1.57	1.38	
Net width (m)	14.11	14.79	14.48	13.44	14.97
Performance	0	-6	0	0	-4.1
Species by weight					
Hagfish			0.32	0.10	
Brown cat shark	0.33		1.25	0.90	
Spiny dogfish					
Skates	45.80		18.30	0.85	
Other Chondrichthyes	1.16				
Arrowtooth flounder	0.90				
Petrale sole					
Dover sole	106.80		76.30	0.55	
Deepsea sole			7.00	1.10	
Rex sole	16.20		3.85		
Other flatfish	0.35				
Sablefish	2.55		1.10	3.85	
Pacific grenadier				0.65	
Giant grenadier					
Other grenadier					
Pacific flatnose			0.65	1.40	
Slickheads					
Eelpouts	7.44		5.17	4.35	
Snailfish	0.95			2.55	
Pacific hake	2.90		3.45		
Other roundfish			0.49	0.86	
Shortspine thornyhead	14.40		15.30	5.65	
Longspine thornyhead			23.25	7.75	
Rougheye rockfish	7.00				
Pacific ocean perch	20.35				
Aurora rockfish	0.85				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	4.45				
Grooved tanner crab	3.30			1.60	
Other invertebrates	53.22		30.94	16.46	
Total catch weight (kg)	288.95		187.37	48.62	

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001006	200201001007	200201001008	200201001009	200201001010
Start date and time	8/22/02 1815	8/22/02 1952	8/23/02 0655	8/23/02 0914	8/23/02 1201
Gear latitude (dd)	47.5272	47.5452	46.8495	46.8412	46.9210
Gear longitude (dd)	-125.2453	-125.2930	-124.9281	-124.9445	-125.1339
Station	4G	4I	8D	8E	8H
Depth (m)	787.22	992.71	440.29	505.27	862.07
Duration (hr)	0.33	0.28	0.30	0.27	0.36
Distance fished (km)	1.46	1.24	1.45	1.11	1.55
Area swept (ha)	2.18	1.86	2.11	1.61	2.32
Net width (m)	14.97	15.02	14.54	14.49	14.94
Performance	0	6	5.1	0	5.1
Species by weight					
Hagfish	0.24	0.65			0.15
Brown cat shark	1.30	0.45	2.55	1.85	2.60
Spiny dogfish					
Skates		0.36		3.70	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			66.50	74.75	0.95
Deepsea sole	3.25	3.15			2.95
Rex sole			2.20	2.60	
Other flatfish					
Sablefish	11.30		6.00	3.05	6.20
Pacific grenadier	0.30	9.25			1.20
Giant grenadier	5.80	7.95			1.75
Other grenadier					
Pacific flatnose		0.25	0.63	2.10	
Slickheads	0.10	0.85			1.85
Eelpouts	2.05	3.71	4.50	5.30	1.20
Snailfish	0.09	0.34	0.47		
Pacific hake			1.65	1.20	
Other roundfish	0.29	0.07	0.11	0.15	0.11
Shortspine thornyhead	3.25	3.85	14.60	9.40	1.30
Longspine thornyhead	13.85	38.00		0.70	76.70
Rougheye rockfish			2.20		
Pacific ocean perch					
Aurora rockfish			1.10		
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	47.20	69.80	4.75	3.05	18.60
Other invertebrates	7.33	9.48	29.83	14.85	11.26
Total catch weight (kg)	96.35	148.16	137.09	122.70	126.82

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001011	200201001012	200201001013	200201001014	200201001015
Start date and time	8/23/02 1459	8/23/02 1644	8/23/02 1908	8/24/02 0704	8/24/02 0905
Gear latitude (dd)	46.9479	46.9389	46.9334	46.1682	46.2068
Gear longitude (dd)	-125.2108	-125.2256	-125.2347	-124.9428	-124.8552
Station	8I	8I	8J	12H	12G
Depth (m)	1,067.99	1,025.27	1,134.16	884.01	732.31
Duration (hr)	0.15	0.38	0.43	0.26	0.35
Distance fished (km)	1.04	1.49	1.60	1.13	1.46
Area swept (ha)	1.56	2.24	2.41	1.69	2.19
Net width (m)	15.02	15.04	15.05	15.02	15.00
Performance	-5.1	5.1	-5.1	0	0
Species by weight					
Hagfish			0.50	0.31	0.50
Brown catshark				1.75	12.60
Spiny dogfish					
Skates		3.30	0.23		2.85
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole					4.60
Deepsea sole		6.70	5.95	0.65	5.50
Rex sole					
Other flatfish					
Sablefish		17.70		11.50	14.15
Pacific grenadier		52.20	36.05	0.65	0.65
Giant grenadier		40.60	35.60	3.45	2.00
Other grenadier					
Pacific flatnose		2.20	2.75	0.15	0.80
Slickheads		15.12	1.50	2.40	0.35
Eelpouts		1.65	0.12	0.75	3.65
Snailfish					0.71
Pacific hake					
Other roundfish		0.41	1.54	0.36	0.81
Shortspine thornyhead		11.80	14.85	0.60	0.40
Longspine thornyhead		44.90	31.75	38.80	43.80
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		2.30	0.35	6.40	27.55
Other invertebrates		20.34	39.31	5.29	4.39
Total catch weight (kg)		219.22	170.50	73.06	125.31

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001016	200201001017	200201001018	200201001019	200201001020
Start date and time	8/24/02 1231	8/24/02 1504	8/24/02 1706	8/25/02 0639	8/25/02 1048
Gear latitude (dd)	46.2387	46.2581	46.2770	45.6199	45.5624
Gear longitude (dd)	-124.5114	-124.4301	-124.4234	-124.5623	-124.7137
Station	12F	12D	12C	16B	16D
Depth (m)	608.97	435.31	389.70	295.55	459.97
Duration (hr)	0.30	0.27	0.28	0.31	0.27
Distance fished (km)	1.12	1.11	1.12	1.16	1.07
Area swept (ha)	1.52	1.67	1.46	1.70	1.56
Net width (m)	13.55	15.01	13.01	14.69	14.58
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.45	0.18			
Brown cat shark	1.00				1.30
Spiny dogfish				2.30	
Skates		6.50	1.55	19.85	0.70
Other Chondrichthyes					
Arrowtooth flounder			3.15	5.60	
Petrale sole					
Dover sole	16.95	69.65	106.60	62.75	23.95
Deepsea sole					
Rex sole		53.65	33.10	28.50	0.25
Other flatfish			0.19	1.90	
Sablefish	17.55	14.00	6.00	17.30	25.75
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	5.31	3.89	1.82	4.45	0.40
Snailfish		0.02	0.30		0.75
Pacific hake	0.55		1.80	31.00	9.05
Other roundfish	0.02	0.05	0.04		
Shortspine thornyhead	40.60	71.20	33.95	26.50	28.95
Longspine thornyhead	33.00				2.55
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish				37.70	
Splitnose rockfish				1.60	
Shortbelly rockfish					
Other rockfish				6.65	
Grooved tanner crab	80.65	3.10	0.06		
Other invertebrates	110.14	23.99	240.68	134.15	15.11
Total catch weight (kg)	306.22	246.23	429.24	380.25	108.76

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001021	200201001022	200201001023	200201001024	200201001025
Start date and time	8/25/02 1257	8/25/02 1513	8/25/02 1731	8/26/02 0557	8/26/02 0734
Gear latitude (dd)	45.5281	45.5501	45.5692	44.9666	44.9419
Gear longitude (dd)	-124.8078	-124.8376	-124.8496	-125.0322	-125.0636
Station	16H	16I	16J	20J	20J
Depth (m)	860.29	1,028.63	1,153.85	1,045.78	1,130.59
Duration (hr)	0.30	0.33	0.33	0.26	0.60
Distance fished (km)	1.18	1.38	1.26	1.08	1.67
Area swept (ha)	1.90	2.04	1.90	1.63	2.51
Net width (m)	16.11	14.84	15.05	15.04	15.05
Performance	0	0	0	-5.1	0
Species by weight					
Hagfish	0.05	0.75	0.25		0.75
Brown cat shark	0.25				
Spiny dogfish					
Skates			12.70		0.26
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole					
Deepsea sole	1.05	0.90	4.05		1.45
Rex sole					
Other flatfish					
Sablefish	1.45	8.05	13.25		13.35
Pacific grenadier	0.05	20.95	32.25		182.85
Giant grenadier	1.35	9.05	42.95		25.85
Other grenadier					
Pacific flatnose		0.40	2.75		4.05
Slickheads	0.15	2.47	2.90		2.15
Eelpouts	0.31	6.95	1.71		0.85
Snailfish			0.45		
Pacific hake					
Other roundfish	0.62	0.20	0.55		0.10
Shortspine thornyhead	0.55	2.10	4.25		11.55
Longspine thornyhead	6.90	46.80	20.55		48.00
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	32.15	42.85	31.65		7.30
Other invertebrates	10.11	7.27	21.33		22.69
Total catch weight (kg)	54.99	148.74	191.59		321.20

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001026	200201001027	200201001028	200201001029	200201001030
Start date and time	8/26/02 1137	8/26/02 1444	8/26/02 1632	8/26/02 1755	8/30/02 0646
Gear latitude (dd)	44.9597	44.9371	44.9678	44.9173	44.2500
Gear longitude (dd)	-124.9676	-124.5905	-124.4851	-124.4253	
Station	20G	20D	20C	20A	24B
Depth (m)	726.47	449.56	367.49	204.67	293.52
Duration (hr)	0.31	0.27	0.29	0.30	
Distance fished (km)	1.04	1.07	1.21	1.23	
Area swept (ha)	1.52	1.56	1.82	1.76	
Net width (m)	14.63	14.54	15.02	14.30	
Performance	0	0	0	0	
Species by weight					
Hagfish					
Brown cat shark	1.40	1.65		0.21	
Spiny dogfish			1.80	1.65	
Skates		2.15	18.05	73.55	
Other Chondrichthyes				1.05	
Arrowtooth flounder		3.30	7.05	21.30	
Petrale sole				0.41	
Dover sole	16.05	20.90	24.10	43.10	
Deepsea sole	2.35				
Rex sole		1.25	4.35	8.95	
Other flatfish			2.05	21.60	
Sablefish	13.70	16.45	28.80	89.30	
Pacific grenadier	0.40				
Giant grenadier	2.20				
Other grenadier					
Pacific flatnose	0.12				
Slickheads	1.61				
Eelpouts	0.80	6.69	4.75	4.03	
Snailfish	0.35				
Pacific hake		5.75	15.70	74.05	
Other roundfish	0.24	0.03	0.05	4.42	
Shortspine thornyhead	1.20	18.50	13.95	4.50	
Longspine thornyhead	39.60	6.05			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		2.25			
Darkblotched rockfish				5.90	
Splitnose rockfish			5.65	35.15	
Shortbelly rockfish					
Other rockfish				5.36	
Grooved tanner crab	13.15	1.75	0.40		
Other invertebrates	5.79	7.10	20.71	66.03	
Total catch weight (kg)	98.96	93.82	147.41	460.56	

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001031	200201001032	200201001033	200201001034	200201001035
Start date and time	8/30/02 0749	8/30/02 1029	8/30/02 1222	8/30/02 1427	8/30/02 1645
Gear latitude (dd)	44.2733	44.2884	44.3180	44.3194	44.2812
Gear longitude (dd)	-124.9201	-124.9248	-124.9051	-124.9129	-125.0090
Station	24B	24D	24E	24F	24G
Depth (m)	289.44	417.21	508.73	534.12	714.47
Duration (hr)	0.31	0.31	0.31	0.31	0.32
Distance fished (km)	1.34	1.36	1.32	1.25	1.43
Area swept (ha)	1.99	2.06	1.99	1.90	2.22
Net width (m)	14.86	15.15	15.15	15.13	15.46
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.19			
Brown cat shark		7.25	0.35	0.95	1.20
Spiny dogfish	7.40				
Skates	46.40	35.10	13.45	13.05	0.35
Other Chondrichthyes	4.00				
Arrowtooth flounder	13.70	2.55			
Petrale sole					
Dover sole	179.95	111.35	102.00	28.91	24.50
Deepsea sole					2.85
Rex sole	29.95	26.20	0.80	0.62	
Other flatfish	1.05	1.05			
Sablefish	76.90	11.50	66.60	36.85	45.00
Pacific grenadier					1.55
Giant grenadier			9.55	17.20	47.70
Other grenadier					
Pacific flatnose		0.80	3.40	2.95	0.06
Slickheads					
Eelpouts	10.45	3.40	2.73	1.96	4.20
Snailfish	0.51	0.90	3.45	1.15	0.12
Pacific hake	1.20	3.05	2.15	2.35	0.40
Other roundfish				0.17	37.73
Shortspine thornyhead	5.05	3.90	8.00	5.15	1.70
Longspine thornyhead				1.85	46.30
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		1.40			
Darkblotched rockfish					
Splitnose rockfish	2.50				
Shortbelly rockfish					
Other rockfish	2.20				
Grooved tanner crab		0.55	4.20	13.95	49.05
Other invertebrates	5.78	23.26	11.10	6.86	4.42
Total catch weight (kg)	387.04	232.45	227.78	133.97	267.13

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001036	200201001037	200201001038	200201001039	200201001040
Start date and time	8/31/02 0629	8/31/02 0903	8/31/02 1221	8/31/02 1421	8/31/02 1619
Gear latitude (dd)	43.6343	43.6232	43.5841	43.5768	43.6024
Gear longitude (dd)	-125.0236	-125.0129	-124.7361	-124.7052	-124.6140
Station	28J	28I	28F	28E	28B
Depth (m)	1,157.50	1,075.41	576.54	501.26	279.76
Duration (hr)	0.25	0.30	0.31	0.32	0.37
Distance fished (km)	0.92	1.01	1.46	1.35	1.66
Area swept (ha)	1.38	1.49	2.27	2.15	2.53
Net width (m)	15.03	14.72	15.54	15.88	15.24
Performance	0	5.1	0	0	1.11
Species by weight					
Hagfish	0.15	0.20			
Brown cat shark		0.25	0.60	5.30	
Spiny dogfish				1.60	1.55
Skates	19.10			8.00	46.55
Other Chondrichthyes					
Arrowtooth flounder					18.40
Petrale sole					
Dover sole		2.00	6.50	38.50	34.10
Deepsea sole	0.35	5.40	1.05		
Rex sole			1.90	22.65	57.85
Other flatfish					5.85
Sablefish	2.45	12.40	17.65	10.40	26.10
Pacific grenadier	69.40	35.75			
Giant grenadier	66.25	58.65			
Other grenadier					
Pacific flatnose	4.95	4.75	1.35	0.95	
Slickheads	2.25	16.85			
Eelpouts		0.95	3.90	4.55	4.10
Snailfish	0.30		1.40	0.80	
Pacific hake				1.00	46.40
Other roundfish	0.57	0.52	0.70		
Shortspine thornyhead		8.45	8.70	3.91	8.65
Longspine thornyhead	26.05	59.85	21.35	3.35	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					2.00
Shortbelly rockfish					
Other rockfish					0.12
Grooved tanner crab	8.70	13.30	13.40	0.35	
Other invertebrates	20.36	13.32	16.04	30.07	36.97
Total catch weight (kg)	220.88	232.64	94.54	131.43	288.64

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001041	200201001042	200201001043	200201001044	200201001045
Start date and time	9/1/02 0641	9/1/02 0950	9/1/02 1247	9/1/02 1511	9/1/02 1755
Gear latitude (dd)	42.8953	42.9238	42.9637	42.9423	42.9155
Gear longitude (dd)	-124.7845	-124.9052	-124.9633	-124.9728	-124.9859
Station	32A	32C	32G	32H	32I
Depth (m)	187.36	360.88	744.08	891.40	1,046.48
Duration (hr)	0.32	0.28	0.35	0.30	0.29
Distance fished (km)	1.23	1.10	1.50	1.22	1.13
Area swept (ha)	1.76	1.53	2.18	1.85	1.68
Net width (m)	14.33	14.00	14.58	15.15	14.86
Performance	0	1.11	0	0	0
Species by weight					
Hagfish			0.35	0.75	0.10
Brown cat shark		1.80	3.50	2.55	4.35
Spiny dogfish		2.65			
Skates	14.60	19.60	9.25		
Other Chondrichthyes	0.95	0.80			
Arrowtooth flounder	8.95	0.50			
Petrale sole	0.75				
Dover sole	160.50	264.20	39.90	8.85	2.50
Deepsea sole			1.25	2.35	6.65
Rex sole	74.20	56.50			
Other flatfish	17.70	1.00			
Sablefish	2.50	31.50	19.70	22.25	8.30
Pacific grenadier			0.30	1.25	14.95
Giant grenadier			3.95	14.45	54.80
Other grenadier					
Pacific flatnose				0.05	1.35
Slickheads				0.85	15.95
Eelpouts	8.10	11.15	1.90	2.20	0.38
Snailfish		0.56	0.25		
Pacific hake	1.80	18.00			
Other roundfish		0.01	0.11	0.59	0.15
Shortspine thornyhead	11.05	23.05	1.50		1.90
Longspine thornyhead			83.80	64.40	40.35
Rougheye rockfish					
Pacific ocean perch	0.50				
Aurora rockfish		5.30			
Darkblotched rockfish	5.85	0.80			
Splitnose rockfish	7.20				
Shortbelly rockfish					
Other rockfish	5.45	1.65			
Grooved tanner crab			14.45	55.40	46.60
Other invertebrates	26.41	117.55	7.64	21.57	15.86
Total catch weight (kg)	346.51	556.62	187.85	197.51	214.19

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001046	200201001047	200201001048	200201001049	200201001050
Start date and time	9/2/02 0635	9/2/02 0827	9/2/02 1106	9/2/02 1349	9/2/02 1638
Gear latitude (dd)	42.2360	42.2287	42.2051	42.2180	42.2662
Gear longitude (dd)	-124.9729	-124.9759	-124.8915	-124.8312	-124.6408
Station	36J	36J	36H	36G	36C
Depth (m)	1,123.32	1,114.42	900.96	743.43	330.38
Duration (hr)	0.15	0.27	0.35	0.29	0.29
Distance fished (km)	0.54	1.05	1.48	1.08	1.30
Area swept (ha)	0.81	1.64	2.23	1.63	1.97
Net width (m)	15.04	15.60	15.04	15.13	15.15
Performance	-5.1	0	0	0	0
Species by weight					
Hagfish		0.20	0.35	0.15	
Brown cat shark		0.45	1.60	0.45	11.55
Spiny dogfish					0.50
Skates		18.80	0.09		16.90
Other Chondrichthyes					
Arrowtooth flounder					4.60
Petrale sole					
Dover sole		42.15	0.65	33.90	67.60
Deepsea sole		3.80	4.50	3.35	
Rex sole					31.15
Other flatfish					23.60
Sablefish		19.05	17.50	22.05	24.60
Pacific grenadier		56.45	4.25	0.50	
Giant grenadier		48.85	45.45	79.80	
Other grenadier					
Pacific flatnose		1.65	0.45	0.25	
Slickheads		2.95	5.60		
Eelpouts		0.45	2.15	1.55	4.10
Snailfish		0.32	0.01	0.26	0.75
Pacific hake					60.50
Other roundfish		0.84	0.07	0.10	
Shortspine thornyhead			2.30	3.30	7.10
Longspine thornyhead		28.30	55.40	72.90	0.20
Rougheye rockfish					
Pacific ocean perch					0.60
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					5.45
Shortbelly rockfish					
Other rockfish					6.65
Grooved tanner crab		30.05	42.80	11.55	
Other invertebrates		34.54	13.84	10.47	42.96
Total catch weight (kg)		288.85	197.01	240.58	308.81

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001051	200201001052	200201001053	200201001054	200201001055
Start date and time	9/2/02 1903	9/3/02 0633	9/3/02 0855	9/3/02 1110	9/3/02 1303
Gear latitude (dd)	42.2840	41.6207	41.6222	41.5793	41.5703
Gear longitude (dd)	-124.6185	-124.5237	-124.5300	-124.5547	-124.5964
Station	36A	40D	40E	40F	40G
Depth (m)	215.92	460.25	494.77	603.76	744.28
Duration (hr)	0.30	0.29	0.27	0.30	0.32
Distance fished (km)	1.32	1.25	1.09	1.40	1.26
Area swept (ha)	1.95	1.85	1.66	2.14	1.90
Net width (m)	14.82	14.84	15.13	15.30	15.04
Performance	0	0	0	0	0
Species by weight					
Hagfish					0.45
Brown cat shark	3.35	14.65	14.45	4.85	8.75
Spiny dogfish	4.10	1.35			
Skates	14.40	6.95	4.20		
Other Chondrichthyes	10.00	0.40			
Arrowtooth flounder	9.15				
Petrale sole	1.25				
Dover sole	164.40	95.30	42.45	15.90	25.00
Deepsea sole				1.00	1.05
Rex sole	78.90	22.60	34.21	0.60	
Other flatfish	4.80		0.13		
Sablefish	27.55	9.45	7.60	28.45	4.45
Pacific grenadier					0.45
Giant grenadier					51.15
Other grenadier					
Pacific flatnose				0.60	
Slickheads					
Eelpouts	4.80	12.80	15.40	3.70	3.20
Snailfish	0.65	1.90	1.15	0.90	0.15
Pacific hake	384.75	6.15	3.30	0.85	
Other roundfish	1.85	0.01	0.03	0.05	0.33
Shortspine thornyhead	2.80	4.00	2.70	29.45	
Longspine thornyhead			4.80	44.55	67.90
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		2.15			
Darkblotched rockfish	14.05				
Splitnose rockfish	7.56				
Shortbelly rockfish					
Other rockfish	16.60				
Grooved tanner crab			0.35	21.90	61.00
Other invertebrates	17.40	37.42	30.25	5.19	12.47
Total catch weight (kg)	768.36	215.13	161.02	157.99	236.35

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001056	200201001057	200201001058	200201001059	200201001060
Start date and time	9/3/02 1707	9/4/02 0624	9/4/02 0835	9/4/02 1059	9/4/02 1335
Gear latitude (dd)	41.5886	40.9698	40.9829	40.9309	40.9127
Gear longitude (dd)	-124.9989	-124.8049	-124.7949	-124.7136	-124.4607
Station	40J	44J	44I	44G	44C
Depth (m)	1,115.98	1,123.64	1,000.64	729.67	331.72
Duration (hr)	0.34	0.34	0.27	0.30	0.29
Distance fished (km)	1.03	1.51	1.17	1.20	1.24
Area swept (ha)	1.55	2.39	1.77	1.81	1.64
Net width (m)	15.10	15.80	15.08	15.00	13.22
Performance	0	0	0	0	-2.4
Species by weight					
Hagfish					
Brown cat shark	0.25		2.00	5.55	
Spiny dogfish					
Skates	7.50	9.35	3.46		10.55
Other Chondrichthyes					0.75
Arrowtooth flounder					8.40
Petrale sole					
Dover sole		2.55		14.55	92.45
Deepsea sole	1.55	8.80	6.70	1.20	0.15
Rex sole					4.90
Other flatfish					1.20
Sablefish	3.75	3.65	6.65	1.60	2.15
Pacific grenadier	48.50	42.90	51.90	0.10	
Giant grenadier	21.60	23.85	8.15	7.15	
Other grenadier					
Pacific flatnose	2.35	0.85	2.20		
Slickheads	4.50	3.10	11.85	4.15	
Eelpouts	2.56	6.46	1.40	1.15	3.80
Snailfish		0.56	0.11		0.07
Pacific hake					93.80
Other roundfish	0.80	0.64	0.75	0.56	18.70
Shortspine thornyhead	18.35	12.85	16.70	3.55	7.40
Longspine thornyhead	51.10	34.50	57.35	99.85	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					145.05
Splitnose rockfish					1.95
Shortbelly rockfish					
Other rockfish					2.70
Grooved tanner crab	194.75	36.05	21.00	147.70	2.75
Other invertebrates	32.72	11.78	16.54	8.04	20.44
Total catch weight (kg)	390.28	197.89	206.76	295.15	417.21

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001061	200201001062	200201001063	200201001064	200201001065
Start date and time	9/4/02 1457	9/7/02 0712	9/7/02 1046	9/7/02 1250	9/7/02 1653
Gear latitude (dd)	40.9350	40.1572	40.2603	40.2566	40.1926
Gear longitude (dd)	-124.4406	-125.0414	-124.9121	-124.8813	-124.4732
Station	44B	48J	48H	48G	48C
Depth (m)	296.46	1,150.92	857.22	798.33	341.90
Duration (hr)	0.30	0.32	0.28	0.27	0.30
Distance fished (km)	1.27	1.28	1.16	0.91	1.31
Area swept (ha)	1.93	1.89	1.71	1.35	1.72
Net width (m)	15.25	14.72	14.74	14.80	13.15
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark			2.00	9.30	
Spiny dogfish					1.20
Skates	17.10	0.21	3.10		20.05
Other Chondrichthyes	0.85				29.80
Arrowtooth flounder	0.80				0.35
Petrale sole					
Dover sole	81.15		36.10	36.00	86.10
Deepsea sole		1.15	1.90	1.35	
Rex sole	71.50				82.15
Other flatfish	2.00				0.15
Sablefish	6.30	22.60	7.05	4.90	34.35
Pacific grenadier		24.55	0.10		
Giant grenadier		19.95			
Other grenadier					
Pacific flatnose		7.60	0.20		
Slickheads		2.55	1.90	2.35	
Eelpouts	4.25	1.65	0.45	0.25	2.40
Snailfish					0.10
Pacific hake	194.50	0.65			2.90
Other roundfish	0.10	0.85	0.32	0.24	5.75
Shortspine thornyhead	3.00	3.65	12.15		1.40
Longspine thornyhead	0.10	22.15	37.20	36.85	
Rougheye rockfish					
Pacific ocean perch	38.75				0.75
Aurora rockfish					
Darkblotched rockfish	62.45				16.05
Splitnose rockfish	5.30				2.05
Shortbelly rockfish					
Other rockfish	1.40				2.45
Grooved tanner crab		24.95	19.00	18.10	1.15
Other invertebrates	47.14	95.26	6.76	13.93	17.85
Total catch weight (kg)	536.69	227.77	128.23	123.27	307.00

