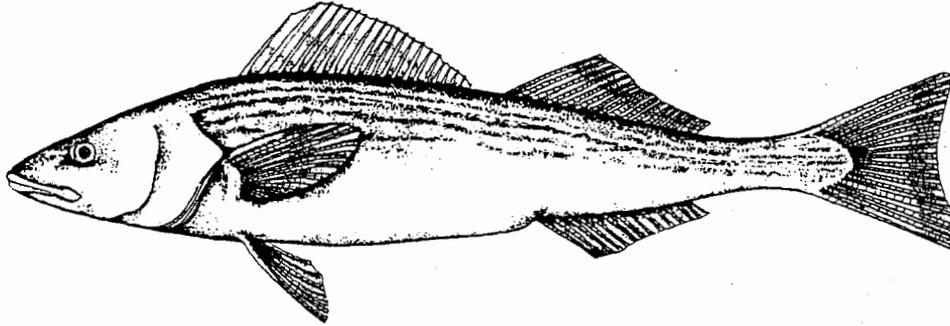


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# Relative Abundance of Sablefish and Other Groundfish Caught on Longline Gear in Prince William Sound, Alaska, 1998



By

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## TABLE OF CONTENTS

LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
LIST OF APPENDICES.....	v
ABSTRACT.....	vi
INTRODUCTION.....	1
METHODS.....	2
Study Areas and Sample Stations.....	2
Vessel and Gear.....	3
Data Collection.....	4
Station Data.....	4
Catch Data.....	4
Data Analysis.....	5
RESULTS.....	5
Sampling Effort.....	5
Catch By Depth.....	6
Relative Population Number.....	7
Fish Size.....	7
DISCUSSION.....	8
LITERATURE CITED.....	11

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Commercial sablefish landings from Prince William Sound, Alaska, 1984-1998. ....	13
2. Annual commercial harvest of sablefish from areas in Prince William Sound, Alaska, 1987-1998. ....	14
3. Longline sets during the Prince William Sound sablefish survey, 1998.....	15
4. Depth stratification, available and fished habitat, and the number of longline skates fished in 1998 in the northwest (A) and eastern (B) areas of Prince William Sound. ....	16
5. Catch and empty hook status by set during the sablefish longline survey in Prince William Sound, 1998. ....	17
6. Depth strata where fish species were captured during the 1998 Prince William Sound longline survey.....	19
7. Average fish catch per longline skate by depth strata and survey area during the sablefish longline survey in Prince William Sound, 1998. ....	20
8. Relative population number (RPN) for fish caught during the sablefish longline in Prince William Sound, 1998.....	21
9. Mean fish length within and among strata after weighting by relative population number.....	22
10. Standardized catch rates during the Prince William Sound longline survey, 1996-1998.....	25

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Districts of the Prince William Sound Management Area, 1998.....	26
2. Locations of sets in a longline survey of Prince William Sound, Alaska, 1998. ....	27
3. Sablefish length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998. ....	28
4. Pacific cod length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998. ....	29
5. Walleye pollock length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998. ....	30
6. Arrowtooth flounder length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998. ....	31
7. Length distributions of (A) rougheye rockfish and (B) shortraker rockfish, 1996-1998. ....	32
8. Pacific sleeper shark precaudal length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1997-1998.....	33
9. Spiny dogfish precaudal length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.....	34
10. Aleutian skate disk width distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.....	35
11. Longnose skate disk width distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1997-1998.....	36

## LIST OF APPENDICES

	<u>Page</u>
Appendix A. Fish catch and the status of hooks without fish for individual longline skates during a sablefish longline survey in Prince William Sound, 1998.....	37

## ABSTRACT

The Alaska Department of Fish and Game has actively managed a commercial fishery for sablefish *Anoplopoma fimbria* in Prince William Sound (PWS) since the 1980s. The harvest guideline for this fishery was based on a yield-per-habitat model using mean values from Clarence Strait in Southeast Alaska as proxy values for PWS. There had been little additional analysis of the suitability of a relatively fixed annual harvest level for the PWS sablefish resource. An annual survey to determine relative abundance and composition of groundfish caught on longline gear in PWS sablefish habitat was initiated in 1996. Fishing gear and effort was standardized as 45 hooks, spaced 2 m apart, attached to a 100 m skate; fifteen skates were attached to make a 1500 m long set with 675 hooks. A single set was placed in randomly selected stations. In 1998 a total of 38 sets, involving 25,650 hooks, were made in depths ranging from 207-753 m.

Twelve sets were made in the eastern area of PWS and 26 sets in the northwest area. Upon retrieval, 4% of the hooks were unbaited, 5% were ineffective by being bent, tangled, or missing, and 62% were baited; the remaining hooks held fish. Sablefish, Pacific halibut *Hippoglossus stenolepis*, walleye pollock *Theragra chalcogramma*, longnose skate *Raja rhina*, Aleutian skate *Bathyraja aleutica*, and Pacific sleeper shark *Somniosus pacificus* were the only species caught in all depth strata. Sablefish were the most abundant species in the catch with catch rates ranging from 1.62 fish per longline skate in the 201-300 m depth stratum of the northwest area to 9.42 fish per longline skate in the 401-500 m depth of the eastern area; mean catch was 4.33 sablefish per skate among all strata. Spiny dogfish *Squalus acanthias* produced the second largest mean catch rate of 4.02 fish per longline skate, ranging from 0.00 fish per skate in the 601-700 m stratum of the northwest area to 9.99 fish per skate in the 201-300 m stratum in the eastern area. Pacific halibut produced the third greatest catch rate, averaging 1.97 fish per longline skate among all strata. Catches of most other fish groups varied inconsistently among depth strata. Mean length of sablefish increased with depth and spiny dogfish size length generally decreased with depth. For other species or fish groups, either no major trends were apparent in changes of fish length among depth strata or too few fish were caught to provide meaningful comparisons.

Survey results are critical to monitoring long-term changes in the sablefish and other fisheries resources. However, this data provides only an index and is not an absolute measure of abundance. It will be important that survey data be correlated with biological data from commercial fisheries, particularly harvest, age, and length data. Only by examining these relationships over an extended time series will meaningful data be available to evaluate annual harvest levels.

**KEY WORDS:** Sablefish, *Anoplopoma fimbria*, groundfish, longline, survey, distribution, relative abundance, length

## INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) has management responsibility for groundfish resources in the Prince William Sound (PWS) area. Groundfish are defined to include all marine finfish except halibut, salmon, herring, and osmerids. Prior to the late 1980s, the groundfish fisheries in Prince William Sound were prosecuted year-round at relatively low annual harvest levels (Table 1; Bechtol 1995; Trowbridge 1996). Biological and economic declines in fisheries such as salmon, combined with diversification by much of the fishing fleet, have increased effort in the groundfish fisheries and raised concerns about sustainable yields from the groundfish resources. Marked improvements in both fishing technology and market conditions have exacerbated these concerns. Fishery changes have been particularly pronounced for sablefish *Anoplopoma fimbria*. In 1995 an Individual Fishing Quota (IFQ) program was implemented for sablefish in the federal waters adjacent to PWS to cap the rapidly increasing effort (Strickland 1995). Increasing effort in the PWS fishery compromised management and in 1996 a limited entry program adopted by the Commercial Fisheries Entry Commission was implemented for PWS sablefish (Trowbridge 1996). The PWS sablefish fishery is primarily prosecuted with longline gear.

Management of PWS sablefish has been based on a yield-per-habitat model developed for similar habitat in Clarence Strait in Southeast Alaska (Bechtol and Morrison 1997). With an estimated yield ranging from 0.06 to 0.25 metric tons per square nautical mile (mt/nm<sup>2</sup>), a guideline harvest level (GHL) of 40-140 mt was applied from 1986 to 1992. However, due to improved bathymetric mapping techniques, the area deemed as suitable sablefish habitat was increased by 26% in 1993 with the GHL modified to 44-175 mt. Management has typically targeted the GHL midpoint (Bechtol 1995; Berceci et al. 1999).

While managers have attempted to maintain a relatively fixed annual harvest, there has been little additional analysis of the suitability of this GHL for the PWS sablefish resource. Fisheries performance data has primarily been limited to ADF&G fish ticket harvest records. The refinement of management strategies for PWS sablefish will require better stock assessment information, particularly data on species composition, distribution, and productivity. In particular, fisheries-independent survey data is needed.

An annual survey was initiated in 1996 to determine the relative abundance and composition of groundfish caught on longline gear in PWS sablefish habitat (Bechtol and Vansant 1997). The main emphasis was to develop a fishery-independent index of sablefish abundance to serve as a baseline for monitoring changes in the sablefish resource.

Specific objectives of the project were to:

- 1) Determine the relative abundance and size composition of commercially important species caught on longline gear in waters deeper than 183 m (100 fathoms).
- 2) Compare the relative abundance and size composition of commercially important groundfish

species in PWS to survey data collected from the Gulf of Alaska.

## METHODS

### *Study Areas and Sample Stations*

The PWS area (Figure 1) includes waters enclosed by lines from Cape Fairfield (148° 50.25' W long.) to Cape Suckling (143° 53.00' W. long.). Regulations restrict the PWS sablefish fishery to the Inside District, delineated by lines from Point Whittshed to Point Bentinck, from Cape Hinchinbrook to Zaikof Point, and from Cape Cleare to Cape Puget (Figure 1). For this study, the Inside District was divided into three sampling areas (Figure 2):

- (1) eastern area – all waters east of 147°00' W long.;
- (2) northwest area – all waters west of 147°00' W long. and north of 60° 30'N lat.; and
- (3) southwest area – all waters west of 147°00' W long. and north of 60° 30'N lat.

These areas were further divided into 2.5 nm x 2.5 nm square grids. A square was considered a potential sampling station if the maximum water depth was  $\geq 183$  m (100 fathoms) and the surface area exceeded 50% water.

Monte Carlo simulations indicated that variability in area-weighted longline CPUE declined with greater sample size when sample size was varied from two to 26 sample stations and two to 20 skates per set (Michael Sigler, National Marine Fisheries Service, Juneau, personal communication). However, increasing the sample size above 12 stations per area or 12 longline skates per set usually produced only small reductions in the sample variance. Thus, the minimum sample size was determined to be 12 longline skates per set or 12 sample stations, or squares, per sample area. For simplification and to provide for potential gear loss or problems, each longline set in this study consisted of 15 longline skates of 100 m each, tied together for a total of 1,500 m..

During the first PWS longline survey in 1996, all survey effort was expended in the northwest area, which had contributed the largest component of commercial sablefish harvests (Table 2). In subsequent PWS surveys, approximately 66-75% of the sampling effort was directed at the northwest area and the remaining effort rotated between the southwest and eastern areas. In 1998, this remaining effort was directed at the eastern area of PWS.

Within an area, survey stations (i.e., stations for placement of longline sets) were randomly selected from all potential stations meeting the criteria of depth and a minimum likelihood for gear loss. Selected stations perceived by the project biologist and the vessel captain to present a high probability of gear loss, such as water designated as a vessel traffic lane or charted as containing underground cables, were replaced with another randomly selected station. Per Monte Carlo simulation results described above, at least 12 stations were selected from each survey area. The total number of stations was determined based upon factors such as vessel time available and anticipated vessel travel time between survey stations and between survey areas and the fish

processor. The project biologist and the vessel captain determined subsequent field modifications to the vessel survey strategy.

### *Vessel and Gear*

Survey operations were conducted with the ADF&G research vessel *Montague*, which has an overall length of 17.7 m (58 ft), a displacement of 81.6 metric tons, and is powered by a 335 hp diesel engine. Gear setting began about 0800 hours daily with retrieval of a given gear set following a soak time of at least three hours. Gear setting and retrieval continued throughout the day until about 1700 hours. After collection of biological data, the marketable catch was processed into either a bled, gutted-and-gilled, or “Eastern cut” condition and the catch iced in the vessel hold. Every three to five days the iced catch was offloaded to a shoreside processor and the catch sold to offset survey costs.

Gear configuration was similar to that used by the National Marine Fisheries Service for annual longline surveys of sablefish in the Gulf of Alaska (Sigler and Zenger 1994). Longline skates on the ADF&G survey were 100 m (55 fathom) long and contained forty-five size 13/0 circle hooks. An entire set comprised of 15 skates totaling 1,500 m contained 675 hooks. Hooks were attached to 38 cm gangions (15 inch tied length; 74 cm [29 inch] untied length) secured to 46 cm (18 inch) beackets tied into the groundline at 2 m (6.5 ft) intervals. Gangion eyes were tied 10 cm (4 inch) long. Each groundline was marked with ink and flagging at the first and forty-fifth beackets to facilitate locating the groundline ends, and with ink at the remaining forty-three beackets. The groundlines were without beackets for the first six meters at each end. Gangions and beackets were medium lay #60 thread and medium lay #72 thread, respectively. All groundline skates and buoylines were medium-lay 9.5 mm (3/8 in) American Line SSR 100<sup>1</sup>.

Each end of a longline set was marked with a flag and buoy array, followed by a buoyline, a 27 kg (60 lb) halibut anchor, and 183 m (100 fm) of bare groundline that was attached to the groundline skates. A 2.3 kg (5 lb) lead ball was snapped onto both ends of each 1,500 m set and between each 100-m longline skate.

Each hook was hand baited with chopped *Illex* squid at the rate of 5.5 kg (12 lb) per 100 hooks. Only the mantle, excluding the tentacles, was used for bait. For baiting, the mantle was cut into 4-5 cm (1 1/2-2 inch) long pieces, yielding 3-4 bait pieces from each 15-23 cm (6-9 inch) mantle.

Given wind and sea currents at each station, the gear was set in a location and direction determined by the vessel skipper and the project leader. The gear was typically set and retrieved in the same direction such that the first buoy set was the first buoy retrieved. Soak time was defined as the difference between the time the last anchor went over at setting and the time the first anchor was brought aboard at retrieval. Soak time was at least 3 hours based on NMFS experiments showing that the catch rate on sablefish longline gear is asymptotic with about 90% of the total catch

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<sup>1</sup> Product names are provided to document methods and do not constitute an endorsement by ADF&G.

occurring in the first 3 hours (Sigler 2000).

### *Data Collection*

#### Station Data

The station number, date, time, latitude and longitude coordinates, and depth were recorded at each anchor deployment and retrieval. The vessel skipper also recorded the set direction, wind velocity, surface water temperature, and sea conditions when the gear was set, as well as noting any anomalies, such as gear tangles. We also attached a thermograph near the anchor of one set each day to capture bottom temperature.

#### Catch Data

Data recorded as each hook was brought aboard included: (1) fish species or major fish group (Hart 1973; Kessler 1985; Kramer and O'Connell 1988); (2) if an unoccupied hook was functional or ineffective, with the latter defined as absent, bent, broken, or tangled; and (3) whether bait remained on a functional, but otherwise, unoccupied bait. Fish observed as being caught, but lost while being brought aboard the vessel were counted as a catch and not as an empty hook. After being documented, Pacific halibut *Hippoglossus stenolepis* were released without being brought aboard. Pacific sleeper shark *Somniosus pacificus* larger than approximately 1.9 m (4 feet) were measured alongside the vessel. All other fish species and Pacific sleeper shark smaller than 1.9 m were brought aboard and measured for length. Most species were measured for total length, except for shark species, measured as precaudal length, and skate species, measured as disk width. Fish observed hooked but lost while being brought aboard were documented according to species only. To obtain age-and growth information through subsequent recaptures, 76 sleeper shark and 147 systematically selected spiny dogfish *Squalus acanthias* were tagged behind the dorsal fin with sequentially numbered, steel-dart spaghetti tags. Each tagged shark was injected with oxytetracycline at a dosage of 28 cc/kg of body weight (Ken Goldman, Virginia Institute of Marine Science, Gloucester Point, VA, personal communication) with body weight either estimated from weight-length regression equations or directly weighed with a hand-held scale. The intent of the oxytetracycline was to provide a tool for potential age validation (Beamish and McFarlane 1985; McFarlane and Beamish 1987).

Target species during this survey included sablefish, Pacific cod *Gadus macrocephalus*, walleye pollock *Theragra chalcogramma*, and all rockfish (*Sebastes* and *Sebastolobus* genera). Every tenth fish within a target species was sampled for total length (1.0 mm), sex, and gonad maturity; sagittal otoliths were removed for aging. Morphometric data were recorded on an electronic measuring board or on field forms and later transferred to computer files.

## Data Analysis

All potential stations were assigned to a depth stratum based on the deepest depth within a survey station as identified visually on NOAA nautical chart #16700. Strata were defined according to 100 m increments, e.g., 101-200 m. Survey catch data were post-stratified by depth with the catch for a survey station assigned to a stratum according to the average of the depths recorded at the first and last anchor deployment. Catch-per-unit-of effort (CPUE) was then calculated for each species as mean catch per longline skate within stratum  $i$  ( $C_i$ ) with standard deviation,  $s^2$ , according to:

$$\bar{C}_i = \frac{\sum_{j=1}^{n_i} C_{ij}}{n_i}$$
$$s_i^2 = \frac{\sum_{j=1}^{n_i} (C_{ij} - \bar{C}_i)^2}{n_i - 1}$$

where  $C_{ij}$  = catch on longline skate  $j$  in stratum  $i$   
 $n_i$  = number of skates fished in stratum  $i$

The relative population number, or RPN (Sigler and Zenger 1994), for each species was calculated by weighting the mean catch rate in a stratum with the total available area of that stratum,  $A_i$ , measured in square nautical miles:

$$RPN = \sum_{i=1}^k \bar{C}_i \times A_i$$

Length frequency distributions, summarized in 20-mm increments, and mean lengths were computed for each species and each stratum. These statistics were not calculated for species groups, such as skates. For length distributions, the RPN was calculated by 20-mm increments of a frequency distribution within and among strata. These statistics were calculated for disk width for skates and in 50-mm increments for Pacific sleeper shark length.

