

2003 NSEI (Chatham) Sablefish Longline Survey Report



by
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Cover photo: Deck of *F/V Masonic*, 2003; photo by Beverly Richardson, ADF&G.

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INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) conducted the 16th in a series of annual longline surveys within the Northern Southeast Inside (NSEI) Subdistrict of the Southeast District of the Gulf of Alaska from August 3 - 7, 2003 (Figure 1). The NSEI longline survey is conducted annually to aid in the management of the NSEI sablefish fishery by providing catch per unit of effort (CPUE) and biological data to assess the abundance and general condition of the sablefish (*Anoplopoma fimbria*) resource in Chatham Strait (Carlile et al. 2002).

The specific objectives of the 2003 survey were:

1. Calculate CPUE for sablefish in the Chatham Strait portion of the NSEI Subdistrict.
2. Enumerate, by species, all groundfish.
3. Collect a random sample of biological data including otoliths (aging structures), length, weight, sex, and stage of gonad maturity from a sub sample of sablefish.
4. Collect biological data including otoliths (aging structures), length, weight, sex, and stage of gonad maturity from all rockfish.
5. Collect lengths from a portion of shortspine thornyheads (*Sebastolobus alascanus*).
6. Enumerate seabirds after retrieval of gear at each station.

METHODS

Station locations were randomly selected from areas of potential sablefish habitat at depths greater than 200 fathoms (fm). The methods and geographic coverage of these annual surveys have evolved over time with several major changes in survey design being instituted in 1997 (Table 1). Since that time, most variables of the survey have remained constant with a further standardization of the fishing gear in 2000 when ADF&G began using longline gear built to National Marine Fisheries Service (NMFS) survey specifications.

The longline surveys are scheduled to fish during periods of minimal tidal fluctuation to minimize problems associated with setting and retrieving gear and to minimize any potential affects on the catchability of sablefish that might be associated with the large tidal currents experienced in Chatham Strait, especially south of Point Gardner.

Survey Area

The survey is designed to set longline gear at the same station locations each August in Chatham Strait. Since 1997, the same 45 stations have been set annually with the exception of 2002 and 2003 when only 44 stations were set. The stations are located in the 4 statistical areas in Chatham Strait where the major proportion of the commercial fishery occurs. The survey area extends from the northernmost station (57° 55.84' N latitude x 134° 47.65' W longitude) located west of Point Hepburn on Admiralty Island, southward down Chatham Strait to the southernmost station

(56° 05.2' N latitude x 134° 30.4' W longitude) several miles southeast of Cape Ommaney on Baranof Island (Figure 2).

Gear

Since 2000 the department has provided the chartered vessels with standardized skates of gear for use in the NSEI longline survey. In 2000, in an effort to minimize variables associated with using commercial vessel gear, ADF&G contracted Lummi Fishery in Seattle to build skates of conventional longline gear. These skates were built to replicate the gear used by NMFS in their longline surveys in the Gulf of Alaska in order to allow the department to compare sablefish catch and effort data in surveys conducted in internal state waters with those conducted by NMFS in the outside waters of the Gulf of Alaska. To eliminate bias introduced by new gear, all new gear was soaked (fished) prior to being used in the survey.

A string of gear consisted of a flag pole, an array of buoys, buoy line (the length of which is dependent upon the depth of the set), a 60 pound longline anchor, 150 fm of running line, and 25 skates of 45 #13/0 Mustad circle hooks, and second 150 fm of running line, a second buoy line (again the length is dependent on depth), a second 60 pound longline anchor, a second array of buoys and a second flagpole. Beginning in 2000, a 7-pound lead ball was snapped to the end of each skate. Hooks were front threaded to gangions secured to beackets tied into the groundline at 6.5-foot (2 m) intervals (Figure 3). The distance of the hook from the groundline (the length of the gangion and the becket when tied together and attached to groundline) was 15 inches (38 cm). Sixteen feet (5 m) of groundline were left bare at each skate end. Gangions were medium lay #60 nylon round braided twine, beackets were medium lay #72 nylon becket twine, and the groundline was medium lay 3/8 inch nylon American Line SSR 100. The vessel crew attached new hooks purchased by the department on all skates prior to each survey.

All ADF&G survey vessels used a sea bird avoidance device (Figure 4).

Vessels

ADF&G awards annual short-term (14-day) charter agreements to 3 commercial longline vessels to fish 15 stations each during the same time period, splitting the survey area into 3 distinct areas and allowing all stations to be fished within a single 5-day period.

The 2003 Request for Bids specified a maximum bid of \$25,000 for each portion of the survey (due to budget constraints) and that a vessel could not fish more than one portion. Annual contracts were awarded to the 3 vessels with the 3 lowest bids. Vessels were assigned to survey portions at the department's discretion.

The *F/V Masonic* was awarded an annual contract and conducted the longline survey in the southern portion (Trip #1) (Figure 5). This was the first year that the *F/V Masonic* has participated in the survey, however the contractor fished this same portion in 2001 with the *F/V Sylvia*. The *F/V Masonic* was built in 1929, with recent major renovations, and is a 70 foot-over-all (FOA) wooden vessel. It is owned and skippered by Bill Lewis.

The *F/V Ida June* was awarded an annual contract and conducted the longline survey in the central portion (Trip #2) (Figure 6). This was the seventh year that the *F/V Ida June* has participated in the survey. It fished the southern portion in 2002 and the northern portion in the previous years; in addition, in 1999, it also fished half the stations in the central portion. The *F/V Ida June* was built in 1974 and is a 52-foot keel length Hoquiam fiberglass vessel. It is owned and skippered by Greg Beam.

The *F/V Archangel* was awarded an annual contract and conducted the longline survey in the northern portion (Trip #3) (Figure 7). This was the second consecutive year that the *F/V Archangel* has participated in the survey. The *F/V Archangel* was built in 1987 and is a 49 FOA fiberglass longliner/seiner. It is owned and skippered by Phil Wyman.

Vessel Crews

Each vessel was required to provide 3 experienced crewmembers in addition to the skipper. The vessel crew operated the fishing vessel and baited, set, retrieved and repaired all longline gear (Figure 8 and 9). ADF&G provided 2 scientific personnel on each vessel who were responsible for gathering the scientific data including the hook accounting and biological data. The fishing crew and scientific personnel for each vessel are listed in Table 2.

Schedule

The *F/V Archangel* and the *F/V Ida June* departed Sitka on August 2 and the *F/V Masonic* departed Petersburg on the same day. All vessels began fishing early in the am on August 3. The *F/V Archangel* and the *F/V Ida June* fished 15 stations each and the *F/V Masonic* fished 14. The vessels offloaded to the tender Traci C either late on August 5 or August 6. Each vessel completed their portion of the survey in 7 days, port to port. The list of stations assigned to each vessel is shown in Table 3.

Tides

The 2003 survey was scheduled to fish during the period of minimal tides in early August in order to complete the survey prior to the opening of the commercial fishery on August 15 while conducting the survey as close to the commercial fishery as possible (Appendix A, Table 1).

Bid to Purchase ADF&G Fish

The department solicited bids from area processors to purchase the fish caught during the survey. The Request for Quotes was based upon a total expected landed 2003 catch similar to the 2002 survey catch (Appendix B). The successful bidder was required to provide tender service in Chatham Strait. They had to be available 7 days a week; capable of handling up to 50,000 pounds of round sablefish; and provide sufficient high-quality ice for each vessel, including those departing other ports. The quoted price for the fish was to include the cost of the required tender service and ice.

Sitka Sound Seafood (SSS) in Sitka won the bid and contracted with the *F/V Traci C* to provide tender service. SSS arranged for the Petersburg vessel to get ice at Petersburg Fisheries (PFI).

SSS requested that all fish be in Sitka by day 4. The *F/V Traci C* experienced battery problems while waiting to offload the first vessel and off loading for all vessels was delayed by ½ day. The *F/V Traci C* picked up fish from the *F/V Masonic* on the southern end at Port Conclusion late in the evening on August 5, continued north and picked up fish from the *F/V Ida June* the following morning at Warm Springs and offloaded the *F/V Archangel* later that afternoon at Basket Bay. At the end of the survey, both the *F/V Ida June* and the *F/V Archangel* unloaded their fish at SSS in Sitka and the *F/V Masonic* unloaded to the *F/V Traci C* at Warm Springs, all on August 8 (Figure 10).