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001066	200201001067	200201001068	200201001069	200201001070
Start date and time	9/7/02 1859	9/8/02 0646	9/8/02 0840	9/8/02 1030	9/8/02 1249
Gear latitude (dd)	40.1892	39.6527	39.6617	39.6531	39.6459
Gear longitude (dd)	-124.4363	-124.0207	-124.0376	-124.0837	-124.1119
Station	48A	52D	52E	52G	52H
Depth (m)	243.79	412.65	466.95	703.25	889.39
Duration (hr)	0.32	0.30	0.26	0.31	0.36
Distance fished (km)	1.26	1.23	1.07	1.27	1.47
Area swept (ha)	1.66	1.88	1.58	1.90	2.19
Net width (m)	13.20	15.28	14.74	15.00	14.84
Performance	0	0	0	0	5.1
Species by weight					
Hagfish		0.25	0.10	0.25	0.55
Brown cat shark		1.10	10.10	6.95	0.75
Spiny dogfish	1.70	0.70	1.80		
Skates	21.70	23.90	16.25		
Other Chondrichthyes	154.50	3.00	1.15		
Arrowtooth flounder	3.15				
Petrale sole	5.45				
Dover sole	140.25	39.40	215.10	19.35	
Deepsea sole				0.70	2.65
Rex sole	8.55	7.95	13.30		
Other flatfish	5.65	0.50	0.05		
Sablefish	14.25	11.65	17.65	4.10	1.10
Pacific grenadier				0.45	0.55
Giant grenadier				6.25	31.85
Other grenadier					
Pacific flatnose			0.85		0.90
Slickheads				10.30	1.00
Eelpouts	3.00	10.05	10.60	0.90	0.51
Snailfish	1.55	2.30	1.00		0.10
Pacific hake	7.50	3.85	16.00	0.45	
Other roundfish	5.60	0.10		0.25	0.15
Shortspine thornyhead	0.30	0.80	2.45	1.40	
Longspine thornyhead			0.01	75.85	43.00
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		4.45	9.20		
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	34.45	1.10			
Grooved tanner crab			0.50	22.05	28.15
Other invertebrates	16.61	19.60	32.72	17.00	18.35
Total catch weight (kg)	424.21	130.70	348.83	166.25	129.61

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001071	200201001072	200201001073	200201001074	200201001075
Start date and time	9/8/02 1530	9/9/02 0627	9/9/02 0913	9/9/02 1107	9/9/02 1305
Gear latitude (dd)	39.6259	38.9252	38.9045	38.9198	38.8983
Gear longitude (dd)	-124.1542	-124.0678	-124.0310	-123.9934	-123.9584
Station	52J	56J	56H	56D	56C
Depth (m)	1,092.63	1,145.55	866.21	432.68	344.68
Duration (hr)	0.39	0.56	0.32	0.29	0.33
Distance fished (km)	1.49	2.22	1.28	1.11	1.30
Area swept (ha)	2.24	3.18	1.87	1.59	1.84
Net width (m)	15.03	14.33	14.60	14.36	14.12
Performance	-5.1	5.1	0	0	5.1
Species by weight					
Hagfish	0.10	0.10	0.15		0.15
Brown cat shark		5.40	1.80		
Spiny dogfish				1.25	0.75
Skates	9.40	28.00		51.10	14.55
Other Chondrichthyes					28.00
Arrowtooth flounder					2.80
Petrale sole					3.70
Dover sole	5.75	12.15	65.00	152.75	74.15
Deepsea sole	9.25	31.25	6.55		
Rex sole				16.75	8.75
Other flatfish					7.85
Sablefish	19.85	22.85		7.70	19.15
Pacific grenadier	41.85	176.15			
Giant grenadier	46.85	66.85	0.95		
Other grenadier					
Pacific flatnose	2.90	4.50			
Slickheads	11.60	12.50	0.50		
Eelpouts	2.10	2.05	0.50	10.85	6.20
Snailfish		0.80			
Pacific hake				9.75	51.90
Other roundfish	0.10	0.21	0.02		
Shortspine thornyhead	32.40	17.70	2.40	0.75	2.60
Longspine thornyhead	63.80	30.55	38.95	0.20	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				2.65	
Darkblotched rockfish					5.70
Splitnose rockfish					48.30
Shortbelly rockfish					
Other rockfish				2.40	1.45
Grooved tanner crab	33.65	43.10	11.05	0.05	
Other invertebrates	43.55	37.48	14.85	17.36	44.20
Total catch weight (kg)	323.15	491.64	142.72	273.56	320.20

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001076	200201001077	200201001078	200201001079	200201001080
Start date and time	9/9/02 1511	9/10/02 0645	9/10/02 0846	9/10/02 1038	9/10/02 1236
Gear latitude (dd)	38.9736	38.2717	38.2773	38.1660	38.1818
Gear longitude (dd)	-123.9481	-123.5447	-123.5576	-123.5386	-123.5736
Station	56B	60D	60E	60F	60G
Depth (m)	270.99	441.24	486.44	577.37	753.38
Duration (hr)	0.32	0.29	0.27	0.33	0.39
Distance fished (km)	1.39	1.26	1.11	1.23	1.53
Area swept (ha)	2.00	1.83	1.56	1.79	2.28
Net width (m)	14.40	14.57	14.03	14.48	14.93
Performance	0	0	0	0	5.1
Species by weight					
Hagfish			0.30		2.75
Brown cat shark		1.90	5.50	28.80	8.40
Spiny dogfish					
Skates	5.25	10.90	5.35	18.85	8.20
Other Chondrichthyes	17.65				
Arrowtooth flounder	2.95				
Petrale sole	7.20				
Dover sole	109.15	237.85	127.15	263.85	39.35
Deepsea sole					3.85
Rex sole	14.85	88.70	19.60		
Other flatfish	32.40	2.35	1.20		
Sablefish	13.90	10.60	10.80	21.65	11.55
Pacific grenadier					0.10
Giant grenadier					10.95
Other grenadier					
Pacific flatnose			1.20	1.70	0.05
Slickheads					5.20
Eelpouts	4.55	19.95	14.75	6.20	4.60
Snailfish	0.20		7.70	0.88	2.35
Pacific hake	0.60	15.10	8.15		
Other roundfish	6.02				0.08
Shortspine thornyhead	1.15	1.00	1.05	2.90	9.60
Longspine thornyhead				10.05	105.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		4.45	3.80		
Darkblotched rockfish	0.75				
Splitnose rockfish	142.70				
Shortbelly rockfish					
Other rockfish	64.75	3.30			
Grooved tanner crab				0.60	3.80
Other invertebrates	20.85	13.35	20.96	28.66	21.05
Total catch weight (kg)	444.92	409.45	227.51	384.14	237.53

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001081	200201001082	200201001083	200201001084	200201001085
Start date and time	9/10/02 1452	9/11/02 0648	9/11/02 1013	9/11/02 1311	9/11/02 1557
Gear latitude (dd)	38.1968	37.6071	37.5758	37.5774	37.5454
Gear longitude (dd)	-123.6099	-123.1625	-123.1174	-123.0890	-123.0113
Station	60J	64J	64H	64G	64B
Depth (m)	1,139.72	1,145.29	904.04	704.86	302.45
Duration (hr)	0.33	0.25	0.32	0.32	0.34
Distance fished (km)	1.21	0.99	1.23	1.04	1.33
Area swept (ha)	1.82	1.50	1.86	1.58	1.82
Net width (m)	15.00	15.11	15.06	15.20	13.70
Performance	0	4.3	1.11	0	5.1
Species by weight					
Hagfish			1.65	0.85	
Brown cat shark	3.30		2.50	1.95	0.25
Spiny dogfish					
Skates	13.45	6.85		15.00	15.65
Other Chondrichthyes	0.05	0.80			
Arrowtooth flounder					
Petrale sole					
Dover sole	88.85	4.65	125.55	269.30	56.95
Deepsea sole	24.20	23.30	17.70	1.95	
Rex sole					0.80
Other flatfish					12.20
Sablefish	58.60	31.35	55.05	52.45	16.60
Pacific grenadier	202.85	150.20	28.70		
Giant grenadier	994.95	62.05	20.50	14.00	
Other grenadier			0.10		
Pacific flatnose	9.30	5.90	1.35		
Slickheads	5.60	43.10	52.55	7.55	
Eelpouts	1.15	1.65	3.75	0.40	10.25
Snailfish	0.52	0.10	0.31	1.85	0.55
Pacific hake					3.80
Other roundfish	0.88	0.35	0.13	0.02	
Shortspine thornyhead	25.15	13.90	14.15	68.15	
Longspine thornyhead	31.55	34.15	156.05	134.05	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					0.25
Splitnose rockfish					66.30
Shortbelly rockfish					0.40
Other rockfish					95.40
Grooved tanner crab	4.90	3.60	10.70	5.15	0.05
Other invertebrates	18.22	15.50	8.86	22.21	9.17
Total catch weight (kg)	1,483.52	397.45	499.60	594.98	288.62

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001086	200201001087	200201001088	200201001089	200201001090
Start date and time	9/11/02 1747	9/14/02 0708	9/14/02 1002	9/14/02 1251	9/14/02 1549
Gear latitude (dd)	37.5525	36.9579	36.9414	36.9385	36.9186
Gear longitude (dd)	-123.0036	-122.5145	-122.4951	-122.5145	-122.5215
Station	64A	68D	68E	68F	68H
Depth (m)	223.09	436.77	502.63	608.07	909.13
Duration (hr)	0.29	0.26	0.27	0.31	0.41
Distance fished (km)	1.11	1.09	1.10	1.32	1.66
Area swept (ha)	1.73	1.52	1.57	1.90	2.61
Net width (m)	15.56	13.98	14.28	14.38	15.75
Performance	0	0	0	0	-5.1
Species by weight					
Hagfish					2.60
Brown cat shark		8.25	0.80	0.10	1.55
Spiny dogfish					
Skates	7.75	246.80	70.35	15.95	0.65
Other Chondrichthyes		2.75	0.50		0.45
Arrowtooth flounder					
Petrale sole		9.05			
Dover sole	3.45	350.05	376.55	128.20	250.45
Deepsea sole					23.60
Rex sole	7.00	65.20	39.06		
Other flatfish	3.70				
Sablefish	0.55	6.90	17.25	33.75	11.45
Pacific grenadier					37.85
Giant grenadier					14.05
Other grenadier			0.10		
Pacific flatnose			0.06	0.10	2.50
Slickheads				0.95	22.80
Eelpouts	0.15	5.71	9.70	10.02	3.05
Snailfish		0.25	0.05	0.85	0.50
Pacific hake		18.85	1.55	0.25	
Other roundfish	0.60				0.06
Shortspine thornyhead		3.25	9.86	18.47	11.40
Longspine thornyhead			2.55	32.68	118.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		3.40	8.90		
Darkblotched rockfish					
Splitnose rockfish	1.55	27.95			
Shortbelly rockfish					
Other rockfish	47.95	5.45			
Grooved tanner crab	0.01		0.35	0.90	10.65
Other invertebrates	21.35	9.70	41.02	19.27	22.87
Total catch weight (kg)	94.06	763.56	578.65	261.49	535.08

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001091	200201001092	200201001093	200201001094	200201001095
Start date and time	9/14/02 1815	9/15/02 0622	9/15/02 0842	9/15/02 1118	9/15/02 1433
Gear latitude (dd)	36.9368	36.2510	36.2462	36.2932	36.2750
Gear longitude (dd)	-122.6029	-122.2898	-122.2694	-122.2093	-122.0454
Station	68I	72J	72I	72H	72B
Depth (m)	1,008.89	1,129.27	1,053.59	893.36	293.01
Duration (hr)	0.42	0.34	0.31	0.33	0.29
Distance fished (km)	1.72	1.55	1.21	1.53	1.22
Area swept (ha)	2.59	2.35	1.84	2.33	1.67
Net width (m)	15.06	15.16	15.17	15.23	13.73
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.13	0.15		
Brown cat shark	1.55			1.65	0.28
Spiny dogfish					
Skates		14.21		20.45	0.68
Other Chondrichthyes	0.32	2.70	1.65	0.25	281.66
Arrowtooth flounder					
Petrale sole					1.95
Dover sole	255.75	13.65		18.55	6.10
Deepsea sole	20.70	1.05	2.60	14.55	
Rex sole					17.95
Other flatfish					23.50
Sablefish	19.90	13.75	6.10	17.05	1.65
Pacific grenadier	158.80	212.15	325.85	4.05	
Giant grenadier	3.50	5.80	12.45	8.15	
Other grenadier					
Pacific flatnose	8.05	9.20	4.00	9.50	
Slickheads	26.20	14.70	13.70	6.90	
Eelpouts	13.25	2.10	0.08	4.50	0.05
Snailfish	0.45			0.20	
Pacific hake					
Other roundfish	0.29	0.28	0.27	0.25	77.90
Shortspine thornyhead	32.75	14.25	6.55	5.05	
Longspine thornyhead	126.75	12.45	20.05	36.50	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					2.50
Shortbelly rockfish					354.94
Other rockfish					63.87
Grooved tanner crab	9.75	0.40	0.45	71.50	1.10
Other invertebrates	37.51	12.66	13.68	20.54	19.01
Total catch weight (kg)	715.52	329.48	407.58	239.64	853.14

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001096	200201001097	200201001101	200201001102	200201001103
Start date and time	9/15/02 1738	9/16/02 0647	9/16/02 0950	9/16/02 1226	9/16/02 1446
Gear latitude (dd)	36.2819	35.6158	35.5965	35.6257	35.6118
Gear longitude (dd)	-122.0472	-121.3500	-121.3769	-121.4887	-121.5425
Station	72A	76B	76D	76F	76G
Depth (m)	220.21	262.14	398.36	605.46	716.31
Duration (hr)	0.30	0.35	0.29	0.33	0.37
Distance fished (km)	1.29	1.32	1.16	1.48	1.48
Area swept (ha)	1.76	1.92	1.74	2.38	2.33
Net width (m)	13.65	14.52	14.93	16.06	15.78
Performance	0	0	0	0	0
Species by weight					
Hagfish				0.12	0.15
Brown cat shark			8.40	11.59	5.15
Spiny dogfish		5.95	3.00		
Skates	0.02	16.55	7.65	9.75	
Other Chondrichthyes	308.90	20.35	17.15	7.85	2.65
Arrowtooth flounder					
Petrale sole	24.90		0.60		
Dover sole	3.70	0.80	57.45	40.11	48.90
Deepsea sole					
Rex sole	18.00	0.30	1.10		
Other flatfish	34.50	0.15			
Sablefish			13.15	22.95	7.70
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					29.60
Eelpouts	0.12	0.90	1.75	0.04	0.45
Snailfish				0.65	0.18
Pacific hake		8.70	62.00	4.90	
Other roundfish	4.15	12.35			0.07
Shortspine thornyhead			1.00	18.65	16.40
Longspine thornyhead				40.90	81.90
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			9.20		
Darkblotched rockfish					
Splitnose rockfish	0.25	271.40	14.15		
Shortbelly rockfish	1.15	0.95			
Other rockfish	18.32	186.23	15.75		
Grooved tanner crab				0.09	1.70
Other invertebrates	27.82	4.48	123.95	20.51	53.02
Total catch weight (kg)	441.83	529.11	336.30	178.11	247.87

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001104	200201001105	200201001106	200201001107	200201001108
Start date and time	9/16/02 1727	9/17/02 0653	9/17/02 0940	9/17/02 1136	9/17/02 1654
Gear latitude (dd)	35.5903	34.9608	34.9858	34.9817	34.9188
Gear longitude (dd)	-121.6748	-120.8820	-120.9348	-121.0130	-121.5732
Station	76H	80A	80B	80D	80I
Depth (m)	890.61	195.97	289.52	432.41	1,020.98
Duration (hr)	0.35	0.28	0.30	0.27	0.49
Distance fished (km)	1.32	1.13	1.27	1.12	2.06
Area swept (ha)	2.12	1.70	1.96	1.74	3.05
Net width (m)	16.03	15.10	15.49	15.46	14.82
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.13				0.40
Brown cat shark	0.80			2.35	0.10
Spiny dogfish		20.10	9.70		
Skates		21.50	42.55	38.15	11.70
Other Chondrichthyes		1.85	3.40	8.05	
Arrowtooth flounder					
Petrale sole		4.70	0.25		
Dover sole	46.95	2.25	15.20	100.45	96.80
Deepsea sole	2.65				1.65
Rex sole		3.55	31.10	8.70	
Other flatfish		34.65	9.65		
Sablefish	19.00	0.95	1.05	11.55	58.95
Pacific grenadier	0.85				99.50
Giant grenadier	6.70				7.70
Other grenadier	0.04				
Pacific flatnose					1.20
Slickheads	6.15				7.90
Eelpouts	7.51	6.25	1.55	2.60	0.20
Snailfish	0.34		0.10	0.20	
Pacific hake		6.00	9.75	82.50	
Other roundfish	0.99	19.45			0.51
Shortspine thornyhead	13.50		0.65	9.65	31.10
Longspine thornyhead	97.60			0.15	36.50
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				12.15	
Darkblotched rockfish		0.55			
Splitnose rockfish			89.60	2.90	
Shortbelly rockfish					
Other rockfish		24.50	15.20	1.15	
Grooved tanner crab	4.50				0.75
Other invertebrates	7.88	36.72	26.09	69.61	10.28
Total catch weight (kg)	215.59	183.02	255.84	350.16	365.24

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001109	200201001110	200201001111	200201001112	200201001113
Start date and time	9/21/02 0746	9/21/02 0923	9/21/02 1130	9/21/02 1315	9/21/02 1626
Gear latitude (dd)	34.1756	34.1729	34.1667	34.2984	34.2744
Gear longitude (dd)	-120.3910	-120.3695	-120.3371	-120.3994	-120.7493
Station	84A	84B	84C	84C	84G
Depth (m)	251.69	326.42	389.77	373.63	701.11
Duration (hr)	0.32	0.37	0.15	0.34	0.33
Distance fished (km)	1.29	1.02	0.63	1.36	1.55
Area swept (ha)	1.81	1.55	0.93	1.61	2.34
Net width (m)	14.07	15.22	14.84	11.81	15.08
Performance	0	1	-1.2	-5	0
Species by weight					
Hagfish					
Brown cat shark					
Spiny dogfish					
Skates		2.45		9.95	0.55
Other Chondrichthyes		0.80		1.85	19.60
Arrowtooth flounder					
Petrale sole					
Dover sole	0.07	1.20		2.40	73.80
Deepsea sole					
Rex sole	0.15			0.90	
Other flatfish	2.20	3.50		1.05	
Sablefish		2.35			29.00
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					2.90
Eelpouts	0.07	0.15		0.45	
Snailfish					0.25
Pacific hake		64.30		8.85	0.80
Other roundfish	8.20	0.70			0.21
Shortspine thornyhead		0.10			51.80
Longspine thornyhead					106.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				1.20	
Darkblotched rockfish					
Splitnose rockfish	19.40	49.70		11.10	
Shortbelly rockfish	0.30	0.05			
Other rockfish	12.00	1.45		1.55	
Grooved tanner crab					0.09
Other invertebrates	140.57	189.11		78.03	15.62
Total catch weight (kg)	182.96	315.86		117.33	301.27

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001114	200201001115	200201001116	200201001117	200201001118
Start date and time	9/21/02 1818	9/22/02 0623	9/22/02 0913	9/22/02 1308	9/22/02 1438
Gear latitude (dd)	34.3089	33.5221	33.6160	33.5592	33.5489
Gear longitude (dd)	-120.8901	-120.1721	-120.0742	-119.7602	-119.7221
Station	84H	88J	88H	88C	88F
Depth (m)	849.63	1,125.34	858.49	461.35	590.61
Duration (hr)	0.32	0.32	0.34	0.27	0.29
Distance fished (km)	1.48	1.39	1.62	1.12	1.09
Area swept (ha)	2.22	2.09	2.48	1.68	1.63
Net width (m)	15.00	15.06	15.26	15.00	14.87
Performance	0	0	0	5.8	6.2
Species by weight					
Hagfish	1.30	0.25			
Brown cat shark		1.70	3.00	0.14	6.50
Spiny dogfish					
Skates			5.30		6.95
Other Chondrichthyes				1.51	3.45
Arrowtooth flounder					
Petrale sole					
Dover sole	160.40			36.65	20.55
Deepsea sole	3.80	4.45	0.85		
Rex sole				2.65	0.25
Other flatfish					
Sablefish	35.40	0.75	45.90	4.50	12.05
Pacific grenadier		1.30			
Giant grenadier	0.65		14.90		
Other grenadier	0.10		0.50	0.06	1.65
Pacific flatnose	0.04	1.45	0.55		
Slickheads	4.95	22.65	2.55		
Eelpouts	5.55		0.24	3.45	
Snailfish	0.86		0.07		0.35
Pacific hake				16.10	2.15
Other roundfish	0.29	0.25	0.23	0.02	
Shortspine thornyhead	50.35	12.25	10.70	18.50	147.15
Longspine thornyhead	147.10	14.50	26.35	9.20	50.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				6.25	2.40
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish				4.45	
Grooved tanner crab	0.08	1.42	0.75		
Other invertebrates	154.29	107.41	86.92	2.93	7.21
Total catch weight (kg)	565.16	168.38	198.81	106.41	261.26

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001119	200201001120	200201001121	200201001122	200201001123
Start date and time	9/23/02 0638	9/23/02 1121	9/23/02 1313	9/23/02 1508	9/23/02 1653
Gear latitude (dd)	32.9772	32.8619	32.8575	32.8710	32.8752
Gear longitude (dd)	-117.8991	-117.4837	-117.4186	-117.3837	-117.3511
Station	92I	92G	92F	92D	92B
Depth (m)	995.15	693.06	541.30	442.00	295.42
Duration (hr)	0.35	0.31	0.28	0.34	0.31
Distance fished (km)	1.43	1.37	1.17	1.48	1.35
Area swept (ha)	2.17	2.06	1.73	2.13	2.06
Net width (m)	15.21	15.06	14.84	14.40	15.27
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.25			
Brown cat shark		9.30	1.00	0.65	
Spiny dogfish					
Skates		3.75			33.70
Other Chondrichthyes	1.20		1.30	0.78	2.60
Arrowtooth flounder					
Petrale sole					
Dover sole		5.35	5.10	13.30	4.40
Deepsea sole					
Rex sole				2.80	7.25
Other flatfish				0.25	10.38
Sablefish	4.65		3.70	49.95	1.54
Pacific grenadier					
Giant grenadier					
Other grenadier		0.30	0.90	1.10	
Pacific flatnose	0.19				
Slickheads	17.13	0.40			
Eelpouts	0.07			1.20	0.52
Snailfish			0.05	0.20	
Pacific hake			5.10	15.95	30.40
Other roundfish	0.28	0.02	0.05	0.02	1.12
Shortspine thornyhead	0.90	23.15	30.90	25.20	7.65
Longspine thornyhead	11.70	34.00	13.40		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			0.95	2.85	0.30
Darkblotched rockfish					
Splitnose rockfish					109.60
Shortbelly rockfish					0.15
Other rockfish				10.25	3.76
Grooved tanner crab	0.02				
Other invertebrates	13.89	22.79	16.17	84.94	49.73
Total catch weight (kg)	50.03	99.31	78.62	209.44	263.10

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201001124	200201001125	200201001126	200201001127	200201001129
Start date and time	9/24/02 0633	9/24/02 0915	9/24/02 1122	9/24/02 1236	9/24/02 1351
Gear latitude (dd)	33.5493	33.5048	33.5017	33.5240	33.5572
Gear longitude (dd)	-118.2925	-118.0593	-118.0401	-118.0382	-118.0338
Station	88G	88E	88E	88D	88B
Depth (m)	817.91	476.83	471.46	415.42	246.76
Duration (hr)	0.27	0.23	0.28	0.26	0.31
Distance fished (km)	1.26		1.10	1.12	1.24
Area swept (ha)	1.88		1.63	1.61	1.82
Net width (m)	14.98	14.86	14.82	14.36	14.63
Performance	0	-1.2	0	0	0
Species by weight					
Hagfish					
Brown cat shark					
Spiny dogfish					
Skates					20.40
Other Chondrichthyes				0.20	0.25
Arrowtooth flounder					
Petrale sole					
Dover sole			17.60	7.60	3.50
Deepsea sole					
Rex sole			1.45	13.30	7.80
Other flatfish				0.15	2.35
Sablefish			0.55	1.15	
Pacific grenadier					
Giant grenadier					
Other grenadier	0.13		0.75		
Pacific flatnose					
Slickheads					
Eelpouts			0.65	2.55	0.72
Snailfish			0.10		
Pacific hake			8.90	5.80	6.90
Other roundfish	0.01			0.01	8.36
Shortspine thornyhead			9.65	27.25	2.20
Longspine thornyhead			29.55	5.45	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish				3.05	8.45
Shortbelly rockfish					9.20
Other rockfish					2.70
Grooved tanner crab					
Other invertebrates	1.26		155.16	130.14	166.10
Total catch weight (kg)	1.40		224.36	196.65	238.93