## RESULTS

### *Sampling Effort*

During the 1998, PWS longline survey effort totaled 38 sets, including 26 stations in the northwest

area and 12 stations in the eastern area (Table 3; Figure 2; Appendix A). From one to three stations were sampled each day. Sampled station depths ranged from 210 to 753 m in the northwest and from 207 to 447 m in the eastern area. These stations represented 18% of the potential sample stations deeper than 200 m in the northwest area, 9% of the potential stations in the eastern area, and a pooled coverage of 14% in the sampled areas (Table 4). At a rate of 15 skates per set, 390 skates were fished in the northwest area and 180 skates in the southwest area for a total of 570 skates in the sampled areas. The number of skates per depth stratum ranged from 45-150 skates, with the greatest number of 150 skates fished in the 201-300 m stratum and the least effort of 45 skates fished in the 601-700 m stratum.

Total fishing effort resulted in the setting of 25,650 hooks. Upon retrieval, 4% of the hooks (n=948) were unbaited, 5% (n=1,322) were ineffective by being bent, tangled, or missing, and 63% (n=16,147) were baited; the remaining hooks held fish (Table 5).

### *Catch By Depth*

Pacific cod, Pacific halibut, walleye pollock, Pacific sleeper shark, Aleutian skate, longnose skate, and sablefish were the only individual species caught in all depth strata in both the northwest and eastern study areas (Table 6). The skate species group was also caught in all strata. Arrowtooth flounder, shortraker rockfish and spiny dogfish were caught in all strata of the northwest area.

Sablefish yielded the greatest relative catch of all species among all depth and area strata in the survey area (Table 7). Mean sablefish catch rate was generally greatest in the 401-500 m and 501-600 m depth strata. In the northwest area, mean catch ranged from 1.62 fish per skate in the 201-300 m stratum to 6.60 fish per skate in the 501-600 m depth. In the eastern area, mean catch ranged from 3.73 fish per skate in the 301-400 m stratum to 9.42 fish per skate in the 401-500 m depth. A relatively high catch rate of 7.03 fish per skate was also observed in the 201-300 m stratum of the eastern area. Mean sablefish catch per longline skate among all depths was 3.16 in the northwest, 6.62 in the eastern area, and 4.33 among strata.

Among all strata, spiny dogfish averaged 2.26 fish per longline skate, the second greatest mean catch rate from the survey (Table 7). Mean spiny dogfish catch rates were greatest in the 201-300 m stratum in both areas with 2.78 fish per skate in northwest area and 6.42 fish per skate in the eastern area. The catch rate of 9.99 fish per skate for spiny dogfish in the 201-300 m stratum of the eastern area was the greatest single species catch rate observed during the survey. Mean spiny dogfish catch rates generally decreased with depth.

Pacific halibut averaged 1.97 fish per longline skate among all strata (Table 7). Mean halibut catch rates were greatest in the 401-500 m stratum in both areas with 1.92 halibut per skate in northwest area and 3.93 halibut per skate in the eastern area. Among all depth and areas, mean halibut catch rates were least in the 701-800 m stratum of the northwest area. Skate species, primarily longnose skate, big skate, and Aleutian skate, produced the third greatest catch rate among all strata, 1.12 fish per longline skate. Maximum skate catch rates were 1.53 fish per longline skate greatest in the 701-800 m depth of the northwest area and 1.96 fish per longline skate in the 401-500 m depth of the

eastern area. Pacific cod catch rates were greatest in the 201-300 m strata with a mean observed catch of 2.02 fish per skate in the northwest area and 2.53 fish per skate in the eastern area. Catches of most other fish groups generally declined with depth or exhibited relatively minor changes with depth. For example, walleye pollock catches were 0.58 and 0.77 fish per skate in the 201-300 m and 301-400 m depth strata of the northwest area and 0.34 fish per skate in the 201-300 m depth of the eastern area. However, pollock catches were less than 0.19 fish per skate in all other strata. A single salmon shark was caught in the 201-300 m strata of the eastern area.

### Relative Population Number

Depth strata shallower than 201 m were not sampled and were excluded from calculations of relative population numbers (Tables 4 and 8). In addition, strata encompassing 501-800 m were sampled in only the NW PWS area. Sablefish, with an aggregate RPN of 5,418 fish among all strata, comprised the greatest component of the sampled population, representing 33% of all species caught. Spiny dogfish, with an aggregate RPN of 5,023 fish, was the second most abundant component of the sampled population and represented 30% of all fish. Pacific halibut ranked third with an RPN of 2,456, representing 15% of the aggregate RPN. The remaining species groups individually comprised <10% and in aggregate comprised 22% of the total RPN. The ranking of RPN by species was relatively consistent between survey areas.

### Fish Size

Mean length of individual fish species varied among strata (Table 9). Sablefish length ranged from 311 to 930 mm (n=2,655). Sablefish mean length generally increased with depth from 528.9 mm in the 201-300 m depth to 642.3 mm in the 701-800 m depth stratum. Mean length among strata was 581.2 mm. Weighted sablefish length distributions revealed primary length modes around 540-580 mm (Figure 3). In the northwest area, the major length mode was centered at 580 mm and comprised 12% of the estimated population. The dominant length mode in the eastern area was centered at 540 mm and comprised 14% of the estimated population.

Pacific cod lengths ranged from 167 to 946 mm with mean length of 725.2 mm in the northwest area, 673.2 mm in the eastern area, and 697.6 mm (n=416) among areas (Table 9). Length increased with depth in the eastern area but trends were not evident in the northwest area or among areas. Numerous modes were present in Pacific cod length distributions, the largest modes were 700 mm in the both areas, representing 15% and 12%, respectively, of the northwest and eastern populations (Figure 4). For remaining species, fish size did not appear to either increasing or decreasing with greater depth or sample sizes were insufficient to draw conclusions.

Mean walleye pollock length was 608.4 mm in the northwest area, 595.3 in the eastern area, and 605.5 mm among areas (Table 9). Pollock lengths ranged from 435 to 762 mm (n=146); length distributions exhibited primary modes at 600 mm in the northwest area, 580 mm in the eastern area, and 600 mm among areas (Figure 5). Arrowtooth flounder length averaged 641.5 mm in the northwest area, 639.3 mm in the eastern area, and 640.6 mm among areas. The weighted length distribution exhibited a variety of modes, with a major mode at 600-620 mm both within and

among areas and a secondary mode at 720 mm in the northwest area and at 660 mm in the eastern area (Figure 6). Length of rougheye rockfish ranged from 356 to 767 mm with a mean of 497.0 mm (n=22) among all strata. The primary length distribution mode was 460 mm, comprising 24% of the RPN among areas (Figure 7). Mean length of shorttraker rockfish was 719.0 mm (n=43) among all strata. The weighted length distribution indicated a primary mode at 720 mm, comprising 19% of aggregate RPN among areas (Figure 7). The single salmon shark caught was 2,133 mm in length. Pacific sleeper shark was the largest species caught with length ranging from 1,067 to 2,591 mm (n=86); mean length was 1,724.1 mm in the northwest, 1,661.9 mm in the eastern area, and 1,70.3 mm among areas (Table 9). The weighted length distribution for Pacific sleeper shark revealed a primary mode at 1,700 mm among areas (Figure 8). Length of spiny dogfish ranged from 200 to 950 mm (n=1,897), with a mean of 692.1 mm in the northwest, 700.9 mm in the eastern area, and 696.9 mm among areas (Table 9). The weighted length distribution for spiny dogfish exhibited a primary mode at 680-700 mm among areas (Figure 9). Mean Aleutian skate disk width was 509.8 mm in the northwest area, 504.9 in the eastern area, and 507.5 mm among areas (Table 9). Aleutian skate width ranged from 287 to 893 mm (n=468), although some of the larger specimens may have been misidentified sand skate; length distributions exhibited a primary mode at 500 mm in both areas (Figure 10). Mean disk width of longnose skate was 793.7 mm in the northwest area, 797.4 in the eastern area, and 795.6 mm among areas (Table 9). Longnose skate width ranged from 404 to 942 mm (n=86); length distributions exhibited a primary mode at 900 mm among areas (Figure 11). Weighted length distributions were not calculated for the remaining species caught during the 1998 survey.

## DISCUSSION

The primarily goal of this survey is to provide a quantified, repeatable index of the sablefish resource in PWS. The commercial longline fishery for sablefish in PWS has targeted the northwest area, particularly in recent years when this area yielded over 90% of the fishery harvest (Table 2). Thus, it is appropriate for the greatest component of the longline survey effort in PWS survey to be annually allocated to the northwest area. To establish baseline data for the PWS longline survey, all survey effort in 1996 was allocated to the northwest area (Bechtol and Vansant 1997). However, to monitor changes in fish resources of other PWS areas where harvests occur, some survey effort needed to be directed to other PWS areas. Statistical analysis of sablefish longline survey catches indicated at least 12 sets should be made in an area, and each set should include at least 12 standardized longline skates, to adequately reduce the variance among sets (Michael Sigler, National Marine Fisheries Service, Juneau, personal communication). The 1997 survey allocated effort to the northwest and southwest areas (Bechtol and Vansant 1998). The 1998 survey allocated 12 sets to the eastern area of PWS and 26 sets to the northwest area, with each set comprised of 15 longline skates (Table 4).

Survey data included catch-per-unit-of-effort for sablefish and other species, and length, for most captured species. Age, sex, and maturity data will be analyzed in the future as needed for most species. As was found in previous PWS surveys, sablefish yielded the greatest relative population number (RPN), comprising 33% of the aggregate RPN for all species, among all 1998 surveyed

strata (Table 8). Sablefish catch rates, measured as standardized fish abundance per longline skate, changed in the northwest area from 3.55 fish/skate in 1996 to 4.18 in 1997 to 3.16 fish in 1998 (Table 10). In comparison, mean catch rate for the southwest area in 1997 was 1.45 fish/skate and for the eastern area in 1998 was 6.62 fish/skate. Data for pooled areas are currently thought insufficient for comparison among years due to shifts in the area sampled by supplemental survey effort. The decline in sablefish catch rates between survey years 1996 and 1998 is similar to declining sablefish catch rates observed during these years by the National Marine Fisheries Service longline survey in the Gulf of Alaska (Sigler et al. 2001). Large sablefish catch rates in the eastern area of PWS in 1998 included a substantial number of smaller-sized fish, possibly corresponding to a relatively strong 1997-year class. Previous analysis of size compositions in the commercial fisheries suggested recruitment trends differed between PWS and adjacent offshore waters (Bechtol and Morrison 1997). Continued monitoring of sablefish recruitment in PWS will be essential to understanding long-term changes in this resource.

Proportional contribution of other species to the aggregate RPN was relatively consistent among PWS survey areas in 1998 (Table 8). Both within and among areas, spiny dogfish ranked second in aggregate RPN followed by Pacific halibut. Although sablefish RPN was greatest among strata, spiny dogfish RPN exceeded sablefish RPN in the 201-300 m strata of both areas and in the 301-400 m strata in the eastern area. Sablefish also had the greatest RPN in offshore federal surveys of the upper continental slope, but the aggregate RPN ranking for non-sablefish species in federal waters often differed substantially from that in PWS. For example, grenadiers typically rank relatively high in species RPN in offshore surveys (Sigler and Zenger 1994). In contrast, only a single grenadier was caught in the 1996-1998 PWS surveys (Bechtol and Vansant 1997, 1998). Some of these differences may be due to variation in species' habitat preferences compared to available habitat in PWS versus offshore waters.

To improve the utility of this survey, greater efforts were made in 1998 to identify all the catch to species and measure length, or width in the case of skates, on all species. The exception remains halibut, which are discarded as quickly as possible to minimize handling. Skate catch was better documented in 1998, although some uncertainty remained for some specimens identified as Aleutian skates. In particular, some of the larger "Aleutian skate" may have been sand skate (Figure 10).

With continued interest being expressed in shark resources off the coast of Alaska, it will be important to collect data on which to base management decisions. Among pooled survey areas, the aggregate PWS shark catch rate in 1997 was over twice the catch rate in 1996 (Table 10; Bechtol and Vansant 1997, 1998). The 1998 PWS increase in spiny dogfish catch relative to previous years was a pattern also observed in anecdotal data for Gulf of Alaska waters from International Pacific Halibut Commission longline surveys and ADF&G bottom trawl surveys (Hulbert 2000). However, this information should be viewed with caution because localized changes in spiny dogfish density indices do not necessarily imply stock abundance changes (Goldman 2001). For example, the total shark catch rate showed little change between 1996 and 1997 within the northwest area. The tagging and release by the 1998 survey of 223 sharks, 147 spiny dogfish and 76 Pacific sleeper shark, combined with subsequent recapture data, will provide a unique opportunity to examine age, growth, and migration.

Survey results will be critical to monitoring long-term changes in the sablefish resource, as well as other species for which there is no established monitoring program. However, this data provides only an index and not an absolute measure of abundance, and it will be important that survey data is correlated with biological data from the commercial fishery and other surveys, particularly age and length data. Only by examining relationships among these data sets, over an extended time series, can meaningful conclusions be developed on which to modify, if appropriate, annual harvest levels.

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Table 1. Commercial sablefish landings from Prince William Sound, Alaska, 1984-1998.

Year	Vessels	Landings	Harvest - Round weight		Price <sup>a/</sup>	Exvessel Value	Lb per Vessel	Lb per Landing	Season Dates <sup>b/</sup>	
			(lb)	(mt)					Opened	Closed
1984	20	37	109,920	50	\$0.46	\$50,563	5,496	2,971	1/1	12/31
1985	29	108	383,290	174	\$0.60	\$229,974	13,217	3,549	1/1	11/20
1986	32	36	189,850	86	\$0.64	\$121,504	5,933	5,274	4/1	6/21
1987	71	120	205,350	93	\$0.66	\$135,531	2,892	1,711	4/1	6/25
1988	53	147	226,206	103	\$1.00	\$226,206	4,268	1,539	4/1	7/21
1989	26	98	190,633	86	\$0.85	\$162,038	7,332	1,945	6/12	12/31
1990	70	257	213,974	97	\$0.71	\$151,922	3,057	833	4/1	8/7
1991	72	147	331,314	150	\$0.93	\$308,122	4,602	2,254	5/15	6/22
1992	54	119	438,301	199	\$1.14	\$499,663	8,117	3,683	5/15	6/1
1993	55	87	313,976	142	\$1.03	\$323,395	5,709	3,609	5/17	6/12
1994	55	92	279,292	127	\$1.45	\$404,973	5,078	3,036	5/23	6/8
1995	124	135	574,195	260	\$2.24	\$1,286,197	4,631	4,253	5/1	5/3
1996	65	68	251,394	114	\$1.86	\$467,593	3,868	3,697	5/1	5/2
1997	53	91	208,371	95	\$2.13	\$443,688	3,932	2,290	5/1	5/8
1998	58	61	232,831	105	\$1.56	\$362,763	4,014	3,817	5/1	5/3

<sup>a/</sup> Price is calculated as a round weight equivalent.

<sup>b/</sup> Beginning in the mid-1990s, the season for many fishing years involved multiple openings, each of short duration.

Table 2. Annual commercial harvest of sablefish from areas in Prince William Sound, Alaska, 1987-1998.

Year	Percent of Total Harvest by Area			Harvest Weight (Round lb)
	East	Northwest	Southwest	
1987	2%	87%	11%	200,534
1988	2%	84%	14%	219,052
1989	0%	91%	9%	187,843
1990	1%	69%	30%	210,064
1991	24%	58%	18%	325,921
1992	13%	51%	36%	432,051
1993	2%	82%	16%	309,135
1994	1%	79%	20%	280,553
1995	6%	82%	12%	565,099
1996	1%	96%	3%	257,877
1997	3%	93%	4%	208,371
1998	3%	96%	<1%	232,831
Average	6%	78%	16%	285,778

Table 3. Longline sets during the Prince William Sound sablefish survey, 1998.