Except for the sampled sablefish, which were eastern cut, the sablefish were delivered bled in the round. Rockfishes were delivered head on with the belly split, with or without the guts. All vessels delivered iced fish and were requested to ice dress sablefish and all rockfish separate from sablefish in the round. SSS requested all iced fish to be bled (Figure 11).

Bait

International Marine Industries in Rhode Island won the 2003 bait bid (the 2 sablefish longline survey bait bids were bid as one bid) to provide 8,250 pounds of Argentina *Illlex* sp, 100-200 gm squid for the NSEI survey. The winning bid was \$0.70 a pound including shipping costs to Petersburg and \$0.73 a pound to Sitka. This provided each vessel 2,750 pounds (84 boxes) of squid. This amount was ample and each vessel had enough left over to set additional sets if required.

In 2003, both the head and the tentacles of the squid were discarded, using only the body of the squid as bait. This was done to replicate NMFS bait use and to eliminate variables that might exist should the heads or tentacles fish differently from the remainder of the squid body. Not using the heads was a departure from years prior to 2000 when only the tentacles were discarded. Hooks were hand-baited with squid cut into 1.5-2 inch pieces. The rate of use averaged 12.5 pounds per 100 hooks and is the same rate of use specified by NMFS. The bait was not allowed to thaw more than 24 hours prior to use.

Set Information

Station location data as set from 1988-2001 were plotted and an updated master list of station locations was prepared for the 2002 survey. The major change was to station 1, which was shortened to one set of gear and station 2 no longer exists. This updated 2002 master list was used for this survey and included the start and end latitudes and longitudes (to nearest hundredth of a minute), and the start and end depths (in fathoms) for each station. Sets were to be made in the same direction as the tidal current between the 2 points on the master list. Haul-back direction was dependent on the tide, wind direction, and currents. If it was necessary to set differently from the master list due to circumstances such as tidal currents or weather, the set was to pass through the start latitude and longitude and be made as close to the original location points as possible.

The beginning and ending latitude and longitude of the set, the time the second anchor went overboard, the wind direction and speed at time of setting, the bottom type, and the start and end depth was recorded by the skipper and/or one of the ADF&G crew on the Sablefish Survey Set Form (Appendix C). The beginning and ending latitude and longitude at retrieval were also recorded. The bottom depth was recorded as each skate went out and an average depth per station was calculated using these depths. Comments, particularly those possibly affecting CPUE, were recorded on this form for each station.

A total of 25 skates were set at each station. In 1997, the number of hooks per station was increased from 500 to the current 1,125, and the ends of station 1 and 2 overlapped. To prevent problems associated with setting over the same ground, from 1997-2001, these two stations were set as one continuous set with double the number of skates (and hooks) and was called station 1. In 2002 and 2003, these stations were set as one set with 25 skates of gear and called station 1. As a result, station 2 data does not exist in the database for the years 1997-2003, and for 1997-2001, station 1 has double the number amount of hooks of other stations.

Soak Time

Each vessel was expected, within time and weather constraints, to set 3 stations a day. To accommodate the tender delay, the northern 2 vessels had to make 4 sets the last day to complete the survey in the original scheduled time. Measured from the time the second anchor went overboard to the time the first anchor was onboard, soak times between 3 and 11 hours were to be maintained. The 3 to 11 hour soak time was specified to replicate NMFS soak times. NMFS choose a 3-hour minimum soak time as 80-90% (approximately 85%) of fish are hooked in the first 3 hours of soak time (Sigler 2000). The maximum 11 hours is based on the time it takes NMFS to haul a station (8-10 hours).

A typical pattern of setting gear is to set the first set, wait to minimize soak time on second set and set the second, leaving time to return and haul the first after a 3 hour minimum soak. The third set of the day is then set and then the second and third set are hauled in sequence. This sequence minimized soak times to reduce flea problems as well as minimized the number of sets in the water at any one time to avoid exceeding the 11 hours maximum should problems arise in

retrieving gear. At times it was not practical to set using the above method and other patterns were followed.

Hook Accounting

The status of each hook was recorded on the Hook Accounting Form (Appendix D).

As each hook broke the surface, its status was noted. A hook without a fish on it was recorded as “bare,” “bait,” or “invalid” (bent, broken, missing, snarled). Fish that broke the surface attached to a hook were identified and recorded by species or species grouping. Sablefish that broke the surface on a hook but which were not landed were noted as “lost.” Sablefish less than 15 inches (38 cm) were noted as “small” and immediately returned to the water (unless they were a biological sample). Sablefish that were not marketable were noted as “discard” and discarded. In the past, all discards were marked “discard.” This year there were 2 new types of discards, “flea bit” or “shark bit” and the generic “discard” was used for all other discards.

The catch and effort data was tallied separately for each skate to allow exclusion of invalid skates and allow for a CPUE comparison both among the sets and between the skates on a set. A skate was considered invalid if greater than 25% of the skate was missing, in a snarl, or stripped of hooks.

All bycatch species, except rockfish, were returned to the water immediately with minimal damage.

On the *F/V Archangel* and the *F/V Masonic* one ADF&G staff sat near the roller at a location that provided a good view of the hooks as they came out of the water to note and record the catch and effort data (Figure 12). On the *F/V Ida June* the skipper, situated at the roller, called out the condition of the hook or species of fish on each hook and a vessel crew nearby recorded the data.

A CPUE of sablefish-per-hook (fish-per-hook) for an individual station was calculated using only valid subsets by dividing the number of valid sablefish (includes the lost and released sablefish but not those caught in a large snarl) by the total number of hooks retrieved at that station.

$$cpue_i = \frac{f_i}{h_i} \quad (1)$$

where $cpue_i$ = the catch per unit of effort for Station i

f_i = the total number of valid sablefish caught at Station i on valid subsets

h_i = the total number of hooks fished at Station i on valid subsets

The overall fish-per-hook for the survey is calculated dividing the total valid sablefish captured by the total hooks retrieved using only valid subsets.

$$CPUE = \frac{\sum_i f_i}{\sum_i h_i} \quad (2)$$

where $CPUE$ = the overall catch per unit of effort (fish-per-hook) for all stations

A $CPUE$ of kilograms-per-hook for an individual station is calculated by multiplying the fish-per-hook for a station by the average weight in kilograms from the fish sampled on that station.

$$cpue_{i:wt} = cpue_i \cdot w_i \quad (3)$$

where $cpue_{i:wt}$ = the catch per unit of effort for Station i in kilograms-per-hook
 $cpue_i$ = the catch per unit of effort for Station i in fish-per-hook
 w_i = the mean weight of sablefish sampled at Station i in kilograms

The kilograms-per-hook for the survey is calculated by multiplying the overall fish-per-hook by the overall average kilogram for sampled sablefish.

$$CPUE_{wt} = CPUE \cdot W \quad (4)$$

where $CPUE_{wt}$ = the overall catch per unit of effort (kilograms-per-hook) for all stations
 $CPUE$ = the overall catch per unit of effort (fish-per-hook) for all stations
 W = the mean weight of sablefish sampled at all stations in kilograms

Biological Sampling

One ADF&G crew was present on deck during the retrieval of the longline gear and took biological samples from the sub sample of fish. A sampling site was set up on the hatch cover of each vessel and a Salter Heavy-Duty Hanging (#235-10S) metric (20 kg) scale was hung nearby (Figure 12). Fish were sampled for biological data and the data was recorded on the Survey Biological Data Form (Appendix E). The ADF&G crew cleaned and dressed the fish to industry standards and the vessel crew iced the sampled fish.

Sablefish

The sampling goal for sablefish for the survey was 750+ samples.

In 2003, biological data including length (to nearest 10 mm), weight (to nearest 0.1 kg), sex, stage of gonad maturity, and otoliths were taken on the first and every tenth sablefish for the first 13 skates hauled at each station (Figure 13). Prior to leaving port, this sampling schedule was calculated based on the survey catches in 2002 and the assumption that the 2003 survey catches would be similar to the 2002 catches. This sampling rate was continued throughout the survey to assure that each station was sampled at the same rate. The stage of gonad maturity was

determined based on the Sablefish Maturity Codes and with the aid of a NMFS gonad maturity photo sheet (Appendix F). Otoliths were extracted and processed according to the Instructions for Labeling and Shipping Otoliths, and sent to the ADF&G Otolith Processing Lab in Juneau for aging (Appendix G).