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number
Haul specifications	200201001130
Start date and time	9/24/02 1520
Gear latitude (dd)	33.5587
Gear longitude (dd)	-118.0177
Station	88A
Depth (m)	199.17
Duration (hr)	0.29
Distance fished (km)	1.27
Area swept (ha)	1.83
Net width (m)	14.45
Performance	0
Species by weight	
Hagfish	
Brown cat shark	
Spiny dogfish	
Skates	18.55
Other Chondrichthyes	1.75
Arrowtooth flounder	
Petrale sole	
Dover sole	1.90
Deepsea sole	
Rex sole	8.90
Other flatfish	7.61
Sablefish	
Pacific grenadier	
Giant grenadier	
Other grenadier	
Pacific flatnose	
Slickheads	
Eelpouts	0.45
Snailfish	
Pacific hake	3.80
Other roundfish	0.66
Shortspine thornyhead	
Longspine thornyhead	
Rougheye rockfish	
Pacific ocean perch	
Aurora rockfish	
Darkblotched rockfish	
Splitnose rockfish	
Shortbelly rockfish	
Other rockfish	41.50
Grooved tanner crab	
Other invertebrates	165.56
Total catch weight (kg)	250.68

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006001	200201006003	200201006004	200201006005	200201006006
Start date and time	6/25/02 0638	6/25/02 1042	6/25/02 1520	6/25/02 1757	6/26/02 1454
Gear latitude (dd)	47.7014	47.7219	47.8085	47.8069	47.1291
Gear longitude (dd)	-125.7518	-125.7170	-125.3398	-125.1542	-124.9861
Station	3J	3I	3F	3D	7B
Depth (m)	1,201.04	1,049.49	659.56	453.72	298.56
Duration (hr)	0.22	0.34	0.32	0.29	0.29
Distance fished (km)	0.97	1.29	1.21	1.34	1.49
Area swept (ha)	1.27	1.91	1.77	1.91	2.08
Net width (m)	13.00	14.80	14.54	14.31	13.96
Performance	-5.1	0	0	0	5.1
Species by weight					
Hagfish		1.07		0.01	
Brown cat shark			15.66	3.01	
Spiny dogfish					
Skates		7.89	0.72	9.99	8.31
Other Chondrichthyes					
Arrowtooth flounder					10.52
Petrale sole					
Dover sole			10.16	25.22	98.12
Deepsea sole		0.51	1.25		
Rex sole				1.32	9.99
Other flatfish					0.30
Sablefish		16.03	6.78	31.50	0.75
Pacific grenadier		37.60	1.70		
Giant grenadier		38.30	9.53		
Other grenadier			0.14		
Pacific flatnose		1.45	2.19		
Slickheads			0.86		
Eelpouts		0.21	8.81	13.27	3.35
Snailfish			1.25		
Pacific hake					1.02
Other roundfish		0.21	0.46	0.08	0.13
Shortspine thornyhead		3.63	2.37	18.06	58.28
Longspine thornyhead		50.41	14.37		
Rougheye rockfish					
Pacific ocean perch					0.65
Aurora rockfish					
Darkblotched rockfish					0.88
Splitnose rockfish					28.11
Shortbelly rockfish					
Other rockfish					71.03
Grooved tanner crab		3.56	27.54	4.86	0.89
Other invertebrates		14.41	16.81	233.42	164.85
Total catch weight (kg)		175.28	120.60	340.74	457.18

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006007	200201006008	200201006009	200201006010	200201006011
Start date and time	6/26/02 1718	6/26/02 1821	6/27/02 0627	6/27/02 1141	6/27/02 1610
Gear latitude (dd)	47.1279	47.1227	46.4204	46.3445	46.4736
Gear longitude (dd)	-124.9831	-124.9918	-124.7045	-124.7049	-124.5231
Station	7C	7D	11J	11H	11C
Depth (m)	378.05	432.03	1,143.50	944.61	371.93
Duration (hr)	0.33	0.26	0.62	0.39	0.27
Distance fished (km)	1.41	1.04	2.18	1.67	1.01
Area swept (ha)	1.96	1.51	3.19	2.48	1.44
Net width (m)	13.96	14.51	14.60	14.86	14.23
Performance	-5.1	-5.1	-5.1	-5.1	5.1
Species by weight					
Hagfish			1.57		0.25
Brown cat shark			0.89		0.19
Spiny dogfish					
Skates			22.69		12.29
Other Chondrichthyes					
Arrowtooth flounder					0.97
Petrale sole					
Dover sole					36.38
Deepsea sole			8.75		
Rex sole					24.95
Other flatfish					0.05
Sablefish			24.86		13.74
Pacific grenadier			10.05		
Giant grenadier			24.82		
Other grenadier			1.54		
Pacific flatnose			2.26		
Slickheads					
Eelpouts			5.97		12.13
Snailfish			0.15		
Pacific hake			0.77		1.48
Other roundfish			0.43		0.02
Shortspine thornyhead			0.62		49.34
Longspine thornyhead			46.76		
Rougheye rockfish					3.50
Pacific ocean perch					
Aurora rockfish					0.85
Darkblotched rockfish					
Splitnose rockfish					0.50
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			5.24		5.32
Other invertebrates			36.84		117.99
Total catch weight (kg)			194.21		279.95

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006013	200201006014	200201006015	200201006016	200201006017
Start date and time	6/27/02 1930	6/28/02 0620	6/28/02 0935	6/28/02 1206	6/29/02 0534
Gear latitude (dd)	46.4745	45.7640	45.7074	45.7051	45.0379
Gear longitude (dd)	-124.5721	-124.5860	-124.7441	-124.7496	-125.0641
Station	11G	15A	15C	15D	19J
Depth (m)	796.39	196.19	372.78	448.60	1,294.33
Duration (hr)	0.41	0.32	0.34	0.36	0.43
Distance fished (km)	1.56	1.32	1.38	1.21	1.65
Area swept (ha)	2.27	1.96	1.92	1.74	1.94
Net width (m)	14.60	14.77	13.85	14.38	11.80
Performance	5.1	0	0	0	0
Species by weight					
Hagfish	0.11				
Brown cat shark	0.21			2.20	
Spiny dogfish		1.70			
Skates		7.62	6.70	8.10	8.28
Other Chondrichthyes		1.20	0.28	5.80	
Arrowtooth flounder		22.00		10.64	
Petrale sole		0.57			
Dover sole	35.24	86.6	27.95	64.15	
Deepsea sole	4.22				1.41
Rex sole	0.17	19.10	10.64	9.11	
Other flatfish		4.80		0.15	
Sablefish	59.72	22.3	6.15	8.70	2.65
Pacific grenadier	0.53				40.20
Giant grenadier					66.52
Other grenadier					
Pacific flatnose	0.12			0.40	1.45
Slickheads	0.33				
Eelpouts	4.67	1.20	0.67	0.30	
Snailfish	0.48			0.90	0.57
Pacific hake		7.50	63.50	63.60	3.45
Other roundfish	0.12	0.13	0.47		0.21
Shortspine thornyhead	42.02	10.10	7.30	7.30	
Longspine thornyhead	109.10			0.25	8.93
Rougheye rockfish			5.56	0.30	
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish			0.70		
Splitnose rockfish		0.20	0.32		
Shortbelly rockfish					
Other rockfish		18.20			
Grooved tanner crab	15.74	0.70			10.84
Other invertebrates	26.82	212.68	17.91	74.80	89.66
Total catch weight (kg)	299.60	416.60	148.15	256.70	234.17

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006018	200201006019	200201006020	200201006021	200201006022
Start date and time	6/29/02 0915	6/29/02 1123	6/29/02 1349	6/29/02 1522	7/2/02 0607
Gear latitude (dd)	45.0490	45.0558	45.0138	45.0118	44.3972
Gear longitude (dd)	-124.8553	-124.7609	-124.4449	-124.3410	-125.1178
Station	19F	19E	19B	19A	23J
Depth (m)	670.94	515.84	311.33	189.11	1,193.22
Duration (hr)	0.49	0.33	0.27	0.29	0.51
Distance fished (km)	1.86	1.46	1.09	1.27	1.83
Area swept (ha)	3.00	2.16	1.63	1.84	2.69
Net width (m)	16.14	14.77	14.97	14.45	14.70
Performance	0	0	0	0	5.1
Species by weight					
Hagfish	0.12	0.08		0.20	0.15
Brown cat shark	2.52	0.99			
Spiny dogfish					
Skates	0.11	21.64	12.91	16.20	15.60
Other Chondrichthyes					
Arrowtooth flounder			16.67	50.90	
Petrale sole				1.10	
Dover sole	1.53	21.46	43.46	22.30	
Deepsea sole	0.59				2.40
Rex sole		0.54	12.49	7.53	
Other flatfish			1.40	12.25	
Sablefish	17.11	6.15	15.79	3.10	14.20
Pacific grenadier	12.53				875.00
Giant grenadier	2.22	1.05			
Other grenadier					
Pacific flatnose	2.55	1.00			6.07
Slickheads					1.40
Eelpouts	0.46	0.19	3.27	1.00	3.25
Snailfish	0.71	0.63			0.82
Pacific hake		4.97	18.10	2.80	
Other roundfish	0.17	0.14		4.18	0.03
Shortspine thornyhead	6.76	8.96	30.94		1.50
Longspine thornyhead	37.16	13.20			31.80
Rougheye rockfish					
Pacific ocean perch			0.73		
Aurora rockfish					
Darkblotched rockfish			0.99	0.85	
Splitnose rockfish			3.32	1.47	
Shortbelly rockfish					
Other rockfish			0.89	0.63	
Grooved tanner crab	33.50	14.30			25.00
Other invertebrates	6.89	35.84	43.96	4.94	83.83
Total catch weight (kg)	124.93	131.14	204.92	129.45	1,061.05

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006023	200201006024	200201006025	200201006026	200201006027
Start date and time	7/2/02 0911	7/2/02 1234	7/2/02 1603	7/2/02 1658	7/2/02 1910
Gear latitude (dd)	44.4114	44.3599	44.3557	44.3407	44.3388
Gear longitude (dd)	-125.0676	-125.0153	-124.8320	-124.8385	-124.8208
Station	23H	23G	23C	23C	23A
Depth (m)	940.02	731.38	359.03	358.70	204.17
Duration (hr)	0.55	0.33	0.36	0.32	0.38
Distance fished (km)	1.93	1.33	1.45	1.27	1.46
Area swept (ha)	2.70	2.00	1.96	1.80	1.92
Net width (m)	14.02	15.08	13.48	14.16	13.22
Performance	0	0	-5.8	0	0
Species by weight					
Hagfish	0.40				
Brown cat shark	1.80	4.46			
Spiny dogfish					
Skates	3.20			15.10	44.62
Other Chondrichthyes					
Arrowtooth flounder				5.50	21.98
Petrale sole					
Dover sole	14.00	6.49		67.38	15.75
Deepsea sole	6.00	3.10			
Rex sole				8.00	9.00
Other flatfish				0.30	36.48
Sablefish	2.20	9.06		30.90	77.82
Pacific grenadier	26.20	1.56			
Giant grenadier	133.80	36.30			
Other grenadier					
Pacific flatnose	1.00	0.22			
Slickheads	2.60				
Eelpouts	2.30	0.94		0.65	0.44
Snailfish	0.30			0.45	
Pacific hake	0.40			18.10	30.70
Other roundfish	0.07	0.18			5.25
Shortspine thornyhead	0.80	6.28		4.50	
Longspine thornyhead	65.90	42.44			
Rougheye rockfish					
Pacific ocean perch					0.22
Aurora rockfish					
Darkblotched rockfish				1.10	0.30
Splitnose rockfish				0.70	1.00
Shortbelly rockfish					
Other rockfish					1.35
Grooved tanner crab	53.60	17.82			
Other invertebrates	7.38	5.35		27.07	87.45
Total catch weight (kg)	321.95	134.20		179.75	332.36

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006028	200201006029	200201006030	200201006031	200201006032
Start date and time	7/3/02 0631	7/3/02 1020	7/3/02 1308	7/3/02 1509	7/3/02 1705
Gear latitude (dd)	43.7264	43.7150	43.7867	43.7866	43.7279
Gear longitude (dd)	-124.9332	-124.8989	-124.8424	-124.7959	-124.6633
Station	27J	27H	27F	27E	27C
Depth (m)	1,160.88	958.44	562.88	493.82	391.55
Duration (hr)	0.49	0.54	0.34	0.40	0.27
Distance fished (km)	1.70	2.24	1.32	1.45	1.14
Area swept (ha)	2.69	3.24	1.92	2.06	1.57
Net width (m)	15.77	14.46	14.50	14.22	13.68
Performance	-5.1	5.1	0	0	0
Species by weight					
Hagfish	0.21	1.35	0.20		
Brown cat shark		1.90	1.40	0.82	0.50
Spiny dogfish					
Skates	59.00		2.97	13.21	14.35
Other Chondrichthyes					
Arrowtooth flounder				2.99	
Petrale sole					
Dover sole	0.95	6.30	60.43	117.28	15.22
Deepsea sole	10.40	4.80	2.50		
Rex sole			11.25	10.87	9.13
Other flatfish					
Sablefish	15.90	20.45	10.77	6.51	6.60
Pacific grenadier	552.90	91.30			
Giant grenadier	77.22	252.70	22.20		
Other grenadier					
Pacific flatnose	5.60	2.80	1.70	1.04	
Slickheads	1.75	3.17			
Eelpouts		4.78	3.15	1.75	4.54
Snailfish	0.27		2.55	1.30	0.20
Pacific hake			0.40	3.11	2.36
Other roundfish	0.07	0.18	0.25		
Shortspine thornyhead	17.80	16.30	21.14	4.89	8.55
Longspine thornyhead	99.11	130.90	8.74		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					0.66
Darkblotched rockfish					
Splitnose rockfish					0.95
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	26.84	5.50	1.20	1.30	0.76
Other invertebrates	19.40	12.25	34.30	26.56	62.58
Total catch weight (kg)	887.42	554.68	185.15	191.63	126.40

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006033	200201006034	200201006035	200201006036	200201006037
Start date and time	7/4/02 0706	7/4/02 0943	7/4/02 1058	7/4/02 1306	7/4/02 1441
Gear latitude (dd)	43.0720	43.0655	43.0842	43.1101	43.0922
Gear longitude (dd)	-125.0350	-124.9365	-124.9289	-124.9036	-124.8834
Station	31J	31G	31G	31E	31D
Depth (m)	1,200.29	846.00	776.61	526.65	446.28
Duration (hr)	0.39	0.26	0.39	0.30	0.38
Distance fished (km)	1.44	0.71	1.71	1.23	1.63
Area swept (ha)	2.17	1.07	2.51	1.82	2.20
Net width (m)	15.00	14.98	14.67	14.87	13.52
Performance	5.8	-5.1	0	0	0
Species by weight					
Hagfish	0.24		1.30	0.10	1.14
Brown cat shark	0.91		2.10	2.13	1.64
Spiny dogfish					
Skates	16.55			20.25	27.44
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			29.60	72.93	36.38
Deepsea sole	8.35		2.77		
Rex sole				4.35	7.17
Other flatfish				0.05	
Sablefish	20.40		6.32	19.65	22.61
Pacific grenadier	92.59		1.40	0.10	
Giant grenadier	116.91		7.00	1.85	
Other grenadier					
Pacific flatnose	7.70		0.12	1.50	
Slickheads	0.18		0.46		
Eelpouts			3.70	4.18	5.11
Snailfish			0.31	0.93	0.66
Pacific hake				1.23	0.56
Other roundfish	0.41		0.01	0.15	
Shortspine thornyhead	4.71		5.60	3.94	2.14
Longspine thornyhead	22.80		96.81	10.36	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					2.64
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	2.36		32.64	14.40	1.66
Other invertebrates	24.85		3.77	12.30	503.18
Total catch weight (kg)	318.96		193.91	170.40	612.33

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006038	200201006039	200201006040	200201006041	200201006042
Start date and time	7/4/02 1615	7/5/02 0720	7/5/02 0949	7/5/02 1200	7/5/02 1337
Gear latitude (dd)	43.1406	42.3705	42.3591	42.3752	42.3907
Gear longitude (dd)	-124.8715	-124.8660	-124.8435	-124.7835	-124.7688
Station	31C	35I	35H	35F	35E
Depth (m)	365.70	1,025.69	961.63	598.74	500.86
Duration (hr)	0.35	0.56	0.38	0.34	0.30
Distance fished (km)	1.37	2.25	1.62	1.41	1.29
Area swept (ha)	1.98	3.36	2.38	2.09	1.80
Net width (m)	14.46	14.91	14.75	14.75	13.98
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.20			0.35
Brown cat shark	0.10	3.30	0.23	0.67	1.35
Spiny dogfish					
Skates	6.80	16.31			3.54
Other Chondrichthyes					
Arrowtooth flounder	0.70				0.85
Petrale sole					
Dover sole	54.12	3.60	9.96	19.03	11.89
Deepsea sole		8.25	7.64	0.18	
Rex sole	12.80			3.69	8.56
Other flatfish	2.37				
Sablefish	2.25	22.75	27.62	10.20	20.20
Pacific grenadier		42.30	16.59	0.94	0.40
Giant grenadier		482.40	228.34	8.02	
Other grenadier					
Pacific flatnose		6.62	0.95	2.25	0.64
Slickheads		50.81		0.33	
Eelpouts	1.05	7.12	2.90	5.91	2.08
Snailfish	0.39	0.29	0.02	3.26	0.79
Pacific hake	3.00				1.13
Other roundfish		0.08	0.05	0.11	0.01
Shortspine thornyhead	1.92		0.84	4.61	2.43
Longspine thornyhead		125.45	94.46	15.64	0.79
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					1.30
Darkblotched rockfish					
Splitnose rockfish	0.30				
Shortbelly rockfish					
Other rockfish	0.14				
Grooved tanner crab		33.13	29.92	15.24	2.78
Other invertebrates	68.97	4.36	14.43	14.71	63.58
Total catch weight (kg)	154.91	806.97	433.95	104.79	122.67

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006043	200201006044	200201006045	200201006046	200201006047
Start date and time	7/5/02 1545	7/6/02 0641	7/6/02 1018	7/6/02 1211	7/6/02 1424
Gear latitude (dd)	42.3565	41.7116	41.6850	41.7120	41.7284
Gear longitude (dd)	-124.7223	-124.4652	-124.5101	-124.6529	-124.8006
Station	35B	39A	39D	39G	39H
Depth (m)	338.85	195.73	413.89	745.75	869.25
Duration (hr)	0.34	0.29	0.30	0.37	0.45
Distance fished (km)	1.38	1.23	1.31	1.54	1.67
Area swept (ha)	1.90	1.80	1.87	2.24	2.46
Net width (m)	13.76	14.57	14.26	14.55	14.71
Performance	6.1	0	0	0	-5.1
Species by weight					
Hagfish			0.38	0.12	1.05
Brown cat shark	1.24		0.21	13.59	16.59
Spiny dogfish	0.95		0.99		
Skates	185.77	6.50	4.15	0.55	3.08
Other Chondrichthyes	40.45	2.11	0.48		
Arrowtooth flounder	0.66	2.50			
Petrale sole					
Dover sole	178.11	86.60	35.61	2.33	31.34
Deepsea sole				0.27	3.54
Rex sole	35.96	84.16	21.25		
Other flatfish	0.16	28.16			
Sablefish	50.06	21.26	4.44	8.65	8.49
Pacific grenadier				0.12	2.13
Giant grenadier				5.04	0.74
Other grenadier					
Pacific flatnose					0.48
Slickheads					0.95
Eelpouts	3.41	3.40	14.66	2.77	2.77
Snailfish	1.19		1.32	0.43	0.19
Pacific hake	5.57	12.69	0.90		
Other roundfish		17.11		0.39	0.42
Shortspine thornyhead	7.07	0.26	4.77	0.59	
Longspine thornyhead				73.09	72.82
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.47		2.92		
Darkblotched rockfish	2.54	81.84			
Splitnose rockfish		1.19			
Shortbelly rockfish					
Other rockfish	0.91	137.76			
Grooved tanner crab	0.50			13.70	25.65
Other invertebrates	41.90	117.06	210.91	25.31	33.76
Total catch weight (kg)	556.92	602.60	302.99	146.95	204.00

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006048	200201006049	200201006050	200201006051	200201006052
Start date and time	7/6/02 1653	7/7/02 0556	7/7/02 0816	7/7/02 1044	7/7/02 1242
Gear latitude (dd)	41.7515	41.0576	41.0305	41.0147	41.0191
Gear longitude (dd)	-124.9315	-124.7635	-124.7071	-124.5612	-124.4228
Station	39I	43H	43G	43F	43C
Depth (m)	1,035.13	939.96	818.86	633.61	370.01
Duration (hr)	0.40	0.42	0.33	0.30	0.29
Distance fished (km)	1.54	1.67	1.30	1.26	1.30
Area swept (ha)	2.28	2.13	1.80	1.84	1.58
Net width (m)	14.76	12.75	13.88	14.60	12.13
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.40	0.13	0.20	4.49	
Brown cat shark	1.77	7.99	4.12	7.94	2.78
Spiny dogfish					
Skates	3.46	0.02			5.52
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole		46.40	24.21	8.97	57.62
Deepsea sole	4.55	8.32	13.52	1.22	
Rex sole					24.42
Other flatfish					0.14
Sablefish	11.41			10.83	8.54
Pacific grenadier	7.98	0.34	0.20	0.26	
Giant grenadier	7.66	6.93	4.29	9.83	
Other grenadier					
Pacific flatnose	3.27	0.18			
Slickheads	3.23	6.13			
Eelpouts	1.90	2.56	0.19	1.15	7.23
Snailfish		0.13		0.05	
Pacific hake					9.64
Other roundfish	0.47	0.19	0.36	0.75	0.02
Shortspine thornyhead	13.56	10.29		2.06	3.26
Longspine thornyhead	132.55	162.41	37.38	34.32	0.30
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					2.48
Darkblotched rockfish					4.52
Splitnose rockfish					0.60
Shortbelly rockfish					
Other rockfish					1.60
Grooved tanner crab	19.84	18.57	20.41	13.75	3.67
Other invertebrates	33.48	33.44	25.43	25.10	326.95
Total catch weight (kg)	245.53	304.03	130.31	120.72	459.29

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006053	200201006054	200201006055	200201006056	200201006057
Start date and time	7/7/02 1417	7/12/02 1433	7/12/02 1630	7/12/02 1756	7/12/02 1944
Gear latitude (dd)	41.0099	40.4586	40.4644	40.4413	40.4186
Gear longitude (dd)	-124.4008	-124.6157	-124.6248	-124.6256	-124.6161
Station	43B	47B	47C	47E	47E
Depth (m)	266.68	293.62	349.89	498.89	628.84
Duration (hr)	0.30	0.31	0.29	0.37	0.30
Distance fished (km)	1.20	1.37	1.17	1.45	1.10
Area swept (ha)	1.44	1.93	1.57	2.03	1.59
Net width (m)	11.97	14.10	13.42	13.99	14.42
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.19				0.05
Brown cat shark			0.05	4.45	1.70
Spiny dogfish	0.81				
Skates	34.76	22.90	56.58	4.00	0.35
Other Chondrichthyes		15.45	29.60	3.85	0.40
Arrowtooth flounder	1.66				
Petrale sole					
Dover sole	46.16	595.05	88.23	376.25	170.30
Deepsea sole					
Rex sole	79.54	73.25	16.15	18.25	6.65
Other flatfish	2.08	7.95	0.75		
Sablefish	1.67	44.50	15.55	20.25	10.25
Pacific grenadier					3.85
Giant grenadier				1.15	14.85
Other grenadier					0.15
Pacific flatnose				2.50	1.15
Slickheads					1.15
Eelpouts	3.75	4.60	2.30	16.65	3.00
Snailfish	1.91		0.40	0.65	0.65
Pacific hake	16.67	4.65	3.55		0.45
Other roundfish					0.01
Shortspine thornyhead	0.59	3.15	6.95	1.55	0.90
Longspine thornyhead					
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				1.40	
Darkblotched rockfish	6.07	1.20	1.70		
Splitnose rockfish	1.67		3.70		0.50
Shortbelly rockfish					
Other rockfish	2.77	6.95	0.60		
Grooved tanner crab					119.90
Other invertebrates	80.91	21.25	12.13	10.82	9.80
Total catch weight (kg)	281.21	800.90	238.24	461.77	346.06

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006058	200201006059	200201006060	200201006061	200201006062
Start date and time	7/13/02 0649	7/13/02 0940	7/13/02 1137	7/13/02 1301	7/13/02 1442
Gear latitude (dd)	39.7227	39.7025	39.7153	39.7349	39.7234
Gear longitude (dd)	-124.1769	-124.1085	-124.0846	-124.0515	-124.0310
Station	51I	51G	51F	51C	51B
Depth (m)	1,033.66	715.24	572.34	347.15	259.85
Duration (hr)	0.43	0.36	0.34	0.33	0.35
Distance fished (km)	1.75	1.53	1.50	1.35	1.42
Area swept (ha)	2.48	2.28	2.22	1.90	2.07
Net width (m)	14.20	14.87	14.75	14.12	14.60
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.90	0.80	0.10		
Brown cat shark	2.50	16.30	10.80	1.80	
Spiny dogfish					
Skates			3.75	35.75	48.70
Other Chondrichthyes				5.85	5.55
Arrowtooth flounder					2.50
Petrale sole					0.50
Dover sole	44.95	25.65		85.10	56.10
Deepsea sole	5.15	5.20	0.70		
Rex sole				57.05	20.95
Other flatfish				1.75	13.75
Sablefish	6.45	2.75	11.45	17.20	26.65
Pacific grenadier	15.70	1.20			
Giant grenadier	10.95				
Other grenadier					
Pacific flatnose	0.55		0.40		
Slickheads	13.00	0.10			
Eelpouts	2.60	0.85	1.65	13.45	2.55
Snailfish	0.15	0.05	0.35	0.30	
Pacific hake			0.70		2.65
Other roundfish	0.32	0.09	0.15		
Shortspine thornyhead	33.80	11.35	14.95	1.00	1.90
Longspine thornyhead	83.35	92.80	31.00	0.40	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					4.25
Splitnose rockfish				0.20	33.90
Shortbelly rockfish					
Other rockfish					0.40
Grooved tanner crab	25.70	33.00	25.70	1.40	
Other invertebrates	20.47	13.82	25.50	35.40	82.45
Total catch weight (kg)	266.54	203.96	127.20	256.65	302.80