Set Number	Date	Station	Set Start		Set End		Soak Time		Heading (deg.)	Length (nm)	Depth (m)		Temp (°C)
			latitude	longitude	latitude	longitude	Set	Pull			Shallow	Deep	
98401	9/3	P24	60° 37.86'	146° 43.76'	60° 38.72'	146° 44.27'	9:03	14:26	344	0.90	207	220	12.8
98402	9/3	R23	60° 33.32'	146° 47.28'	60° 34.21'	146° 48.08'	10:07	17:15	336	0.98	426	442	13.3
98403	9/3	T24	60° 28.34'	146° 43.62'	60° 29.25'	146° 43.51'	11:18	20:08	003	0.93	227	235	12.7
98404	9/4	W23	60° 20.91'	146° 47.48'	60° 21.81'	146° 47.65'	9:32	14:26	335	0.92	290	296	12.9
98405	9/5	M13	60° 46.38'	147° 36.16'	60° 45.59'	147° 36.77'	9:22	14:05	200	0.90	577	603	12.2
98406	9/5	M12	60° 46.36'	147° 41.20'	60° 45.50'	147° 41.93'	10:03	17:15	203	0.91	542	550	10.6
98407	9/6	M17	60° 45.64'	147° 18.84'	60° 45.38'	147° 17.19'	10:20	15:27	107	0.87	405	419	12.1
98408	9/6	M18	60° 46.33'	147° 12.50'	60° 47.16'	147° 11.93'	12:19	18:18	018	0.90	369	383	12.8
98409	9/7	P18	60° 38.67'	147° 10.97'	60° 37.88'	147° 11.91'	9:21	14:28	210	0.91	231	255	12.8
98410	9/7	P23	60° 38.70'	146° 46.60'	60° 39.56'	146° 47.43'	11:21	17:17	335	0.95	374	386	12.5
98411	9/9	Q22	60° 35.89'	146° 52.40'	60° 36.82'	146° 52.39'	9:43	14:15	000	0.93	442	447	12.7
98412	9/9	Q21	60° 35.96'	146° 57.41'	60° 36.90'	146° 57.36'	11:48	17:08	001	0.92	438	441	12.8
98413	9/10	I14	60° 56.61'	147° 33.50'	60° 55.81'	147° 33.90'	9:09	14:04	193	0.84	300	311	13.7
98414	9/10	G14	61° 00.19'	147° 34.83'	61° 00.25'	147° 33.10'	11:50	16:15	085	0.85	210	218	10.9
98415	9/11	J14	60° 54.72'	147° 34.58'	60° 54.03'	147° 34.02'	8:50	13:48	158	0.80	332	347	10.5
98416	9/11	M15	60° 46.59'	147° 28.51'	60° 46.23'	147° 26.78'	11:28	16:10	113	0.92	469	478	9.6
98417	9/12	L19	60° 49.05'	147° 06.98'	60° 48.33'	147° 07.92'	10:10	15:27	212	0.88	434	448	6.4
98418	9/12	M19	60° 46.59'	147° 06.90'	60° 45.83'	147° 07.57'	12:08	17:40	203	0.90	428	452	12.7
98419	9/13	V23	60° 24.05'	146° 47.58'	60° 23.13'	146° 47.55'	9:15	14:32	180	0.93	283	295	12.4
98420	9/13	U24	60° 26.93'	146° 44.28'	60° 25.97'	146° 44.28'	11:52	17:13	180	0.95	217	221	12.9
98421	9/14	Q13	60° 35.35'	147° 39.06'	60° 35.43'	147° 38.12'	7:49	14:06	032	0.95	740	749	11.9
98422	9/17	P12	60° 39.18'	147° 43.64'	60° 38.30'	147° 43.67'	9:31	15:27	180	0.90	749	753	12.3
98423	9/17	Q10	60° 37.35'	147° 53.60'	60° 36.68'	147° 54.58'	11:13	18:23	215	0.90	501	524	12.1
98424	9/18	Q09	60° 35.60'	147° 57.42'	60° 35.78'	147° 59.20'	9:08	14:35	280	0.90	607	612	11.9
98425	9/18	R08	60° 34.46'	148° 00.28'	60° 34.89'	148° 01.86'	11:54	16:33	300	0.92	619	626	12.0
98426	9/19	R3	60° 33.30'	148° 27.26'	60° 33.31'	148° 29.00'	9:07	14:07	270	0.92	466	467	12.3
98427	9/19	R6	60° 34.15'	148° 13.01'	60° 33.28'	148° 13.49'	11:37	16:40	195	0.91	621	622	11.4
98428	9/20	N4	60° 44.14'	148° 20.74'	60° 43.23'	148° 20.39'	9:35	14:32	170	0.93	244	273	11.4
98429	9/20	M2	60° 46.06'	148° 32.22'	60° 45.51'	148° 33.70'	11:55	17:40	234	0.92	365	366	10.3
98430	9/21	K05	60° 51.92'	148° 16.21'	60° 51.10'	148° 16.23'	9:30	14:17	181	0.88	284	344	10.1
98431	9/21	I06	60° 57.05'	148° 11.39'	60° 56.25'	148° 10.85'	11:41	18:58	161	0.87	359	394	10.7
98432	9/23	Q33	60° 35.38'	145° 56.96'	60° 35.27'	145° 58.87'	12:10	17:35	263	0.93	211	222	11.7
98433	9/24	M22	60° 47.05'	146° 52.06'	60° 46.21'	146° 51.43'	9:38	14:33	160	0.91	339	388	11.6
98434	9/24	M21	60° 45.46'	146° 56.78'	60° 46.26'	146° 56.96'	10:37	16:56	354	0.86	328	384	11.7
98435	9/24	O18	60° 42.04'	147° 11.02'	60° 41.21'	147° 11.96'	11:50	19:42	208	0.95	212	264	11.9
98436	9/25	O13	60° 41.45'	147° 39.33'	60° 40.48'	147° 39.42'	9:47	18:38	182	0.98	716	737	10.2
98437	9/26	O12	60° 42.11'	147° 40.96'	60° 41.19'	147° 41.06'	9:15	15:08	183	0.95	712	742	9.9
98438	9/26	R10	60° 33.04'	147° 54.81'	60° 32.81'	147° 53.12'	10:52	17:33	105	0.90	535	580	9.8

Set numbers 98406, 98407, 98427, and 98429 retrieved in reverse direction from the set direction.

Table 4. Depth stratification, available and fished habitat, and the number of longline skates fished in 1998 in the northwest (A) and eastern (B) areas of Prince William Sound.

Depth Strata	Depth Range (m)	Habitat (nm <sup>2</sup> )		Percent Fished	Skates Fished
		Available	Fished		
<b>A. Northwest Area</b>					
1	0 - 100	18	0	0%	0
2	101 - 200	30	0	0%	0
3	201 - 300	34	4	12%	60
4	301 - 400	36	6	17%	90
5	401 - 500	35	5	14%	75
6	501 - 600	9	4	44%	60
7	601 - 700	7	3	43%	45
8	701 - 800	11	4	36%	60
Total <sup>a/</sup>	201 - 800	132	26	20%	390
<b>B. Eastern Area</b>					
1	0 - 100	51	0	0%	0
2	101 - 200	43	0	0%	0
3	201 - 300	25	6	24%	90
4	301 - 400	23	3	13%	45
5	401 - 500	20	3	15%	45
6	501 - 600	0	0	0%	0
7	601 - 700	0	0	0%	0
8	701 - 800	0	0	0%	0
Total <sup>a/</sup>	201 - 800	68	12	18%	180
<b>Pooled Among Northwest and Eastern Areas</b>					
1	0 - 100	69			
2	101 - 200	73			
3	201 - 300	59	10	17%	150
4	301 - 400	59	9	15%	135
5	401 - 500	55	8	15%	120
6	501 - 600	9	4	44%	60
7	601 - 700	7	3	43%	45
8	701 - 800	11	4	36%	60
Total <sup>a/</sup>	201 - 800	200	38	19%	570

<sup>a/</sup> Depth stratum 1 and 2 were not sampled during the survey and were excluded from totals.

Table 5. Catch and empty hook status by set during the sablefish longline survey in Prince William Sound, 1998.

Set Number	Sablefish	Pacific Cod	Walleye Pollock	Halibut	Arrowtooth Flounder	Rockfish	Shark				Hooks Without Fish			
							Skate	Salmon	Pacific Sleeper	Spiny Dogfish	Other	Baited	Unbaited	Ineffective
98401	88	5	10	9	10	6	25	0	2	289	0	173	51	7
98402	212	3	5	75	2	2	36	0	2	44	0	234	35	25
98403	47	29	2	9	11	2	19	1	2	387	1	105	54	6
98404	141	79	0	38	2	0	16	0	0	140	0	180	72	7
98405	122	0	1	14	1	3	38	0	2	0	0	424	23	47
98406	119	0	4	25	0	5	15	0	6	0	0	415	36	50
98407	99	4	5	36	3	2	10	0	1	9	0	431	24	51
98408	115	8	5	81	5	1	14	0	5	11	0	347	35	48
98409	57	45	10	23	7	0	38	0	1	135	0	307	33	19
98410	77	11	2	68	0	3	31	0	3	24	1	431	9	15
98411	128	0	2	56	7	1	29	0	2	5	0	395	21	29
98412	84	1	1	46	2	1	23	0	4	20	0	451	10	32
98413	6	6	8	15	4	0	2	0	1	5	1	591	11	25
98414	22	3	0	18	10	2	19	0	0	22	3	555	7	14
98415	24	6	18	18	5	0	3	0	0	4	0	537	17	43
98416	102	0	5	16	1	0	8	0	2	2	0	481	30	28
98417	66	1	0	36	1	0	7	0	3	29	0	450	40	42
98418	56	0	1	50	2	1	13	0	1	14	0	482	21	34
98419	97	39	0	26	0	0	16	0	0	45	0	424	21	7
98420	39	33	6	4	1	8	21	0	8	24	0	420	46	65
98421	0	4	10	1	1	24	52	0	12	2	0	481	55	33
98422	81	0	0	6	0	1	13	0	2	0	0	471	26	75
98423	70	4	5	17	1	3	5	0	5	3	0	475	27	60
98424	103	0	4	16	2	1	12	0	1	0	0	500	10	26
98425	29	0	1	6	1	1	9	0	0	0	0	557	32	39

Table 5. (page 2 of 2)

Set Number	Sablefish	Pacific Cod	Walleye Pollock	Halibut	Arrowtooth Flounder	Rockfish	Skate	Shark			Other	Hooks Without Fish		
								Salmon	Pacific Sleeper	Spiny Dogfish		Baited	Unbaited	Ineffective
98426	10	0	0	6	0	5	16	0	0	3	0	618	3	14
98427	96	5	0	12	0	0	5	0	0	0	0	522	11	24
98428	7	19	18	13	2	2	19	0	1	58	0	518	10	8
98429	13	0	0	18	1	0	4	0	8	4	0	550	25	52
98430	2	19	22	5	0	9	1	0	0	13	0	583	4	17
98431	0	1	16	9	0	3	1	0	11	2	0	573	5	54
98432	221	43	13	61	18	0	11	0	0	14	3	257	21	13
98433	42	11	2	33	0	1	13	0	0	154	0	380	10	29
98434	49	43	3	63	2	1	22	0	5	128	0	261	28	70
98435	11	54	7	27	7	1	21	0	1	356	1	157	20	12
98436	113	0	0	7	0	3	12	0	6	0	0	433	43	58
98437	65	0	0	4	1	6	15	0	4	0	0	492	12	76
98438	85	0	1	8	1	3	8	0	2	2	1	486	10	68
Total	2,698	476	187	975	111	101	622	1	103	1,948	11	16,147	948	1,322
% of Hooks	11%	2%	1%	4%	<1%	<1%	2%	<1%	<1%	8%	<1%	63%	4%	5%

Table 6. Depth strata where fish species were captured during the 1998 Prince William Sound longline survey.

Common Name	Scientific Name	Northwest						East			Pooled Areas					
								Depth Strata (m)								
		201-300	301-400	401-500	501-600	601-700	701-800	201-300	301-400	401-500	201-300	301-400	401-500	501-600	601-700	701-800
Sablefish	<i>Anoplopoma fimbria</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pacific Cod	<i>Gadus macrocephalus</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Walleye Pollock	<i>Theragra chalcogramma</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pacific Halibut	<i>Hippoglossus stenolepis</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arrowtooth Flounder	<i>Atheresthes stomias</i>				X	X	X	X	X	X	X	X	X	X	X	X
Flathead Sole	<i>Hippoglossoides elassodon</i>	X	X					X			X	X				
Dover Sole	<i>Microstomus pacificus</i>								X			X				
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>					X	X			X			X		X	X
Rougheye Rockfish	<i>Sebastes aleutianus</i>	X	X	X	X	X		X			X	X	X	X	X	
Shorttraker Rockfish	<i>Sebastes borealis</i>	X	X	X	X		X	X	X	X	X	X	X	X		X
Redbanded Rockfish	<i>Sebastes babcocki</i>		X									X				
Longnose Skate	<i>Raja rhina</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Aleutian Skate	<i>Bathyraja aleutica</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Big Skate	<i>Raja binoculata</i>	X	X					X			X	X				
Salmon Shark	<i>Lamna ditropis</i>							X			X					
Spiny Dogfish	<i>Squalus acanthias</i>	X	X	X	X		X	X	X	X	X	X	X	X		X
Pacific Sleeper Shark	<i>Somniosus pacificus</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lingcod	<i>Ophiodon elongatus</i>							X			X					
Sculpin	Family Cottidae				X			X			X			X		
Giant Wrymouth	<i>Delolepis gigantea</i>															

X - Indicates presence in stratum.

Table 7. Average fish catch per longline skate by depth strata and survey area during the sablefish longline survey in Prince William Sound, 1998.

Depth (m)	Sablefish	Pacific Cod	Walleye Pollock	Pacific Halibut	Arrowtooth Flounder	Rockfish	Skate Species	Pacific Sleeper Shark	Spiny Dogfish	Other Species	All Specie
<b>Fish per Longline Skate</b>											
<b>Northwest Area</b>											
201 - 300	1.62	2.02	0.58	1.35	0.43	0.08	1.62	0.05	9.52	0.07	17.33
301 - 400	1.78	0.44	0.77	1.62	0.17	0.14	0.28	0.28	0.43	0.01	5.92
401 - 500	4.44	0.07	0.15	1.92	0.09	0.11	0.72	0.09	0.76	0.00	8.35
501 - 600	6.60	0.07	0.18	1.07	0.05	0.23	1.10	0.25	0.08	0.02	9.65
601 - 700	5.07	0.11	0.11	0.76	0.07	0.04	0.58	0.02	0.00	0.00	6.76
701 - 800	4.32	0.07	0.17	0.30	0.03	0.57	1.53	0.40	0.03	0.00	7.42
Average	3.16	0.67	0.43	1.44	0.19	0.15	0.92	0.16	2.78	0.02	9.93
<b>East Area</b>											
201 - 300	7.03	2.53	0.34	1.63	0.47	0.18	1.20	0.13	9.99	0.06	23.57
301 - 400	3.73	1.44	0.16	3.64	0.04	0.11	1.47	0.18	6.80	0.02	17.60
401 - 500	9.42	0.09	0.18	3.93	0.24	0.09	1.96	0.18	1.53	0.00	17.62
Average	6.62	1.45	0.23	2.99	0.26	0.13	1.51	0.16	6.42	0.03	19.80
<b>Pooled Areas</b>											
201 - 300	3.91	2.24	0.48	1.47	0.45	0.12	1.44	0.09	9.72	0.06	10.02
301 - 400	2.54	0.83	0.53	2.41	0.12	0.13	0.74	0.24	2.92	0.02	6.87
401 - 500	6.25	0.07	0.16	2.65	0.15	0.10	1.17	0.12	1.04	0.00	6.41
501 - 600	6.60	0.07	0.18	1.07	0.05	0.23	1.10	0.25	0.08	0.02	9.65
601 - 700	5.07	0.11	0.11	0.76	0.07	0.04	0.58	0.02	0.00	0.00	6.76
701 - 800	4.32	0.07	0.17	0.30	0.03	0.57	1.53	0.40	0.03	0.00	7.42
Average	4.33	0.94	0.36	1.97	0.21	0.15	1.12	0.16	4.02	0.02	7.82

Table 8. Relative population number (RPN) for fish caught during the sablefish longline in Prince William Sound, 1998.

Depth (m)	Habitat (nm <sup>2</sup> )	RPN									
		Sablefish	Pacific Cod	Walleye Pollock	Pacific Halibut	Arrowtooth flounder	Rockfish	Skates	Spiny Dogfish	Sleeper Shark	Other Species
<b>Northwest</b>											
201 - 300	34	344	429	124	287	92	18	344	2,022	11	14
301 - 400	36	400	100	173	365	38	33	63	98	63	3
401 - 500	35	971	15	32	420	20	23	158	166	20	0
501 - 600	9	371	4	10	60	3	13	62	5	14	1
601 - 700	7	222	5	5	33	3	2	25	0	1	0
701 - 800	11	297	5	11	21	2	39	105	2	28	0
Total	132	2,604	556	355	1,186	158	128	756	2,293	136	18
Percent		32%	7%	4%	14%	2%	2%	9%	28%	2%	<1%
<b>East</b>											
301 - 400	25	1,099	396	54	255	73	28	188	1,561	21	9
401 - 500	23	537	208	22	524	6	16	211	978	26	3
501 - 600	20	1,178	11	22	492	31	11	244	192	22	0
Total	68	2,813	615	98	1271	110	55	643	2,730	69	12
Percent		33%	7%	1%	15%	1%	1%	8%	32%	1%	<1%
<b>Pooled Areas</b>											
201 - 300	59	1,443	824	178	542	165	45	531	3,583	31	23
301 - 400	59	937	308	195	889	44	48	273	1,075	88	6
401 - 500	55	2,149	26	54	912	51	34	402	358	43	0
501 - 600	9	371	4	10	60	3	13	62	5	14	1
601 - 700	7	222	5	5	33	3	2	25	0	1	0
701 - 800	11	297	5	11	21	2	39	105	2	28	0
Total	200	5,418	1,171	454	2,456	268	182	1,399	5,023	205	29
Percent		33%	7%	3%	15%	2%	1%	8%	30%	1%	<1%

Table 9. Mean fish length within and among strata after weighting by relative population number.