Sablefish Tags

No sablefish tagging was done on the longline survey this year. All tagging had been done on the pot survey earlier in the season (Richardson 2003). In previous years, all ADF&G tagged sablefish that were captured were sacrificed and the recovery data was recorded. This year all 2003 released tagged sablefish that were recovered were sacrificed to minimize affects of the longline survey on the 2003 mark-recapture project. In addition, an effort was made to re-release ADF&G tagged sablefish from releases prior to 2003 in order to gain movement data. This was not always possible as the sablefish were often injured prior noticing the tag. If healthy, these tagged sablefish were re-released with the original tag in place and the recovered/re-release location and length was noted. Sablefish captured that had been tagged by other agencies were handled according to Protocol for previously tagged sablefish (Appendix H).

Rockfish

The sampling goal for rockfish for the survey was 400 samples for each species; therefore all rockfish were to be sampled. Biological data including length (to nearest 10 mm), weight (to nearest 0.1 kg), sex, stage of gonad maturity and otoliths were taken on as many rockfish as time allowed (Figures 14, 15 and 16, Appendix I). Rockfish were delivered with guts intact to free time to sample more fish. The stage of gonad maturity was determined based on the Gonad Condition Criteria Applied to *Sebastes* from Alaska Landings Used in 1988 (Appendix I). Otoliths were extracted, processed according to the 2003 Survey SOP and sent to ADF&G Otolith Processing Lab in Juneau for aging.

Shortspine Thornyheads

The sampling goal for shortspine thornyheads for the survey was 400 samples. Shortspine thornyheads do not have swim bladders and are expected to survive after being released: therefore lengths (to nearest 10 mm) were to be taken from all thornyheads on the first 13 skates, and the fish were immediately returned to the water.

Other Species

Bycatch species, other than those listed above were identified, enumerated, and released at the roller. If dead, Pacific sleeper sharks were examined for stomach contents. No other biological samples were collected from these fish.

Sampling for Other Agencies

Rougheye Rockfish Heart Tissue Sampling

Rougheye rockfish heart tissue sampling was done at the request of the University of Alaska, Juneau Center, School of Fisheries and Ocean Sciences (JCSFOS). One hundred samples were requested. The *F/V Ida June* was able to provide 37 samples; samples were not taken on other vessels. A small piece of heart tissue was taken from each fish and placed in vials filled with DMSO/EDTA/NaCl. The tissue samples were then described as having been taken from light or dark colored fish. These samples were mailed to JCSFOS at the completion of the survey.

Seabird Abundance Survey

Seabird abundance data was collected to aid the North Pacific Fisheries Management Council in revisions to seabird avoidance measures in groundfish and halibut hook-and-line fisheries of Alaska. The International Pacific Halibut Commission (IPHC) Protocol for Seabird Sampling and the Seabird Occurrence Form were used (Appendix J). The wind direction and speed, in Beaufort scale, were recorded while setting gear and systematic estimates of seabird abundance were made after the completion of the haul of each set and prior to leaving the area. The data was sent to IPHC for compilation and analysis.

Data Entry/Management

Survey data was entered while at sea using the portable version of the regional integrated database Alexander (Alex) and uploaded to the main Region 1 Alex database at the completion of the survey. In November, after the otoliths were aged, the age data was entered in Sitka.

RESULTS

Tides

The tides were still falling at the beginning of the survey and vessels stayed away from the confluence with Frederick Sound as well as avoided setting the southern most sets during the first few days. The confluence of Frederick Sound and Chatham Strait creates strong and unpredictable tidal currents from Point Gardner south. Currents at depth often may not correspond to the tide book or surface currents and gear snarls are often experienced in this area.

Set Information

Set information was collected from 44 stations. The latitude and longitude for each station as set are listed in Table 4. Beginning last year station 1 was set with only one set of gear, which is a

departure from 1997-2001, where 2 sets of gear were set to cover the area of station 1 and 2. Station 2 continues to no longer exist and was not set.

The depths at the locations where the anchors went overboard ranged from a minimum of 203 fathoms at station 35 to 409 fathoms at station 27. The mean of the average depths calculated at each station was 316 fathoms (Table 4).

The *F/V Masonic* experienced only one set with notable gear snarl problems while the *F/V Ida June* and the *F/V Archangel* experienced gear snarls on several sets. The gear snarls were due to setting snarls, shark snarls, tides, or unknown reasons. The *F/V Ida June* was the only vessel to part gear and they parted at station 23, 24 and 28. All gear was retrieved.

The recorded winds during the survey were from 0 to 15 knots with many days of flat calm. The exception was winds up to 15-25 knots were recorded while setting station 53 on trip 1.

Soak Time

The soak time for a set, measured from the second anchor overboard to the first anchor onboard, ranged from 3 hours 8 minutes to 8 hours 57 minutes, the average soak time was 4 hours 29 minutes and the median was 3 hours 56 minutes (Table 5). For the *F/V Masonic* (southern portion-trip 1) the average soak time was 4 hours 18 minutes. The *F/V Ida June* (central portion-trip 2) average soak time was 5 hours 23 minutes. The *F/V Archangel* (northern portion-trip 3) average soak time was 3 hours 44 minutes.

The haul times measured from anchor to anchor averaged 1 hour and 26 minutes overall and averaged 1 hour 38 minutes for the *F/V Masonic* (southern portion-trip 1), 1 hour and 32 minutes for the *F/V Ida June* (central portion-trip 2) and 1 hour and eight minutes for *F/V Archangel* (northern portion-trip 3) (Table 5).

Hook Accounting

Set information and CPUE data were collected from all 44 stations (Table 6, 7 and 8). Of the 1,098 skates (subsets) recorded, 1,045 skates were valid and used to calculate CPUEs. Of the total 46,838 hooks retrieved on valid subsets, 13,198 (28%) still had bait on them, 14,245 (30%) were bare, and 1,281 (3%) were invalid; i.e. broken, bent, snarled or otherwise invalid. Either sablefish or bycatch species occupied the remaining hooks (39%).

On valid subsets, a total of 15,748 sablefish were caught on a total of 46,838 hooks set. The overall fish-per-hook was 0.34 and ranged from 0.19 at both station 39 and station 23 to 0.51 at station 49 (Table 7 and 8, Figure 17 and 18). The per station fish-per-hook varied throughout the survey area and the overall fish-per-hook per survey portion ranged from a high of 0.36 for stations in the southern portion, to 0.34 for stations in the northern portion, to a low of 0.30 for those stations in the central portion. The fish-per-hook also varied widely within each of these portions (Figure 21).

Using the overall average weight of 2003 survey samples of 3.25 kg (7.17 lbs) the overall kilograms-per-hook was 1.09 (2.41 pounds-per-hook) and ranged from a minimum kilograms-per-hook of 0.58 (1.27 pounds-per-hook) at station 23 to a maximum kilograms-per-hook of 1.80 (3.96 pounds-per-hook) at station 30 (Table 8, Figure 17).

Bycatch

Bycatch included 1,189 shortspine thornyheads, 587 skates, 83 halibut, 82 rougheye rockfish, 57 arrowtooth flounder, 119 shortraker rockfish, 37 Pacific sleeper sharks and 10 redbanded rockfish (Table 6 and Table 7). Additionally, there were 48 other fishes and invertebrates captured that were not identified to species in the Alex database output.

The bycatch of shortspine thornyheads varies substantially by set (Table 6). The 2003 bycatch of shortspine thornyheads is down substantially from all years, 1997-2002 (Table 9). This year's bycatch was down in all 4 statistical areas over last year and overall was only 61% of last year's catch with the largest decrease in Statistical Area 345631 where the catch was only 53% of last year's.

Biological Sampling

Sablefish

Lengths were taken on 818 sablefish. The mean length recorded was 65 cm and the sablefish ranged in length from 36 to 103 cm (Table 10). The mean length recorded in the southern portion was 65 cm and these sablefish ranged from 46 to 101 cm. The mean length recorded in the central portion was 65 cm with a range of 36 to 103 cm. The mean length recorded in the northern portion fish was 64 cm with a range of 47 to 93 cm. To compare lengths with past years data the length frequency was adjusted by the fish-per-hook (Figure 19).