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006063	200201006064	200201006065	200201006066	200201006067
Start date and time	7/14/02 0630	7/14/02 0837	7/14/02 1123	7/15/02 0607	7/15/02 0858
Gear latitude (dd)	39.0237	39.0174	39.0179	38.3611	38.3565
Gear longitude (dd)	-123.9623	-123.9865	-124.0063	-123.5346	-123.4838
Station	55C	55E	55F	59A	59A
Depth (m)	352.48	492.55	570.61	226.56	199.99
Duration (hr)	0.33	0.35	0.34	0.33	0.37
Distance fished (km)	1.24	1.44	1.14	1.25	1.36
Area swept (ha)	1.71	2.08	1.68	1.62	1.79
Net width (m)	13.84	14.40	14.71	12.94	13.23
Performance	0	0	0	-2.4	0
Species by weight					
Hagfish		0.60	0.75		
Brown cat shark	3.45	3.20	5.45		
Spiny dogfish					5.60
Skates	33.50	24.50	3.25		0.55
Other Chondrichthyes					1.71
Arrowtooth flounder					
Petrale sole					
Dover sole	155.25	257.45	4.70		8.60
Deepsea sole					
Rex sole	34.75	3.05			0.50
Other flatfish	0.02				9.60
Sablefish	9.00	157.90	62.65		3.90
Pacific grenadier					
Giant grenadier					
Other grenadier		3.05			
Pacific flatnose		1.50	1.35		
Slickheads			0.30		
Eelpouts	11.25	6.85	1.30		1.35
Snailfish	0.30	0.65	0.70		
Pacific hake	6.05				46.30
Other roundfish					13.78
Shortspine thornyhead	6.50	3.60	6.50		
Longspine thornyhead		4.55	21.20		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	2.80	6.00			
Darkblotched rockfish					0.25
Splitnose rockfish	4.70				71.15
Shortbelly rockfish					
Other rockfish	0.55				1.15
Grooved tanner crab	2.55		1.80		
Other invertebrates	50.29	48.40	15.18		33.05
Total catch weight (kg)	320.96	521.30	125.13		197.49

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006068	200201006069	200201006070	200201006071	200201006072
Start date and time	7/15/02 1043	7/15/02 1242	7/15/02 1433	7/15/02 1619	7/20/02 0635
Gear latitude (dd)	38.3536	38.3672	38.4064	38.4270	37.1041
Gear longitude (dd)	-123.5520	-123.6168	-123.6415	-123.6762	-122.7120
Station	59B	59E	59F	59G	67C
Depth (m)	288.74	509.69	568.63	734.42	383.07
Duration (hr)	0.38	0.39	0.36	0.40	0.28
Distance fished (km)	1.45	1.65	1.44	1.53	1.15
Area swept (ha)	1.68	2.20	2.02	2.12	1.57
Net width (m)	11.61	13.32	13.95	13.86	13.70
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.30	2.10	3.05	
Brown cat shark		2.70	6.20	0.30	2.60
Spiny dogfish	0.87	1.35			
Skates	39.67	16.70	1.85		2.30
Other Chondrichthyes	10.20				4.45
Arrowtooth flounder					
Petrale sole					
Dover sole	181.96	45.00	36.10	4.25	95.10
Deepsea sole				1.00	
Rex sole	33.90	15.45			25.95
Other flatfish	18.16	0.05			0.40
Sablefish	6.44	21.25	22.80	3.40	12.60
Pacific grenadier					
Giant grenadier					
Other grenadier		0.10			
Pacific flatnose		0.50	1.10	0.05	
Slickheads					
Eelpouts	2.35	11.50	2.85	0.55	12.80
Snailfish	0.25	4.75	3.05	0.40	0.35
Pacific hake	2.35	0.90			0.90
Other roundfish			0.02	0.05	
Shortspine thornyhead		4.65	22.70	0.90	1.30
Longspine thornyhead			24.80	98.10	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					3.25
Darkblotched rockfish					
Splitnose rockfish	11.30				2.05
Shortbelly rockfish					
Other rockfish	11.78				
Grooved tanner crab		0.01	0.45	8.95	0.35
Other invertebrates	19.73	40.05	26.92	17.80	14.08
Total catch weight (kg)	338.96	165.26	150.94	138.80	178.48

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006073	200201006074	200201006075	200201006076	200201006077
Start date and time	7/20/02 0819	7/20/02 1026	7/20/02 1241	7/20/02 1355	7/20/02 1744
Gear latitude (dd)	37.1315	37.0629	37.0223	37.0229	37.0804
Gear longitude (dd)	-122.7551	-122.7731	-122.7752	-122.7723	-122.9962
Station	67D	67G	67H	67H	67H
Depth (m)	449.70	762.37	915.31	929.72	974.24
Duration (hr)	0.28	0.33		0.38	0.44
Distance fished (km)	1.08	1.32			1.64
Area swept (ha)	1.42	1.89			2.33
Net width (m)	13.18	14.31		13.23	14.20
Performance	0	0	-1.12	-4.1	-5.1
Species by weight					
Hagfish		1.20			
Brown cat shark	13.65	10.20			
Spiny dogfish					
Skates	13.75	7.40			
Other Chondrichthyes	2.35				
Arrowtooth flounder					
Petrale sole					
Dover sole	195.90	275.45			
Deepsea sole		2.45			
Rex sole	30.95				
Other flatfish					
Sablefish	3.80	33.15			
Pacific grenadier					
Giant grenadier					
Other grenadier	0.30				
Pacific flatnose					
Slickheads		6.50			
Eelpouts	6.05	0.30			
Snailfish	0.25	0.75			
Pacific hake	5.25				
Other roundfish					
Shortspine thornyhead	0.75	55.20			
Longspine thornyhead		130.70			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	7.35				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		6.20			
Other invertebrates	5.27	3.22			
Total catch weight (kg)	285.62	532.72			

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006078	200201006079	200201006080	200201006081	200201006082
Start date and time	7/20/02 1935	7/21/02 0637	7/21/02 0853	7/21/02 1130	7/21/02 1353
Gear latitude (dd)	37.0672	36.4037	36.3992	36.3674	36.3642
Gear longitude (dd)	-122.9736	-122.2186	-122.2011	-122.1022	-122.0828
Station	67J	71I	71H	71F	71E
Depth (m)	1,199.50	1,073.07	904.98	588.23	497.00
Duration (hr)	0.49	0.30	0.39	0.56	0.27
Distance fished (km)	1.94	1.37	1.67	2.26	1.13
Area swept (ha)	2.65	1.98	2.42	3.00	1.49
Net width (m)	13.67	14.44	14.46	13.25	13.14
Performance	-5.1	5.1	0	6.31	0
Species by weight					
Hagfish			0.65		
Brown cat shark		1.20	7.45	1.55	2.75
Spiny dogfish					
Skates		21.15	1.30	7.90	13.05
Other Chondrichthyes				4.85	4.05
Arrowtooth flounder					
Petrale sole					
Dover sole		1.20	18.40	181.55	193.65
Deepsea sole			6.30	0.40	
Rex sole				3.10	26.40
Other flatfish					
Sablefish		2.35	16.85	12.70	7.00
Pacific grenadier		91.35			
Giant grenadier		11.65	11.80		
Other grenadier			0.02		
Pacific flatnose		2.45	3.50	0.25	0.10
Slickheads		24.50	19.80		
Eelpouts		0.25	1.80	1.60	1.20
Snailfish		0.01		0.55	
Pacific hake				2.55	0.75
Other roundfish		1.20	0.46	0.01	
Shortspine thornyhead		24.95	8.30	3.25	0.90
Longspine thornyhead		31.20	47.90	1.35	
Rougheye rockfish					
Pacific ocean perch					13.10
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		4.40	22.55	2.60	0.95
Other invertebrates		11.35	67.73	18.72	9.48
Total catch weight (kg)		229.21	234.81	242.93	273.38

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006083	200201006084	200201006085	200201006086	200201006087
Start date and time	7/21/02 1535	7/22/02 0653	7/22/02 0956	7/22/02 1259	7/22/02 1455
Gear latitude (dd)	36.3710	35.8146	35.8140	35.8076	35.7782
Gear longitude (dd)	-122.0117	-121.8836	-121.8416	-121.5930	-121.5243
Station	71C	75J	75I	75F	75E
Depth (m)	361.69	1,189.23	1,107.90	642.23	497.19
Duration (hr)	0.31	0.48	0.42	0.29	0.31
Distance fished (km)	1.28	1.92	1.64	1.17	1.38
Area swept (ha)	1.67	2.14	2.01	1.58	1.94
Net width (m)	13.12	11.13	12.26	13.48	13.99
Performance	5.1	4.3	0	6.24	0
Species by weight					
Hagfish			0.40		0.20
Brown cat shark	0.60	0.75	0.60	9.70	3.25
Spiny dogfish					
Skates	16.55			6.75	40.20
Other Chondrichthyes	79.50	10.05		5.60	9.45
Arrowtooth flounder					
Petrale sole					
Dover sole	194.00	1.45		25.80	28.15
Deepsea sole					
Rex sole	26.10				0.20
Other flatfish	17.70				
Sablefish	24.10	5.85	16.55	5.10	26.05
Pacific grenadier		36.70	11.05	1.75	
Giant grenadier		10.20	16.70		
Other grenadier				0.25	0.30
Pacific flatnose		1.65	2.60	0.35	
Slickheads		7.45	12.95		
Eelpouts	3.82	0.70	1.35		0.91
Snailfish				0.30	0.30
Pacific hake	4.00		0.45	0.25	2.25
Other roundfish	0.95	0.01	0.46	0.11	
Shortspine thornyhead	0.25	5.55	12.55	10.90	38.15
Longspine thornyhead		9.75	19.50	30.90	0.40
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					9.30
Darkblotched rockfish	0.40				
Splitnose rockfish	25.85				
Shortbelly rockfish					
Other rockfish	1.75				0.75
Grooved tanner crab		7.50	21.70	3.55	1.40
Other invertebrates	11.43	44.31	69.86	81.06	168.39
Total catch weight (kg)	407.00	141.92	186.72	182.37	329.65

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006088	200201006089	200201006090	200201006091	200201006092
Start date and time	7/22/02 1708	7/22/02 1830	7/23/02 0541	7/23/02 0828	7/23/02 1201
Gear latitude (dd)	35.7128	35.6895	35.1345	35.1623	35.1441
Gear longitude (dd)	-121.4460	-121.4247	-121.6160	-121.6262	-121.2516
Station	75B	75B	79I	79H	79F
Depth (m)	279.24	285.85	1,053.95	986.08	604.28
Duration (hr)	0.34	0.31	0.36	0.38	0.35
Distance fished (km)		1.33	1.63	1.52	1.51
Area swept (ha)		1.81	2.25	2.10	1.99
Net width (m)	12.79	13.63	13.79	13.88	13.17
Performance	-1.12	0	1.11	0	0
Species by weight					
Hagfish			0.40	0.35	
Brown cat shark					2.80
Spiny dogfish					
Skates		49.70	9.00	9.30	2.30
Other Chondrichthyes		1.25			2.10
Arrowtooth flounder					
Petrale sole					
Dover sole		119.60	41.30	30.90	25.40
Deepsea sole			5.45	3.00	
Rex sole		35.95			
Other flatfish		5.95			
Sablefish		41.00	53.25	37.85	
Pacific grenadier			24.65	20.75	
Giant grenadier			4.45	2.45	
Other grenadier					
Pacific flatnose			1.35	1.25	
Slickheads			25.00	6.20	0.10
Eelpouts		5.80		0.01	
Snailfish		0.10	0.15		0.03
Pacific hake		35.10			2.50
Other roundfish		1.55	0.80	0.35	
Shortspine thornyhead		0.60	99.65	17.90	11.45
Longspine thornyhead			37.85	48.20	36.30
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					0.45
Darkblotched rockfish		0.25			
Splitnose rockfish		242.30			
Shortbelly rockfish					
Other rockfish		10.75			
Grooved tanner crab			5.00	6.50	2.80
Other invertebrates		2.00	6.66	13.97	35.45
Total catch weight (kg)		551.90	314.96	198.98	121.68

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006093	200201006094	200201006095	200201006096	200201006097
Start date and time	7/23/02 1413	7/23/02 1610	7/26/02 0808	7/26/02 1107	7/26/02 1541
Gear latitude (dd)	35.1265	35.1312	34.3526	34.3674	34.3980
Gear longitude (dd)	-121.0230	-120.9639	-121.0076	-120.9706	-120.6295
Station	79C	79B	83J	83I	83C
Depth (m)	406.05	272.74	1,193.96	1,112.08	366.87
Duration (hr)	0.32	0.27	0.33	0.43	0.31
Distance fished (km)	1.10	1.02	1.13	1.53	1.28
Area swept (ha)	1.42	1.29	1.56	1.97	1.79
Net width (m)	12.89	12.62	13.82	12.90	13.92
Performance	0	-5.1	0	-5.1	-2.4
Species by weight					
Hagfish			0.20		
Brown cat shark	4.95		0.55		1.25
Spiny dogfish	0.25				
Skates	37.7	12.95			8.15
Other Chondrichthyes	9.00	2.90			0.60
Arrowtooth flounder					
Petrale sole					
Dover sole	23.60		3.75		32.25
Deepsea sole			2.20		
Rex sole	15.65	4.50			2.80
Other flatfish		1.90			0.50
Sablefish	12.70	2.75	2.50		22.70
Pacific grenadier			149.30		
Giant grenadier					
Other grenadier					
Pacific flatnose			5.50		
Slickheads			7.40		
Eelpouts	2.80	2.45	0.80		4.75
Snailfish	0.40				
Pacific hake	152.55	3.80			23.55
Other roundfish			0.65		0.03
Shortspine thornyhead	2.80		3.35		2.05
Longspine thornyhead	1.40		6.15		
Rougheye rockfish	0.01				
Pacific ocean perch					
Aurora rockfish	1.25				1.75
Darkblotched rockfish					
Splitnose rockfish	44.80	54.70			41.45
Shortbelly rockfish		0.50			
Other rockfish	0.50	11.00			19.05
Grooved tanner crab	1.10				0.15
Other invertebrates	74.95	14.95	4.16		98.01
Total catch weight (kg)	386.41	112.40	186.51		259.04

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006098	200201006099	200201006100	200201006101	200201006102
Start date and time	7/26/02 1746	7/26/02 1936	7/27/02 0628	7/27/02 0953	7/27/02 1344
Gear latitude (dd)	34.4182	34.3905	34.1211	34.0079	34.0023
Gear longitude (dd)	-120.6291	-120.5049	-119.3474	-119.1202	-119.2745
Station	83B	83A	87A	87E	87F
Depth (m)	282.30	197.91	194.37	529.05	620.06
Duration (hr)	0.29	0.29	0.34	0.33	0.29
Distance fished (km)	1.39	1.22	1.47	1.46	1.08
Area swept (ha)	2.01	1.67	1.97	2.07	1.48
Net width (m)	14.45	13.73	13.38	14.20	13.75
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark				1.50	1.95
Spiny dogfish					
Skates	9.90	18.80	7.35	3.70	2.00
Other Chondrichthyes	1.95	0.70	7.95	4.00	0.75
Arrowtooth flounder					
Petrale sole		5.60	5.55		
Dover sole	16.25	1.85	2.00	78.95	26.65
Deepsea sole					
Rex sole	0.15	0.65	0.35		
Other flatfish	2.05	5.35	41.05		
Sablefish	0.70			6.35	1.55
Pacific grenadier					
Giant grenadier					
Other grenadier				2.95	1.80
Pacific flatnose					
Slickheads					
Eelpouts	2.40	0.15		0.95	0.05
Snailfish	0.30				0.10
Pacific hake	0.90	12.55	0.95	3.40	3.30
Other roundfish	3.60	0.45	0.37		0.10
Shortspine thornyhead	0.05			62.90	49.50
Longspine thornyhead				17.20	23.15
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				1.95	0.35
Darkblotched rockfish					
Splitnose rockfish	9.50				
Shortbelly rockfish			1.00		
Other rockfish	61.93	21.15	2.25		
Grooved tanner crab					
Other invertebrates	79.70	104.35	47.91	14.81	11.46
Total catch weight (kg)	189.38	171.60	116.73	198.66	122.71

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006103	200201006104	200201006105	200201006106	200201006107
Start date and time	7/28/02 0621	7/28/02 1014	7/28/02 1308	7/28/02 1615	7/29/02 0800
Gear latitude (dd)	33.8163	33.7195	33.6881	33.7258	33.1473
Gear longitude (dd)	-120.0961	-120.0843	-120.2687	-120.4187	-120.1332
Station	87A	87F	87I	87J	91I
Depth (m)	200.96	664.50	1,010.28	1,224.14	1,090.64
Duration (hr)	0.31	0.31	0.36	0.49	0.49
Distance fished (km)	1.36	1.11	1.43	1.89	1.86
Area swept (ha)	1.83	1.68	2.02	2.88	2.21
Net width (m)	13.46	15.11	14.08	15.29	11.88
Performance	3.3	0	0	0	0
Species by weight					
Hagfish		0.55	0.20		0.25
Brown cat shark		0.70	0.75		0.70
Spiny dogfish					
Skates	10.20	17.60	4.75	10.05	0.01
Other Chondrichthyes	4.75	13.50	0.15		
Arrowtooth flounder					
Petrale sole	0.90				
Dover sole		10.65			
Deepsea sole					1.30
Rex sole					
Other flatfish	6.61				
Sablefish		14.25	15.65		6.60
Pacific grenadier			0.15	10.40	0.25
Giant grenadier			9.20	7.35	
Other grenadier		0.18			0.15
Pacific flatnose			0.90	2.50	0.55
Slickheads		1.50	27.20	39.45	17.70
Eelpouts		1.80	2.40	1.05	0.85
Snailfish	0.05	0.35			
Pacific hake		0.95			
Other roundfish	0.35	0.10	0.22	0.40	0.01
Shortspine thornyhead		22.34	6.65	7.45	1.90
Longspine thornyhead		31.20	13.45	10.65	6.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish	0.15				
Other rockfish	23.65				
Grooved tanner crab			1.80	0.46	1.35
Other invertebrates	45.15	73.97	25.46	18.32	25.29
Total catch weight (kg)	91.81	189.64	108.93	108.08	63.56

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201006108	200201006109	200201006110	200201006111	200201006112
Start date and time	7/29/02 1037	7/29/02 1233	7/30/02 0536	7/30/02 0849	7/30/02 1307
Gear latitude (dd)	33.0879	33.1314	33.0947	33.0923	33.0275
Gear longitude (dd)	-120.1645	-120.2437	-118.0878	-117.9203	-117.4951
Station	91E	91F	91I	91H	91F
Depth (m)	536.27	667.60	1,028.92	951.22	671.18
Duration (hr)	0.26	0.36	0.30	0.34	0.34
Distance fished (km)	1.12	1.42	1.25	1.41	1.38
Area swept (ha)	1.52	2.00	1.79	2.00	1.96
Net width (m)	13.58	14.13	14.31	14.16	14.24
Performance	1.1	0	4	0	0
Species by weight					
Hagfish		0.25		0.15	
Brown cat shark		5.80	0.75	4.20	0.70
Spiny dogfish					
Skates			1.70	2.35	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	3.65	33.50		4.80	6.75
Deepsea sole					
Rex sole					
Other flatfish					
Sablefish	3.40	9.55	2.60	0.55	
Pacific grenadier	0.20				
Giant grenadier					
Other grenadier	0.60	0.25	0.55	0.45	0.55
Pacific flatnose			0.30	0.05	
Slickheads		4.60	19.70	58.30	2.95
Eelpouts			0.05	1.20	
Snailfish		0.30	0.15	0.10	
Pacific hake					
Other roundfish	0.11	2.50	0.25	0.06	0.10
Shortspine thornyhead	6.85	5.20	4.30	7.45	14.00
Longspine thornyhead	8.15	19.10	9.80	24.00	19.85
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	5.60				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	0.01	0.70			
Other invertebrates	5.03	19.00	17.43	22.08	72.36
Total catch weight (kg)	33.60	100.75	57.58	125.74	117.26

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number	
	200201006113	200201006114
Start date and time	7/30/02 1457	7/30/02 1633
Gear latitude (dd)	33.0161	33.0366
Gear longitude (dd)	-117.4049	-117.3515
Station	91E	91A
Depth (m)	499.82	197.71
Duration (hr)	0.31	0.27
Distance fished (km)	1.31	1.12
Area swept (ha)	1.59	1.51
Net width (m)	12.16	13.56
Performance	0	0
Species by weight		
Hagfish		
Brown cat shark	1.90	
Spiny dogfish		1.90
Skates		2.35
Other Chondrichthyes	0.75	1.10
Arrowtooth flounder		
Petrale sole		
Dover sole	7.20	0.65
Deepsea sole		
Rex sole	0.30	1.35
Other flatfish		3.95
Sablefish	1.05	
Pacific grenadier		
Giant grenadier		
Other grenadier	3.95	
Pacific flatnose		
Slickheads		
Eelpouts		0.35
Snailfish	0.05	
Pacific hake	6.30	0.90
Other roundfish	0.01	1.30
Shortspine thornyhead	11.90	
Longspine thornyhead	17.85	
Rougheye rockfish		
Pacific ocean perch		
Aurora rockfish	2.65	
Darkblotched rockfish		
Splitnose rockfish		0.05
Shortbelly rockfish		0.05
Other rockfish		14.95
Grooved tanner crab		
Other invertebrates	146.80	84.46
Total catch weight (kg)	200.71	113.36

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008001	200201008002	200201008003	200201008004	200201008005
Start date and time	8/22/02 0823	8/22/02 1137	8/22/02 1417	8/22/02 1640	8/22/02 1744
Gear latitude (dd)	47.9915	47.9053	47.9052	47.8972	47.8995
Gear longitude (dd)	-125.8218	-125.7089	-125.6531	-125.5812	-125.585
Station	2J	2G	2F	2D	2D
Depth (m)	1,206.57	718.91	578.80	436.72	412.48
Duration (hr)	0.16	0.34	0.36	0.16	0.37
Distance fished (km)	0.54	1.40	1.59	0.62	
Area swept (ha)	0.78	2.00	2.25	0.87	
Net width (m)	14.54	14.32	14.16	13.96	14.04
Performance	-1.11	0	0	-1.11	6
Species by weight					
Hagfish		0.30	0.15		
Brown cat shark		2.90	1.15		0.40
Spiny dogfish					
Skates			6.50		
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole		15.35	95.95		57.75
Deepsea sole		7.70	5.50		
Rex sole			0.40		6.30
Other flatfish					0.15
Sablefish		10.30	17.60		
Pacific grenadier		1.15			
Giant grenadier		10.05	14.75		
Other grenadier					
Pacific flatnose		0.55	6.30		
Slickheads					
Eelpouts		5.70	1.65		2.35
Snailfish		1.10	1.55		
Pacific hake					
Other roundfish		1.30	0.15		
Shortspine thornyhead		12.55	54.15		10.60
Longspine thornyhead		14.55	8.70		
Rougheye rockfish					4.40
Pacific ocean perch					10.80
Aurora rockfish					2.15
Darkblotched rockfish					0.80
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					4.20
Grooved tanner crab		31.80	11.00		
Other invertebrates		6.65	15.70		13.41
Total catch weight (kg)		121.95	241.20		113.31

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008006	200201008007	200201008008	200201008009	200201008010
Start date and time	8/22/02 1925	8/23/02 0824	8/23/02 1121	8/23/02 1408	8/23/02 1616
Gear latitude (dd)	47.9115	47.2815	47.3022	47.2240	47.2308
Gear longitude (dd)	-125.5556	-125.2179	-125.1234	-125.0179	-124.9948
Station	2B	6J	6I	6E	6D
Depth (m)	303.37	1,199.71	1,066.79	517.04	419.24
Duration (hr)	0.41	0.32	0.47	0.34	0.31
Distance fished (km)	1.47	1.31	1.58	1.35	1.26
Area swept (ha)	2.00	1.90	2.29	1.90	1.76
Net width (m)	13.60	14.54	14.47	14.10	13.96
Performance	-2.4	7	0	0	0
Species by weight					
Hagfish			0.40		
Brown cat shark				6.75	2.70
Spiny dogfish					
Skates	8.25	18.00		6.70	32.20
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	22.95			63.95	104.65
Deepsea sole		4.10	8.80		
Rex sole	7.05			3.95	19.20
Other flatfish	0.60				35.50
Sablefish	4.20		6.75		7.40
Pacific grenadier		27.05	6.75	4.15	
Giant grenadier		34.85	4.80	23.55	
Other grenadier					
Pacific flatnose		0.85	0.05	2.95	
Slickheads					
Eelpouts	3.20		2.40	11.05	8.25
Snailfish				1.45	
Pacific hake	4.00			0.95	2.40
Other roundfish		0.70	0.05	0.12	0.10
Shortspine thornyhead	5.95	0.40	13.00	19.20	16.85
Longspine thornyhead		12.00	28.80		
Rougheye rockfish					0.40
Pacific ocean perch	21.05				13.55
Aurora rockfish	0.05			3.30	1.90
Darkblotched rockfish	12.30				
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	0.70				
Grooved tanner crab		0.05	3.10	1.60	18.60
Other invertebrates	3.12	32.30	26.62	40.84	17.13
Total catch weight (kg)	93.42	130.30	101.52	190.51	280.83