Depth (m)	<b>Mean Fish Length (mm)</b>						
	Sablefish	Pacific Cod	Walleye Pollock	Arrowtooth flounder	Flathead Sole	Dover Sole	Thornyhead Rockfish
<b><u>Northwest</u></b>							
201 – 300	537.8	723.4	633.9	636.2	408.3		
301 – 400	536.3	739.2	594.4	631.8	419.0		
401 – 500	589.1	683.0	591.3	675.4			
501 – 600	634.6		591.3	683.8			
601 – 700	592.8		605.4	588.7			573.0
701 – 800	642.3			727.0			625.0
Weighted Mean	587.1	725.2	608.4	641.5	409.9		613.5
<b><u>East</u></b>							
201 – 300	526.2	649.2	581.0	635.6	397.0		
301 – 400	593.0	716.1	624.2	525.5		521.0	
401 – 500	614.2	727.2	601.0	672.0			402.0
Weighted Mean	575.7	673.2	595.3	639.3	397.0	521.0	402.0
<b><u>Pooled Areas</u></b>							
201 – 300	528.9	687.7	617.9	635.9	407.0		
301 – 400	568.8	723.6	597.8	616.4	419.0	521.0	
401 – 500	602.8	702.1	595.2	673.4			
501 – 600	634.6		591.3	683.8			402.0
601 – 700	592.8		605.4	588.7			573.0
701 – 800	642.3			727.0			625.0
Weighted Mean	581.2	697.6	605.5	640.6	408.6	521.0	570.0
<b><u>Fish Length (mm)</u></b>							
Minimum	311	167	435	331	369	521	402
Maximum	930	946	762	868	450	521	642

Table 9. (page 2 of 3)

Depth (m)	<b>Mean Fish Length (mm)</b>						
	Rougeye Rockfish	Shorthead Rockfish	Redbanded Rockfish	Redstripe Rockfish	Salmon Shark	Spiny Dogfish	Pacific Sleeper Shark
<b><u>Northwest</u></b>							
201 – 300	448.7	817.0				685.5	1,752.6
301 – 400	594.2	696.4	508.0			724.1	1,680.6
401 – 500	523.5	620.1		497.0		753.2	1,802.4
501 – 600	670.0	647.4				741.8	1,846.4
601 – 700	667.0						1,270.0
701 – 800		718.1					1,707.2
<b>Weighted Mean</b>	525.3	688.4	508.0	497.0		692.1	1,724.1
<b><u>East</u></b>							
201 – 300	430.0				2,133.0	694.9	1,664.4
301 – 400		799.3				700.1	1,716.6
401 – 500		846.3				753.4	1,596.6
<b>Weighted Mean</b>	430.0	816.0			2,133.0	700.9	1,661.9
<b><u>Pooled Areas</u></b>							
201 – 300	439.4	817.0				689.6	1,694.2
301 – 400	594.2	747.7	508.0			702.2	1,691.1
401 – 500	523.5	700.2		497.0		753.3	1,695.1
501 – 600	670.0	647.4				741.8	1,846.4
601 – 700	667.0						1,270.0
701 – 800		718.1					1,707.2
<b>Weighted Mean</b>	497.0	719.0	508.0	497.0	2,133.0	696.9	1,703.2
<b><u>Fish Length (mm)</u></b>							
Minimum	356	190	465	497	2,133	200	1067
Maximum	767	936	551	497	2,133	950	2591

Table 9. (page 3 of 3)

Depth (m)	Mean Fish Length (mm)					
	Aleutian Skate	Big Skate	Longnose Skate	Sand Skate	Lingcod	Giant Wrymouth
<b><u>Northwest</u></b>						
201 – 300	506.4	663.4	789.0	939.3		
301 – 400	518.2	679.5	808.8	510.0		
401 – 500	507.4		798.7			
501 – 600	515.2		848.3			
601 – 700	533.0		810.0			
701 – 800	507.6		790.0			
Weighted Mean	509.8	669.2	793.7	857.6		
<b><u>East</u></b>						
201 – 300	512.1	950.1	815.5		1,080.0	1,260.0
301 – 400	522.7		787.1			
401 – 500	487.3		804.4			
Weighted Mean	504.9	950.1	797.4		1,080.0	1,260.0
<b><u>Pooled Areas</u></b>						
201 – 300	508.3	789.4	793.3	939.3	1,080.0	1,260.0
301 – 400	521.8	679.5	790.1	510.0		
401 – 500	495.9		803.4			
501 – 600	515.2		848.3			
601 – 700	533.0		810.0			
701 – 800	507.6		790.0			
Weighted Mean	507.5	763.0	795.6	857.6	1,080.0	1,260.0
<b><u>Fish Length (mm)</u></b>						
Minimum	287	528	404	908	1,080	1,260
Maximum	951	1430	942	980	1,080	1,260

Table 10. Standardized catch rates during the Prince William Sound longline survey, 1996-1998.

<b>Catch Abundance per Longline Skate</b>											
Year	Sablefish	Pacific Cod	Walleye Pollock	Pacific Halibut	Arrowtooth Flounder	Rockfish	Skates	Sleeper Shark	Spiny Dogfish	Total Sharks	Other Species
<b><u>Northwest Area</u></b>											
1996	3.55	0.51	0.28	1.80	0.15	0.24	0.97			0.14	0.02
1997	4.18	0.25	0.31	1.66	0.07	0.22	0.60			0.14	0.02
1998	3.16	0.67	0.43	1.44	0.19	0.15	0.92	0.16	2.78	2.94	0.02
<b><u>Southwest Area</u></b>											
1997	1.45	0.88	0.21	2.13	0.39	0.12	0.76			0.51	0.12
<b><u>Eastern Area</u></b>											
1998	6.62	1.45	0.23	2.99	0.26	0.13	1.51	0.16	6.42	6.58	0.03
<b><u>Pooled Areas</u></b>											
1996	3.55	0.51	0.28	1.80	0.15	0.24	0.97			0.14	0.02
1997	3.06	0.51	0.27	1.85	0.2	0.18	0.66			0.29	0.06
1998	4.33	0.94	0.36	1.97	0.21	0.15	1.12	0.09	2.26		1.84

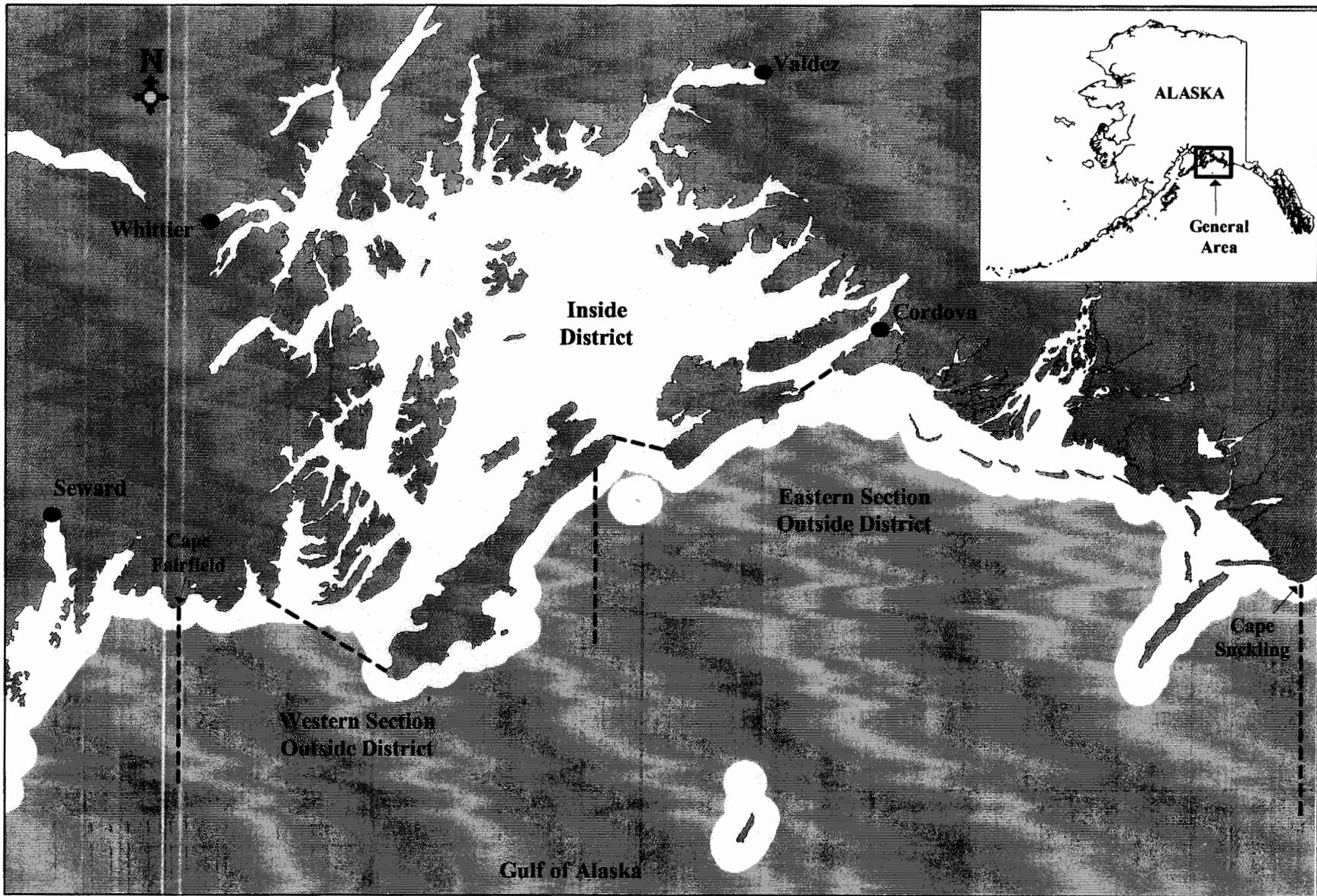


Figure 1. Districts of the Prince William Sound Management Area, 1998.

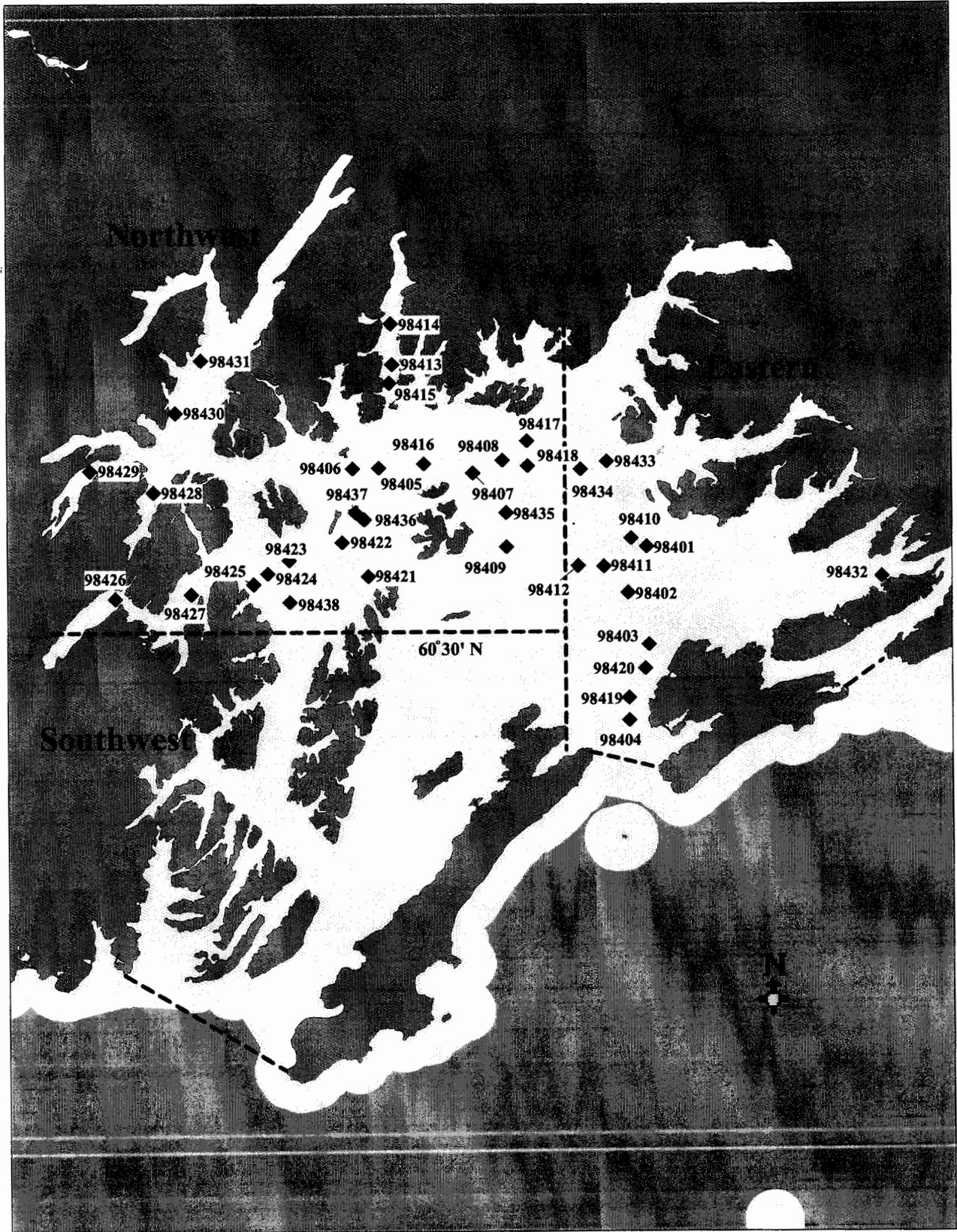


Figure 2. Locations of sets in a longline survey of Prince William Sound, Alaska, 1998.

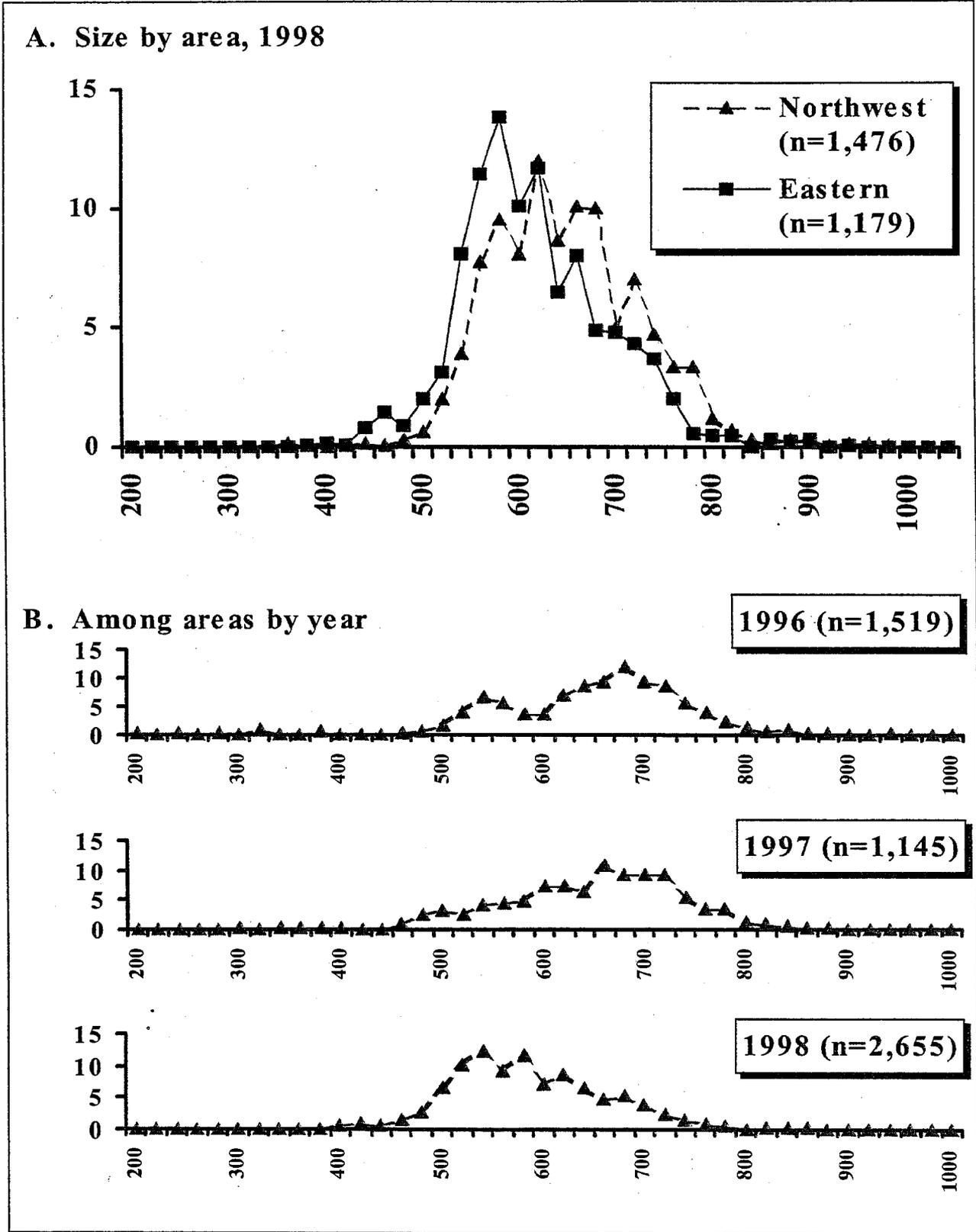


Figure 3. Sablefish length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

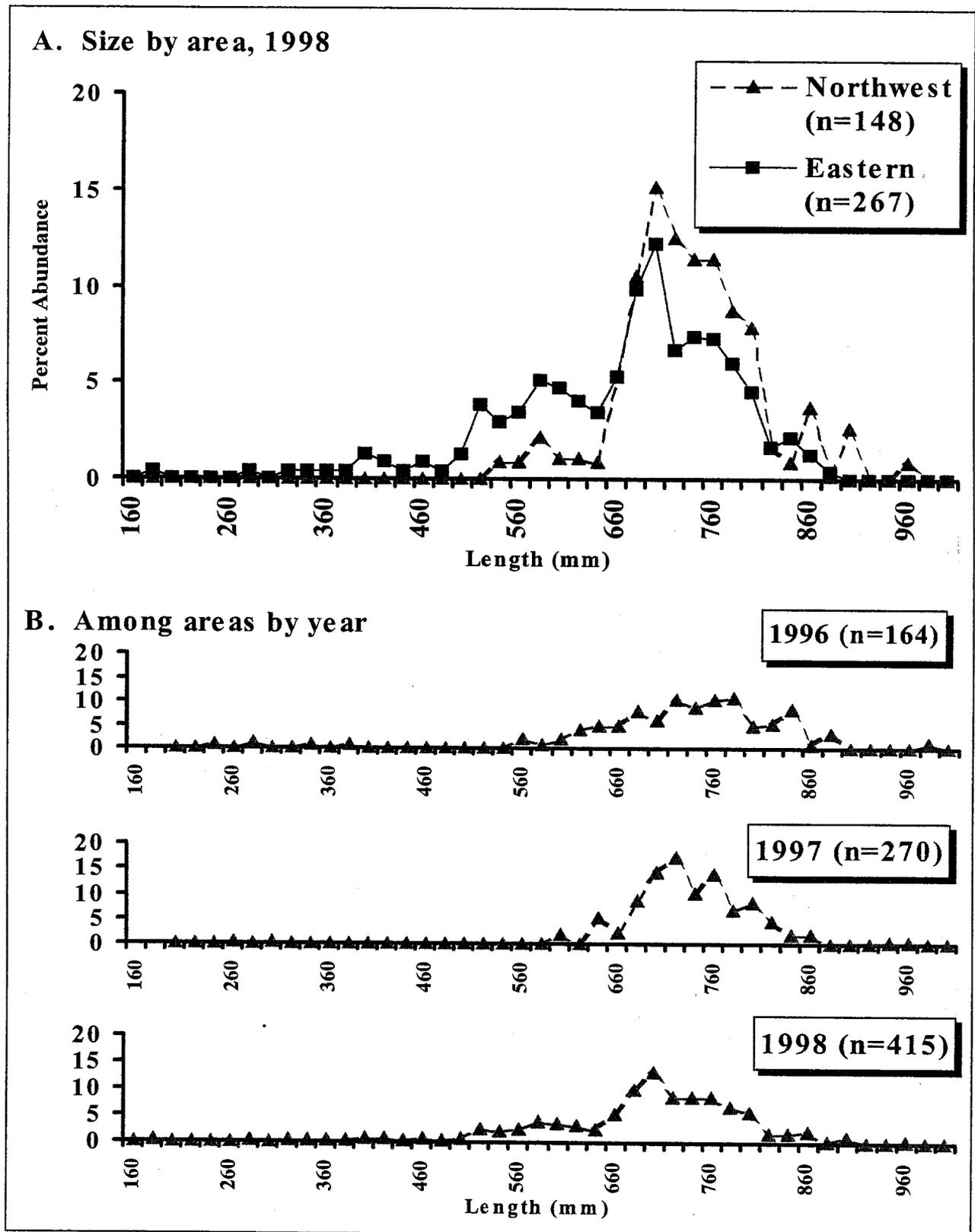


Figure 4. Pacific cod length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