The mean length for male sablefish (n=410) was 62 cm and the samples ranged in length from 37 to 80 cm. The mean length for female sablefish (n=396) was 68 cm and ranged in length from 47 to 103 cm (Table 10, Figure 20, 21).

Weights were recorded for 811 sablefish. The mean weight of the sampled sablefish was 3.25 kg (7.2 round pounds). The mean weight per station ranged from 2.4 to 4.8 kg (5.3 to 10.6 lbs) and the weights of individual fish ranged from 1.0 kg to 12.6 kg (2.2 to 27.8 lbs).

Sex was noted on 806 sablefish. Fifty one percent of the fish were male (Table 11). Fifteen percent of the sablefish males and 4% of the females were immature (maturity code 1) (Table 12). One ripe female (maturity code 4) sablefish was noted; there were no ripe males noted.

The age lab returned estimated ages for 784 samples. These sablefish ranged in age from 4 to 64 years with a mean age at 15 years (Table 13, Figure 22). Females appear on the average to be 4 years younger than the males in the southern portion, 1 year younger in the central portion and

less than ½ year younger in the northern portion. Overall the females average 3 year younger than the males. The sablefish averaged the oldest, at 16.2 years, in the central portion, 15.4 in the southern portion and 12.4 years in the northern portion. The 2003 age frequency has a bimodal distribution with the first mode at 8 and 10 years of age and a weak one around 25 (Figure 22). The distribution is strongly skewed to the left tail, with most fish under 10 years of age. It is unclear why there is a strong mode at 10 years as this year class is not obvious in previous distributions.

Sablefish Tags

One hundred and ten sablefish that were previously tagged by ADF&G were recovered during the survey (Table 14). With the exception of one tag from the NSEI 1988 release, all ADF&G tags recovered were tags from the 1997-2003 NSEI releases: 6 were from the 1997 longline release, 6 from the 1998 longline release, 2 from the 1999 longline release, 9 from the 2000 pot release, 14 from the 2001 pot release, 26 from the 2002 pot release and 46 from the 2003 pot release. Efforts were made to re-release previously tagged sablefish from ADF&G releases other than 2003 with their original tags in place. It was often difficult to notice a tagged fish prior to injury and the majority of these previously tagged fish were harvested due to injury. Of the tagged fish recovered uninjured and released, 25 were re-released for the second time, 2 were released for the third time and one tagged fish was released for the fourth time. All recovered tagged fish from the 2003 release were harvested.

Rockfish

Shortraker, rougheye, and redbanded rockfish were sampled for length, weight, sex and maturity (Appendix I). Aging structures were taken from rockfish, however ages are not available at this time.

Of a total of 119 shortraker rockfish caught, 96 were measured for length and weight (Table 15). The mean length was 62 cm and the fish ranged in length from 40 to 93 cm. The mean weight was 4.5 kg (9.9 lb) and ranged from 1.2 to 13.3 kg (2.6 to 29.3 lb). The sex ratio, noted on 94 of the shortraker rockfish was 53% male. Sexual maturities were noted on 93 shortraker and showed 2% “immature” plus 25% “maturing” shortrakers and no shortrakers found in spawning condition.

Of a total of 82 rougheye rockfish caught, 69 were measured for length and weight (Table 16). The mean length was 44 cm and the fish ranged in length from 34 to 59 cm. The mean weight was 1.5 kg (3.3 lb) and ranged from 0.6 to 5.0 kg (1.3 to 11.0 lb). The sex and sexual maturity were noted on all 69 of the rougheye rockfish resulting in 59% males and 57% percent of the samples were “immature” and 20% “maturing” and no rougheye found in spawning condition.

Of a total of 10 redbanded rockfish caught, none were sampled in 2003 (Table 17).

Shortspine Thornyhead

Of the 1,189 shortspine thornyhead captured, lengths were taken on 483 fish. The mean length was 40 cm and lengths ranged from 28 to 66 cm (Table 18, Figure 23).

Other Species

Biological data was not recorded from other species.

Sampling for Other Agencies

Seabird Abundance Survey

Gulls spp. were the only sea birds noted at most of the stations during the seabird observation time period. No birds were present at the majority of the stations. Observations at the 4 southernmost stations were the exception. One blackfooted albatross was observed within the 50-meter observation area at station 57 and while no albatross were observed within the observation area, 24 were observed outside the area at station 52 (Figure 24 and 25). Fifteen blackfooted albatross were observed inside and 10 outside the observation area at station 55 and 2 were observed inside and 3 outside the area at station 58. In addition, 2 dark fulmars were observed inside and 4 outside the area at station 58.

The seabird observation data was sent to IPHC for summarization and analysis. The results are not available at this time.

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Table 1. Longline survey specifications, NSEI longline surveys 1988-2003.

Year	Start	End	Vessels		Hooks per set	Hook spacing	Hook size	Gangion length	Bait	Soak Time	Skate Wts	Fish tagged ¹	Sets made
1988	8/14	8/26	F/V Betty		1000	3 m	13 C	NA	Herring	1 hr	No	1298 t	24
1989	8/7	8/25	<i>F/V Carrie</i>		500	3 m	13 C	NA	Herring	1 hr	No	None	44
1990	8/26	9/10	<i>F/V Isis</i>		500	3 m	13 C	NA	Herring	1 hr	No	None	40
1991	8/13	8/30	<i>R/V Stellar</i>		500	3 m	13 C	0.375 m	Herring	1 hr	2.3 kg	None	40
1992	8/17	8/31	<i>F/V Charles T</i>		500	3 m	13 C	0.375 m	Herring	1 hr	2.3 kg	None	40
1993	8/23	9/8	<i>R/V Medeia</i>		500	3 m	13 C	0.375 m	Herring	1 hr	2.3 kg	None	38
1994	8/23	9/5	<i>R/V Medeia</i>		500	3 m	13 C	0.375 m	Herring	1 hr	2.3 kg	None	38
1995	8/23	9/8	<i>R/V Medeia</i>		500	3 m	13 C	0.375 m	Herring Squid Squid	1 hr 3 hr 3 hr	2.3 kg	None	30 6 24
1996	8/17 8/19	8/31 8/23	<i>R/V Medeia</i> <i>F/V Ida June</i>		500 750	3 m 1 m	13 C 13C	0.375 m 0.2 m	Herring Squid	1 hr 3-7 hr	2.3 kg 1.0 kg	None None	38 16
1997	8/7	8/13	<i>F/V Ida June</i> <i>F/V Charles T</i> <i>F/V Kruzof</i>		923- 1217	2 m	13 C	0.2-0.3 m	Squid	3-11 hr	1-3.2 kg	5579 tu	45
1998	8/13	8/19	<i>F/V Ida June</i> <i>F/V Charles T</i> <i>F/V Ocean Cape</i>		831- 1267	2 m	13 C	0.2-0.3 m	Squid	3-11 hr	1-3.2 kg	4998 tl	45
1999	8/15	8/23	<i>F/V Ida June</i> <i>F/V Charles T</i>		1002- 1129	2 m	13 C	0.2-0.3 m	Squid	3-11 hr	1.4 kg	3568 t	45
2000	8/16	8/23	<i>F/V Ida June</i> <i>F/V Charles T</i> <i>F/V Spirit</i>		1125	2 m	13 C	0.375 m	Squid	3-11 hr	3.2 kg		45
2001	8/08	8/13	<i>F/V Ida June</i> <i>F/V Charles T</i> <i>F/V Sylvia</i>		1125	2 m	13 C	0.375 m	Squid	3-11 hr	3.2 kg	none	45
2002	8/13	8/18	<i>F/V Ida June</i> <i>F/V Charles T</i> <i>F/V Archangel</i>		1125	2 m	13 C	0.375 m	Squid	3-11 hr	3.2 kg	none	44
2003	8/3	8/7	<i>F/V Masonic</i> <i>F/V Ida June</i> <i>F/V Archangel</i>		1125	2 m	13 C	0.375	Squid	3-11 hr	3.2	none	44

¹notation on tags: t=t-bar tag, u=upper fin clip, l=lower fin clip.