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008011	200201008012	200201008013	200201008014	200201008015
Start date and time	8/23/02 1859	8/24/02 0642	8/24/02 1025	8/24/02 1234	8/24/02 1541
Gear latitude (dd)	47.2650	46.6428	46.5805	46.5753	46.5432
Gear longitude (dd)	-124.8516	-124.9901	-124.8309	-124.6727	-124.6009
Station	6A	10I	10F	10G	10E
Depth (m)	211.10	1,081.62	610.60	803.62	497.58
Duration (hr)	0.39	0.52	0.36	0.35	0.26
Distance fished (km)	1.45	2.14	1.49	1.41	1.12
Area swept (ha)	1.91	3.11	2.11	2.02	1.57
Net width (m)	13.16	14.54	14.22	14.34	14.10
Performance	0	0	5.1	0	0
Species by weight					
Hagfish		0.45		0.20	0.35
Brown cat shark	0.30	0.90		5.60	15.40
Spiny dogfish					
Skates	27.90	0.70			4.35
Other Chondrichthyes				6.35	
Arrowtooth flounder	144.25				2.50
Petrale sole					
Dover sole	68.40		13.20	52.95	47.15
Deepsea sole		14.25	5.30	12.55	
Rex sole	7.00				5.65
Other flatfish	27.85				
Sablefish	39.65	5.25		51.45	41.15
Pacific grenadier		29.30	1.60	0.02	
Giant grenadier		53.90	0.60	1.30	
Other grenadier					
Pacific flatnose		5.45	3.20	0.70	1.90
Slickheads				1.55	
Eelpouts	0.50	5.41	1.20	4.50	11.50
Snailfish	0.80	0.50	1.10	0.17	
Pacific hake					1.85
Other roundfish	42.85	0.50	1.01	0.06	0.15
Shortspine thornyhead	50.40	2.25	2.50	7.30	35.45
Longspine thornyhead		60.75	14.85	75.65	1.20
Rougheye rockfish	0.40				
Pacific ocean perch	65.20				
Aurora rockfish					
Darkblotched rockfish	42.15				
Splitnose rockfish	97.30				
Shortbelly rockfish					
Other rockfish	4.35				
Grooved tanner crab	1.70	12.55	4.80	5.10	
Other invertebrates	23.37	40.48	15.42	78.30	45.55
Total catch weight (kg)	644.37	232.64	64.78	303.75	214.15

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008016	200201008017	200201008018	200201008019	200201008020
Start date and time	8/24/02 1819	8/24/02 1922	8/25/02 0637	8/25/02 0818	8/25/02 1026
Gear latitude (dd)	46.5185	46.5307	45.9688	45.9336	45.9348
Gear longitude (dd)	-124.6830	-124.6870	-124.7125	-124.7624	-124.8269
Station	10D	10D	14B	14E	14F
Depth (m)	458.46	444.90	275.34	521.58	669.29
Duration (hr)	0.19	0.34	0.26	0.30	0.41
Distance fished (km)	0.75	1.40	1.01	1.12	1.78
Area swept (ha)	1.06	1.97	1.35	1.57	2.55
Net width (m)	14.00	14.00	13.42	14.10	14.30
Performance	0	0	0	0	0
Species by weight					
Hagfish				0.15	
Brown cat shark		6.60		0.30	1.55
Spiny dogfish					
Skates		17.50	8.75	3.50	
Other Chondrichthyes			7.15		
Arrowtooth flounder			2.55	5.20	
Petrale sole					
Dover sole		53.20	11.65	43.50	17.75
Deepsea sole				0.75	1.60
Rex sole		3.71	18.25	0.40	
Other flatfish		0.25	7.65	0.05	
Sablefish		1.80	1.20	24.10	61.50
Pacific grenadier				2.35	0.35
Giant grenadier					13.80
Other grenadier					
Pacific flatnose		1.35		1.60	2.30
Slickheads					
Eelpouts		11.15	1.20	5.20	4.55
Snailfish		0.90		1.00	0.45
Pacific hake		4.60	9.35	0.65	
Other roundfish		0.03	0.95	0.01	0.17
Shortspine thornyhead		12.70	6.35	6.80	10.80
Longspine thornyhead		1.45	0.05	2.50	32.30
Rougheye rockfish					
Pacific ocean perch		2.85			
Aurora rockfish		3.35			
Darkblotched rockfish					
Splitnose rockfish			9.60		
Shortbelly rockfish					
Other rockfish			1.70		
Grooved tanner crab		2.40	0.20	3.30	77.60
Other invertebrates		36.62	48.27	19.18	7.39
Total catch weight (kg)		160.46	134.87	120.54	232.11

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008021	200201008022	200201008023	200201008024	200201008025
Start date and time	8/25/02 1319	8/25/02 1630	8/25/02 1823	8/26/02 0614	8/26/02 0918
Gear latitude (dd)	45.9184	45.9706	45.9796	45.2661	45.2459
Gear longitude (dd)	-125.0174	-125.0574	-125.0798	-124.9868	-124.9042
Station	14I	14J	14J	18J	18H
Depth (m)	1,084.24	1,196.00	1,227.76	1,206.18	941.87
Duration (hr)	0.54	0.11	0.57	0.60	0.45
Distance fished (km)	2.08	0.37	1.72	2.10	1.71
Area swept (ha)	3.01	0.54	2.49	3.05	2.47
Net width (m)	14.50	14.53	14.53	14.53	14.44
Performance	0	-1.11	-2.4	0	0
Species by weight					
Hagfish	0.20			0.95	1.05
Brown cat shark					1.75
Spiny dogfish					
Skates	14.25		3.30	9.00	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole					
Deepsea sole	2.30		1.65	0.15	3.20
Rex sole					
Other flatfish					
Sablefish	30.20		17.65	18.20	5.65
Pacific grenadier	148.60		93.75	37.45	11.10
Giant grenadier	48.15		18.50	46.65	17.85
Other grenadier					
Pacific flatnose	3.15		6.25	3.80	1.10
Slickheads	3.40			0.15	1.05
Eelpouts	2.30			0.65	3.60
Snailfish				0.51	0.17
Pacific hake					
Other roundfish	0.14		0.15	0.74	0.36
Shortspine thornyhead	15.55		3.45	5.90	5.65
Longspine thornyhead	28.10		5.85	39.45	75.30
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	19.05		0.05	27.25	48.75
Other invertebrates	27.58		5.56	54.51	9.47
Total catch weight (kg)	342.97		156.16	245.36	186.05

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008026	200201008027	200201008028	200201008029	200201008030
Start date and time	8/26/02 1153	8/26/02 1326	8/26/02 1549	8/30/02 0706	8/30/02 0854
Gear latitude (dd)	45.2236	45.2339	45.1900	44.5877	44.5811
Gear longitude (dd)	-124.7143	-124.6427	-124.3396	-124.7093	-124.8508
Station	18E	18D	18B	22B	22D
Depth (m)	526.16	436.37	277.63	291.19	465.03
Duration (hr)	0.39	0.29	0.30	0.30	0.28
Distance fished (km)	1.56	1.13	1.19	1.18	0.99
Area swept (ha)	2.20	1.57	1.60	1.64	1.44
Net width (m)	14.10	13.96	13.42	13.86	14.48
Performance	7	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark	1.25	3.60			2.10
Spiny dogfish					
Skates	6.95	4.00	14.55	10.10	17.85
Other Chondrichthyes					
Arrowtooth flounder			8.80	13.50	
Petrale sole					
Dover sole	0.90	38.80	30.20	71.65	49.80
Deepsea sole					1.40
Rex sole		11.35	1.75	4.00	7.30
Other flatfish		0.10	5.17	2.26	
Sablefish	2.15	2.05	27.90	17.45	4.65
Pacific grenadier		0.10			
Giant grenadier					
Other grenadier					
Pacific flatnose	1.35				0.45
Slickheads					
Eelpouts	1.95	3.10	6.50	7.15	1.60
Snailfish	0.45	0.40		0.20	0.40
Pacific hake	1.65	6.00	44.55	2.60	
Other roundfish	0.13	0.01	0.05	0.01	
Shortspine thornyhead	23.25	14.75	17.20	34.90	20.75
Longspine thornyhead	25.90	0.25			6.50
Rougheye rockfish					
Pacific ocean perch		1.55	1.05		
Aurora rockfish		1.20	0.65	0.25	7.95
Darkblotched rockfish			31.15	0.40	
Splitnose rockfish			5.40		
Shortbelly rockfish					
Other rockfish			5.45	0.35	
Grooved tanner crab	2.85	0.05	0.26		0.60
Other invertebrates	37.39	30.76	13.96	20.36	58.49
Total catch weight (kg)	106.17	118.07	214.59	185.18	179.84

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008031	200201008032	200201008033	200201008034	200201008035
Start date and time	8/30/02 1117	8/30/02 1307	8/30/02 1456	8/31/02 0618	8/31/02 0848
Gear latitude (dd)	44.6109	44.6408	44.6252	43.9479	43.9327
Gear longitude (dd)	-124.9090	-124.9515	-125.0786	-125.0423	-125.0054
Station	22F	22G	22H	26J	26F
Depth (m)	616.89	726.49	936.41	1,238.58	641.04
Duration (hr)	0.31	0.31	0.40	0.31	0.27
Distance fished (km)	1.18	1.06	1.63	1.08	1.14
Area swept (ha)	1.82	1.61	2.34	1.52	1.61
Net width (m)	15.38	15.20	14.34	14.10	14.17
Performance	0	5.1	0	0	0
Species by weight					
Hagfish			0.15	0.70	0.20
Brown cat shark	0.65	0.75	0.25		1.10
Spiny dogfish					
Skates	1.10		0.20		
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	2.15	15.10			115.10
Deepsea sole		0.35	6.90	10.20	4.05
Rex sole					
Other flatfish					
Sablefish	12.40	7.30	4.80		5.65
Pacific grenadier	0.30	0.05	7.80	43.35	1.90
Giant grenadier	20.30	2.35		65.70	32.40
Other grenadier					
Pacific flatnose	2.25			2.00	3.45
Slickheads			5.65	1.25	
Eelpouts	0.90	0.65	0.30	1.40	0.40
Snailfish	0.85				0.23
Pacific hake					
Other roundfish	0.18	0.15	0.15	0.25	0.25
Shortspine thornyhead	8.65		1.40		21.15
Longspine thornyhead	10.00	29.20	53.30	15.00	25.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.95				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	2.20	13.50	43.10	3.50	2.15
Other invertebrates	24.03	3.10	6.46	21.25	16.10
Total catch weight (kg)	86.91	72.50	130.46	164.60	229.78

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008036	200201008037	200201008038	200201008039	200201008040
Start date and time	8/31/02 1045	8/31/02 1412	8/31/02 1741	9/1/02 0647	9/1/02 0820
Gear latitude (dd)	43.9498	43.8635	43.8843	43.2221	43.2350
Gear longitude (dd)	-124.9601	-124.7180	-124.7319	-124.8952	-124.9021
Station	22D	26B	26A	30D	30E
Depth (m)	469.36	295.14	251.02	461.26	499.63
Duration (hr)	0.26	0.27	0.27	0.29	0.29
Distance fished (km)	1.02	1.04	1.02	1.15	1.14
Area swept (ha)	1.36	1.36	1.39	1.61	1.59
Net width (m)	13.38	13.10	13.64	14.00	13.86
Performance	0	2.4	0	0	0
Species by weight					
Hagfish	1.20				
Brown cat shark	1.80			1.55	1.95
Spiny dogfish	1.20				
Skates	42.55	45.60	18.20	15.20	14.90
Other Chondrichthyes	2.35		1.20		
Arrowtooth flounder	6.90	2.30	6.50		
Petrale sole					
Dover sole	287.40	53.95	38.30	90.65	118.50
Deepsea sole					
Rex sole	11.95	19.05	20.60	13.15	8.60
Other flatfish	0.20	1.10	2.45	0.25	0.02
Sablefish	35.40	27.75	15.60	10.50	6.05
Pacific grenadier					
Giant grenadier				1.55	1.20
Other grenadier					
Pacific flatnose	1.80			0.65	2.20
Slickheads					
Eelpouts	1.25	1.40	0.55	5.60	2.75
Snailfish	1.35	0.85	0.30	1.85	1.65
Pacific hake	2.50	1.45	0.65	1.45	
Other roundfish		4.15	0.01		
Shortspine thornyhead	7.90	10.15	3.80	2.25	4.50
Longspine thornyhead	0.35				
Rougheye rockfish			0.05		
Pacific ocean perch	0.75				
Aurora rockfish	3.35			0.90	
Darkblotched rockfish		9.55			
Splitnose rockfish		0.90	1.40		
Shortbelly rockfish					
Other rockfish		27.60	3.32		
Grooved tanner crab	0.75			0.25	2.90
Other invertebrates	43.10	49.56	46.56	10.90	26.45
Total catch weight (kg)	454.05	255.36	159.49	156.70	191.67

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008041	200201008042	200201008043	200201008044	200201008045
Start date and time	9/1/02 1000	9/1/02 1156	9/1/02 1309	9/1/02 1644	9/2/02 0700
Gear latitude (dd)	43.2398	43.2050	43.2301	43.2206	42.6182
Gear longitude (dd)	-124.9210	-124.9419	-124.9427	-124.9865	-124.7046
Station	30F	30G	30G	30I	34A
Depth (m)	635.98	786.82	787.35	1,071.52	213.97
Duration (hr)	0.29	0.38	0.35	0.46	0.29
Distance fished (km)	1.07	1.58	1.38	1.72	1.09
Area swept (ha)	1.56	2.43	2.09	2.51	1.42
Net width (m)	14.59	15.44	15.12	14.61	13.08
Performance	5.41	-5.23	0	0	0
Species by weight					
Hagfish				0.30	
Brown cat shark			4.50	2.80	
Spiny dogfish					
Skates	7.00				34.80
Other Chondrichthyes					
Arrowtooth flounder					7.65
Petrale sole					0.65
Dover sole	29.50		13.80	15.55	167.80
Deepsea sole	4.45		4.65	10.40	
Rex sole					26.55
Other flatfish					1.60
Sablefish	20.50		19.50	16.20	52.15
Pacific grenadier	0.15			7.90	
Giant grenadier	3.65		6.40	43.75	
Other grenadier					
Pacific flatnose	1.90				
Slickheads				0.40	
Eelpouts	0.20		1.05	0.50	13.95
Snailfish	4.00		0.25		
Pacific hake					115.55
Other roundfish	0.01		0.17	0.20	
Shortspine thornyhead	52.50		8.80		0.40
Longspine thornyhead	45.85		75.35	74.55	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					14.60
Splitnose rockfish					15.25
Shortbelly rockfish					
Other rockfish					20.85
Grooved tanner crab	8.95		24.00	22.75	
Other invertebrates	5.05		12.52	18.65	50.66
Total catch weight (kg)	183.71		170.99	213.95	522.46

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008046	200201008047	200201008048	200201008049	200201008050
Start date and time	9/2/02 0953	9/2/02 1144	9/2/02 1339	9/2/02 1612	9/3/02 0642
Gear latitude (dd)	42.5436	42.5855	42.5957	42.5729	41.9746
Gear longitude (dd)	-124.7576	-124.7991	-124.8141	-124.9188	-124.5927
Station	34B	34F	34G	34J	38B
Depth (m)	314.87	598.80	786.26	1,203.58	277.73
Duration (hr)	0.27	0.26	0.41	0.43	0.31
Distance fished (km)	1.18	0.94	1.43	1.28	1.46
Area swept (ha)	1.63	1.34	2.00	1.88	2.10
Net width (m)	13.78	14.24	14.01	14.71	14.36
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.15	0.65		
Brown cat shark	1.65	2.65	3.25		7.35
Spiny dogfish	3.50				
Skates	47.60	1.05		14.95	82.90
Other Chondrichthyes					
Arrowtooth flounder					6.05
Petrale sole					1.55
Dover sole	58.90	72.45	8.95	5.15	142.35
Deepsea sole			1.25	40.10	
Rex sole	24.45	0.30			70.25
Other flatfish	0.30				5.40
Sablefish	24.25	63.05	25.65	33.40	14.80
Pacific grenadier			4.85	141.75	
Giant grenadier		4.00	393.60	131.25	
Other grenadier					
Pacific flatnose		4.30		8.50	
Slickheads			2.75	15.25	
Eelpouts	11.95	10.45		15.80	5.60
Snailfish	0.30	0.30	0.04		1.10
Pacific hake	35.85	0.90			75.65
Other roundfish		0.05	0.10	0.30	
Shortspine thornyhead	3.90	1.75	0.25	16.50	5.90
Longspine thornyhead		6.00	56.35	35.15	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish	2.15				0.95
Splitnose rockfish	0.45				2.00
Shortbelly rockfish					
Other rockfish					0.40
Grooved tanner crab		12.95	69.25	5.75	
Other invertebrates	162.75	7.66	10.91	34.54	110.20
Total catch weight (kg)	378.00	188.01	577.85	498.39	532.45

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008051	200201008052	200201008053	200201008054	200201008055
Start date and time	9/3/02 0912	9/3/02 1126	9/3/02 1424	9/3/02 1715	9/4/02 0612
Gear latitude (dd)	41.9287	41.9082	41.9258	41.9843	41.2537
Gear longitude (dd)	-124.6146	-124.6357	-124.8830	-125.0475	-124.6567
Station	38E	38F	38H	38J	42J
Depth (m)	498.12	583.37	879.52	1,172.41	1,148.25
Duration (hr)	0.27	0.29	0.40	0.32	0.36
Distance fished (km)	1.14	1.25	1.57	1.08	1.20
Area swept (ha)	1.69	1.86	2.27	1.47	1.74
Net width (m)	14.82	14.85	14.43	13.70	14.54
Performance	0	0	0	0	0
Species by weight					
Hagfish					0.30
Brown cat shark	8.05	2.40	1.10		
Spiny dogfish					
Skates	1.75			6.25	3.70
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	118.60	52.55	148.15	0.90	4.84
Deepsea sole		0.80	11.95	5.20	17.70
Rex sole	53.40	14.40			
Other flatfish	0.10	0.05			
Sablefish	37.40	23.65	39.35	19.00	24.38
Pacific grenadier			0.50	41.25	13.92
Giant grenadier			3.20	45.80	55.70
Other grenadier		0.20			
Pacific flatnose		0.35		7.90	4.32
Slickheads			0.90	3.95	4.30
Eelpouts	7.60	9.05	0.80	0.35	0.65
Snailfish	0.50	1.25			0.13
Pacific hake	28.70	6.45	0.75		
Other roundfish			0.06	6.82	0.97
Shortspine thornyhead	14.45	5.35	16.00	16.55	15.42
Longspine thornyhead	8.60	25.75	270.45	37.90	92.32
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.35				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		11.30	11.25	19.80	9.65
Other invertebrates	15.75	5.25	11.80	140.85	75.68
Total catch weight (kg)	295.25	158.80	516.26	352.52	323.98

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008056	200201008057	200201008058	200201008059	200201008060
Start date and time	9/4/02 0943	9/4/02 1209	9/4/02 1400	9/4/02 1546	9/7/02 0835
Gear latitude (dd)	41.2065	41.2143	41.2388	41.1822	40.6119
Gear longitude (dd)	-124.5204	-124.4717	-124.4360	-124.3688	-124.5837
Station	42H	42G	42E	42A	46A
Depth (m)	977.77	764.44	512.94	219.17	211.91
Duration (hr)	0.39	0.35	0.32	0.27	0.28
Distance fished (km)	1.52	1.37	1.25	1.09	1.12
Area swept (ha)	2.18	2.05	1.74	1.49	1.60
Net width (m)	14.35	14.89	13.90	13.66	14.23
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.10				
Brown cat shark	0.52	1.95	5.40	0.35	
Spiny dogfish				0.20	1.80
Skates			8.15	3.55	34.40
Other Chondrichthyes					8.40
Arrowtooth flounder				7.45	0.50
Petrale sole					
Dover sole	23.75	24.80	153.91	61.00	266.36
Deepsea sole	5.95	1.60			
Rex sole			60.85	9.55	46.50
Other flatfish				10.05	3.08
Sablefish	9.50	9.55	20.00	3.95	10.10
Pacific grenadier	3.00	0.10			
Giant grenadier	28.15	28.60			
Other grenadier					
Pacific flatnose	1.40		0.75		
Slickheads	14.90	0.15			
Eelpouts	4.50	0.85	6.65	3.40	1.90
Snailfish			1.85		
Pacific hake			15.95	416.95	173.70
Other roundfish	0.06	0.10	0.05		1.50
Shortspine thornyhead		2.85	4.95	1.00	0.75
Longspine thornyhead	87.30	88.45	4.60		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			2.15		
Darkblotched rockfish				50.55	0.45
Splitnose rockfish				14.55	0.90
Shortbelly rockfish					
Other rockfish				39.05	30.00
Grooved tanner crab	24.65	11.40	13.90	1.65	
Other invertebrates	15.34	29.77	19.25	24.40	120.56
Total catch weight (kg)	219.12	200.17	318.41	647.65	700.90

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008061	200201008062	200201008063	200201008064	200201008065
Start date and time	9/7/02 1105	9/7/02 1409	9/7/02 1527	9/7/02 1649	9/7/02 1848
Gear latitude (dd)	40.5571	40.5531	40.5467	40.5382	40.5225
Gear longitude (dd)	-124.7005	-124.6980	-124.7117	-124.7268	-124.7608
Station	46C	46C	46E	46H	46J
Depth (m)	401.16	381.75	529.31	894.61	1,219.69
Duration (hr)	0.30	0.33	0.28	0.39	0.54
Distance fished (km)	1.11	1.41	1.21	1.56	1.91
Area swept (ha)	1.59	1.85	1.68	2.21	3.10
Net width (m)	14.31	13.12	13.88	14.15	16.20
Performance	-2.4	1.11	0	5.1	7
Species by weight					
Hagfish				0.20	
Brown cat shark			2.45		
Spiny dogfish		0.38			
Skates		14.20	3.55	9.80	20.05
Other Chondrichthyes		1.36			
Arrowtooth flounder					
Petrale sole					
Dover sole		250.09	170.40	56.90	43.07
Deepsea sole				17.15	18.48
Rex sole		8.40	14.50		
Other flatfish					
Sablefish		19.50	8.65	35.90	10.50
Pacific grenadier				120.31	167.72
Giant grenadier			0.90	20.10	21.00
Other grenadier				0.01	0.12
Pacific flatnose			1.50	0.95	2.98
Slickheads				6.15	
Eelpouts		6.32	2.65	12.80	0.25
Snailfish			0.55	0.42	
Pacific hake		15.40	1.80		
Other roundfish				0.20	21.05
Shortspine thornyhead		8.85	1.75	33.05	
Longspine thornyhead				107.30	5.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		2.00			
Darkblotched rockfish		1.10			
Splitnose rockfish		0.75	0.25		
Shortbelly rockfish					
Other rockfish		3.15			
Grooved tanner crab			3.35	81.45	63.00
Other invertebrates		6.26	7.37	4.09	6.13
Total catch weight (kg)		337.76	219.67	506.78	379.95

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008066	200201008067	200201008068	200201008069	200201008070
Start date and time	9/8/02 0734	9/8/02 1021	9/8/02 1155	9/8/02 1446	9/8/02 1640
Gear latitude (dd)	39.9367	39.9493	39.9499	39.9767	39.9630
Gear longitude (dd)	-124.4169	-124.3521	-124.3550	-124.2837	-124.2484
Station	50J	50I	50I	50G	50E
Depth (m)	1,188.88	1,034.65	1,025.15	766.57	513.58
Duration (hr)	0.34	0.42	0.34	0.34	0.31
Distance fished (km)	1.39	1.79	1.37	1.36	1.27
Area swept (ha)	1.91	2.59	2.00	2.03	1.82
Net width (m)	13.78	14.47	14.65	14.90	14.40
Performance	0	-5	0	7	0
Species by weight					
Hagfish					
Brown cat shark			0.90	2.90	4.75
Spiny dogfish					
Skates	2.25		63.24	2.35	0.60
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole			2.52	19.35	66.07
Deepsea sole	4.45		3.50	8.45	
Rex sole					1.60
Other flatfish					
Sablefish	15.35		64.26		21.70
Pacific grenadier	186.10	1.95	44.40		
Giant grenadier	26.70		4.20	21.90	
Other grenadier					
Pacific flatnose	3.70		0.40	0.05	1.22
Slickheads		0.40	15.12	2.50	
Eelpouts			2.45	1.60	5.08
Snailfish			0.20		0.15
Pacific hake					12.88
Other roundfish	0.35	0.05	0.06	0.15	
Shortspine thornyhead	9.35		64.30	3.40	10.99
Longspine thornyhead	13.00	0.90	68.50	94.25	5.45
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					0.92
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	9.05	0.15	42.30	17.55	0.30
Other invertebrates	34.20	2.49	9.92	12.44	13.51
Total catch weight (kg)	304.50	5.94	386.27	186.89	145.22