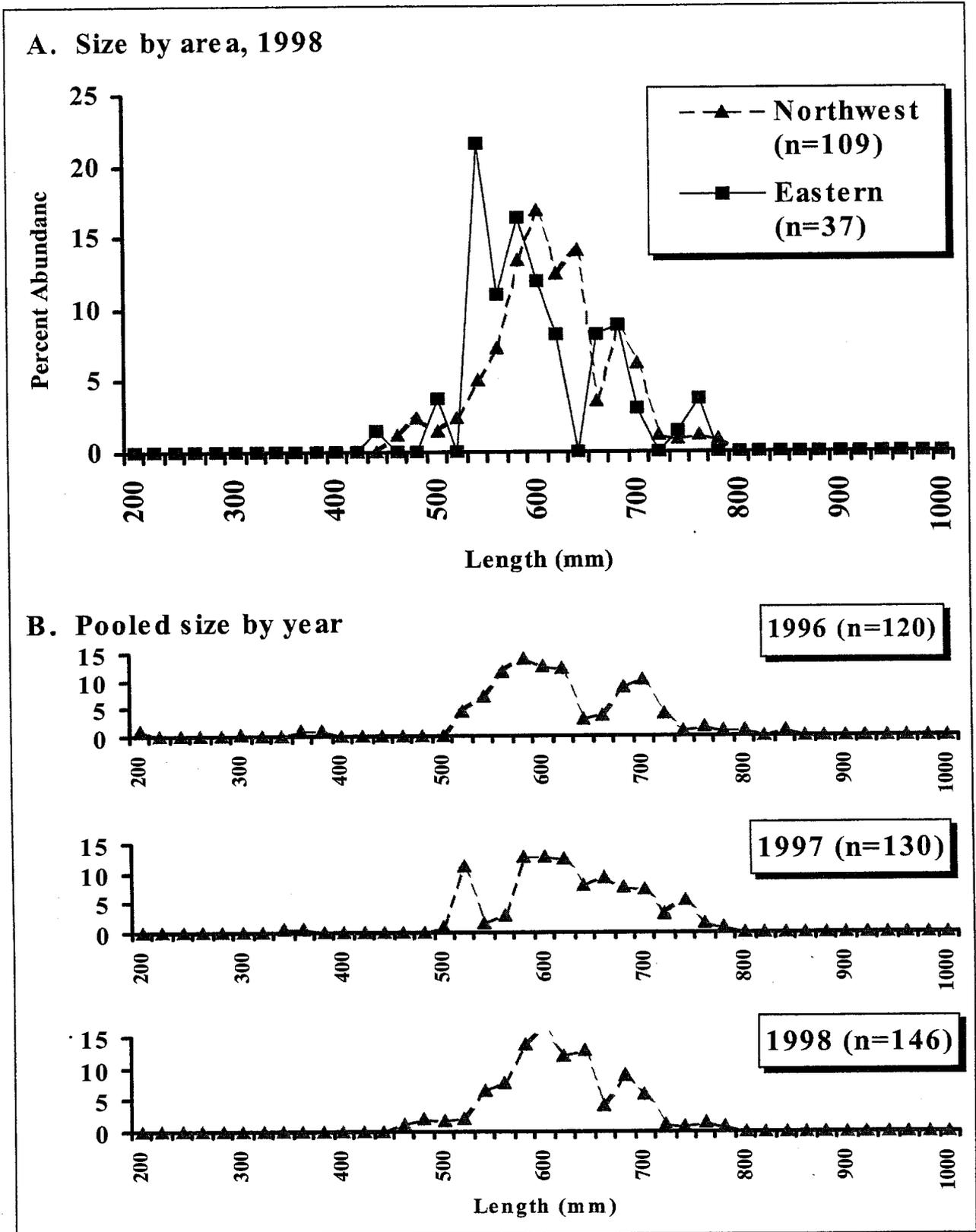


Figure 5. Walleye pollock length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

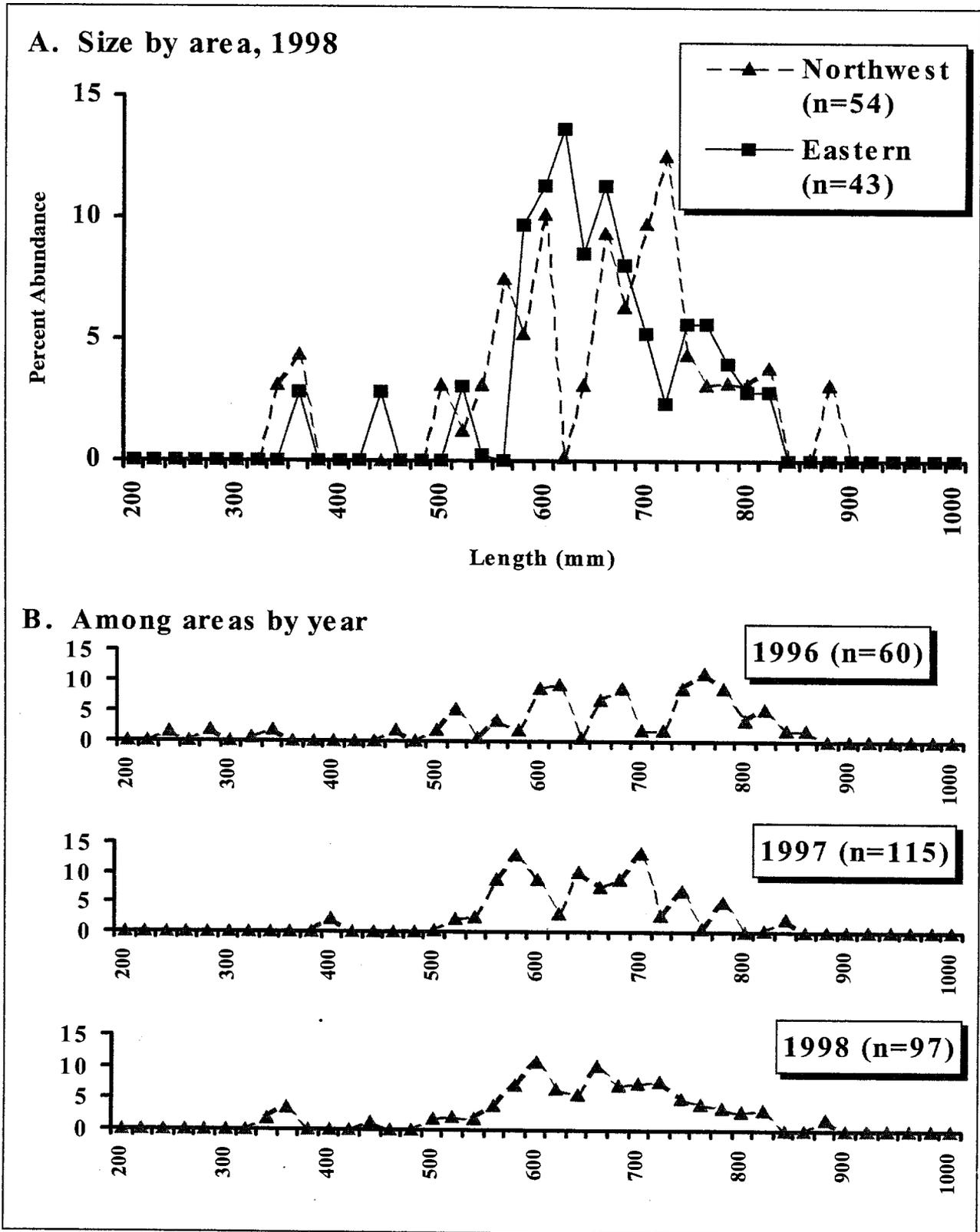


Figure 6. Arrowtooth flounder length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

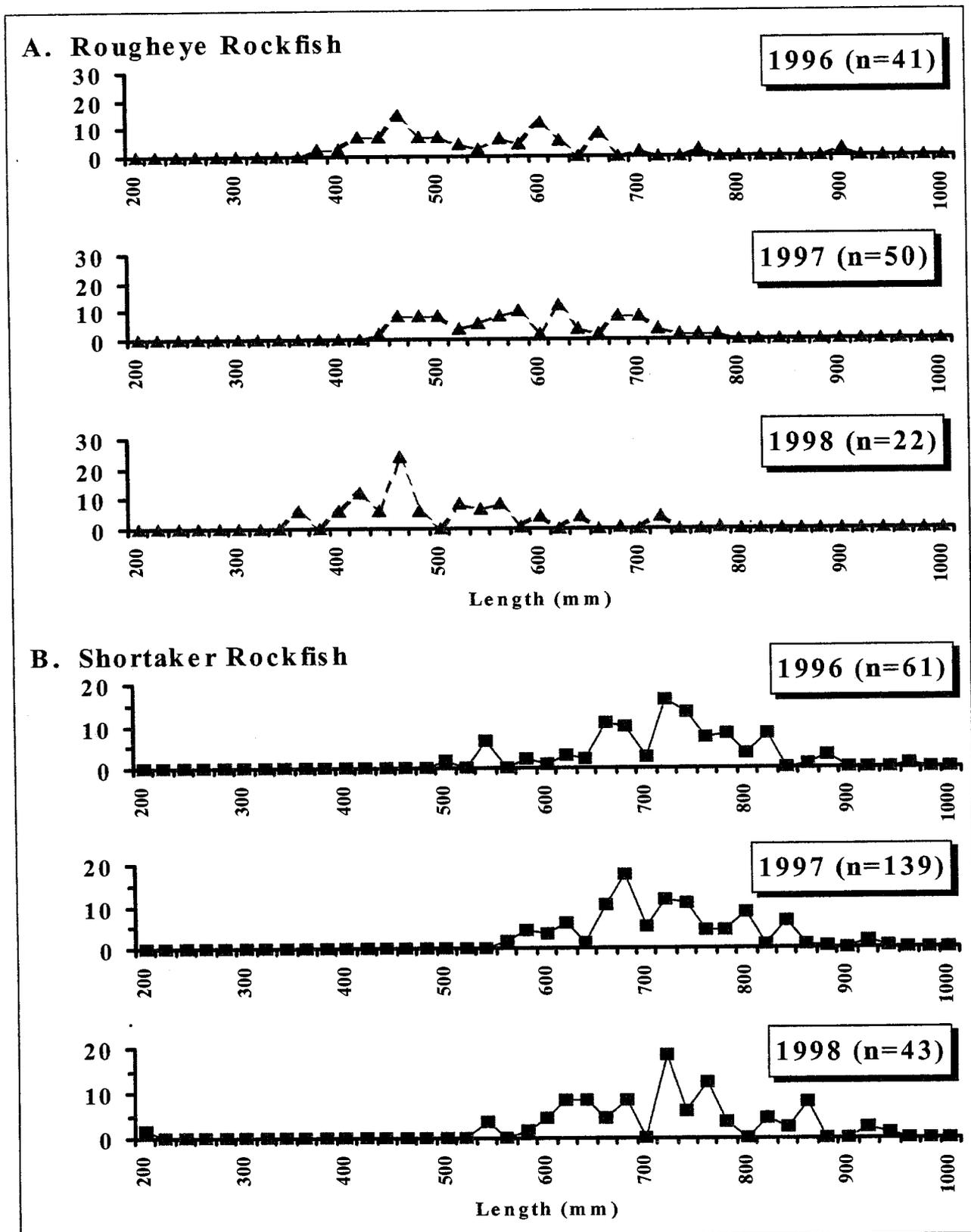


Figure 7. Length distributions of (A) rougheye rockfish and (B) shorttraker rockfish, 1996-1998.

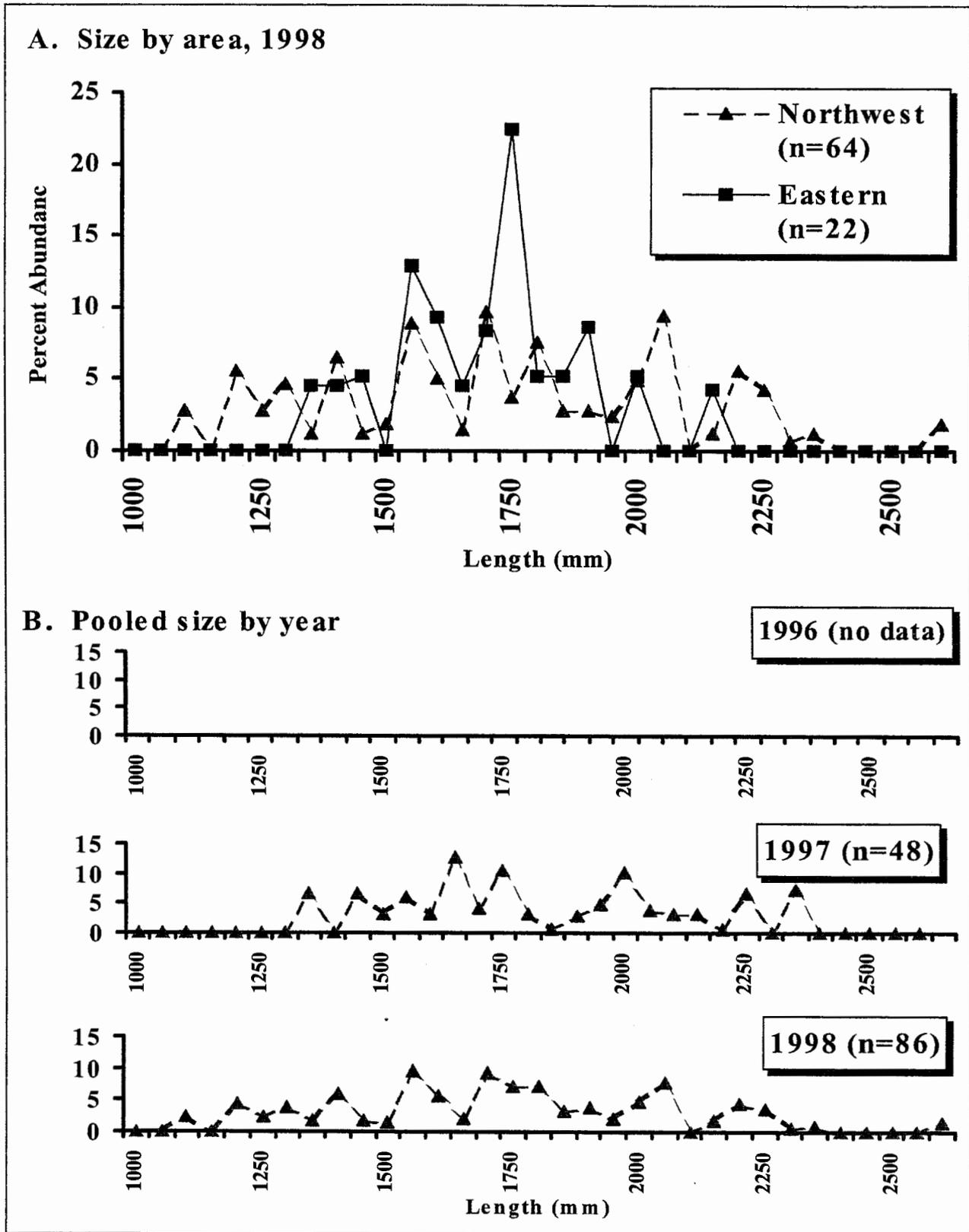


Figure 8. Pacific sleeper shark precaudal length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1997-1998.