²In 1995 30 sets were made side-by-side to compare 1 hour and 3 hours soaks, 6 of these were conventional gear but due to operational problems the rest of the comparison sets were snap-on gear

Table 2. Vessel and scientific crew, NSEI longline survey 2003.

<i>F/V Masonic</i>	<i>F/V Archangel</i>	<i>F/V Ida June</i>
Skipper: Bill Lewis	Skipper: Phil Wyman	Skipper: Greg Beam
Crew: John Olsen	Crew: Todd Nevers	Crew: Ameriah Beam
Crew: Seth Perry	Crew: Todd Bayne	Crew: Patrick Kingsley
Crew: Chris Christensen	Crew: Todd Wyman	Crew: Caanan Beam
Crew: Dane Lewis Bill's son		Crew: Angela Tilleson
ADFG: Beverly Richardson	ADFG :Deidra Holum	ADFG: Tory O'Connell
ADFG: Mike Vaughn	ADFG: Kamala Carroll	

Table 3. Station assignments and station numbers by portion of survey area, NSEI longline survey 2003.

<i>F/V Masonic</i> Southern Portion Trip 1	<i>F/V Ida June</i> Central Portion Trip 2	<i>F/V Archangel</i> Northern Portion Trip 3
Station Number	Station Number	Station Number
1	9	30
	10	32
3	13	33
4	15	35
5	16	37
6	18	39
7	19	41
8	21	42
52	22	43
53	23	44
54	24	45
55	25	46
56	27	47
57	28	49
58	29	51

Table 4. Actual locations of sets and time set, stations listed south to north, NSEI longline survey 2003.

Year	Trip	Set	Statistical Area	Station	Start Latitude	Start Longitude	End Latitude	End Longitude	Day and Time Set	Start fm	End fm	Avg fm
2003	1	14	345631	1	56 32.83	134 34.59	56 31.23	134 34.59	8/7/2003 12:12	284	284	277
2003	1	6	345631	3	56 33.58	134 31.13	56 35.14	134 31.28	8/4/2003 13:15	356	355	356
2003	1	5	345631	4	56 41.48	134 34.81	56 39.80	134 34.85	8/4/2003 8:59	373	363	370
2003	1	4	345631	5	56 42.31	134 33.07	56 40.88	134 33.16	8/4/2003 7:11	382	373	378
2003	1	2	345631	6	56 40.57	134 25.61	56 39.07	134 25.63	8/3/2003 7:26	296	275	295
2003	1	1	345631	7	56 43.28	134 26.52	56 42.06	134 26.16	8/3/2003 6:38	275	248	277
2003	1	3	345631	8	56 42.90	134 33.22	56 44.19	134 33.20	8/3/2003 12:45	385	400	392
2003	1	9	345603	52	56 14.04	134 27.33	56 15.46	134 27.27	8/6/2003 6:52	394	393	394
2003	1	13	345603	53	56 25.28	134 29.69	56 26.67	134 29.87	8/7/2003 8:00	389	383	386
2003	1	11	345603	54	56 20.25	134 33.92	56 18.79	134 34.73	8/6/2003 13:29	231	349	320
2003	1	7	345603	55	56 5.34	134 30.49	56 6.84	134 30.53	8/5/2003 6:20	282	293	288
2003	1	12	345603	56	56 24.44	134 36.01	56 26.02	134 36.25	8/7/2003 5:32	314	309	305
2003	1	10	345603	57	56 16.60	134 24.71	56 15.17	134 24.74	8/6/2003 9:18	390	366	378
2003	1	8	345603	58	56 8.07	134 34.80	56 6.52	134 34.92	8/5/2003 8:19	304	285	295
2003	2	14	345631	9	56 45.40	134 29.14	56 44.14	134 28.49	8/7/2003 8:11	360	352	356
2003	2	13	345631	10	56 48.90	134 31.83	56 47.53	134 31.70	8/7/2003 7:40	365	385	375
2003	2	15	345631	13	56 49.04	134 30.64	56 50.54	134 30.65	8/7/2003 12:50	206	228	217
2003	2	11	345631	15	56 54.45	134 38.39	56 53.05	134 38.39	8/6/2003 11:45	357	364	360
2003	2	12	345631	16	56 54.34	134 33.67	56 52.97	134 33.80	8/7/2003 6:59	316	364	357
2003	2	10	345701	18	57 2.10	134 42.65	57 0.59	134 42.65	8/6/2003 10:45	352	335	360
2003	2	8	345701	19	57 2.96	134 43.89	57 1.53	134 43.89	8/5/2003 8:53	360	336	348
2003	2	9	345701	21	57 7.57	134 41.99	57 6.04	134 42.06	8/5/2003 10:08	342	355	348
2003	2	7	345701	22	57 9.97	134 47.31	57 11.43	134 48.37	8/5/2003 7:20	334	315	324
2003	2	6	345701	23	57 13.04	134 40.88	57 11.22	134 41.01	8/4/2003 10:59	338	396	367
2003	2	5	345701	24	57 15.35	134 40.55	57 13.96	134 40.88	8/4/2003 5:46	242	298	270
2003	2	4	345701	25	57 16.64	134 38.98	57 17.81	134 39.90	8/4/2003 8:10	242	279	261
2003	2	2	345701	27	57 18.70	134 44.88	57 20.12	134 44.62	8/3/2003 8:06	409	371	385
2003	2	1	345701	28	57 18.63	134 42.65	57 20.26	134 42.72	8/3/2003 7:24	258	335	275
2003	2	3	345701	29	57 20.87	134 36.95	57 19.41	134 37.01	8/3/2003 9:55	271	278	290
2003	3	2	345701	30	57 21.10	134 39.25	57 19.60	134 39.44	8/3/2003 9:01	290	334	301
2003	3	1	345701	32	57 24.01	134 46.01	57 22.76	134 46.01	8/3/2003 7:02	390	358	357
2003	3	3	345701	33	57 25.38	134 41.64	57 26.85	134 41.60	8/3/2003 12:29	292	310	298
2003	3	15	345731	35	57 33.18	134 42.20	57 31.83	134 42.01	8/7/2003 16:15	203	325	275
2003	3	13	345731	37	57 33.65	134 45.10	57 32.13	134 45.20	8/7/2003 9:27	322	348	332
2003	3	14	345731	39	57 35.91	134 43.89	57 34.69	134 42.25	8/7/2003 13:34	303	241	244
2003	3	12	345731	41	57 41.37	134 50.34	57 41.71	134 52.95	8/7/2003 7:12	258	300	291
2003	3	10	345731	42	57 44.02	134 53.14	57 42.58	134 52.96	8/6/2003 6:59	294	311	298
2003	3	8	345731	43	57 44.35	134 45.79	57 45.82	134 46.01	8/5/2003 10:06	285	248	288
2003	3	11	345731	44	57 46.32	134 48.76	57 44.96	134 48.73	8/6/2003 9:10	278	278	278
2003	3	9	345731	45	57 47.17	134 50.19	57 45.70	134 50.07	8/5/2003 12:26	295	285	289
2003	3	7	345731	46	57 50.00	134 49.02	57 48.69	134 48.64	8/5/2003 7:37	248	267	257
2003	3	4	345731	47	57 50.50	134 45.93	57 52.05	134 46.25	8/4/2003 8:14	245	270	259
2003	3	6	345731	49	57 51.36	134 47.24	57 52.86	134 46.94	8/4/2003 12:58	278	273	274
2003	3	5	345731	51	57 55.26	134 47.87	57 56.79	134 48.16	8/4/2003 10:34	302	240	273

Table 5. Dates and time of set with soak and hauling times, NSEI longline survey 2003.