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008071	200201008072	200201008073	200201008074	200201008075
Start date and time	9/8/02 1841	9/9/02 0654	9/9/02 0950	9/9/02 1226	9/9/02 1408
Gear latitude (dd)	39.8694	39.3161	39.2300	39.1971	39.2167
Gear longitude (dd)	-124.1472	-124.2334	-124.1901	-124.0776	-124.0229
Station	50C	54J	54I	54F	54E
Depth (m)	366.71	1,166.80	1,048.83	661.72	512.04
Duration (hr)	0.28	0.33	0.39	0.28	0.27
Distance fished (km)	1.18	1.28	1.41	1.26	1.11
Area swept (ha)	1.63	1.81	2.06	1.88	1.56
Net width (m)	13.81	14.13	14.60	14.92	13.99
Performance	0	0	0	0	0
Species by weight					
Hagfish			0.25		
Brown cat shark	0.42	0.12	10.00	3.50	5.72
Spiny dogfish	2.22				0.44
Skates	20.70		15.90		10.95
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	39.52	1.85	135.00	1.15	153.40
Deepsea sole		1.85	5.40	1.15	
Rex sole	16.85				3.15
Other flatfish	0.60				
Sablefish	4.04	22.00	28.76	2.30	9.50
Pacific grenadier		59.46	86.45	0.85	
Giant grenadier		177.70	53.35	10.45	
Other grenadier		0.18			
Pacific flatnose			2.80	0.45	0.40
Slickheads		8.25	7.20	1.75	
Eelpouts	3.21	2.98	3.06	0.62	0.95
Snailfish	0.40			0.30	0.95
Pacific hake	0.55				32.90
Other roundfish		0.45	0.10	0.16	
Shortspine thornyhead	0.18	24.55	35.75	4.40	13.90
Longspine thornyhead	0.34	25.50	34.25	34.40	13.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.80				0.50
Darkblotched rockfish					
Splitnose rockfish	0.75				
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	1.63	14.80	37.57	3.80	0.50
Other invertebrates	37.84	38.62	44.79	18.58	21.73
Total catch weight (kg)	130.05	378.31	500.63	83.86	268.64

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008076	200201008077	200201008078	200201008079	200201008080
Start date and time	9/9/02 1601	9/10/02 0705	9/10/02 0927	9/10/02 1136	9/10/02 1341
Gear latitude (dd)	39.1967	38.6258	38.6419	38.6109	38.5679
Gear longitude (dd)	-123.9675	-123.8068	-123.7953	-123.7435	-123.7045
Station	54B	58H	58F	58E	58D
Depth (m)	287.70	918.03	663.43	526.34	447.33
Duration (hr)	0.28	0.31	0.29	0.30	0.29
Distance fished (km)	1.24	1.14	1.02	1.18	1.23
Area swept (ha)	1.72	1.65	1.45	1.74	1.87
Net width (m)	13.86	14.52	14.22	14.69	15.26
Performance	0	0	0	0	-5.23
Species by weight					
Hagfish		2.75	0.16		
Brown cat shark			15.75	7.40	
Spiny dogfish				0.10	
Skates	19.13		30.42	13.99	
Other Chondrichthyes	6.55				
Arrowtooth flounder					
Petrale sole	1.45				
Dover sole	17.45	6.85	50.20	469.27	
Deepsea sole		4.00	16.72	0.10	
Rex sole	5.00			8.15	
Other flatfish	55.14				
Sablefish	1.56		6.70	29.90	
Pacific grenadier		5.80	1.50		
Giant grenadier		31.45	3.66		
Other grenadier				0.20	
Pacific flatnose		1.05	0.14	0.90	
Slickheads		12.95	14.44		
Eelpouts	1.62	4.10	0.15	12.55	
Snailfish		0.16	0.75	0.95	
Pacific hake	3.52			8.44	
Other roundfish	1.60	0.28	0.15		
Shortspine thornyhead	0.44	0.48	1.70	14.80	
Longspine thornyhead	0.30	24.65	46.45		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish				6.30	
Darkblotched rockfish	1.26				
Splitnose rockfish	57.79				
Shortbelly rockfish					
Other rockfish	65.25				
Grooved tanner crab		17.40	17.50	2.44	
Other invertebrates	21.43	6.14	4.91	21.34	
Total catch weight (kg)	259.49	118.06	211.30	596.83	

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008081	200201008082	200201008083	200201008084	200201008085
Start date and time	9/10/02 1441	9/10/02 1638	9/10/02 1720	9/11/02 0730	9/11/02 1231
Gear latitude (dd)	38.5708	38.5186	38.5210	37.8364	37.9214
Gear longitude (dd)	-123.7073	-123.6566	-123.6587	-123.4652	-123.4746
Station	58D	58C	58C	62J	62F
Depth (m)	444.32	326.58	348.07	1,257.34	599.09
Duration (hr)	0.28	0.20	0.28	0.30	0.32
Distance fished (km)	1.10		0.94	0.91	1.30
Area swept (ha)	1.55		1.21	1.36	1.83
Net width (m)	14.07	13.37	12.86	14.92	14.06
Performance	0	-5.23	1.11	-5.1	0
Species by weight					
Hagfish					
Brown cat shark	3.11				8.05
Spiny dogfish	1.44				
Skates	44.18		9.30		8.58
Other Chondrichthyes	3.44		7.80		
Arrowtooth flounder	2.20		2.10		
Petrale sole					
Dover sole	283.94		90.74		381.60
Deepsea sole					
Rex sole	57.20		40.10		
Other flatfish	2.40		25.75		
Sablefish	9.80		0.55		48.00
Pacific grenadier					4.55
Giant grenadier					19.20
Other grenadier					
Pacific flatnose					0.15
Slickheads					0.10
Eelpouts	17.05		10.00		2.36
Snailfish	0.30		0.30		1.36
Pacific hake	44.24		8.90		0.40
Other roundfish					
Shortspine thornyhead	3.74				67.09
Longspine thornyhead					68.15
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	28.75		0.60		
Darkblotched rockfish			0.32		
Splitnose rockfish			29.35		
Shortbelly rockfish					
Other rockfish	6.78		1.05		
Grooved tanner crab					1.10
Other invertebrates	19.02		8.76		11.29
Total catch weight (kg)	527.59		235.62		621.98

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008086	200201008087	200201008088	200201008089	200201008090
Start date and time	9/11/02 1424	9/11/02 1615	9/14/02 0642	9/14/02 0826	9/14/02 1023
Gear latitude (dd)	37.9136	37.9184	37.2981	37.2858	37.2283
Gear longitude (dd)	-123.4661	-123.4581	-122.8483	-122.9176	-122.9417
Station	62E	62C	66A	66C	66D
Depth (m)	509.75	361.13	205.24	361.13	440.93
Duration (hr)	0.30	0.27	0.26	0.26	0.28
Distance fished (km)	1.32	1.17	0.97	1.14	1.13
Area swept (ha)	1.81	1.56	1.29	1.49	1.48
Net width (m)	13.69	13.30	13.34	13.12	13.11
Performance	7	0	0	0	0
Species by weight					
Hagfish	0.30				
Brown cat shark	21.38	0.12			1.15
Spiny dogfish					6.10
Skates	18.69	8.25	2.50	6.10	29.35
Other Chondrichthyes	1.27	99.25	1.40		0.65
Arrowtooth flounder		0.35			
Petrale sole			3.80	0.65	
Dover sole	678.05	711.65	1.00	11.35	83.85
Deepsea sole	2.60				
Rex sole	46.75	73.77	8.00	4.45	24.20
Other flatfish		4.78	12.65	7.45	0.25
Sablefish		4.55		0.10	1.80
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	9.55	13.45	0.65	3.25	6.20
Snailfish	0.50			0.10	0.25
Pacific hake	0.40	13.50	1.00		3.00
Other roundfish	0.15	4.80	0.50		
Shortspine thornyhead	44.80	37.33			0.70
Longspine thornyhead	33.05	0.35			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	11.80	3.96		0.60	5.50
Darkblotched rockfish		1.05			
Splitnose rockfish		16.75		3.20	13.35
Shortbelly rockfish			0.60	7.35	0.20
Other rockfish	2.35	6.78	29.20	6.05	1.95
Grooved tanner crab					
Other invertebrates	10.48	10.89	4.40	3.06	21.71
Total catch weight (kg)	882.12	1,011.58	65.70	53.71	200.21

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008091	200201008092	200201008093	200201008094	200201008095
Start date and time	9/14/02 1223	9/14/02 1438	9/15/02 0619	9/15/02 0901	9/15/02 1143
Gear latitude (dd)	37.2614	37.2430	36.6463	36.5851	36.5146
Gear longitude (dd)	-123.0191	-123.1314	-122.0853	-122.0760	-122.1551
Station	66F	66I	70J	70H	70J
Depth (m)	619.61	1,049.79	1,207.92	919.10	1,169.61
Duration (hr)	0.28	0.40		0.39	0.34
Distance fished (km)	1.05	1.84		1.74	1.46
Area swept (ha)	1.42	2.54		2.31	2.16
Net width (m)	13.48	13.75		13.27	14.84
Performance	0	0	-1	0	0
Species by weight					
Hagfish	0.50			0.15	
Brown cat shark	6.80			2.90	0.60
Spiny dogfish					
Skates	7.95	7.35		10.10	2.35
Other Chondrichthyes	0.55	1.95			15.25
Arrowtooth flounder					
Petrale sole					
Dover sole	353.20	163.35		181.00	
Deepsea sole		9.60		9.20	6.75
Rex sole					
Other flatfish					
Sablefish	31.40	47.05		35.60	15.00
Pacific grenadier		200.65		53.98	128.00
Giant grenadier		21.80		7.50	47.35
Other grenadier					
Pacific flatnose		5.70		2.20	4.90
Slickheads	0.15	34.90		42.75	35.40
Eelpouts	5.00	5.30		4.40	3.00
Snailfish	1.35				
Pacific hake	0.75			0.40	
Other roundfish		0.46		0.85	1.21
Shortspine thornyhead	10.90	35.50		20.95	2.70
Longspine thornyhead	50.35	77.65		98.85	24.40
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	10.50	3.35		6.05	7.75
Other invertebrates	13.35	20.52		12.00	24.00
Total catch weight (kg)	492.75	635.13		488.88	318.66

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008096	200201008097	200201008098	200201008099	200201008100
Start date and time	9/15/02 1417	9/15/02 1706	9/15/02 1805	9/16/02 0625	9/16/02 1010
Gear latitude (dd)	36.5247	36.5044	36.5039	35.9269	35.9750
Gear longitude (dd)	-122.0376	-122.0182	-121.9944	-121.9036	-121.7111
Station	70F	70C	70A	74J	74H
Depth (m)	574.31	369.43	214.07	1,210.31	864.88
Duration (hr)	0.29	0.31	0.28	0.42	0.33
Distance fished (km)	1.26	1.28	1.11	1.49	1.37
Area swept (ha)	1.82	1.61	1.41	2.13	1.97
Net width (m)	14.39	12.52	12.77	14.31	14.43
Performance	0	0	0	0	0
Species by weight					
Hagfish				0.20	0.50
Brown cat shark	12.30	0.10		0.95	3.30
Spiny dogfish	16.40				
Skates	10.65	9.90	4.75	1.95	
Other Chondrichthyes	16.30	10.35	10.65		
Arrowtooth flounder					
Petrale sole			2.30		
Dover sole	296.35	107.80	1.40		16.65
Deepsea sole	0.70			0.95	4.85
Rex sole	0.25	24.25	5.70		
Other flatfish		13.45	27.40		
Sablefish	47.35	6.85	9.30	3.25	6.70
Pacific grenadier				17.65	0.55
Giant grenadier	1.20			7.75	
Other grenadier	0.75				0.05
Pacific flatnose				6.35	0.20
Slickheads				23.15	4.20
Eelpouts	1.15	0.60	0.40		3.70
Snailfish	0.71				0.30
Pacific hake	0.75	1.75	0.85		
Other roundfish			1.15	0.90	0.70
Shortspine thornyhead	86.10	1.10		3.00	12.60
Longspine thornyhead	44.25			16.00	117.05
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	11.15				
Darkblotched rockfish		0.25			
Splitnose rockfish		29.85	0.70		
Shortbelly rockfish					
Other rockfish		3.70	24.65		
Grooved tanner crab	2.80			6.85	2.55
Other invertebrates	56.42	21.97	14.05	98.59	51.06
Total catch weight (kg)	605.58	231.92	103.30	187.54	224.96

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008101	200201008102	200201008104	200201008105	200201008106
Start date and time	9/16/02 1248	9/16/02 1444	9/16/02 1746	9/17/02 0641	9/17/02 0813
Gear latitude (dd)	35.8989	35.8941	35.8450	35.2764	35.2650
Gear longitude (dd)	-121.5960	-121.5533	-121.4914	-121.0871	-121.1598
Station	74F	74C	74A	78C	78E
Depth (m)	577.21	391.92	206.55	354.78	480.96
Duration (hr)	0.30	0.27	0.33	0.26	0.27
Distance fished (km)	1.23	1.08	1.24	0.90	1.17
Area swept (ha)	1.84	1.54	1.71	1.03	1.72
Net width (m)	14.98	14.28	13.83	11.53	14.71
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark	4.65	3.45		0.90	3.45
Spiny dogfish		204.70	12.95	2.10	
Skates	2.20	54.00		16.85	30.25
Other Chondrichthyes	14.35	58.25	58.40	7.45	1.25
Arrowtooth flounder					
Petrale sole			16.80		
Dover sole	63.80	152.50	5.35	3.85	105.05
Deepsea sole					
Rex sole		3.15	21.10	0.45	5.25
Other flatfish			16.45		0.05
Sablefish	19.35	74.55	7.05	1.65	16.15
Pacific grenadier					
Giant grenadier					
Other grenadier	0.20				
Pacific flatnose					
Slickheads					
Eelpouts	0.30	1.70	0.05	1.55	3.90
Snailfish	0.30	0.25			
Pacific hake	6.00	46.35		26.90	102.60
Other roundfish			20.56		
Shortspine thornyhead	13.95	3.00			12.15
Longspine thornyhead	20.65				7.25
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	3.90	3.05			21.35
Darkblotched rockfish					
Splitnose rockfish		8.20	0.80	39.70	0.55
Shortbelly rockfish			1.65		
Other rockfish			1,324.95	0.75	1.80
Grooved tanner crab	1.05	0.25			
Other invertebrates	46.45	47.65	6.35	30.20	72.95
Total catch weight (kg)	197.15	661.05	1,492.46	132.35	384.00

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008107	200201008108	200201008109	200201008110	200201008111
Start date and time	9/17/02 1051	9/17/02 1302	9/17/02 1641	9/21/02 0837	9/21/02 1111
Gear latitude (dd)	35.2702	35.3142	35.2308	34.5226	34.5331
Gear longitude (dd)	-121.3890	-121.4548	-121.6882	-121.2584	-121.1607
Station	78G	78H	78J	82J	82I
Depth (m)	737.24	884.28	1,161.08	1,224.73	1,005.18
Duration (hr)	0.35	0.28	0.53	0.46	0.31
Distance fished (km)	1.42	1.41	1.71	1.71	1.10
Area swept (ha)	2.21	2.02	2.36	2.47	1.55
Net width (m)	15.53	14.31	13.81	14.42	14.15
Performance	0	0	0	2.4	0
Species by weight					
Hagfish					
Brown cat shark	0.80	1.45	2.15	4.85	
Spiny dogfish					
Skates	3.70			19.05	
Other Chondrichthyes	1.40	1.05			
Arrowtooth flounder					
Petrale sole					
Dover sole	61.45	88.75	7.45		20.30
Deepsea sole	2.20	5.45	0.70		4.45
Rex sole					
Other flatfish					
Sablefish	9.55	35.05	2.00		
Pacific grenadier			26.00	180.50	20.20
Giant grenadier			34.60	12.50	9.10
Other grenadier		0.30			
Pacific flatnose		0.75	5.20	6.75	0.70
Slickheads	4.40	11.60	6.20	13.95	2.65
Eelpouts	0.10	1.05	1.20	6.90	0.55
Snailfish	0.30	0.15		0.05	
Pacific hake		0.35			
Other roundfish	0.01	0.51	0.90	0.16	0.66
Shortspine thornyhead	22.95	9.25	4.05	3.50	15.95
Longspine thornyhead	87.35	117.05	27.40	4.95	20.70
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	3.25	5.70	2.10		0.25
Other invertebrates	18.06	11.75	34.52	11.41	8.37
Total catch weight (kg)	215.52	290.21	154.47	264.57	103.88

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008112	200201008113	200201008114	200201008115	200201008116
Start date and time	9/21/02 1327	9/21/02 1541	9/21/02 1734	9/22/02 0640	9/22/02 1040
Gear latitude (dd)	34.5760	34.6103	34.5654	33.9682	33.9431
Gear longitude (dd)	-121.0491	-120.9189	-120.8239	-120.4830	-120.5003
Station	82G	82D	82B	86B	86E
Depth (m)	789.28	420.44	273.89	272.73	478.73
Duration (hr)	0.23	0.27	0.26	0.27	0.26
Distance fished (km)	1.02	1.24	1.11	1.04	1.11
Area swept (ha)	1.52	1.78	1.52	1.43	1.54
Net width (m)	14.87	14.42	13.64	13.76	13.93
Performance	0	0	0	0	0
Species by weight					
Hagfish					
Brown cat shark	0.30	2.50	0.05		1.60
Spiny dogfish			2.45		
Skates	1.25	28.10	32.70	25.95	30.30
Other Chondrichthyes	1.50	7.00	4.90	47.65	27.75
Arrowtooth flounder					
Petrale sole			10.45	11.35	
Dover sole	64.25	57.80	56.90	3.10	78.75
Deepsea sole	1.20				
Rex sole		77.80	7.70	0.10	13.75
Other flatfish		0.05	5.25		
Sablefish	0.75	7.00	2.95	3.85	24.80
Pacific grenadier					
Giant grenadier	3.15				
Other grenadier	0.05	0.10			0.25
Pacific flatnose	0.20				
Slickheads	4.85				
Eelpouts	0.70	19.55	3.20		5.65
Snailfish	0.04	0.50	0.30	0.05	0.20
Pacific hake		79.20	0.05	1.75	9.25
Other roundfish	0.25		1.80	6.65	
Shortspine thornyhead	12.70	1.20		0.30	13.50
Longspine thornyhead	44.30	1.90			3.35
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish		5.65			31.80
Darkblotched rockfish					
Splitnose rockfish		6.00	42.85	1.15	
Shortbelly rockfish				1,276.40	
Other rockfish			19.20	75.45	8.30
Grooved tanner crab	0.40	0.20			
Other invertebrates	21.45	28.00	20.80	5.93	10.10
Total catch weight (kg)	157.34	322.55	211.55	1,459.68	259.35

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008117	200201008118	200201008119	200201008120	200201008121
Start date and time	9/22/02 1235	9/22/02 1451	9/23/02 0733	9/23/02 1020	9/23/02 1156
Gear latitude (dd)	33.9118	33.9206	33.3106	33.2070	33.1932
Gear longitude (dd)	-120.4893	-120.5392	-120.0393	-119.9194	-119.8903
Station	86G	86I	90I	90F	90E
Depth (m)	681.31	1,059.09	1,042.64	632.77	508.13
Duration (hr)	0.36	0.40	0.36	0.32	0.26
Distance fished (km)	1.24	1.36	1.35	1.30	0.76
Area swept (ha)	1.68	2.07	1.97	1.74	1.07
Net width (m)	13.60	15.26	14.60	13.41	14.13
Performance	0	-5.1	0	-5.1	0
Species by weight					
Hagfish		0.25		0.25	0.30
Brown cat shark			1.85	1.75	0.90
Spiny dogfish					
Skates		16.45	2.50		4.35
Other Chondrichthyes	38.60			10.65	2.95
Arrowtooth flounder					
Petrale sole					
Dover sole	75.75	32.95		3.40	4.15
Deepsea sole	1.20	2.25	1.45		
Rex sole					
Other flatfish					
Sablefish	21.35	12.70	12.30	8.15	2.55
Pacific grenadier		18.10	3.00	0.70	0.30
Giant grenadier		2.00	10.20		
Other grenadier			0.80		
Pacific flatnose		1.70	0.85		
Slickheads	5.65	4.00	31.25	0.50	
Eelpouts		7.30	1.55	0.70	
Snailfish	0.35		0.01	0.10	
Pacific hake				3.10	18.60
Other roundfish	0.25	0.35	0.45		
Shortspine thornyhead	24.00	8.45		6.75	25.60
Longspine thornyhead	13.65	4.30	12.55	3.70	9.55
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					1.30
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab			0.25		
Other invertebrates	9.69	6.10	25.25	10.70	5.13
Total catch weight (kg)	190.49	116.90	104.26	50.45	75.68

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201008122	200201008123	200201008124	200201008125	200201008126
Start date and time	9/23/02 1331	9/23/02 1444	9/24/02 0627	9/24/02 0828	9/24/02 1209
Gear latitude (dd)	33.2507	33.2203	33.1897	33.1794	33.2202
Gear longitude (dd)	-119.8788	-119.8452	-118.3748	-118.3777	-118.0260
Station	90B	90A	90J	90J	90H
Depth (m)	311.21	247.81	1,186.82	426.22	909.29
Duration (hr)	0.24	0.22	0.45	0.13	0.35
Distance fished (km)	0.89	0.95	1.92	0.74	1.27
Area swept (ha)	1.17	1.25	0.83	0.26	1.60
Net width (m)	13.14	13.12	4.35	3.47	12.67
Performance	1	0	-5.42	-5.42	0
Species by weight					
Hagfish					
Brown cat shark					1.90
Spiny dogfish					
Skates	4.25	5.15			
Other Chondrichthyes	0.95	0.45			
Arrowtooth flounder					
Petrale sole		1.10			
Dover sole	6.10	3.05			9.10
Deepsea sole					3.15
Rex sole	6.25	0.75			
Other flatfish	1.40	1.85			
Sablefish					7.10
Pacific grenadier					
Giant grenadier					
Other grenadier					0.25
Pacific flatnose					0.10
Slickheads					47.30
Eelpouts	2.65				0.60
Snailfish					0.10
Pacific hake		1.75			
Other roundfish	7.33	1.65			0.15
Shortspine thornyhead	0.35				11.15
Longspine thornyhead					37.30
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish	0.20				
Shortbelly rockfish		2.70			
Other rockfish	3.20	56.05			
Grooved tanner crab					0.25
Other invertebrates	6.40	4.30			19.63
Total catch weight (kg)	39.08	78.80			138.08

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number		
	200201008127	200201008128	200201008129
Start date and time	9/24/02 1410	9/24/02 1650	9/24/02 1822
Gear latitude (dd)	33.2697	33.3062	33.2811
Gear longitude (dd)	-117.9007	-117.6488	-117.6167
Station	90G	90D	90C
Depth (m)	745.93	453.90	382.46
Duration (hr)	0.27	0.27	0.26
Distance fished (km)	0.90	1.09	1.23
Area swept (ha)	1.32	1.50	1.69
Net width (m)	14.78	13.79	13.77
Performance	0	5.1	0
Species by weight			
Hagfish			
Brown cat shark	8.00	0.65	
Spiny dogfish			
Skates		0.85	13.00
Other Chondrichthyes			
Arrowtooth flounder			
Petrale sole			
Dover sole	1.15	11.50	17.75
Deepsea sole			
Rex sole		7.20	15.30
Other flatfish			0.95
Sablefish		1.50	5.40
Pacific grenadier			
Giant grenadier			
Other grenadier	0.25	1.25	
Pacific flatnose			
Slickheads	0.55		
Eelpouts		1.55	0.80
Snailfish		0.20	0.10
Pacific hake		3.70	16.10
Other roundfish	0.03		
Shortspine thornyhead	10.80	14.60	89.15
Longspine thornyhead	14.45	6.00	
Rougheye rockfish			
Pacific ocean perch			
Aurora rockfish		0.45	0.75
Darkblotched rockfish			
Splitnose rockfish			1.85
Shortbelly rockfish			
Other rockfish			1.40
Grooved tanner crab			
Other invertebrates	16.15	73.80	65.21
Total catch weight (kg)	51.38	123.25	227.76

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010001	200201010002	200201010003	200201010004	200201010005
Start date and time	6/25/02 0756	6/25/02 0909	6/25/02 1313	6/25/02 1541	6/25/02 1843
Gear latitude (dd)	48.10	48.12	48.12	48.08	48.09
Gear longitude (dd)	-125.74	-125.76	-125.77	-125.74	-125.91
Station	1C	1C	1D	1E	1H
Depth (m)	369.09	372.17	419.70	519.84	927.32
Duration (hr)	0.15	0.30	0.21	0.31	0.30
Distance fished (km)		1.21	0.70	1.42	1.22
Area swept (ha)		1.67	1.04	2.13	1.93
Net width (m)	13.80	13.86	14.96	14.97	15.86
Performance	-5.10	1.11	1.11	4.20	0
Species by weight					
Hagfish			0.50		0.84
Brown cat shark				1.13	1.13
Spiny dogfish					
Skates		6.91	4.72	8.57	6.15
Other Chondrichthyes					
Arrowtooth flounder		0.84	22.24		
Petrale sole					
Dover sole		56.97	69.78	89.38	
Deepsea sole			0.58	2.35	3.97
Rex sole		1.64	0.93	0.96	
Other flatfish		0.54			
Sablefish		2.75	20.63	18.77	39.76
Pacific grenadier					3.23
Giant grenadier				7.89	27.84
Other grenadier					
Pacific flatnose				0.42	1.14
Slickheads					3.05
Eelpouts		2.58	2.38	1.39	2.37
Snailfish				2.01	0.28
Pacific hake		5.30	3.11		
Other roundfish		0.05		0.03	0.05
Shortspine thornyhead		18.61	11.48	21.53	13.96
Longspine thornyhead			3.51	18.81	60.90
Rougheye rockfish		5.01	6.79		
Pacific ocean perch		84.54	7.70	0.61	
Aurora rockfish		0.54	2.98	0.44	
Darkblotched rockfish		4.55			
Splitnose rockfish		0.21		0.61	
Shortbelly rockfish					
Other rockfish		15.34	7.81		
Grooved tanner crab				4.22	18.94
Other invertebrates		6.66	10.11	19.45	6.83
Total catch weight (kg)		213.04	175.25	198.57	190.44