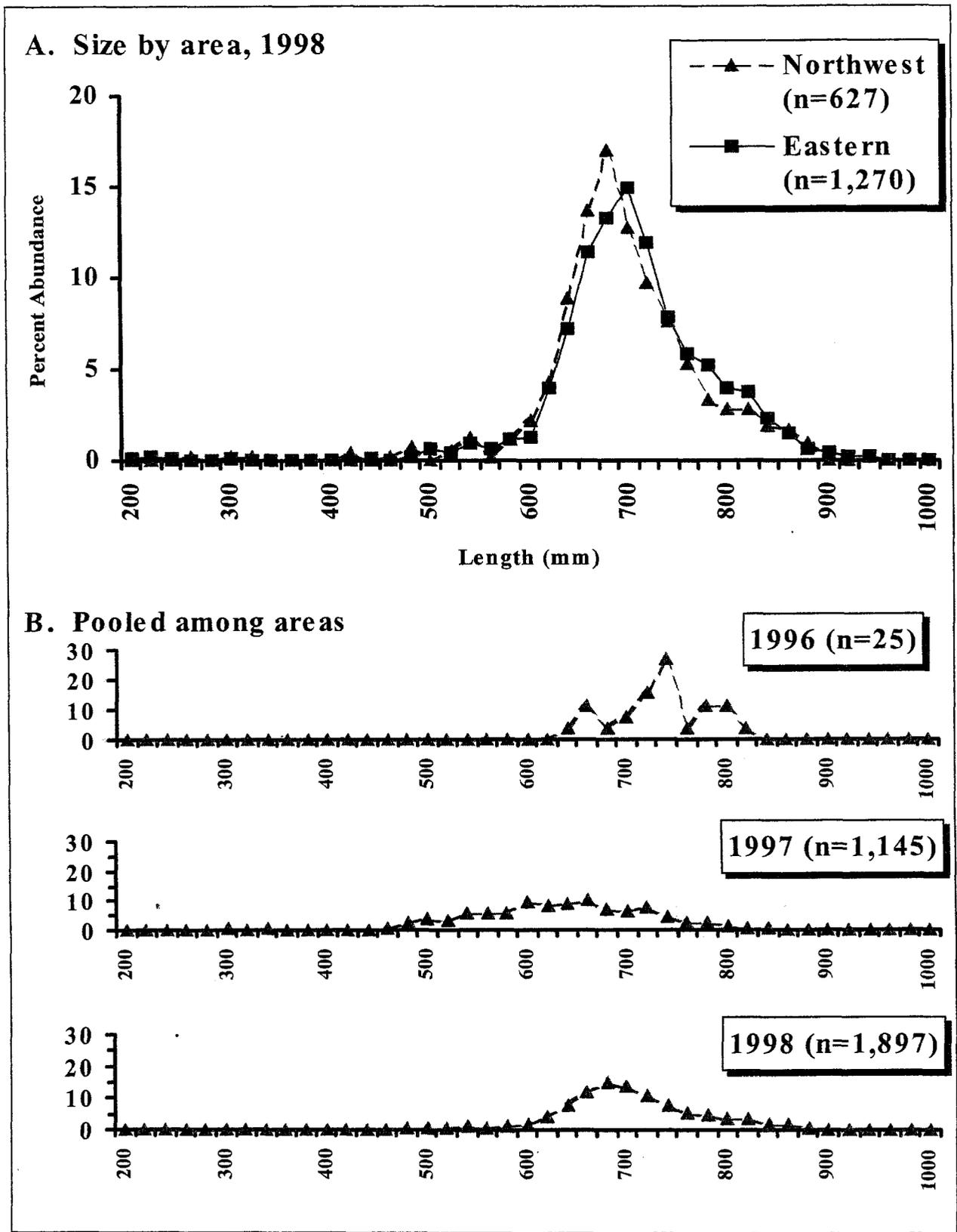


Figure 9. Spiny dogfish precaudal length distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

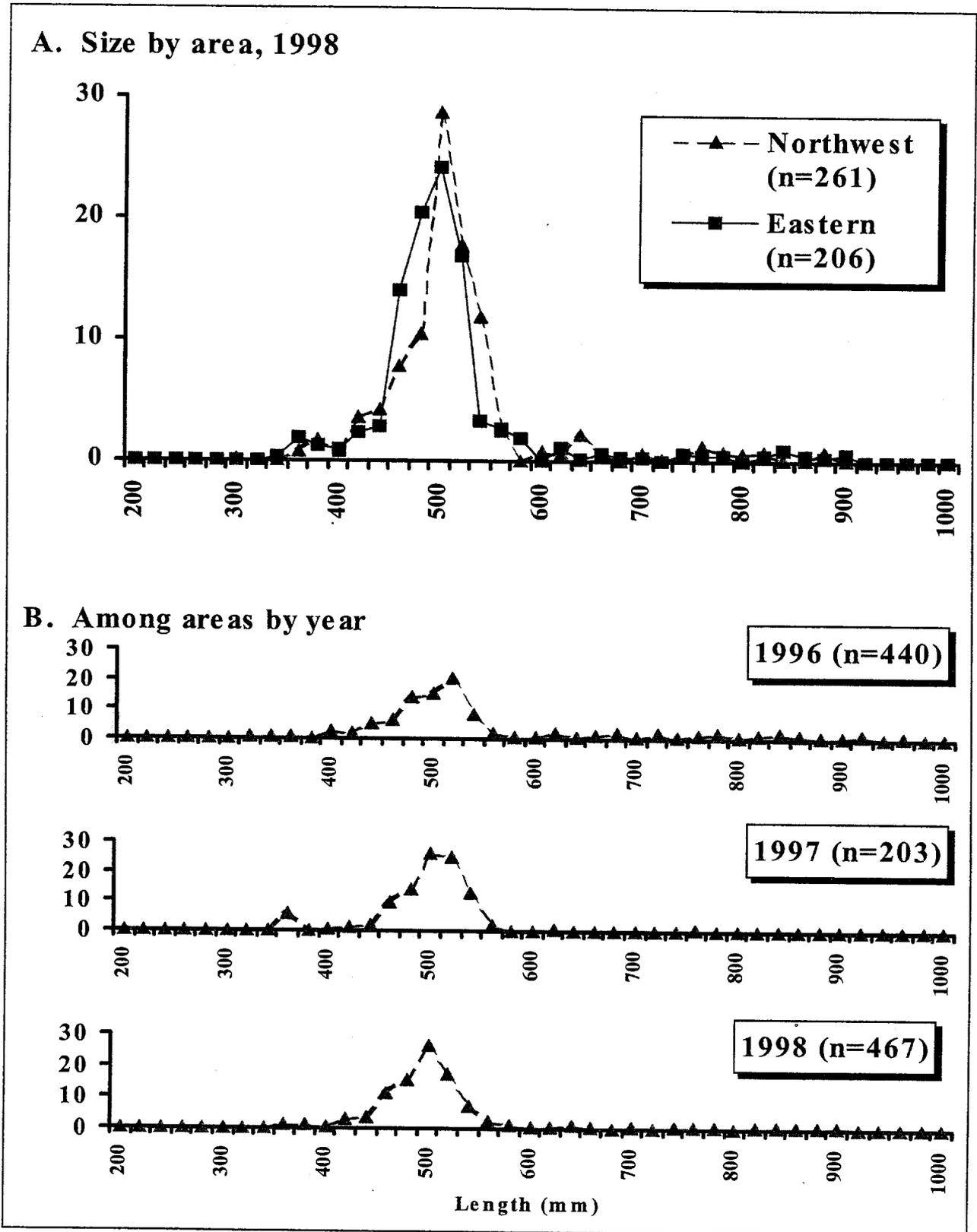


Figure 10. Aleutian skate disk width distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1996-1998.

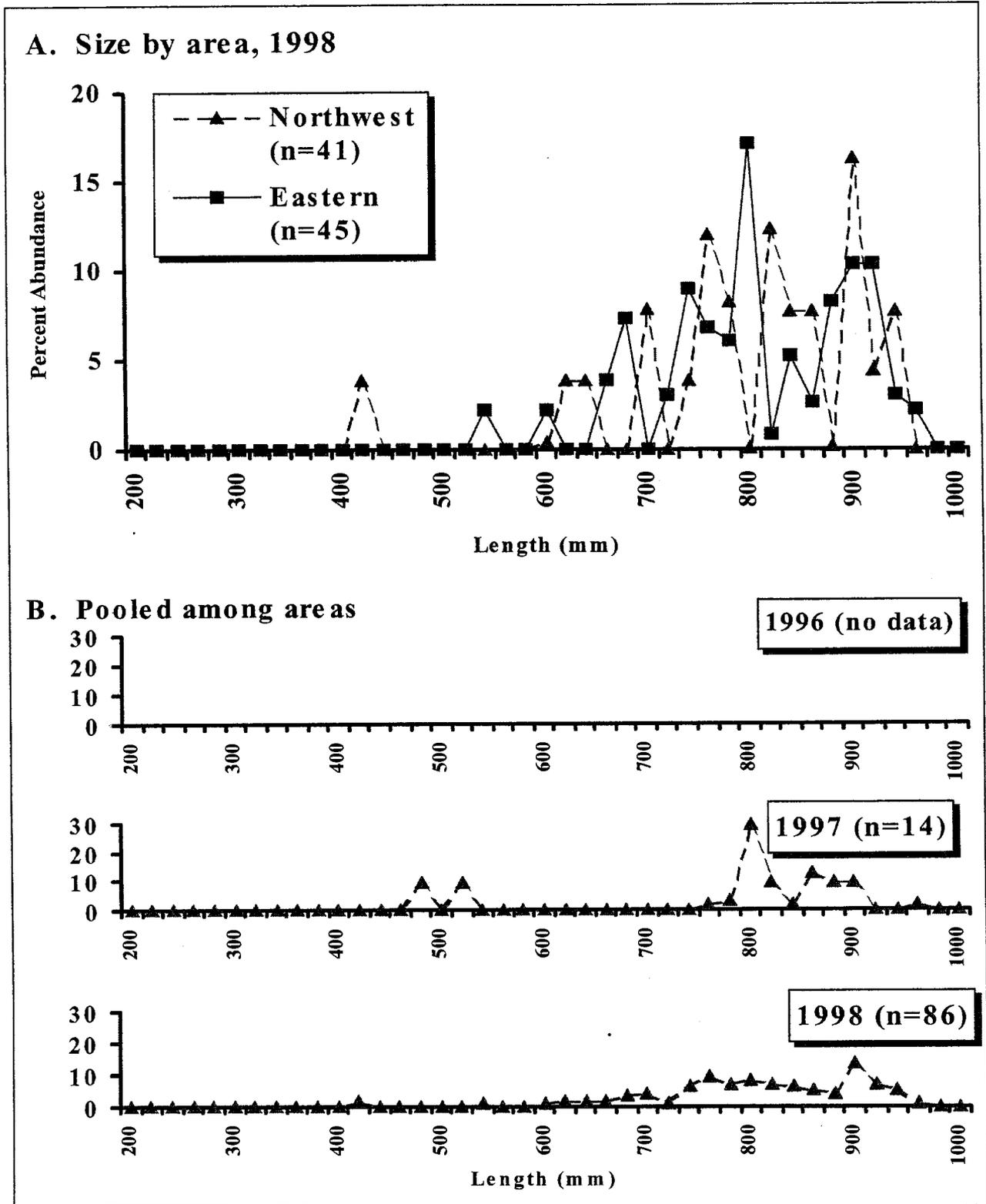


Figure 11. Longnose skate disk width distribution (A) in the northwest and eastern areas, 1998, and (B) pooled among areas, 1997-1998.

Appendix A. Fish catch and the status of hooks without fish for individual longline skates during a sablefish longline survey in Prince William Sound, 1998.

Set Number	Longline Skate	Sablefish	Pacific		Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock	Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98401	1	8	2	0	2	0	0	3	23	0	3	0	4	
98401	2	10	0	0	0	0	0	1	23	0	5	0	6	
98401	3	6	0	0	1	1	1	2	19	0	7	0	8	
98401	4	7	0	0	0	1	0	2	20	0	8	0	7	
98401	5	5	0	1	0	1	1	1	14	0	16	0	6	
98401	6	6	0	1	0	0	1	2	21	0	8	2	4	
98401	7	1	1	0	0	0	0	0	29	0	13	0	1	
98401	8	3	0	1	0	0	1	2	23	0	13	0	2	
98401	9	7	0	1	1	2	0	2	23	0	7	0	2	
98401	10	4	1	1	2	1	0	3	15	0	14	0	4	
98401	11	6	0	0	0	2	0	4	23	0	5	2	3	
98401	12	7	1	2	1	0	1	2	17	0	14	0	0	
98401	13	8	0	1	1	1	1	1	16	0	13	0	3	
98401	14	6	0	1	1	1	0	0	18	0	18	0	0	0 Skate snarled some during set.
98401	15	4	0	1	0	0	0	0	7	0	29	3	1	1 Skate snarled some during set.
98402	1	12	0	0	10	0	0	2	3	0	13	0	5	
98402	2	12	0	1	12	0	0	0	2	0	12	0	6	
98402	3	15	0	0	7	1	0	4	2	0	11	0	5	
98402	4	18	0	0	4	0	0	3	6	0	11	0	3	
98402	5	15	1	0	3	0	0	3	4	0	18	0	1	
98402	6	15	0	0	3	0	0	2	4	0	20	1	0	
98402	7	18	0	0	1	0	0	3	3	0	15	0	5	
98402	8	24	0	0	0	0	1	3	7	0	5	0	5	
98402	9	11	1	0	7	0	0	0	0	0	25	0	1	
98402	10	14	0	2	1	0	0	4	5	0	18	0	1	
98402	11	12	0	1	8	1	0	2	2	0	19	0	0	
98402	12	12	0	0	7	0	1	1	3	0	21	0	0	
98402	13	12	1	1	6	0	0	3	1	0	16	4	1	
98402	14	12	0	0	3	0	0	2	2	0	22	2	2	
98402	15	10	0	0	3	0	0	4	2	0	8	18	0	
98403	1	8	1	0	0	0	0	2	21	0	7	0	6	6 Shearwater swimming ~ 20 m off stern.

Appendix A. (p. 2 of 18)

Set Number	Longline		Pacific		Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective	
98403	2	3	0	0	1	1	0	1	20	0	14	0	5	
98403	3	7	1	1	1	0	0	2	20	1	12	0	0	
98403	4	5	4	0	0	0	0	1	24	0	10	0	1	
98403	5	1	1	0	1	0	0	2	32	0	5	0	3	
98403	6	1	2	0	0	0	0	1	30	0	4	4	3	
98403	7	7	2	0	0	2	0	3	22	0	3	0	6	
98403	8	2	1	0	0	0	0	0	33	0	1	0	8	
98403	9	1	1	0	0	0	0	0	32	0	9	0	2	
98403	10	0	2	0	1	1	2	0	25	0	10	0	4	
98403	11	3	4	0	2	2	0	1	27	0	3	2	1	
98403	12	2	3	0	0	3	0	0	29	0	5	0	3	
98403	13	1	4	0	1	1	0	2	23	0	12	0	1	
98403	14	3	2	1	1	1	0	1	26	0	6	0	4	
98403	15	3	1	0	1	0	0	3	26	0	4	0	7	
98404	1	10	8	0	5	0	0	0	5	0	14	2	1	
98404	2	11	6	0	2	0	0	1	7	0	12	3	3	
98404	3	4	5	0	6	0	0	3	7	0	19	0	1	
98404	4	8	5	0	1	0	0	0	8	0	22	0	1	
98404	5	11	4	0	3	0	0	1	9	0	15	0	2	
98404	6	12	6	0	2	0	0	1	6	0	15	0	3	
98404	7	14	6	0	1	0	0	0	7	0	7	0	10	
98404	8	8	4	0	3	1	0	1	11	0	6	0	11	
98404	9	5	3	0	5	0	0	0	13	0	14	0	5	
98404	10	7	3	0	2	1	0	1	14	0	13	0	4	
98404	11	10	2	0	0	0	0	2	15	0	14	0	2	
98404	12	9	8	0	2	0	0	0	8	0	17	0	1	
98404	13	8	5	0	1	0	0	3	10	0	2	1	15	
98404	14	13	6	0	2	0	0	3	7	0	5	0	9	
98404	15	11	8	0	3	0	0	0	13	0	5	1	4	
98405	1	3	0	0	0	0	1	0	1	0	21	18	1	
98405	2	10	0	0	2	0	0	2	0	0	28	2	1	
98405	3	4	0	0	1	0	0	1	0	0	32	3	4	

Appendix A. (p. 3 of 18)

Set Number	Longline		Pacific			Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective		
98405	4	6	0	0	0	0	0	2	0	0	34	2	1		
98405	5	4	0	1	1	0	0	2	0	0	37	0	0		
98405	6	8	0	0	1	0	0	5	0	0	30	1	0		
98405	7	6	0	0	1	0	0	2	0	0	28	6	2		
98405	8	7	0	0	1	0	0	5	0	0	32	0	0		
98405	9	10	0	0	2	0	0	4	0	0	27	0	2		
98405	10	11	0	0	0	0	0	2	0	0	31	0	1		
98405	11	8	0	0	1	0	1	0	0	0	22	9	4		
98405	12	5	0	0	1	0	0	1	0	0	35	2	1		
98405	13	8	0	0	1	0	0	4	0	0	26	4	2		
98405	14	18	0	0	1	1	1	0	0	0	23	0	1		
98405	15	14	0	0	1	0	0	8	1	0	18	0	3		
98406	1	6	0	0	4	0	0	3	0	0	27	5	0		
98406	2	6	0	0	0	0	1	4	2	0	25	7	0	Pulled set in reverse.	
98406	3	5	0	0	3	0	0	1	0	0	35	0	1		
98406	4	2	0	0	2	0	0	1	1	0	38	1	0		
98406	5	6	0	0	3	0	2	3	0	0	30	1	0		
98406	6	6	0	0	2	0	1	0	1	0	29	1	5		
98406	7	11	0	3	3	0	0	0	0	0	27	0	1		
98406	8	16	0	0	1	0	0	1	0	0	22	0	5		
98406	9	10	0	0	1	0	0	0	0	0	34	0	0		
98406	10	5	0	0	1	0	0	0	0	0	32	4	3		
98406	11	12	0	1	1	0	0	1	0	0	19	0	11		
98406	12	8	0	0	3	0	1	1	1	0	28	0	3		
98406	13	13	0	0	0	0	0	0	1	0	26	5	0		
98406	14	7	0	0	1	0	0	0	0	0	31	5	1		
98406	15	6	0	0	0	0	0	0	0	0	12	21	6	Lost lead ball closest to anchor.	
98407	1	9	0	0	3	0	1	0	2	0	21	9	0	Pulled set in reverse.	
98407	2	5	0	1	1	0	0	1	1	0	26	9	1		
98407	3	3	0	0	3	0	0	1	0	0	37	1	0		
98407	4	8	0	0	3	0	0	0	0	0	33	1	0		
98407	5	10	0	1	5	0	0	2	0	0	22	2	3		

Appendix A. (p. 4 of 18)