Year	Trip	Station	Area	Date and time 2nd anchor overboard	Soak time (2nd anchor over to 1st anchor onboard)	Haul time (1st to 2nd anchor onboard)	Haulback order	Wind direction	Wind speed in knots
2003	1	1	Patterson Point	8/7/2003 12:12	3:55	1:39	Opposite	NW	5 to 15
2003	1	3	N Patterson Point	8/4/2003 13:15	4:34	1:37	Opposite	SE	0 to 5
2003	1	4	Mt Ada	8/4/2003 8:59	5:37	1:52	Same	SE	0 to 5
2003	1	5	S Gut Bay	8/4/2003 7:11	3:08	1:30	Same	SE	0 to 5
2003	1	6	S Washington Bay	8/3/2003 7:26	6:37	1:28	Opposite	N	0 to 5
2003	1	7	Washington Bay	8/3/2003 6:38	3:14	1:33	Same	N	0 to 5
2003	1	8	Gut Bay	8/3/2003 12:45	4:05	1:44	Same	Calm	0
2003	1	52	Port Alexander Mid	8/6/2003 6:52	3:14	1:49	Opposite	N	5 to 15
2003	1	53	Port Herbert Middle	8/7/2003 8:00	5:14	1:29	Opposite	N	15 to 25
2003	1	54	Port Alexander	8/6/2003 13:29	4:07	1:41	Opposite	N	5 to 15
2003	1	55	Point Howard Middle	8/5/2003 6:20	3:22	1:43	Opposite	SE	5 to 15
2003	1	56	Port Herbert	8/7/2003 5:32	3:31	1:46	Same	N	0 to 5
2003	1	57	Port Malmsbury	8/6/2003 9:18	5:34	1:28	Opposite	N	5 to 15
2003	1	58	Cape Ommaney	8/5/2003 8:19	4:11	1:45	Opposite	SE	5 to 15
2003	2	9	N Washington Bay	8/7/2003 8:11	7:41	1:26	Same	W	0 to 5
2003	2	10	Hoggat Bay in Middle	8/7/2003 7:40	5:43	1:32	Same	W	0 to 5
2003	2	13	Kingsmill Point	8/7/2003 12:50	5:37	1:23	Same	NW	0 to 5
2003	2	15	N Red Bluff Bay	8/6/2003 11:45	5:00	1:24	Same	W	5 to 15
2003	2	16	Yasha Island	8/7/2003 6:59	3:25	1:28	Same	N	0 to 5
2003	2	18	Cascade Bay	8/6/2003 10:45	3:14	1:21	Same	W	5 to 15
2003	2	19	N Cascade Bay	8/5/2003 8:53	8:57	1:36	Same	Calm	0
2003	2	21	Warm Springs Bay	8/5/2003 10:08	3:46	1:37	Same	Calm	0
2003	2	22	White Cliff	8/5/2003 7:20	3:57	1:33	Same	Calm	0
2003	2	23	N Wilson Cove	8/4/2003 10:59	6:26	0:56	Same	SW	0 to 5
2003	2	24	Point Caution	8/4/2003 5:46	8:38	1:41	Same	SW	0 to 5
2003	2	25	Woody Point	8/4/2003 8:10	3:56	1:24	Opposite	SW	0 to 5
2003	2	27	Point Lull	8/3/2003 8:06	5:18	1:31	Opposite	Calm	0
2003	2	28	Point Lull in Middle	8/3/2003 7:24	3:25	2:02	Same	Calm	0
2003	2	29	Chaik Bay	8/3/2003 9:55	5:52	2:13	Opposite	Calm	0
2003	3	30	Village Point	8/3/2003 9:01	4:56	1:24	Same	SE	0 to 5
2003	3	32	S Point Thatcher	8/3/2003 7:02	3:34	1:13	Opposite	SE	0 to 5
2003	3	33	Distant Pt. Middle	8/3/2003 12:29	3:56	1:00	Same	S	0 to 5
2003	3	35	N Danger Point	8/7/2003 16:15	3:23	1:09	Same	NW	5 to 15
2003	3	37	White Rock in Middle	8/7/2003 9:27	4:55	1:05	Same	NW	5 to 15
2003	3	39	Parker Point	8/7/2003 13:34	3:55	1:12	Opposite	NW	0 to 5
2003	3	41	Basket Bay	8/7/2003 7:12	4:04	1:13	Same	NW	5 to 15
2003	3	42	S South Passage Pt	8/6/2003 6:59	3:16	1:09	Opposite	NW	5 to 15
2003	3	43	South Fishery Creek	8/5/2003 10:06	3:15	1:10	Same	NW	0 to 5
2003	3	44	S Passage Pt Middle	8/6/2003 9:10	3:16	1:05	Opposite	NW	5 to 15
2003	3	45	South Passage Point	8/5/2003 12:26	3:41	1:10	Opposite	NW	5 to 15
2003	3	46	Fishery Point	8/5/2003 7:37	3:12	1:05	Opposite	SE	0 to 5
2003	3	47	North Fishery Point	8/4/2003 8:14	3:21	1:03	Opposite	S	5 to 15
2003	3	49	Far North Fishery Pt	8/4/2003 12:58	3:50	1:07	Opposite	SE	5 to 15
2003	3	51	Point Hepburn	8/4/2003 10:34	3:36	1:07	Opposite	SE	5 to 15
				average	4:29	1:26	average		
				maximum	8:57				
				minimum	3:08				
				median	3:56				

Table 6. Status of hooks by station, NSEI longline survey 2003.

Station (south to north)	Fish per Hook	Trip	Hooks Retrieved	Bare Hooks	Hooks with Bait	Invalid Hooks	Sable fish	Halibut	Thorny- head	SR	RE	RB	Skates	ATF	Dover sole	Pacific Sleepers Shark	Others
55	0.45	1	1,114	267	251	41	506	5	28	0	0	0	9	4	3	0	0
58	0.29	1	1,111	222	464	27	324	4	57	10	1	0	1	0	1	0	0
52	0.23	1	1,118	192	509	34	256	0	91	3	0	0	3	1	3	0	24
57	0.37	1	1,118	356	246	40	417	0	41	0	0	0	6	2	5	0	5
54	0.28	1	1,122	323	342	37	319	2	49	43	0	0	2	5	0	0	0
56	0.42	1	1,074	352	206	12	450	2	21	1	0	0	25	5	0	0	0
53	0.38	1	1,122	473	163	23	426	1	22	0	0	0	9	5	0	0	0
1	0.33	1	1,034	234	334	36	342	6	60	3	0	0	12	4	3	0	0
3	0.31	1	1,124	480	257	10	349	0	10	0	0	0	12	1	2	0	0
4	0.44	1	1,128	582	15	12	499	1	5	0	0	0	11	2	1	0	0
5	0.38	1	1,111	556	90	25	419	1	9	0	0	0	9	0	2	0	0
6	0.37	1	1,117	643	7	21	418	2	2	0	0	0	21	2	0	1	0
7	0.43	1	1,104	300	277	11	472	3	25	0	7	0	5	3	0	1	0
8	0.39	1	1,111	609	46	8	431	1	1	0	0	0	13	2	0	0	0
9	0.23	2	1,000	417	192	69	233	0	79	1	0	0	3	0	5	1	0
10	0.25	2	990	313	264	60	246	1	84	2	0	0	10	1	5	4	0
13	0.23	2	1,123	231	422	37	258	16	75	3	50	7	16	2	4	1	0
16	0.34	2	1,033	321	292	28	349	1	28	1	0	0	6	5	2	0	0
15	0.41	2	946	305	196	16	389	0	20	0	0	0	15	1	3	1	0
18	0.27	2	953	228	372	33	253	0	46	1	0	0	13	0	4	0	0
19	0.30	2	899	443	81	62	268	3	24	0	0	0	7	0	11	0	0
21	0.34	2	989	247	344	39	339	1	11	0	0	0	6	0	2	0	0
22	0.28	2	1,133	310	398	23	321	2	40	0	0	0	34	5	0	0	0
23	0.19	2	945	261	427	24	175	1	43	3	0	0	2	0	6	3	0
24	0.34	2	900	381	118	23	302	7	34	14	0	2	13	0	4	1	0
25	0.36	2	901	389	113	32	328	1	24	0	0	0	9	0	4	1	0
28	0.24	2	1,125	387	370	44	269	0	37	8	0	0	2	0	5	2	0
27	0.40	2	1,036	472	82	30	415	0	11	0	0	0	16	0	8	2	0
29	0.38	2	1,128	549	55	48	429	1	19	0	0	0	15	0	12	0	0
30	0.47	3	1,111	263	227	17	518	0	40	2	0	0	24	1	12	6	0
32	0.37	3	1,069	462	123	18	391	2	25	0	0	0	19	2	27	0	0
33	0.47	3	1,103	232	279	22	519	0	22	0	0	0	29	0	0	0	0
35	0.21	3	1,074	205	571	36	225	1	14	2	2	0	12	0	3	3	0
37	0.25	3	1,073	147	594	24	268	0	24	0	0	0	15	1	0	0	0
39	0.19	3	1,122	163	676	32	212	0	10	15	1	1	7	0	2	3	0
41	0.36	3	1,070	198	440	5	385	3	13	3	2	0	10	0	8	2	0
42	0.26	3	1,118	128	618	41	286	0	16	0	0	0	27	2	0	0	0
43	0.36	3	1,124	258	403	24	406	2	3	0	0	0	21	1	3	2	1
44	0.27	3	1,036	161	540	18	284	1	18	0	0	0	14	0	0	0	0
45	0.35	3	1,075	196	459	26	371	1	2	0	0	0	20	0	0	0	0
46	0.36	3	1,026	249	332	49	371	5	1	0	3	0	15	0	0	0	0
47	0.37	3	1,117	270	379	22	408	1	1	0	5	0	27	0	1	2	0
49	0.51	3	1,080	218	260	15	554	2	1	0	0	0	30	0	0	0	0
51	0.34	3	1,031	252	364	27	348	3	3	4	11	0	12	0	3	1	3
Overall	0.34		46,838	14,245	13,198	1,281	15,748	83	1,189	119	82	10	587	57	154	37	48
<p>0.19 min @ Stations 23 and 39 0.51 max @ Stations 49 (all subsets good catches) 0.34 median</p>																	
<p style="text-align: right;">This table includes only valid subsets</p>																	