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010006	200201010007	200201010008	200201010009	200201010010
Start date and time	6/26/02 0559	6/26/02 1208	6/26/02 1517	6/26/02 1542	6/26/02 1838
Gear latitude (dd)	47.49	47.48	47.47	47.44	47.44
Gear longitude (dd)	-124.92	-125.09	-125.04	-125.09	-125.18
Station	5A	5H	5J	5J	5F
Depth (m)	191.84	893.88	102.78	1,256.73	626.66
Duration (hr)	0.28	0.37	0.03	0.41	0.34
Distance fished (km)	1.11	1.59			1.35
Area swept (ha)	1.55	2.37			1.94
Net width (m)	13.94	14.97	15.00	15.37	14.37
Performance	5.10	0	-5.23	-5.10	4.10
Species by weight					
Hagfish	0.33			1.38	0.17
Brown cat shark					2.98
Spiny dogfish					
Skates	6.89			2.84	0.53
Other Chondrichthyes					
Arrowtooth flounder	15.08				
Petrale sole					
Dover sole	38.39			13.96	
Deepsea sole				8.55	3.20
Rex sole	3.19				
Other flatfish	0.96				
Sablefish	23.70			66.80	17.79
Pacific grenadier				6.42	0.88
Giant grenadier				8.70	5.37
Other grenadier				0.11	
Pacific flatnose				1.26	2.72
Slickheads				3.23	
Eelpouts	0.30			8.98	0.83
Snailfish				0.34	1.79
Pacific hake	0.78				
Other roundfish	6.11			0.32	0.05
Shortspine thornyhead	6.50			23.79	10.53
Longspine thornyhead				128.06	60.85
Rougheye rockfish					
Pacific ocean perch	40.98				
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	52.07				
Grooved tanner crab				27.85	12.97
Other invertebrates	12.69			9.36	11.76
Total catch weight (kg)	207.97			311.95	132.42

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010011	200201010012	200201010013	200201010014	200201010015
Start date and time	6/27/02 0555	6/27/02 0931	6/27/02 1229	6/27/02 1520	6/27/02 1752
Gear latitude (dd)	46.80	46.76	46.75	46.76	46.75
Gear longitude (dd)	-125.23	-125.15	-125.06	-124.90	-124.86
Station	9I	9H	9G	9E	9C
Depth (m)	1,090.71	886.53	765.60	529.90	348.61
Duration (hr)	0.47	0.39	0.30	0.30	0.31
Distance fished (km)	2.37	1.58	1.27	1.38	1.42
Area swept (ha)	3.49	2.34	1.94	2.11	2.07
Net width (m)	14.74	14.81	15.34	15.29	14.59
Performance	4.20	0	0	4.20	0
Species by weight					
Hagfish		0.07		0.50	
Brown cat shark	0.77	3.07	1.80	1.11	
Spiny dogfish					
Skates	29.16			2.33	3.02
Other Chondrichthyes					1.99
Arrowtooth flounder					8.85
Petrale sole					
Dover sole			2.13	11.35	71.66
Deepsea sole	5.36	4.42	1.85		
Rex sole					20.85
Other flatfish					0.50
Sablefish	29.53	8.91	6.64	10.33	7.94
Pacific grenadier	177.98	2.81	2.83	0.38	
Giant grenadier	47.17	4.60		4.81	
Other grenadier					
Pacific flatnose	7.40	0.12	0.64	1.63	
Slickheads	4.06	3.01	2.78		
Eelpouts	2.18	1.34	1.54	14.22	11.54
Snailfish				0.98	0.30
Pacific hake					31.88
Other roundfish	0.26	0.45	0.35	0.01	
Shortspine thornyhead	11.00	1.04		6.68	13.92
Longspine thornyhead	78.03	73.40	36.46	18.41	
Rougheye rockfish					1.13
Pacific ocean perch					0.85
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					0.26
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	4.33	32.55	18.73	18.10	0.93
Other invertebrates	13.91	5.36	15.73	12.95	39.19
Total catch weight (kg)	411.14	141.15	91.48	103.79	214.81

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010016	200201010017	200201010018	200201010019	200201010020
Start date and time	6/28/02 0629	6/28/02 1012	6/29/02 0514	6/29/02 0810	6/29/02 1024
Gear latitude (dd)	46.08	46.08	45.37	45.37	45.35
Gear longitude (dd)	-124.68	-124.77	-124.88	-124.78	-124.66
Station	13A	13E	17H	17F	17D
Depth (m)	203.01	499.67	921.87	636.68	454.34
Duration (hr)	0.31	0.31	0.37	0.35	0.31
Distance fished (km)	1.19	1.27	1.33	1.41	1.20
Area swept (ha)	1.76	1.99	2.18	2.26	1.87
Net width (m)	14.85	15.65	16.37	16.00	15.61
Performance	0	0	5.10	0	0
Species by weight					
Hagfish			0.15	0.15	
Brown cat shark		1.29	1.34	19.45	0.15
Spiny dogfish					
Skates	61.02	4.04	0.78	1.41	9.30
Other Chondrichthyes	2.31				
Arrowtooth flounder	9.06	1.95			2.87
Petrale sole					
Dover sole	71.46	20.12		8.59	5.51
Deepsea sole			4.94	2.79	
Rex sole	11.59				
Other flatfish	5.26				
Sablefish	6.04	5.44	3.39	17.85	13.22
Pacific grenadier			1.91	5.98	
Giant grenadier			13.30	2.33	
Other grenadier					
Pacific flatnose		0.64	0.48	1.71	
Slickheads	0.13		1.51		
Eelpouts	1.94	5.56	0.75	0.07	1.20
Snailfish		1.91		0.30	1.42
Pacific hake	17.53	12.40			37.65
Other roundfish	7.57	0.57	0.31	0.88	0.01
Shortspine thornyhead	0.05	31.62	4.00	8.33	25.42
Longspine thornyhead			50.17	14.90	2.08
Rougheye rockfish					
Pacific ocean perch	0.06				0.68
Aurora rockfish					3.11
Darkblotched rockfish	2.93				
Splitnose rockfish	0.77				
Shortbelly rockfish					
Other rockfish	18.00				
Grooved tanner crab	0.17	9.96	12.50	8.80	
Other invertebrates	9.32	13.03	2.93	13.81	41.31
Total catch weight (kg)	225.21	108.53	98.46	107.35	143.93

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010021	200201010022	200201010023	200201010024	200201010025
Start date and time	6/29/02 1220	6/29/02 1409	7/2/02 0640	7/2/02 0913	7/2/02 1142
Gear latitude (dd)	45.36	45.35	44.69	44.73	44.72
Gear longitude (dd)	-124.50	-124.36	-124.59	-124.73	-124.81
Station	17C	17A	21A	21C	21D
Depth (m)	397.38	223.13	196.30	370.12	436.51
Duration (hr)	0.30	0.29	0.30	0.32	0.31
Distance fished (km)	1.17	1.13	1.18	1.30	1.28
Area swept (ha)	1.81	1.70	1.72	2.07	1.99
Net width (m)	15.55	15.02	14.56	15.85	15.52
Performance	0	0	0	0	0
Species by weight					
Hagfish			0.60		0.50
Brown cat shark					2.00
Spiny dogfish			0.60		
Skates	1.24	4.91	10.40	1.10	
Other Chondrichthyes		0.86		0.70	1.00
Arrowtooth flounder	0.52	54.34	46.90	0.25	
Petrale sole			0.60		
Dover sole	25.95	36.76	39.40	22.20	3.70
Deepsea sole					
Rex sole	0.81	9.73	5.80	0.50	1.20
Other flatfish	0.32	3.86	9.00	0.10	
Sablefish	20.14	25.60	22.30	11.80	17.10
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose					
Slickheads					
Eelpouts	3.30	0.66	0.80	1.90	6.80
Snailfish				0.20	0.20
Pacific hake	55.20	2.72	7.40	6.50	1.80
Other roundfish	0.02	0.04	15.40	0.10	0.10
Shortspine thornyhead	34.74	25.37		19.60	15.80
Longspine thornyhead					0.20
Rougheye rockfish	1.60				
Pacific ocean perch	0.98				
Aurora rockfish	0.48				4.40
Darkblotched rockfish		7.80	0.10		0.50
Splitnose rockfish		50.20		0.90	0.50
Shortbelly rockfish					
Other rockfish		22.50	1.00		0.80
Grooved tanner crab	0.74				1.60
Other invertebrates	37.74	29.54	5.31	12.53	29.36
Total catch weight (kg)	183.78	274.89	165.61	78.38	87.56

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010026	200201010027	200201010028	200201010029	200201010030
Start date and time	7/2/02 1613	7/2/02 1909	7/3/02 0549	7/3/02 0755	7/3/02 1034
Gear latitude (dd)	44.76	44.77	44.15	44.12	44.06
Gear longitude (dd)	-125.02	-125.07	-125.03	-125.02	-125.02
Station	21I	21J	25I	25G	25I
Depth (m)	1,027.85	1,236.28	975.12	735.23	1,086.37
Duration (hr)	0.37	0.37	0.12	0.29	0.29
Distance fished (km)	1.32	1.50		1.21	1.11
Area swept (ha)	1.95	2.28		1.82	1.62
Net width (m)	14.78	15.20	13.15	15.00	14.63
Performance	0	0	-5.10	1.11	0
Species by weight					
Hagfish	1.62				0.78
Brown cat shark	0.45			1.96	
Spiny dogfish					
Skates	9.98		3.02		3.84
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole				18.58	26.48
Deepsea sole	1.01			2.18	1.44
Rex sole					
Other flatfish					
Sablefish	3.33		5.66	28.13	12.56
Pacific grenadier	37.61		961.66	0.55	53.74
Giant grenadier	36.62		105.64	71.75	238.14
Other grenadier					
Pacific flatnose	1.38		5.19	0.25	1.52
Slickheads	0.30		0.61	0.04	7.38
Eelpouts	4.77		0.37	0.85	2.99
Snailfish	0.30				
Pacific hake					
Other roundfish	0.66		0.06	0.04	0.08
Shortspine thornyhead	11.62		2.65	4.78	23.79
Longspine thornyhead	40.92		13.46	49.44	54.80
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	34.06		4.72	45.09	11.49
Other invertebrates	24.96		30.74	3.13	6.02
Total catch weight (kg)	209.59		1,133.78	226.77	445.05

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010031	200201010032	200201010033	200201010034	200201010035
Start date and time	7/3/02 1342	7/3/02 1606	7/3/02 1818	7/4/02 0538	7/4/02 0848
Gear latitude (dd)	44.08	44.13	44.06	43.47	43.49
Gear longitude (dd)	-125.00	-124.99	-124.96	-125.03	-124.97
Station	25F	25E	25D	29J	29I
Depth (m)	648.05	503.36	447.91	1,174.37	1,052.73
Duration (hr)	0.36	0.26	0.31	0.30	0.29
Distance fished (km)	1.39	1.06	1.32	1.26	1.13
Area swept (ha)	2.03	1.50	1.89	1.91	1.54
Net width (m)	14.60	14.18	14.32	15.20	13.64
Performance	5.10	0	0	0	0
Species by weight					
Hagfish	0.18	0.57	0.22		
Brown cat shark	0.75	0.37	0.02		1.85
Spiny dogfish					
Skates		1.10	38.89	9.79	0.14
Other Chondrichthyes					
Arrowtooth flounder		2.92	3.18		
Petrale sole					
Dover sole	58.79	58.80	33.94		
Deepsea sole	2.09			5.03	6.88
Rex sole	1.18	12.71	15.20		
Other flatfish		0.79	2.69		
Sablefish	7.29	17.43	5.89	2.76	
Pacific grenadier	0.82	0.12		65.30	74.25
Giant grenadier	20.62	17.56		123.78	44.96
Other grenadier					
Pacific flatnose	2.15	2.92	0.99	5.21	5.42
Slickheads				5.47	11.27
Eelpouts	14.10	1.29	3.62	1.75	5.72
Snailfish	1.28	1.53	3.27	0.08	
Pacific hake			1.65		
Other roundfish	0.23		0.02	0.58	0.41
Shortspine thornyhead	18.52	4.99	4.03	6.25	5.35
Longspine thornyhead	63.04	1.55		50.14	25.41
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			0.24		
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	7.84	1.04	0.63	9.40	23.35
Other invertebrates	9.54	112.17	57.80	11.41	9.28
Total catch weight (kg)	208.42	237.86	172.28	296.95	214.29

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010036	200201010037	200201010038	200201010039	200201010040
Start date and time	7/4/02 1147	7/4/02 1437	7/4/02 1614	7/4/02 1818	7/5/02 0549
Gear latitude (dd)	43.41	43.40	43.39	43.39	42.81
Gear longitude (dd)	-124.93	-124.72	-124.70	-124.65	-124.75
Station	29G	29D	29D	29A	33A
Depth (m)	719.96	454.81	441.92	208.74	190.42
Duration (hr)	0.31	0.27	0.29	0.29	0.29
Distance fished (km)	1.57	1.09	1.12	1.25	1.28
Area swept (ha)	2.32	1.58	1.69	1.81	1.74
Net width (m)	14.77	14.52	15.05	14.50	13.65
Performance	5.10	-3.11	5.10	0	0
Species by weight					
Hagfish		0.58			
Brown cat shark		4.83			
Spiny dogfish				1.25	
Skates		2.54	2.26	25.76	30.53
Other Chondrichthyes					5.63
Arrowtooth flounder			10.84	6.82	6.98
Petrale sole					
Dover sole		35.98	6.54	47.56	73.61
Deepsea sole		3.25			
Rex sole			7.25	16.76	29.62
Other flatfish			0.10	4.95	49.61
Sablefish		1.63	30.68	3.33	5.88
Pacific grenadier		2.60			
Giant grenadier		25.68			
Other grenadier					
Pacific flatnose		0.55			
Slickheads					
Eelpouts		0.98	3.50	1.91	1.68
Snailfish		0.14	1.07		0.40
Pacific hake			3.86	14.33	29.78
Other roundfish		0.16	0.10	421.31	6.99
Shortspine thornyhead		6.12	6.25	6.82	
Longspine thornyhead		74.93			
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			3.87	2.10	
Darkblotched rockfish					0.08
Splitnose rockfish				2.72	4.27
Shortbelly rockfish					
Other rockfish				48.91	19.54
Grooved tanner crab		8.51			
Other invertebrates		11.60	195.62	28.23	42.13
Total catch weight (kg)		180.08	271.94	632.76	306.73

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010041	200201010042	200201010043	200201010044	200201010045
Start date and time	7/5/02 0754	7/5/02 1026	7/5/02 1236	7/5/02 1513	7/6/02 0548
Gear latitude (dd)	42.75	42.71	42.69	42.70	42.14
Gear longitude (dd)	-124.82	-124.91	-124.93	-125.00	-124.61
Station	33D	33G	33H	33J	37B
Depth (m)	443.07	726.96	972.83	1,154.87	302.39
Duration (hr)	0.28	0.31	0.28	0.32	0.29
Distance fished (km)	1.08	1.33	1.23	1.32	1.31
Area swept (ha)	1.58	2.03	1.83	2.04	1.91
Net width (m)	14.65	15.26	14.93	15.40	14.60
Performance	0	0	1.00	0	0
Species by weight					
Hagfish			0.14		
Brown cat shark	2.58	1.77	0.45	0.38	1.52
Spiny dogfish					1.84
Skates	1.48	3.01		7.11	134.90
Other Chondrichthyes					2.88
Arrowtooth flounder					2.60
Petrale sole					
Dover sole	107.94	29.32	25.14	1.24	46.33
Deepsea sole		6.69	5.65	13.40	
Rex sole	9.57				42.46
Other flatfish	0.20				0.19
Sablefish	27.80	18.32	26.10	44.06	55.36
Pacific grenadier		0.18	15.42	112.04	
Giant grenadier		8.66	19.80	120.56	
Other grenadier					
Pacific flatnose	2.47		0.72	7.66	
Slickheads		5.53	8.61	2.22	
Eelpouts	3.95	1.05	3.50	1.24	9.73
Snailfish	0.60	0.11			2.05
Pacific hake	2.90				4.50
Other roundfish	0.01	0.11	0.08	0.42	
Shortspine thornyhead	1.27	5.46	3.18	11.58	6.09
Longspine thornyhead		55.17	64.88	53.46	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	1.70				
Darkblotched rockfish					0.54
Splitnose rockfish					3.67
Shortbelly rockfish					
Other rockfish					0.90
Grooved tanner crab	2.63	38.74	13.78	5.78	
Other invertebrates	74.96	6.90	9.24	81.19	145.35
Total catch weight (kg)	240.06	181.02	196.69	462.34	460.91

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010046	200201010047	200201010048	200201010049	200201010050
Start date and time	7/6/02 0816	7/6/02 1113	7/6/02 1345	7/6/02 1701	7/7/02 0515
Gear latitude (dd)	42.10	42.12	42.12	42.06	41.38
Gear longitude (dd)	-124.65	-124.86	-124.90	-124.99	-124.91
Station	37D	37G	37I	37J	41I
Depth (m)	466.81	819.21	1,016.63	1,214.90	1,075.53
Duration (hr)	0.32	0.34	0.35	0.37	0.36
Distance fished (km)	1.35	1.43	1.44	1.52	1.45
Area swept (ha)	2.02	2.12	2.13	2.13	2.17
Net width (m)	14.91	14.86	14.85	14.01	15.00
Performance	0	0	0	0	0
Species by weight					
Hagfish		0.93	0.56		0.16
Brown cat shark	2.71	5.91	8.63	0.26	4.26
Spiny dogfish	0.86				
Skates	1.15	1.04	2.62	0.64	42.21
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	62.71	23.08	25.48	1.98	3.37
Deepsea sole		6.83	9.03	3.50	11.27
Rex sole	47.28				
Other flatfish	0.25				
Sablefish	24.02	6.75	8.30	5.56	10.46
Pacific grenadier		0.23	21.48	93.06	58.69
Giant grenadier		17.24	26.12	85.38	8.94
Other grenadier					
Pacific flatnose		0.21	4.04	4.60	3.59
Slickheads		4.58	11.85	4.58	3.44
Eelpouts	13.43	0.91	6.52		0.67
Snailfish	1.34	0.10	0.21		
Pacific hake	3.18				0.79
Other roundfish		0.57	0.49	0.56	0.30
Shortspine thornyhead	8.89	9.82	5.94	7.36	20.72
Longspine thornyhead	7.52	93.44	131.46	35.34	65.93
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	1.44				
Darkblotched rockfish					
Splitnose rockfish	0.13				
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		17.32	23.59	12.50	18.58
Other invertebrates	177.52	13.34	20.71	27.48	30.67
Total catch weight (kg)	352.43	202.30	307.03	282.80	284.05

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010051	200201010052	200201010053	200201010054	200201010055
Start date and time	7/7/02 0812	7/7/02 1154	7/7/02 1344	7/7/02 1511	7/12/02 1224
Gear latitude (dd)	41.44	41.37	41.36	41.37	40.79
Gear longitude (dd)	-124.80	-124.53	-124.51	-124.47	-124.48
Station	41H	41F	41D	41A	45B
Depth (m)	920.69	585.98	413.35	199.48	291.82
Duration (hr)	0.38	0.28	0.27	0.28	0.28
Distance fished (km)	1.48	1.36	1.10	1.08	1.20
Area swept (ha)	2.22	1.87	1.29	1.49	1.78
Net width (m)	15.05	13.78	11.64	13.81	14.84
Performance	0	0	4.50	0	0
Species by weight					
Hagfish	1.61	0.53	1.94		
Brown cat shark	4.46	3.90	0.47		
Spiny dogfish				1.68	0.70
Skates	1.01	1.88	0.32	8.36	25.60
Other Chondrichthyes					
Arrowtooth flounder			2.54	2.99	1.05
Petrale sole					
Dover sole	23.38	73.54	1.35	136.20	69.30
Deepsea sole	6.45	0.21			
Rex sole		0.04	1.89	60.25	49.60
Other flatfish				7.96	
Sablefish	3.04	9.04	9.97	7.99	8.40
Pacific grenadier	1.10				
Giant grenadier	0.76	17.51			
Other grenadier					
Pacific flatnose	0.18	0.98			
Slickheads	3.97				
Eelpouts	3.21	2.98	3.41	23.12	6.00
Snailfish	0.04	3.00	0.21		1.85
Pacific hake		0.88	0.76	28.74	16.05
Other roundfish	0.65	0.06	0.06	2.87	
Shortspine thornyhead	2.93	10.23	2.05	1.21	1.20
Longspine thornyhead	74.70	21.61			
Rougheye rockfish					
Pacific ocean perch				0.86	
Aurora rockfish			2.00		
Darkblotched rockfish				16.57	1.10
Splitnose rockfish				5.59	2.85
Shortbelly rockfish					
Other rockfish			1.26	20.16	0.10
Grooved tanner crab	9.98	26.84	2.25		
Other invertebrates	41.27	32.28	53.13	54.35	35.24
Total catch weight (kg)	178.74	205.51	83.61	378.90	219.04

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010056	200201010057	200201010058	200201010059	200201010060
Start date and time	7/12/02 1453	7/12/02 1755	7/13/02 0559	7/13/02 0937	7/13/02 1308
Gear latitude (dd)	40.80	40.75	40.09	40.11	40.11
Gear longitude (dd)	-124.51	-124.66	-124.94	-124.83	-124.59
Station	45D	45G	49J	49I	49G
Depth (m)	432.51	804.58	1,240.38	1,048.42	813.38
Duration (hr)	0.27	0.34	0.29	0.30	0.34
Distance fished (km)	1.22	1.43	0.99	1.27	1.29
Area swept (ha)	1.81	2.21	1.43	1.87	1.96
Net width (m)	14.86	15.44	14.36	14.72	15.12
Performance	0	0	0	0	0
Species by weight					
Hagfish	2.30	0.55		0.45	2.20
Brown cat shark	2.40	2.70		4.40	4.15
Spiny dogfish					
Skates	7.60		4.55	0.28	
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	8.20	9.95		4.30	2.10
Deepsea sole		1.55		3.50	6.20
Rex sole	15.95				
Other flatfish					
Sablefish	41.00	14.35	3.20		
Pacific grenadier		0.55	59.55	3.00	0.25
Giant grenadier		16.20	27.65		
Other grenadier					
Pacific flatnose	0.35		2.30	0.05	
Slickheads		0.55	3.90	10.75	
Eelpouts	9.40	0.90		2.55	1.20
Snailfish	0.54	0.10	0.03	0.10	
Pacific hake	1.25				
Other roundfish	0.07	0.20	0.73	0.18	0.06
Shortspine thornyhead	1.70	1.40		10.75	1.55
Longspine thornyhead		109.05	19.85	69.30	104.20
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	22.10				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		25.00	5.55	13.40	27.55
Other invertebrates	289.28	14.40	111.39	72.10	29.49
Total catch weight (kg)	402.14	197.45	238.70	195.11	178.95

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010061	200201010062	200201010063	200201010064	200201010065
Start date and time	7/13/02 1603	7/13/02 1835	7/14/02 0551	7/14/02 0910	7/14/02 1137
Gear latitude (dd)	40.12	40.08	39.46	39.45	39.44
Gear longitude (dd)	-124.40	-124.27	-123.97	-124.02	-124.10
Station	49E	49A	53A	53E	53G
Depth (m)	524.09	201.09	204.03	514.87	737.30
Duration (hr)	0.31	0.30	0.28	0.27	0.30
Distance fished (km)	1.28	1.21	1.25	1.12	1.26
Area swept (ha)	1.94	1.73	1.81	1.74	1.96
Net width (m)	15.23	14.32	14.47	15.52	15.54
Performance	0	0	0	0	0
Species by weight					
Hagfish	0.21			0.10	1.15
Brown cat shark	18.15			9.15	13.30
Spiny dogfish					
Skates		12.55	33.45		
Other Chondrichthyes		0.35	12.65		
Arrowtooth flounder		3.15	2.20		
Petrale sole					
Dover sole	69.45	73.70	96.60	31.70	9.20
Deepsea sole					1.40
Rex sole	0.65	8.30	17.25		
Other flatfish		1.45	14.40		
Sablefish	25.90	21.15	99.30	6.60	0.80
Pacific grenadier					0.15
Giant grenadier	50.65			1.10	0.70
Other grenadier					
Pacific flatnose	0.50			0.25	
Slickheads					2.35
Eelpouts			6.30	1.50	1.10
Snailfish	0.30			2.00	0.10
Pacific hake	0.35	2.80	8.85	1.70	
Other roundfish	0.03	0.65			0.85
Shortspine thornyhead	6.10	0.15		1.95	0.30
Longspine thornyhead	8.35			12.90	62.45
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish		0.15	5.10		
Splitnose rockfish		52.85	3.30		
Shortbelly rockfish			0.45		
Other rockfish		77.10	31.05		
Grooved tanner crab	16.75			4.05	12.25
Other invertebrates	6.67	19.53	42.30	30.32	14.65
Total catch weight (kg)	204.06	273.88	373.20	103.32	120.75