Set Number	Longline		Pacific Cod	Pollock	Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
	Skate	Sablefish			Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98407	6	4	1	1	3	1	0	1	0	0	28	1	5	
98407	7	7	0	0	0	0	0	0	0	0	33	3	2	
98407	8	10	1	0	1	1	0	1	1	0	29	1	0	
98407	9	9	0	1	4	1	0	0	0	0	26	2	2	
98407	10	7	0	0	0	0	0	2	1	0	21	5	9	
98407	11	3	1	0	5	0	0	1	0	0	33	2	0	
98407	12	5	0	1	1	0	0	0	0	0	38	0	0	
98407	13	8	0	0	1	0	0	0	1	0	33	1	1	
98407	14	8	1	0	2	0	0	1	2	0	26	4	1	
98407	15	3	0	0	4	0	1	0	2	0	25	10	0	
98408	1	2	2	0	12	1	0	0	2	0	22	2	2	Kittiwake swimming off stem.
98408	2	6	1	0	3	2	0	3	1	0	24	5	0	
98408	3	11	1	0	4	1	0	1	1	0	18	4	4	
98408	4	11	0	0	4	0	0	2	1	0	20	0	7	
98408	5	16	1	1	1	0	0	0	0	0	23	1	2	
98408	6	5	0	0	2	1	0	1	1	0	24	9	2	
98408	7	6	0	0	5	0	0	2	1	0	27	3	1	
98408	8	8	0	0	2	0	0	0	2	0	19	11	3	
98408	9	8	0	1	7	0	0	0	1	0	22	5	1	
98408	10	13	0	0	14	0	0	1	1	0	14	0	2	
98408	11	3	0	2	9	0	1	1	0	0	25	0	4	
98408	12	5	0	0	5	0	0	0	2	0	32	0	1	
98408	13	10	1	0	3	0	0	1	0	0	30	0	0	
98408	14	6	0	1	6	0	0	1	1	0	21	8	1	
98408	15	5	2	0	4	0	0	1	2	0	26	0	5	
98409	1	7	2	1	3	0	0	4	10	0	16	0	2	
98409	2	6	2	0	0	0	0	3	6	0	22	0	6	
98409	3	1	0	0	2	0	0	2	17	0	22	0	1	
98409	4	6	0	0	3	0	0	2	11	0	23	0	0	
98409	5	5	7	2	1	0	0	1	9	0	13	4	3	
98409	6	4	1	1	0	0	0	4	6	0	23	1	5	
98409	7	3	4	1	0	0	0	4	9	0	23	1	0	

Appendix A. (p. 5 of 18)

Set Number	Longline Skate	Sablefish	Pacific		Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock	Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98409	8	2	5	0	2	0	0	2	9	0	21	4	0	
98409	9	8	2	0	1	0	0	3	9	0	16	0	6	
98409	10	4	6	0	2	3	0	5	10	0	15	0	0	
98409	11	0	4	1	4	0	0	1	7	0	23	3	2	
98409	12	4	5	2	2	0	0	0	5	0	27	0	0	
98409	13	0	0	0	0	0	0	1	0	0	44	0	0	
98409	14	6	3	2	1	3	0	4	11	0	6	2	7	
98409	15	1	4	0	2	1	0	2	17	0	13	4	1	
98410	1	5	3	0	6	0	0	2	3	0	24	1	1	
98410	2	5	2	0	3	0	0	2	3	0	30	0	0	
98410	3	4	1	0	11	0	0	1	1	0	21	5	1	
98410	4	5	0	0	3	0	0	1	1	0	34	0	1	
98410	5	5	0	1	3	0	1	3	1	0	30	1	0	
98410	6	7	0	0	3	0	0	3	0	0	31	0	1	
98410	7	5	1	1	2	0	0	2	1	0	33	0	0	
98410	8	6	0	0	2	0	0	0	2	1	33	1	0	
98410	9	8	1	0	2	0	0	1	1	0	31	0	1	
98410	10	3	2	0	3	0	0	2	1	0	29	3	2	
98410	11	6	1	0	8	0	0	1	1	0	26	0	2	
98410	12	3	0	0	9	0	1	1	1	0	30	0	0	
98410	13	4	0	0	2	0	0	4	4	0	31	0	0	
98410	14	7	0	0	3	0	1	3	6	0	25	0	0	
98410	15	4	0	0	8	0	0	5	1	0	23	4	0	
98411	1	13	0	0	4	0	0	1	0	0	23	3	1	
98411	2	9	0	0	1	1	0	0	0	0	27	6	1	
98411	3	2	0	0	3	0	0	2	0	0	37	1	0	
98411	4	7	0	0	3	0	0	3	1	0	24	7	0	
98411	5	16	0	1	2	0	0	1	0	0	25	0	0	
98411	6	11	0	0	2	0	1	2	1	0	22	6	0	
98411	7	10	0	0	6	0	0	3	0	0	25	0	1	
98411	8	3	0	0	8	1	0	2	0	0	30	0	1	
98411	9	10	0	0	3	0	0	0	0	0	28	4	0	

Appendix A. (p. 6 of 18)

Set Number	Longline		Pacific			Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective		
98411	10	3	0	1	5	0	0	2	1	0	33	0	0		
98411	11	3	0	0	3	1	0	2	0	0	26	2	8		
98411	12	7	0	0	2	1	0	3	2	0	25	0	5		
98411	13	12	0	0	4	1	0	3	1	0	21	0	3		
98411	14	10	0	0	2	1	0	3	0	0	29	0	0		
98411	15	12	0	0	8	1	0	2	1	0	20	0	1		
98412	1	10	0	0	0	0	0	1	3	0	30	1	0		
98412	2	7	0	0	2	0	1	1	5	0	25	3	1		
98412	3	5	0	0	4	0	0	2	1	0	31	2	0		
98412	4	6	1	0	2	0	0	1	2	0	26	7	0		
98412	5	4	0	0	7	1	0	2	0	0	25	5	1		
98412	6	8	0	0	3	0	0	1	2	0	30	1	0		
98412	7	2	0	0	8	0	0	2	3	0	28	0	2		
98412	8	5	0	0	9	1	0	4	0	0	26	0	0		
98412	9	2	0	0	4	0	0	0	2	0	34	3	0		
98412	10	7	0	0	2	0	0	2	2	0	32	0	0		
98412	11	6	0	0	0	0	0	2	1	0	35	1	0		
98412	12	5	0	0	0	0	0	1	0	0	35	1	3		
98412	13	8	0	1	1	0	0	0	1	0	34	0	0		
98412	14	8	0	0	2	0	0	1	1	0	33	0	0		
98412	15	1	0	0	2	0	0	3	1	0	27	8	3		
98413	1	3	0	0	0	0	0	0	0	0	41	1	0		
98413	2	0	0	1	0	0	0	0	1	0	34	9	0		
98413	3	2	0	2	1	0	0	0	1	0	38	0	1		
98413	4	0	0	0	1	1	0	0	0	0	43	0	0		
98413	5	0	2	1	1	1	0	0	1	0	35	1	3		
98413	6	0	0	0	0	0	0	0	1	0	42	2	0		
98413	7	0	0	1	1	0	0	1	0	0	42	0	0		
98413	8	0	0	1	1	0	0	0	0	0	43	0	0		
98413	9	0	1	0	1	0	0	0	0	0	43	0	0		
98413	10	0	0	0	0	0	0	0	1	0	44	0	0		
98413	11	1	0	2	1	1	0	0	1	0	37	0	2		

Appendix A. (p. 7 of 18)

Set Number	Longline Skate	Sablefish	Pacific			Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock		Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98413	12	0	0	0	0	0	0	0	1	0	0	42	0	2	
98413	13	0	0	0	5	0	0	0	0	0	0	36	3	1	
98413	14	0	2	0	1	1	0	0	0	0	0	38	2	1	
98413	15	0	1	0	2	0	0	0	0	0	1	33	7	1	
98414	1	1	0	0	0	0	1	2	3	1	1	34	3	0	
98414	2	0	0	0	0	1	0	0	2	0	0	42	0	0	
98414	3	1	0	0	0	1	0	2	1	0	0	38	2	0	
98414	4	0	0	0	1	0	0	1	0	0	0	43	0	0	
98414	5	2	0	0	0	1	1	0	1	0	0	34	3	3	
98414	6	1	0	0	1	0	0	0	1	0	0	39	2	1	
98414	7	3	1	0	1	0	0	2	2	0	0	36	0	0	
98414	8	1	1	0	1	1	0	1	2	0	0	37	0	1	
98414	9	1	0	0	2	1	0	2	2	1	1	36	0	0	
98414	10	2	0	0	3	2	0	1	2	0	0	35	0	0	
98414	11	1	0	0	1	1	0	0	0	0	0	41	0	1	
98414	12	2	0	0	0	0	0	1	0	0	0	41	1	0	
98414	13	2	0	0	2	0	0	0	5	0	0	35	0	1	
98414	14	1	0	0	1	0	0	2	0	1	1	40	0	0	
98414	15	4	1	0	5	2	0	5	1	0	0	24	3	0	
98415	1	4	0	0	1	0	0	1	0	0	0	28	8	3	
98415	2	0	0	0	2	1	0	0	0	0	0	40	0	2	
98415	3	3	0	1	1	0	0	0	0	0	0	39	0	1	
98415	4	1	0	3	2	0	0	1	0	0	0	38	0	0	
98415	5	4	2	2	1	0	0	0	0	0	0	36	0	0	
98415	6	2	1	0	1	0	0	0	0	0	0	38	3	0	
98415	7	2	1	0	1	0	0	0	1	0	0	37	2	1	
98415	8	1	0	2	1	0	0	0	0	0	0	41	0	0	
98415	9	1	0	0	3	1	0	0	1	0	0	39	0	0	
98415	10	2	0	1	1	0	0	0	0	0	0	41	0	0	
98415	11	0	0	0	1	3	0	0	1	0	0	40	0	0	
98415	12	1	0	4	1	0	0	1	0	0	0	38	0	0	
98415	13	1	2	1	0	0	0	0	1	0	0	29	6	5	

Appendix A. (p. 8 of 18)

Set Number	Longline Skate	Sablefish	Pacific		Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock	Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98415	14	1	0	4	2	0	0	0	0	0	22	13	3	
98415	15	1	0	0	0	0	0	0	0	0	31	11	2	
98416	1	4	0	0	2	0	0	1	0	0	35	2	1	
98416	2	3	0	0	1	0	0	0	0	0	38	3	0	
98416	3	3	0	0	1	0	0	1	0	0	39	1	0	
98416	4	5	0	1	1	0	0	0	0	0	34	3	1	
98416	5	10	0	1	1	0	0	0	0	0	32	0	1	
98416	6	9	0	0	0	0	0	0	0	0	26	1	9	
98416	7	8	0	1	0	0	0	2	0	0	32	0	2	
98416	8	7	0	0	1	0	0	1	0	0	36	0	0	
98416	9	7	0	0	3	0	0	0	0	0	35	0	0	
98416	10	3	0	0	0	0	0	1	0	0	40	0	1	
98416	11	7	0	1	1	1	0	1	0	0	27	2	5	
98416	12	8	0	0	3	0	0	0	1	0	30	3	0	
98416	13	8	0	0	1	0	0	0	0	0	27	2	7	
98416	14	13	0	1	0	0	0	0	1	0	25	3	2	
98416	15	7	0	0	1	0	0	1	2	0	25	8	1	
98417	1	0	0	0	0	0	0	0	0	0	4	19	22	
98417	2	5	0	0	2	0	0	1	1	0	32	0	4	
98417	3	4	0	0	3	0	0	0	0	0	33	3	2	
98417	4	2	0	0	3	0	0	0	1	0	36	2	1	
98417	5	0	1	0	1	0	0	1	2	0	35	3	2	
98417	6	4	0	0	3	0	0	1	2	0	32	3	0	
98417	7	5	0	0	1	0	0	1	6	0	29	2	1	
98417	8	4	0	0	0	0	0	2	1	0	37	1	0	
98417	9	7	0	0	3	0	0	0	4	0	31	0	0	
98417	10	7	0	0	2	0	0	1	1	0	34	0	0	
98417	11	5	0	0	3	0	0	0	0	0	36	0	1	
98417	12	4	0	0	2	1	0	0	5	0	33	0	0	
98417	13	7	0	0	2	0	0	0	2	0	30	0	4	
98417	14	4	0	0	7	0	0	0	4	0	20	8	2	
98417	15	8	0	0	4	0	0	0	3	0	28	1	1	

Appendix A. (p. 9 of 18)

Set Number	Longline		Pacific		Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective	
98418	1	5	0	0	5	0	0	1	0	0	19	13	2	
98418	2	3	0	0	5	0	0	0	0	0	29	1	7	
98418	3	4	0	0	4	0	0	2	2	0	33	0	0	
98418	4	1	0	0	6	0	0	1	1	0	35	1	0	
98418	5	5	0	0	5	0	0	0	0	0	27	7	1	
98418	6	3	0	0	4	0	0	0	1	0	36	1	0	
98418	7	7	0	1	2	0	0	1	0	0	32	0	2	
98418	8	6	0	0	2	1	1	0	1	0	27	5	2	
98418	9	4	0	0	2	0	0	0	1	0	38	0	0	
98418	10	4	0	0	1	1	0	3	3	0	32	0	1	
98418	11	0	0	0	2	0	0	0	0	0	43	0	0	
98418	12	2	0	0	4	0	0	1	0	0	36	1	1	
98418	13	5	0	0	2	0	0	3	1	0	33	0	1	
98418	14	3	0	0	4	0	0	1	3	0	31	3	0	
98418	15	4	0	0	2	0	0	0	2	0	31	2	4	
98419	1	3	5	0	2	0	0	1	4	0	28	1	1	
98419	2	6	4	0	2	0	0	0	3	0	27	0	3	
98419	3	10	5	0	0	0	0	5	6	0	17	1	1	
98419	4	7	2	0	2	0	0	0	3	0	29	1	1	
98419	5	6	1	0	2	0	0	0	2	0	32	0	2	
98419	6	5	2	0	2	0	0	1	1	0	32	0	2	
98419	7	5	3	0	2	0	0	3	4	0	26	1	1	
98419	8	5	1	0	3	0	0	0	0	0	34	1	1	
98419	9	4	0	0	2	0	0	0	4	0	35	0	0	
98419	10	11	3	0	0	0	0	1	8	0	22	0	0	
98419	11	5	1	0	3	0	0	4	4	0	28	0	0	
98419	12	12	1	0	0	0	0	0	0	0	27	0	5	
98419	13	5	2	0	3	0	0	0	3	0	29	1	2	
98419	14	7	2	0	1	0	0	0	1	0	32	1	1	
98419	15	6	7	0	2	0	0	1	2	0	26	0	1	
98420	1	2	0	2	0	0	0	0	0	0	29	2	10	
98420	2	1	2	0	0	0	2	2	0	0	32	6	0	

Appendix A. (p. 10 of 18)

Set Number	Longline Skate	Pacific Sablefish	Pacific			Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock		Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98420	3	1	5	0	0	0	0	2	0	0	31	4	2		
98420	4	0	3	0	0	0	1	1	0	0	36	3	1		
98420	5	1	4	0	0	0	1	1	1	0	28	7	2		
98420	6	1	4	0	0	0	1	1	1	0	32	3	2		
98420	7	0	4	0	0	0	1	2	0	0	29	7	2		
98420	8	6	0	3	0	0	0	2	0	0	31	1	2		
98420	9	3	0	1	0	0	1	1	1	0	30	2	6		
98420	10	3	5	0	1	0	1	2	6	0	24	2	1		
98420	11	5	1	0	0	0	0	2	6	0	26	1	4		
98420	12	6	1	0	1	0	0	1	3	0	26	5	2		
98420	13	2	0	0	1	0	0	0	3	0	36	1	2		
98420	14	5	3	0	1	0	0	3	6	0	18	7	2		
98420	15	3	1	0	0	1	0	1	5	0	12	14	8		
98421	1	0	0	0	0	0	5	16	8	0	10	0	6		
98421	2	0	0	0	0	0	0	2	4	0	38	0	1		
98421	3	0	1	1	0	0	0	0	0	0	35	0	8		
98421	4	0	0	1	0	1	5	2	0	0	27	0	9		
98421	5	0	0	2	0	0	2	8	0	0	32	0	1		
98421	6	0	1	0	0	0	1	0	0	0	41	0	2		
98421	7	0	1	3	0	0	5	0	0	0	32	0	4		
98421	8	0	0	0	0	0	0	8	0	0	32	0	5		
98421	9	0	1	3	0	0	1	7	0	0	24	0	9		
98421	10	0	0	0	0	0	0	2	1	0	37	5	0		
98421	11	0	0	0	0	0	0	2	0	0	35	3	5		
98421	12	0	0	0	0	0	3	2	0	0	34	6	0		
98421	13	0	0	0	1	0	0	1	0	0	36	3	4		
98421	14	0	0	0	0	0	2	2	0	0	32	9	0		
98421	15	0	0	0	0	0	0	0	1	0	36	7	1		
98422	1	3	0	0	1	0	0	2	0	0	20	18	1		
98422	2	1	0	0	0	0	0	0	0	0	31	8	5		
98422	3	6	0	0	0	0	0	1	1	0	26	11	0		
98422	4	8	0	0	1	0	0	2	0	0	29	2	3		

Appendix A. (p. 11 of 18)

Set Number	Longline		Pacific			Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective		
98422	5	6	0	0	0	0	0	2	0	0	35	1	1		
98422	6	7	0	0	0	0	1	1	0	0	36	0	0		
98422	7	5	0	0	0	0	0	1	0	0	39	0	0		
98422	8	4	0	0	1	0	0	1	0	0	36	2	1		
98422	9	10	0	0	1	0	0	0	0	0	30	3	1		
98422	10	7	0	0	1	0	0	0	0	0	30	7	0		
98422	11	5	0	0	1	0	0	0	0	0	33	3	3		
98422	12	4	0	0	0	0	0	1	0	0	40	0	0		
98422	13	6	0	0	0	0	0	1	0	0	27	8	3		
98422	14	6	0	0	0	0	0	0	0	0	27	5	7		
98422	15	3	0	0	0	0	0	1	1	0	32	7	1		
98423	1	5	0	0	0	0	0	0	0	0	37	2	1		
98423	2	0	0	0	0	0	0	1	1	0	29	5	9		
98423	3	7	0	0	0	0	0	0	0	0	37	1	0		
98423	4	6	0	1	1	0	0	0	0	0	37	0	0		
98423	5	5	0	0	0	0	0	1	2	0	35	0	2		
98423	6	8	1	0	2	0	1	0	0	0	33	0	0		
98423	7	8	1	0	0	0	0	0	0	0	33	1	2		
98423	8	3	0	0	0	0	0	0	0	0	16	20	6		
98423	9	6	0	2	1	0	0	0	1	0	33	1	1		
98423	10	3	0	0	0	0	1	0	2	0	38	1	0		
98423	11	2	0	0	1	0	0	0	0	0	39	0	3		
98423	12	2	0	0	4	0	1	1	0	0	34	3	0		
98423	13	6	0	0	3	1	0	1	1	0	27	5	1		
98423	14	5	0	0	3	0	0	0	1	0	24	12	0		
98423	15	4	2	2	2	0	0	1	0	0	23	9	2		
98424	1	5	0	0	1	0	0	1	1	0	32	5	0		
98424	2	2	0	0	2	0	0	0	0	0	36	3	2		
98424	3	8	0	0	0	2	0	0	0	0	35	0	0		
98424	4	11	0	0	0	0	0	0	0	0	34	0	0		
98424	5	7	0	0	1	0	1	2	0	0	34	0	0		
98424	6	9	0	0	2	0	0	2	0	0	32	0	0		