Table 7. Overall status of hooks and catch (valid subsets only), NSEI longline survey 1997-2003.

Valid subsets only	2003	2002	2001	2000	1999	1998	1997
Total hooks	46,838	46,435	47,867	48,400	48,538	46,716	45,778
Bare	14,245	9,927	13,660	12,254	16,393	11,380	15,235
Bait	13,198	17,371	12,314	17,662	15,739	17,785	15,236
Invalid	1,281	1,092	1,191	1,669	875	1,124	18
Sablefish	15,748	14,542	17,361	12,122	12,708	12,472	12,336
Halibut	83	161	104	142	101	159	214
Thornyhead	1,189	1,950	1,704	2,491	1,541	1,909	1,381
Shortraker	119	54	250	183	217	215	184
Rougheyeye	82	153	69	111	173	79	91
Redbanded	10	17	22	22	37	39	34
Other rockfish	0	0	0	0	0	0	1
Dogfish	0	1	0	1	1	5	0
Skate	587	770	817	1,097	439	1,189	788
Arrowtooth	57	141	121	197	135	116	131
Other criters	192	195	133	366	155	219	124
Pacific Sleeper	37	48	109	59	19	20	3
Corals	10	8	5	7	5	0	1
Percent of valid (total hooks minus invalid hooks) hooks with bait	29%	38%	26%	38%	33%	39%	33%
Percent of total hooks with bait	28%	37%	26%	36%	32%	38%	33%
Sablefish-per-(valid) hook	0.35	0.32	0.37	0.26	0.27	0.27	0.27
Sablefish-per-hook	0.34	0.31	0.36	0.25	0.26	0.27	0.27
Percent of total hooks with bycatch	5%	8%	7%	10%	6%	8%	6%

Table 8. Fish-per-hook, average weight, round kilogram-per-hook and round pound-per-hook by station and overall, NSEI longline survey 2003.

Valid subsets only.							
Station (south to north)	Hooks Retrieved	Sablefish	Fish-per- Hook	Average (round) kilogram	(Round) Kilogram- per-hook	Average (round) pound	(Round) Pound- per-hook
55	1,114	506	0.45	2.78	1.26	6.12	2.78
58	1,111	324	0.29	3.86	1.13	8.52	2.48
52	1,118	256	0.23	4.54	1.04	10.01	2.29
57	1,118	417	0.37	3.61	1.35	7.96	2.97
54	1,122	319	0.28	3.68	1.05	8.11	2.31
56	1,074	450	0.42	3.24	1.36	7.14	2.99
53	1,122	426	0.38	2.56	0.97	5.64	2.14
1	1,034	342	0.33	3.42	1.13	7.54	2.50
3	1,124	349	0.31	3.16	0.98	6.97	2.16
4	1,128	499	0.44	2.60	1.15	5.74	2.54
5	1,111	419	0.38	3.05	1.15	6.72	2.53
6	1,117	418	0.37	3.56	1.33	7.84	2.93
7	1,104	472	0.43	3.76	1.61	8.29	3.55
8	1,111	431	0.39	2.80	1.08	6.16	2.39
9	1,000	233	0.23	3.71	0.86	8.18	1.91
10	990	246	0.25	3.82	0.95	8.42	2.09
13	1,123	258	0.23	3.29	0.76	7.26	1.67
16	1,033	349	0.34	2.96	1.00	6.52	2.20
15	946	389	0.41	2.80	1.15	6.18	2.54
18	953	253	0.27	3.01	0.80	6.63	1.76
19	899	268	0.30	3.33	0.99	7.34	2.19
21	989	339	0.34	3.76	1.29	8.28	2.84
22	1,133	321	0.28	3.16	0.90	6.98	1.98
23	945	175	0.19	3.11	0.58	6.86	1.27
24	900	302	0.34	3.47	1.16	7.65	2.57
25	901	328	0.36	3.74	1.36	8.25	3.00
28	1,125	269	0.24	4.79	1.14	10.55	2.52
27	1,036	415	0.40	3.40	1.36	7.49	3.00
29	1,128	429	0.38	2.91	1.11	6.42	2.44
30	1,111	518	0.47	3.85	1.80	8.49	3.96
32	1,069	391	0.37	2.99	1.09	6.58	2.41
33	1,103	519	0.47	2.37	1.12	5.23	2.46
35	1,074	225	0.21	3.35	0.70	7.39	1.55
37	1,073	268	0.25	2.61	0.65	5.76	1.44
39	1,122	212	0.19	4.68	0.88	10.32	1.95
41	1,070	385	0.36	3.95	1.42	8.70	3.13
42	1,118	286	0.26	2.95	0.76	6.51	1.67
43	1,124	406	0.36	2.80	1.01	6.17	2.23
44	1,036	284	0.27	2.89	0.79	6.38	1.75
45	1,075	371	0.35	3.18	1.10	7.01	2.42
46	1,026	371	0.36	2.95	1.07	6.49	2.35
47	1,117	408	0.37	2.75	1.01	6.07	2.22
49	1,080	554	0.51	2.54	1.30	5.60	2.87
51	1,031	348	0.34	4.03	1.36	8.88	3.00
Overall	46,838.00	15,748.00	0.34	3.25	1.09	7.17	2.41
Maximun	1,133	554	0.51	4.79	1.80	10.55	3.96
Minimum	899	175	0.19	2.37	0.58	5.23	1.27

Table 9. Shortspine thornyhead bycatch in numbers and by percent of total thornyheads by statistical area, NSEI longline survey 1997-2003.

Statistical Area	2003		2002		2001		2000		1999		1998		1997	
345603	309	26%	444	23%	488	29%	726	29%	237	15%	440	23%	261	19%
345631	398	33%	751	39%	621	36%	868	35%	585	38%	728	38%	621	45%
345701	376	32%	613	31%	434	25%	723	29%	610	40%	610	32%	389	28%
345731	106	9%	142	7%	161	9%	174	7%	109	7%	131	7%	110	8%
Total	1189	100%	1950	100%	1,704	100%	2,491	100%	1,541	100%	1,909	100%	1,381	100%

Table 10. Sablefish lengths by survey area by sex 2001-2003 and overall 2000-2003, NSEI longline survey.

Fork Lengths cm		2003			2002			2001			2000
Trip		All	Male	Female	All	Male	Female	All	Male	Female	All
Trip 1 Southern	n	277	160	117	178	92	86				
	Maximum	101	79	101	109	83	109	103			111
	Minimum	46	46	47	44	44	46	47			45
	Average	65	63	69	68	65	71	67			66
Trip 2 Central	n	267	135	120	37	121	111				
	Maximum	103	79	103	104	78	104	98			90
	Minimum	36	37	49	46	46	49	44			45
	Average	65	62	70	67	63	71	65			66
Trip 3 Northern	n	274	115	159	262	150	111				
	Maximum	93	80	93	92	77	92	91			86
	Minimum	47	48	47	50	50	51	45			46
	Average	64	61	67	64	62	66	61			63
All	n	818	410	396	673	363	308	746	397	348	422
	Maximum	103	80	103	109	83	109	103	80	103	111
	Minimum	36	37	47	44	44	46	44	44	47	45
	Average	65	62	68	66	63	69	64	62	67	65

Table 11. Sablefish percent males, NSEI longline survey 1997-2003.