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010066	200201010067	200201010068	200201010069	200201010070
Start date and time	7/14/02 1427	7/14/02 1707	7/15/02 0555	7/15/02 0846	7/15/02 1120
Gear latitude (dd)	39.45	39.39	38.74	38.75	38.74
Gear longitude (dd)	-124.15	-124.18	-123.83	-123.85	-123.87
Station	53H	53I	57B	57C	57E
Depth (m)	918.41	1,007.24	276.00	374.18	484.99
Duration (hr)	0.36	0.37	0.28	0.26	0.29
Distance fished (km)	1.47	1.42	1.24	1.17	
Area swept (ha)	2.32	2.19	1.80	1.69	
Net width (m)	15.80	15.48	14.50	14.43	15.06
Performance	0	0	5.10	1.11	-4.10
Species by weight					
Hagfish	0.40	2.70			0.15
Brown cat shark	1.60	0.45	0.80	1.40	2.90
Spiny dogfish			0.95		
Skates			10.30	22.70	8.25
Other Chondrichthyes			3.40	3.05	
Arrowtooth flounder			1.05	0.40	
Petrale sole					
Dover sole	1.40	19.45	134.75	185.95	131.90
Deepsea sole	4.80	6.50			5.60
Rex sole			51.15	72.00	12.50
Other flatfish			7.95	0.55	
Sablefish	2.50	1.60	23.60	9.15	27.95
Pacific grenadier	0.85	11.05			
Giant grenadier	4.10	30.80			1.90
Other grenadier					0.05
Pacific flatnose	0.20	2.05			0.90
Slickheads	0.65	13.95			
Eelpouts	1.15	4.10	5.05	20.95	1.75
Snailfish	0.10	0.19			0.30
Pacific hake			10.15	3.10	0.70
Other roundfish	0.30	1.32	0.05	0.02	
Shortspine thornyhead		8.85	4.20	18.25	5.85
Longspine thornyhead	84.60	46.10			30.70
Rougheye rockfish				8.35	
Pacific ocean perch					
Aurora rockfish				1.15	1.05
Darkblotched rockfish			10.15		
Splitnose rockfish			60.05	3.35	
Shortbelly rockfish					
Other rockfish			27.30	7.55	
Grooved tanner crab	38.50	49.45	0.85		
Other invertebrates	11.10	16.10	19.40	11.21	5.25
Total catch weight (kg)	152.25	214.66	371.15	369.13	237.70

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010071	200201010072	200201010073	200201010074	200201010075
Start date and time	7/15/02 1327	7/15/02 1527	7/15/02 1756	7/16/02 0531	7/16/02 0757
Gear latitude (dd)	38.75	38.71	38.70	38.14	38.14
Gear longitude (dd)	-123.87	-123.85	-123.89	-123.57	-123.54
Station	57E	57F	57J	61H	61F
Depth (m)	527.84	630.10	1,170.59	927.01	660.41
Duration (hr)	0.26	0.29	0.32	0.27	0.27
Distance fished (km)	0.97	1.20	1.24	1.08	1.13
Area swept (ha)	1.43	1.74	1.81	1.63	1.72
Net width (m)	14.73	14.41	14.60	15.03	15.21
Performance	0	0	0	5.00	1.11
Species by weight					
Hagfish	0.10	0.25		2.20	0.40
Brown cat shark	4.25	7.35	0.30	2.80	12.65
Spiny dogfish					
Skates	9.85	8.75	4.43	0.03	3.15
Other Chondrichthyes					
Arrowtooth flounder					
Petrale sole					
Dover sole	101.25	70.40	4.95	81.95	66.80
Deepsea sole		1.90	21.55	3.05	
Rex sole	0.60				
Other flatfish					
Sablefish	5.85	9.85		14.65	24.35
Pacific grenadier			127.75	2.00	0.15
Giant grenadier	7.80		12.90	4.10	
Other grenadier					0.09
Pacific flatnose	1.50		13.05	0.35	
Slickheads			9.90	3.60	0.04
Eelpouts	5.15		1.20	3.75	
Snailfish	0.10	1.03		0.25	1.60
Pacific hake	1.20			2.40	0.85
Other roundfish		0.01	4.10	0.03	0.14
Shortspine thornyhead	5.40	7.10	13.45	11.55	25.00
Longspine thornyhead	0.60	26.65	26.15	73.25	42.40
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	0.60				
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab		8.25	13.25	13.55	0.85
Other invertebrates	28.46	27.05	86.66	12.29	9.37
Total catch weight (kg)	172.71	168.59	339.64	231.80	187.84

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010076	200201010077	200201010078	200201010079	200201010080
Start date and time	7/16/02 1006	7/16/02 1200	7/16/02 1327	7/16/02 1436	7/20/02 0605
Gear latitude (dd)	38.14	38.15	38.14	38.13	37.37
Gear longitude (dd)	-123.51	-123.49	-123.43	-123.42	-122.90
Station	61F	61D	61A	61A	65A
Depth (m)	501.08	433.37	224.42	228.19	238.00
Duration (hr)	0.27	0.27	0.24	0.26	0.28
Distance fished (km)	1.10	1.09	1.06	1.13	1.17
Area swept (ha)	1.57	1.53	1.43	1.59	1.62
Net width (m)	14.27	14.06	13.47	14.11	13.84
Performance	5.10	0	-4.10	-2.40	-5.80
Species by weight					
Hagfish					
Brown cat shark	9.25	3.20			
Spiny dogfish		1.20			
Skates	29.60	29.55			
Other Chondrichthyes		2.15			
Arrowtooth flounder					
Petrale sole					
Dover sole	168.85	161.00			
Deepsea sole	3.15				
Rex sole	15.85	41.45			
Other flatfish		0.85			
Sablefish	18.65	9.65			
Pacific grenadier					
Giant grenadier					
Other grenadier					
Pacific flatnose	2.30				
Slickheads					
Eelpouts	26.30	7.65			
Snailfish	2.60	0.25			
Pacific hake	2.25	0.75			
Other roundfish					
Shortspine thornyhead	9.60	4.00			
Longspine thornyhead	4.50				
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	13.55	3.70			
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish	4.40	2.35			
Grooved tanner crab					
Other invertebrates	26.15	26.45			
Total catch weight (kg)	337.00	294.20			

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010081	200201010082	200201010083	200201010084	200201010085
Start date and time	7/20/02 0709	7/20/02 0804	7/20/02 1008	7/20/02 1213	7/20/02 1505
Gear latitude (dd)	37.39	37.41	37.43	37.39	37.38
Gear longitude (dd)	-122.89	-122.87	-123.00	-123.07	-123.20
Station	65A	65A	65E	65G	65I
Depth (m)	252.01	241.14	503.35	736.41	1,047.34
Duration (hr)	0.16	0.30	0.28	0.34	0.34
Distance fished (km)		1.15	1.01	1.25	1.29
Area swept (ha)		1.67	1.51	1.98	1.96
Net width (m)	14.08	14.55	14.98	15.75	15.25
Performance	-5.80	1.11	0	0	-3.11
Species by weight					
Hagfish				0.25	
Brown cat shark			34.10	8.60	4.10
Spiny dogfish					
Skates		4.30	22.00		2.85
Other Chondrichthyes		1.25	1.85		
Arrowtooth flounder					
Petrale sole					
Dover sole		293.50	243.20	54.60	129.45
Deepsea sole				3.35	8.95
Rex sole		0.85	33.25		
Other flatfish		0.08			
Sablefish		15.95	17.00	16.35	8.85
Pacific grenadier					82.05
Giant grenadier				4.50	35.70
Other grenadier			0.15		
Pacific flatnose			0.40	0.04	3.85
Slickheads				5.75	28.12
Eelpouts		11.45	17.65	1.59	1.60
Snailfish		0.08	0.90	0.27	0.26
Pacific hake		14.50	5.00		
Other roundfish		1.90		0.11	0.64
Shortspine thornyhead		0.33	7.15	27.85	24.60
Longspine thornyhead				95.20	28.95
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			7.80		
Darkblotched rockfish					
Splitnose rockfish		170.25			
Shortbelly rockfish					
Other rockfish		28.41			
Grooved tanner crab				5.50	3.20
Other invertebrates		17.13	35.63	16.23	42.49
Total catch weight (kg)		559.98	426.08	240.19	405.66

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010086	200201010087	200201010088	200201010089	200201010090
Start date and time	7/20/02 1733	7/21/02 0615	7/21/02 0900	7/21/02 1225	7/21/02 1443
Gear latitude (dd)	37.38	36.74	36.75	36.78	36.79
Gear longitude (dd)	-123.23	-122.31	-122.27	-122.23	-122.13
Station	65J	69J	69H	69F	69C
Depth (m)	1,181.28	1,173.28	904.66	605.73	371.48
Duration (hr)	0.30	0.31	0.36	0.31	0.27
Distance fished (km)	1.06	1.16	1.43	1.36	1.16
Area swept (ha)	1.58	1.73	2.16	2.02	1.60
Net width (m)	14.89	14.94	15.16	14.88	13.81
Performance	0	0	0	0	1.11
Species by weight					
Hagfish			3.35		
Brown cat shark	1.95	1.35	3.15	6.35	2.25
Spiny dogfish					2.15
Skates		4.19	2.80		45.45
Other Chondrichthyes					14.05
Arrowtooth flounder					
Petrale sole					
Dover sole	62.75	5.65	177.80	43.50	284.74
Deeplea sole	12.35	3.00			
Rex sole					91.86
Other flatfish					
Sablefish	10.00	5.65	15.65	4.95	5.85
Pacific grenadier	82.85	142.30	35.05		
Giant grenadier	13.75	31.45	2.85		
Other grenadier			0.10		
Pacific flatnose	8.10	10.90	5.15	0.60	
Slickheads	12.05	2.50	8.90		
Eelpouts		0.09	7.55		22.75
Snailfish		0.04	1.25	2.95	
Pacific hake				0.20	1.45
Other roundfish	1.15	0.51	0.20	0.03	0.02
Shortspine thornyhead	21.05	10.05	19.05	5.20	21.01
Longspine thornyhead	12.85	11.10	82.75	8.95	9.15
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					9.90
Darkblotched rockfish					
Splitnose rockfish					32.20
Shortbelly rockfish					
Other rockfish					16.47
Grooved tanner crab	2.66	5.40	110.45	5.45	0.70
Other invertebrates	231.26	229.93	47.60	74.07	43.16
Total catch weight (kg)	472.77	464.11	523.65	152.25	603.16

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010091	200201010092	200201010093	200201010094	200201010095
Start date and time	7/21/02 1712	7/22/02 0556	7/22/02 0855	7/22/02 1156	7/22/02 1420
Gear latitude (dd)	36.80	36.08	36.06	36.12	36.17
Gear longitude (dd)	-122.12	-121.97	-121.90	-121.83	-121.80
Station	69A	73J	73I	73G	73E
Depth (m)	202.83	1,201.93	1,078.68	757.95	535.45
Duration (hr)	0.28	0.30	0.35	0.32	0.31
Distance fished (km)	1.31	1.13	1.41	1.38	1.22
Area swept (ha)	1.72	1.44	1.90	2.10	1.88
Net width (m)	13.12	12.71	13.50	15.17	15.33
Performance	5.00	0	0	0	0
Species by weight					
Hagfish			0.40	0.30	
Brown cat shark		0.80		8.00	4.10
Spiny dogfish	2.35				
Skates	44.85	1.05			2.00
Other Chondrichthyes	1.60			0.85	15.60
Arrowtooth flounder					
Petrale sole					
Dover sole	40.90			49.05	32.80
Deepsea sole		0.50			
Rex sole	13.45				
Other flatfish	16.15				
Sablefish	5.50		4.45	32.90	20.10
Pacific grenadier		30.21	22.35	0.02	
Giant grenadier		41.30	13.25		
Other grenadier					0.15
Pacific flatnose		7.05	1.10	0.03	
Slickheads		17.35	23.90	3.75	
Eelpouts	0.55		1.21	0.56	
Snailfish				0.34	0.55
Pacific hake	53.40				1.65
Other roundfish		0.63	1.44	0.09	0.01
Shortspine thornyhead		2.90	9.50	16.65	73.70
Longspine thornyhead		10.80	25.60	98.55	20.40
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					15.60
Darkblotched rockfish					
Splitnose rockfish	85.75				
Shortbelly rockfish	0.55				
Other rockfish	76.85				0.70
Grooved tanner crab		6.35	16.50	0.50	
Other invertebrates	103.63	22.01	41.52	102.08	174.69
Total catch weight (kg)	445.53	140.95	161.22	313.67	362.05

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010096	200201010097	200201010098	200201010099	200201010100
Start date and time	7/22/02 1657	7/23/02 0527	7/23/02 0829	7/23/02 1101	7/23/02 1310
Gear latitude (dd)	36.12	35.42	35.42	35.39	35.36
Gear longitude (dd)	-121.70	-121.65	-121.52	-121.35	-121.21
Station	73C	77J	77H	77F	77D
Depth (m)	366.66	1,144.02	915.28	622.27	426.13
Duration (hr)	0.28	0.28	0.33	0.27	0.27
Distance fished (km)	1.27	1.02	1.34	0.94	1.08
Area swept (ha)	1.80	1.54	1.82	1.28	1.44
Net width (m)	14.13	15.15	13.54	13.67	13.30
Performance	0	0	0	0	0
Species by weight					
Hagfish			0.65	0.55	
Brown cat shark	2.00		2.50	13.20	16.15
Spiny dogfish	2.10				0.41
Skates	31.00		3.65	6.20	66.50
Other Chondrichthyes	45.85	1.75		3.35	18.55
Arrowtooth flounder					
Petrale sole					
Dover sole	172.10		8.30	60.70	43.05
Deepsea sole		1.35	9.65	0.80	
Rex sole	8.75				4.15
Other flatfish	0.06				
Sablefish	19.80	1.35	10.55	5.70	20.20
Pacific grenadier		76.70	0.90		
Giant grenadier		1.55	6.70		
Other grenadier			0.09		
Pacific flatnose		2.00	0.50		
Slickheads		7.15	3.20	0.40	
Eelpouts	5.95		11.55	0.60	4.65
Snailfish	0.21			0.70	
Pacific hake	35.75				36.00
Other roundfish		0.81	0.32	0.07	
Shortspine thornyhead	6.80	2.55	35.05	7.40	14.80
Longspine thornyhead		10.20	87.45	31.70	
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	2.65				25.55
Darkblotched rockfish					
Splitnose rockfish	37.65				83.30
Shortbelly rockfish					
Other rockfish	2.55				3.60
Grooved tanner crab		0.85	9.70	0.40	
Other invertebrates	82.33	11.58	39.39	95.96	61.81
Total catch weight (kg)	455.55	117.84	230.15	227.73	398.72

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010101	200201010102	200201010103	200201010104	200201010105
Start date and time	7/23/02 1518	7/26/02 0611	7/26/02 0822	7/26/02 1259	7/26/02 1539
Gear latitude (dd)	35.35	34.78	34.74	34.69	34.70
Gear longitude (dd)	-121.03	-120.94	-120.96	-121.43	-121.51
Station	77A	81B	81C	81G	81I
Depth (m)	175.45	300.11	362.95	777.16	1,013.51
Duration (hr)	0.29	0.27	0.28	0.28	0.28
Distance fished (km)	1.17	1.17	1.14	1.07	1.05
Area swept (ha)	1.38	1.73	1.70	1.47	1.48
Net width (m)	11.80	14.77	14.90	13.69	14.06
Performance	4.50	0	0	0	0
Species by weight					
Hagfish					0.35
Brown cat shark			0.60	2.05	
Spiny dogfish		0.22			
Skates	17.05	30.10	34.35	0.65	9.20
Other Chondrichthyes	12.45	2.35	7.35		1.06
Arrowtooth flounder					
Petrale sole	1.05				
Dover sole	0.20	34.45	64.37	35.15	38.15
Deepsea sole					0.75
Rex sole	0.11	4.00	84.53		
Other flatfish	2.20	1.50	0.30		
Sablefish	2.15	25.50	13.45	11.20	7.75
Pacific grenadier					171.05
Giant grenadier					1.30
Other grenadier					
Pacific flatnose				0.35	3.35
Slickheads				11.15	21.70
Eelpouts	0.04	10.51	14.85	0.41	0.01
Snailfish		0.11	0.12		0.06
Pacific hake	10.25	122.40	134.95		
Other roundfish	0.07		0.07	0.67	0.12
Shortspine thornyhead		0.85	0.10		8.65
Longspine thornyhead				38.55	17.60
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish			0.10		
Darkblotched rockfish	0.02	0.25			
Splitnose rockfish	5.35	101.20	31.70		
Shortbelly rockfish	0.09				
Other rockfish	27.24	44.70	10.60		
Grooved tanner crab				0.55	0.40
Other invertebrates	67.86	60.02	68.64	20.06	5.43
Total catch weight (kg)	146.13	438.16	466.08	120.79	286.93

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010106	200201010107	200201010108	200201010109	200201010110
Start date and time	7/26/02 1759	7/27/02 0612	7/27/02 0928	7/27/02 1338	7/27/02 1704
Gear latitude (dd)	34.69	34.13	34.12	34.06	34.14
Gear longitude (dd)	-121.52	-120.97	-120.80	-120.61	-120.63
Station	81J	85I	85G	85E	85A
Depth (m)	1,164.74	1,094.16	772.70	551.81	208.11
Duration (hr)	0.29	0.32	0.32	0.19	0.27
Distance fished (km)	1.08	1.28	1.33		1.25
Area swept (ha)	1.56	1.81	2.01		1.72
Net width (m)	14.40	14.08	15.17	13.75	13.78
Performance	0	-5.10	0	-5.10	0
Species by weight					
Hagfish		0.25	0.30		
Brown cat shark			1.25		
Spiny dogfish					
Skates	0.55		1.20		
Other Chondrichthyes	2.65	8.25	0.30		1.60
Arrowtooth flounder					
Petrale sole					0.55
Dover sole	5.10	19.75	78.25		0.40
Deepsea sole			1.85		
Rex sole					2.05
Other flatfish					1.15
Sablefish	9.50	8.25	23.85		
Pacific grenadier	45.40	275.90	1.40		
Giant grenadier	14.05	3.05	2.40		
Other grenadier		1.15			
Pacific flatnose	9.95	1.50	0.34		
Slickheads	34.50	9.80	2.80		0.50
Eelpouts	0.90		6.30		0.10
Snailfish		0.07	0.36		
Pacific hake					
Other roundfish	0.51	0.50	0.33		2.49
Shortspine thornyhead	8.45	4.00	30.35		
Longspine thornyhead	5.70	3.10	113.50		
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					0.39
Shortbelly rockfish					0.15
Other rockfish					41.10
Grooved tanner crab		0.01	0.02		
Other invertebrates	15.31	6.77	100.82		158.28
Total catch weight (kg)	152.57	342.35	365.62		208.76

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010111	200201010112	200201010113	200201010114	200201010115
Start date and time	7/28/02 0657	7/28/02 1037	7/28/02 1313	7/29/02 0550	7/29/02 0919
Gear latitude (dd)	33.39	33.39	33.37	33.48	33.43
Gear longitude (dd)	-120.22	-119.97	-119.88	-118.39	-118.19
Station	89I	89H	89F	89H	89G
Depth (m)	1,106.14	875.52	640.92	896.44	724.66
Duration (hr)	0.34	0.34	0.28	0.34	0.26
Distance fished (km)	1.29	1.46	1.16	1.43	1.12
Area swept (ha)	1.74	2.20	1.72	2.11	1.59
Net width (m)	13.42	15.08	14.79	14.76	14.19
Performance	0	0	-5.10	0	0
Species by weight					
Hagfish	0.65	0.25			0.75
Brown cat shark		0.90		1.75	3.95
Spiny dogfish					
Skates		3.95			
Other Chondrichthyes		0.75			
Arrowtooth flounder					
Petrale sole					
Dover sole		22.20			1.60
Deepsea sole					
Rex sole					
Other flatfish					
Sablefish	6.40	36.50			
Pacific grenadier					
Giant grenadier	3.10	1.25			
Other grenadier				0.16	1.25
Pacific flatnose	0.24	1.10			
Slickheads	24.75	9.35			0.20
Eelpouts		1.05			
Snailfish		0.35			
Pacific hake					
Other roundfish	0.14	0.44		0.01	0.10
Shortspine thornyhead	6.95	18.60			6.95
Longspine thornyhead	11.60	30.50			20.65
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish					
Darkblotched rockfish					
Splitnose rockfish					
Shortbelly rockfish					
Other rockfish					
Grooved tanner crab	1.85	0.35			
Other invertebrates	24.79	59.70		6.94	135.09
Total catch weight (kg)	80.47	187.24		8.86	170.54

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number				
	200201010116	200201010117	200201010118	200201010119	200201010120
Start date and time	7/29/02 1149	7/29/02 1624	7/29/02 1732	7/30/02 0539	7/30/02 0848
Gear latitude (dd)	33.48	33.36	33.36	32.92	32.91
Gear longitude (dd)	-118.13	-117.67	-117.66	-117.73	-117.52
Station	89C	89B	89A	92I	92G
Depth (m)	375.01	281.14	212.33	1,006.45	762.88
Duration (hr)	0.26	0.22	0.27	0.38	0.29
Distance fished (km)	1.10		1.24	1.68	1.27
Area swept (ha)	1.49		1.69	2.16	1.89
Net width (m)	13.63	14.15	13.59	12.88	14.84
Performance	5.10	-5.10	1.11	0	0
Species by weight					
Hagfish					0.18
Brown cat shark	0.25				5.55
Spiny dogfish					
Skates	0.01		6.05		
Other Chondrichthyes	0.57			0.31	
Arrowtooth flounder					
Petrale sole					
Dover sole	8.85		4.55		
Deepsea sole					1.45
Rex sole	0.75		2.85		
Other flatfish			5.58		
Sablefish	8.65			5.65	1.00
Pacific grenadier					
Giant grenadier					
Other grenadier				0.60	0.60
Pacific flatnose				1.15	0.06
Slickheads				36.15	4.50
Eelpouts	0.35		0.47	1.75	0.55
Snailfish				0.01	
Pacific hake	6.55		0.25		
Other roundfish	0.05		2.29	0.24	3.36
Shortspine thornyhead	26.75			3.90	13.25
Longspine thornyhead	1.60			12.50	28.75
Rougheye rockfish					
Pacific ocean perch					
Aurora rockfish	1.50				
Darkblotched rockfish					
Splitnose rockfish	57.75		1.85		
Shortbelly rockfish	18.40				
Other rockfish	80.25		9.05		
Grooved tanner crab					0.03
Other invertebrates	78.20		180.60	17.00	18.79
Total catch weight (kg)	290.48		213.54	79.26	78.07

Table A-1 continued. Station and catch (kg) data from the 2002 NWFSC slope survey.

Haul specifications	Haul number		
	200201010121	200201010122	200201010123
Start date and time	7/30/02 1107	7/30/02 1255	7/30/02 1419
Gear latitude (dd)	32.89	32.86	32.86
Gear longitude (dd)	-117.42	-117.39	-117.36
Station	92F	92D	92A
Depth (m)	573.49	424.35	231.32
Duration (hr)	0.31	0.25	0.28
Distance fished (km)	1.45	1.07	1.24
Area swept (ha)	2.24	1.58	1.86
Net width (m)	15.43	14.74	14.93
Performance	0	0	0
Species by weight			
Hagfish	0.18		
Brown cat shark	4.35	0.34	
Spiny dogfish			
Skates		2.25	0.75
Other Chondrichthyes		1.30	0.35
Arrowtooth flounder			
Petrale sole			
Dover sole	0.90	18.15	0.35
Deepsea sole			
Rex sole		4.80	0.65
Other flatfish		0.20	23.05
Sablefish	1.40	11.00	
Pacific grenadier			
Giant grenadier			
Other grenadier	1.00	0.12	
Pacific flatnose			
Slickheads			
Eelpouts		1.95	0.10
Snailfish			
Pacific hake	4.50	19.00	14.30
Other roundfish	0.20	0.14	4.32
Shortspine thornyhead	25.70	53.25	0.50
Longspine thornyhead	13.65		
Rougheye rockfish			
Pacific ocean perch			
Aurora rockfish		1.15	
Darkblotched rockfish			
Splitnose rockfish		2.75	2.75
Shortbelly rockfish			0.35
Other rockfish		5.25	7.65
Grooved tanner crab			
Other invertebrates	16.29	67.41	167.43
Total catch weight (kg)	68.17	189.06	222.55

Recent NOAA Technical Memorandums NMFS
published by the
Northwest Fisheries Science Center

NOAA Tech. Memo.

NMFS-NWFSC-

- 74 Pool, S.S., and R.D. Brodeur. 2006.** Neustonic mesozooplankton abundance and distribution in the northern California Current, 2000 and 2002. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-74, 76 p. NTIS number pending.
- 73 Myers, J., C. Busack, D. Rawding, A. Marshall, D. Teel, D.M. Van Doornik, and M.T. Maher. 2006.** Historical population structure of Pacific salmonids in the Willamette River and lower Columbia River basins. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-73, 311 p. NTIS number pending.
- 72 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. NTIS number pending.
- 71 Nash, C.E., P.R. Burbridge, and J.K. Volkman (editors). 2005.** Guidelines for ecological risk assessment of marine fish aquaculture. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-71, 90 p. NTIS number pending.
- 70 Keller A.A., T.L. Wick, E.L. Fruh, K.L. Bosley, D.J. Kamikawa, J.R. Wallace, and B.H. Horness. 2005.** The 2000 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-70, 163 p. NTIS number pending.
- 69 Fresh, K.L., E. Casillas, L.L. Johnson, and D.L. Bottom. 2005.** Role of the estuary in the recovery of Columbia River basin salmon and steelhead: An evaluation of the effects of selected factors on salmonid population viability. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-69, 105 p. NTIS number pending.
- 68 Bottom, D.L., C.A. Simenstad, J. Burke, A.M. Baptista, D.A. Jay, K.K. Jones, E. Casillas, and M.H. Schiewe. 2005.** Salmon at river's end: The role of the estuary in the decline and recovery of Columbia River salmon. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-68, 246 p. NTIS PB2006-101123.
- 67 Holmes, E.E., W.F. Fagan, J.J. Rango, A. Folarin, J.A. Sorensen, J.E. Lippe, and N.E. McIntyre. 2005.** Cross validation of quasi-extinction risks from real time series: An examination of diffusion approximation methods. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-67, 37 p. NTIS number pending.
- 66 Good, T.P., R.S. Waples, and P. Adams (editors). 2005.** Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-66, 598 p. NTIS PB2005-110650.

**Most NOAA Technical Memorandums NMFS-NWFSC are available online at the
Northwest Fisheries Science Center web site (<http://www.nwfsc.noaa.gov>).**