Appendix A. (p. 12 of 18)

Set Number	Longline		Pacific			Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective		
98424	7	8	0	2	2	0	0	3	0	0	27	2	1		
98424	8	10	0	1	1	0	0	0	0	0	33	0	0		
98424	9	11	0	0	1	0	0	0	0	0	33	0	0		
98424	10	9	0	1	1	0	0	1	0	0	33	0	0		
98424	11	6	0	0	2	0	0	1	0	0	33	0	3		
98424	12	4	0	0	1	0	0	0	0	0	40	0	0		
98424	13	9	0	0	1	0	0	1	0	0	33	0	1		
98424	14	0	0	0	1	0	0	1	0	0	32	9	2		
98424	15	4	0	0	0	0	0	0	0	0	33	7	1		
98425	1	2	0	0	0	0	0	0	0	0	28	14	1		
98425	2	1	0	0	0	0	0	0	0	0	35	2	7		
98425	3	1	0	0	0	0	0	0	0	0	43	0	1		
98425	4	1	0	0	0	0	0	2	0	0	38	3	1		
98425	5	1	0	0	0	0	0	0	0	0	42	0	2		
98425	6	1	0	0	1	0	0	0	0	0	37	4	2		
98425	7	1	0	1	1	0	0	0	0	0	38	2	2		
98425	8	1	0	0	1	0	0	0	0	0	40	1	2		
98425	9	4	0	0	0	0	0	0	0	0	40	1	0		
98425	10	3	0	0	1	0	0	2	0	0	32	6	1		
98425	11	5	0	0	2	0	0	1	0	0	36	0	1		
98425	12	3	0	0	0	0	0	1	0	0	39	0	2		
98425	13	1	0	0	0	0	0	0	0	0	39	1	4		
98425	14	1	0	0	0	0	0	1	0	0	41	0	2		
98425	15	3	0	0	0	1	1	2	0	0	29	5	4		
98426	1	0	0	0	1	0	1	0	1	0	42	0	0		
98426	2	3	0	0	2	0	0	1	0	0	37	0	2		
98426	3	1	0	0	0	0	2	0	0	0	42	0	0		
98426	4	1	0	0	0	0	0	4	0	0	40	0	0		
98426	5	1	0	0	0	0	1	1	0	0	42	0	0		
98426	6	1	0	0	1	0	0	0	0	0	42	1	0		
98426	7	0	0	0	0	0	1	1	0	0	43	0	0		
98426	8	0	0	0	0	0	0	2	0	0	43	0	0		

Appendix A. (p. 13 of 18)

Set Number	Longline		Pacific		Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective	
98426	9	0	0	0	0	0	0	2	0	0	43	0	0	
98426	10	0	0	0	0	0	0	1	0	0	43	0	1	
98426	11	0	0	0	0	0	0	0	0	0	42	3	0	
98426	12	1	0	0	0	0	0	0	1	0	43	0	0	
98426	13	1	0	0	1	0	0	0	0	0	43	0	0	
98426	14	1	0	0	0	0	0	0	1	0	40	3	0	
98426	15	0	0	0	1	0	0	4	0	0	33	7	0	
98427	1	7	0	0	2	0	0	0	0	0	29	7	0	
98427	2	10	0	0	0	0	0	1	0	0	31	3	0	
98427	3	8	0	0	0	0	0	0	0	0	36	0	1	
98427	4	2	0	0	0	0	0	0	0	0	40	2	1	
98427	5	7	0	0	1	0	0	0	0	0	37	0	0	
98427	6	3	0	0	2	0	0	0	0	0	36	4	0	
98427	7	2	0	0	1	0	0	0	0	0	42	0	0	
98427	8	8	0	0	0	0	0	0	0	0	36	0	1	
98427	9	2	0	0	0	0	0	0	0	0	38	1	4	
98427	10	1	0	0	1	0	0	0	0	0	41	2	0	
98427	11	6	0	0	1	0	0	1	0	0	36	0	1	
98427	12	0	5	0	2	0	0	0	0	0	37	1	0	
98427	13	8	0	0	2	0	0	1	0	0	34	0	0	
98427	14	15	0	0	0	0	0	1	0	0	28	0	1	
98427	15	17	0	0	0	0	0	1	0	0	21	4	2	
98428	1	1	1	1	1	0	0	0	9	0	28	3	1	
98428	2	0	1	1	1	0	0	2	1	0	38	0	1	
98428	3	0	4	1	1	0	0	0	4	0	35	0	0	
98428	4	0	2	0	0	0	0	1	4	0	37	0	1	
98428	5	0	7	0	2	0	0	0	0	0	34	0	2	
98428	6	0	1	1	1	0	0	1	4	0	36	0	1	
98428	7	1	1	2	2	0	1	1	6	0	30	1	0	
98428	8	1	0	0	0	1	0	2	4	0	37	0	0	
98428	9	1	0	2	1	0	0	1	3	0	36	1	0	
98428	10	0	0	2	0	0	0	2	3	0	34	3	1	

Appendix A. (p. 14 of 18)

Set Number	Longline Skate	Sablefish	Pacific			Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock	Halibut	Flounder	Rockfish	Baited				Unbaited	Ineffective		
98428	11	1	0	1	0	0	1	1	6	0	34	0	1		
98428	12	1	0	0	0	0	0	2	3	0	39	0	0		
98428	13	0	0	1	1	1	0	4	4	0	33	0	1		
98428	14	0	0	4	0	0	0	0	5	0	36	0	0		
98428	15	1	2	2	3	0	0	2	3	0	31	0	1		
98429	1	0	0	0	0	0	0	1	0	0	23	11	10	Pulled set in reverse.	
98429	2	1	0	0	0	0	0	0	0	0	43	0	1		
98429	3	0	0	0	1	0	0	0	0	0	44	0	0		
98429	4	0	0	0	0	0	0	0	2	0	43	0	0		
98429	5	2	0	0	3	0	0	1	1	0	37	0	1		
98429	6	2	0	0	0	0	0	0	0	0	40	2	1		
98429	7	0	0	0	1	0	0	0	1	0	34	6	3		
98429	8	0	0	0	4	0	0	0	1	0	39	1	0		
98429	9	0	0	0	3	0	0	0	0	0	40	0	2		
98429	10	3	0	0	2	0	0	2	0	0	37	1	0		
98429	11	2	0	0	0	0	0	0	2	0	32	7	2		
98429	12	0	0	0	0	0	0	0	1	0	43	1	0		
98429	13	1	0	0	3	1	0	0	1	0	38	0	1		
98429	14	0	0	0	1	0	0	0	0	0	33	10	1		
98429	15	2	0	0	0	0	0	0	3	0	24	13	3		
98430	1	0	0	0	1	0	0	0	1	0	30	11	2		
98430	2	1	0	1	0	0	0	0	2	0	38	3	0		
98430	3	0	0	1	1	0	2	0	1	0	38	2	0		
98430	4	0	0	2	0	0	0	0	1	0	42	0	0		
98430	5	0	1	1	0	0	1	0	1	0	40	0	1		
98430	6	0	0	1	0	0	0	0	0	0	44	0	0		
98430	7	1	3	1	1	0	0	0	0	0	39	0	0		
98430	8	0	0	2	0	0	0	0	1	0	42	0	0		
98430	9	0	0	1	0	0	0	0	1	0	43	0	0		
98430	10	0	2	1	0	0	0	0	0	0	42	0	0		
98430	11	0	0	3	0	0	0	0	2	0	40	0	0		
98430	12	0	1	1	0	0	0	1	2	0	40	0	0		

Appendix A. (p. 15 of 18)

Set Number	Longline Skate	Sablefish	Pacific			Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
			Cod	Pollock	Halibut	Flounder	Rockfish	Baited				Unbaited	Ineffective		
98430	13	0	1	4	1	0	0	0	1	0	36	1	1		
98430	14	0	1	3	0	0	2	0	0	0	39	0	0		
98430	15	0	10	0	1	0	4	0	0	0	30	0	0		
98431	1	0	0	1	2	0	0	0	0	0	31	10	1		
98431	2	0	0	1	1	0	0	0	0	0	41	2	0		
98431	3	0	0	2	1	0	0	0	0	0	34	8	0		
98431	4	0	0	0	1	0	0	0	2	0	42	0	0		
98431	5	0	0	1	0	0	0	0	3	0	31	10	0		
98431	6	0	0	0	1	0	0	0	0	0	42	2	0		
98431	7	0	0	1	0	0	0	0	1	0	34	7	2		
98431	8	0	0	1	0	0	0	0	2	0	42	0	0		
98431	9	0	1	3	1	0	0	0	0	0	40	0	0		
98431	10	0	0	1	1	0	0	1	1	0	41	0	0		
98431	11	0	0	2	0	0	1	0	1	0	38	3	0		
98431	12	0	0	1	1	0	1	0	2	0	32	7	1		
98431	13	0	0	0	0	0	1	0	0	0	40	3	1		
98431	14	0	0	1	0	0	0	0	0	0	42	2	0		
98431	15	0	0	1	0	0	0	0	1	0	43	0	0		
98432	1	6	2	0	7	0	0	1	2	0	13	8	6		
98432	2	9	4	0	5	0	0	1	1	0	24	0	1		
98432	3	10	1	3	4	1	0	0	0	0	25	0	1		
98432	4	10	5	1	6	2	0	1	1	0	19	0	0		
98432	5	20	0	2	1	0	0	0	0	0	20	0	2		
98432	6	15	2	1	1	3	0	0	0	0	22	1	0		
98432	7	18	1	0	9	1	0	1	0	0	14	0	1		
98432	8	9	6	0	2	0	0	0	0	1	23	4	0		
98432	9	16	5	1	0	0	0	3	1	0	19	0	0		
98432	10	20	1	1	5	0	0	0	2	0	11	0	5		
98432	11	18	0	3	2	3	0	1	0	0	18	0	0		
98432	12	20	3	0	7	1	0	0	0	1	9	0	4		
98432	13	18	3	0	3	3	0	0	2	0	15	0	1		
98432	14	19	2	0	3	3	0	1	1	1	15	0	0		

Appendix A. (p. 16 of 18)

Set Number	Longline		Pacific		Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective	
98432	15	13	8	1	6	1	0	2	4	0	10	0	0	
98433	1	2	2	1	0	0	0	0	11	0	21	8	0	
98433	2	2	0	0	4	0	0	0	6	0	32	1	0	
98433	3	2	0	0	0	0	0	2	8	0	33	0	0	
98433	4	1	0	0	3	0	0	1	7	0	30	3	0	
98433	5	2	0	0	0	0	0	2	18	0	23	0	0	
98433	6	1	1	0	3	0	0	1	10	0	29	0	0	
98433	7	5	2	0	2	0	0	2	8	0	26	0	0	
98433	8	3	0	0	1	0	0	1	10	0	29	1	0	
98433	9	5	1	0	1	0	0	0	9	0	24	2	3	
98433	10	8	0	0	2	0	0	1	13	0	21	0	0	
98433	11	0	1	1	3	0	0	2	11	0	27	0	0	
98433	12	1	2	0	5	0	0	0	5	0	29	1	2	
98433	13	4	0	0	3	0	0	0	12	0	21	4	1	
98433	14	2	1	0	0	0	1	0	20	0	16	3	2	
98433	15	4	1	0	6	0	0	1	6	0	19	6	2	
98434	1	4	2	0	6	0	0	2	6	0	9	15	1	1 Skate tangled w/groundline; lost lead.
98434	2	0	8	0	13	0	0	2	12	0	4	5	1	
98434	3	5	2	0	4	0	0	1	5	0	20	4	4	
98434	4	2	4	0	5	0	0	3	10	0	17	0	4	
98434	5	7	2	0	3	0	0	0	17	0	10	6	0	
98434	6	2	3	0	3	0	1	0	8	0	22	2	4	
98434	7	3	3	2	5	0	0	1	9	0	18	1	3	
98434	8	6	2	0	3	0	0	1	4	0	25	2	2	
98434	9	4	3	1	3	0	0	1	10	0	20	2	1	
98434	10	6	2	0	6	0	0	0	8	0	17	4	2	
98434	11	3	3	0	2	1	0	3	16	0	14	2	1	
98434	12	4	1	0	2	0	0	2	6	0	23	5	2	
98434	13	2	1	0	1	0	0	1	8	0	18	13	1	
98434	14	1	3	0	3	1	0	4	10	0	20	2	1	
98434	15	0	4	0	4	0	0	1	4	0	24	7	1	
98435	1	1	3	0	2	1	0	2	17	0	13	2	4	

Appendix A. (p. 17 of 18)

Set Number	Longline Skate	Pacific			Arrowtooth			Skate Species	Shark Species	Other Species	Hooks without fish			Remarks
		Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish				Baited	Unbaited	Ineffective	
98435	2	1	3	1	1	1	0	0	16	0	19	3	0	
98435	3	0	5	0	0	0	0	2	23	0	14	1	0	
98435	4	0	3	0	0	0	0	1	26	0	14	0	1	
98435	5	2	5	0	1	0	0	2	26	0	4	0	5	
98435	6	0	5	0	0	0	0	3	30	0	7	0	0	
98435	7	1	7	0	2	0	0	0	22	0	12	1	0	
98435	8	0	1	0	0	0	0	1	28	0	14	0	1	
98435	9	1	7	1	2	0	0	1	22	0	9	0	2	
98435	10	1	6	0	10	0	0	3	20	1	4	0	0	
98435	11	0	3	0	0	0	0	0	35	0	7	0	0	
98435	12	1	1	0	2	0	0	3	21	0	14	1	2	
98435	13	0	0	1	1	4	0	2	28	0	9	0	0	
98435	14	2	1	2	4	0	0	0	31	0	2	0	3	
98435	15	1	4	2	2	1	1	1	12	0	15	4	2	
98436	1	4	0	0	0	0	0	1	0	0	27	12	1	Strong current/wind.
98436	2	4	0	0	0	0	0	0	0	0	24	6	11	
98436	3	6	0	0	0	0	0	2	0	0	26	3	8	
98436	4	6	0	0	1	0	0	1	0	0	31	5	1	
98436	5	9	0	0	0	0	0	1	0	0	35	0	0	
98436	6	14	0	0	1	0	0	1	0	0	27	2	0	
98436	7	7	0	0	1	0	0	0	0	0	35	1	1	
98436	8	6	0	0	2	0	0	0	0	0	37	0	0	
98436	9	7	0	0	0	0	0	0	0	0	23	6	9	
98436	10	6	0	0	0	0	0	2	1	0	24	10	2	
98436	11	12	0	0	0	0	1	0	2	0	23	6	1	
98436	12	8	0	0	0	0	0	1	1	0	31	2	2	
98436	13	6	0	0	0	0	2	0	1	0	30	2	4	
98436	14	9	0	0	0	0	0	2	1	0	27	3	3	
98436	15	9	0	0	2	0	0	1	0	0	33	0	0	
98437	1	4	0	0	1	0	0	1	0	0	27	12	0	Strong current.
98437	2	1	0	0	0	0	0	0	0	0	24	12	8	
98437	3	1	0	0	0	0	0	0	0	0	30	11	3	

Appendix A. (p. 18 of 18)

Set Number	Longline		Pacific			Arrowtooth			Skate	Shark	Other	Hooks without fish			Remarks
	Skate	Sablefish	Cod	Pollock	Halibut	Flounder	Rockfish	Species	Species	Species	Baited	Unbaited	Ineffective		
98437	4	6	0	0	0	0	0	1	0	0	35	3	0		
98437	5	2	0	0	1	0	0	0	0	0	36	6	0		
98437	6	7	0	0	0	0	4	0	0	0	29	5	0		
98437	7	3	0	0	1	0	0	1	0	0	39	0	1		
98437	8	4	0	0	1	0	0	0	0	0	35	5	0		
98437	9	8	0	0	0	1	0	1	0	0	33	2	0		
98437	10	3	0	0	0	0	0	1	0	0	36	5	0		
98437	11	7	0	0	0	0	0	3	0	0	33	2	0		
98437	12	5	0	0	0	0	0	3	2	0	32	3	0		
98437	13	4	0	0	0	0	1	1	1	0	33	5	0		
98437	14	3	0	0	0	0	1	1	0	0	40	0	0		
98437	15	7	0	0	0	0	0	2	1	0	30	5	0		
98438	1	0	0	0	0	0	0	0	0	0	18	25	2		
98438	2	4	0	0	0	0	0	0	0	0	27	14	0		
98438	3	6	0	0	0	0	0	0	1	0	37	1	0		
98438	4	7	0	0	1	0	2	1	0	0	27	7	0		
98438	5	10	0	0	0	0	0	0	0	1	33	0	1		
98438	6	5	0	0	0	0	0	2	0	0	38	0	0		
98438	7	3	0	0	1	0	0	0	1	0	33	4	3		
98438	8	8	0	0	0	0	0	0	0	0	37	0	0		
98438	9	9	0	0	0	0	0	0	0	0	36	0	0		
98438	10	7	0	0	0	0	0	0	0	0	38	0	0		
98438	11	4	0	0	3	0	1	1	0	0	32	3	1		
98438	12	3	0	0	0	1	0	3	1	0	37	0	0		
98438	13	7	0	0	0	0	0	1	1	0	25	10	1		
98438	14	4	0	1	3	0	0	0	0	0	35	1	1		
98438	15	8	0	0	0	0	0	0	0	0	33	3	1		

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