	2003	2002	2001	2000	1999	1998	1997
Males	410	366	398	198	188	165	298
Females	396	308	348	226	157	203	283
Total	806	674	746	424	345	368	581
% male	51%	54%	53%	47%	54%	45%	51%

Table 12. Sablefish sex and maturities, NSEI longline survey 2000-2003.

Sex and maturities	2003			2002			2001			2000		
	Both sex	Male	Female									
	%	%	%	%	%	%	%	%	%	%	%	%
Immature	10%	15%	4%	11%	14%	6%	12%	16%	7%	8%	15%	2%
Maturing juvenile	21%	13%	28%	21%	14%	30%	24%	16%	32%	23%	11%	34%
Mature developing	38%	41%	36%	33%	33%	32%	22%	27%	15%	33%	30%	35%
Spawning	0%	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%	0%
Spent	12%	14%	10%	7%	8%	6%	10%	5%	16%	8%	7%	9%
Resting	19%	17%	21%	27%	29%	25%	32%	36%	29%	28%	36%	20%
n	812	414	398	674	366	308	746	398	348	421	198	223

Table 13. Estimated ages of sablefish by sex by trip, NSEI longline survey 2003.

2003	Estimated ages	Male	Female	Grand Total
Trip 1 Southern	n	149	112	261
	Maximum age	64	46	64
	Minimum age	5	5	5
	Average age	17	13	15
Trip 2 Central	n	132	119	251
	Maximum age	52	50	52
	Minimum age	4	5	4
	Average age	17	16	16
Trip 3 Northern	n	115	157	272
	Maximum age	44	45	45
	Minimum age	5	5	5
	Average age	13	12	12
All	n	396	388	784
	Maximum age	64	50	64
	Minimum age	4	5	4
	Average age	16	13	15

Table 14. Recoveries of ADF&G released tags, NSEI longline survey 2003.

ADFG Release Survey	Status	Northern Portion	Center Portion	Southern Portion	Portion Unknown	Total
1988 Longline	Harvested		1			1
1997 Longline	2nd Release	2				2
	Harvested		2	2		4
1998 Longline	2nd Release		1	1		2
	Harvested		1	3		4
1999 Longline	2nd Release	1				1
	Harvested		1			1
2000 Pot	2nd Release	2	1	1		4
	Harvested	2	2		1	5
2001 Pot	2nd Release	4	1			5
	3rd Release	1				1
	4th Release			1		1
	Harvested	1	1	4	1	7
2002 Pot	2nd Release	6	3	2		11
	3rd Release	1				1
	Harvested	2	5	6	1	14
2003 Pot	Harvested	17	17	11	1	46
Total		39	36	31	4	110

Table 15. Shortraker rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2003.

Shortraker Rockfish												
	2003			2002			2001	2000	1999	1998	1997	1997-2001 5 year average
	All	Males	Females	All	Males	Females	All	All	All	All	All	
<u>Lengths (cm)</u>												
n	96	50	44	48	22	26	225	175	124	203	136	Total 862
Maximum length	93	93	84	96	89	96	95	100	98	97	102	102
Minimum length	40	42	40	42	46	42	44	38	41	45	43	38
Average length	62	65	60	62	65	59	64	63	66	68	68	66
<u>Weights</u>												
n	96	50	44	48	22	26	225	151				
Maximum kg	13.3	13.3	10.9	14.0	11.8	14.0	11.8	17.2				
Minimum kg	1.2	1.2	1.2	1.2	1.3	1.2	1.0	0.9				
Average kg	4.5	4.9	4.0	4.4	5.1	3.9	4.6	4.4				
Maximum lb	29.3	29.3	24.0	30.9	26.0	30.9	26.0	37.9				
Minimum lb	2.6	2.6	2.6	2.6	2.9	2.6	2.2	2.0				
Average lb	9.9	10.8	8.9	9.7	11.1	8.5	10.1	9.7				
<u>Sex</u>												
n	94	50	44	48	22	26	223	170				
% male	53%			46%			49%	47%				
<u>Maturities</u>												
n	93	50	43	47	22	25	178	148				
Immature	2	1	1	2	1	1	2	9				
Maturing	23	3	20	12	2	10	30	29				
Mature	20	16	4	12	8	4	37	11				
Developing				0	0	0	0	0				
Spawning				1	0	1	0	1				
Spent	7	1	6	11	6	5	18	44				
Resting	41	29	12	9	5	4	91	54				
% Immatures	2%	2%	2%	4%	5%	4%	1%	6%				
% Maturing	25%	6%	47%	26%	9%	40%	17%	20%				
age data not yet available												

Table 16. Rougheye rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2003.

Rougheye Rockfish												
	2003			2002			2001	2000	1999	1998	1997	1997-2001 5 year average
	All	Males	Females	All	Males	Females	All	All	All	All	All	
<u>Lengths (cm)</u>												
n	69	41	28	117	68	49	77	128	149	75	35	Total 464
Maximum length	59	57	59	64	57	64	79	69	69	64	59	79
Minimum length	34	34	34	32	37	32	31	32	33	32	34	31
Average length	44	43	45	43	44	43	45	44	47	44	44	45
<u>Weights</u>												
n	68	40	28	116	68	48	77	62				
Maximum kg	5.0	5.0	3.6	4.0	3.1	4.0	7.9	2.8				
Minimum kg	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6				
Average kg	1.5	1.4	1.7	1.4	1.4	1.4	1.5	1.3				
Maximum lb	11.0	11.0	7.9	8.8	6.8	8.8	17.4	6.2				
Minimum lb	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3				
Average lb	3.3	3.1	3.6	3.0	3.1	3.0	3.3	2.9				
<u>Sex</u>												
n	69	41	28	117	68	49	77	115				
% male	59%			58%			35%	51%				
<u>Maturities</u>												
n	69	41	28	116	68	48	77	83				
Immature	39	28	11	45	35	10	32	43				
Maturing	14	2	12	37	8	29	27	27				
Mature	8	6	2	15	13	2	5	5				
Developing				0	0	0	0	0				
Spawning				1	1		0	0				
Spent	3	1	2	9	3	6	1	3				
Resting	5	4	1	9	8	1	12	5				
% Immatures	57%	68%	39%	39%	51%	21%	42%	52%				
% Maturing	20%	5%	43%	32%	12%	60%	35%	33%				
age data not yet available												

Table 17. Redbanded rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2003.

Redbanded Rockfish												
	2003			2002			2001	2000	1999	1998	1997	1997-2001 5 year average
	All	Males	Females	All	Males	Females	All	All	All	All	All	
<u>Lengths (cm)</u>	no redbanded sampled in 2003											
n				17	10	7	21	18	37	45	29	Total 150
Maximum length				53	50	53	53	52	57	70	71	71
Minimum length				41	41	43	36	39	37	37	38	36
Average length				46	45	48	45	46	46	51	50	48
<u>Weights</u>												
n				17	10	7	21	13				
Maximum kg				2.9	2.3	2.9	2.9	2.6				
Minimum kg				1.3	1.3	1.7	0.8	1.2				
Average kg				1.9	1.7	2.3	1.8	2.0				
Maximum lb				6.4	5.1	6.4	6.4	5.7				
Minimum lb				2.9	2.9	3.7	1.8	2.6				
Average lb				4.3	3.7	5.1	4.0	4.4				
<u>Sex</u>												
n				17	10	7	20	16				
% male				59%			60%	38%				
<u>Maturities</u>												
n				17	10	7	20	16				
Immature				0	0	0	3	0				
Maturing				0	0	0	2	1				
Mature				7	7	0	1	4				
Developing				0	0	0	0	0				
Spawning				0	0	0	0	0				
Spent				0	0	0	3	7				
Resting				10	3	7	11	4				
% Immatures				0%	0%	0%	15%	0%				
% Maturing				0%	0%	0%	10%	6%				
age data not yet available												

Table 18. Shortspine thornyhead lengths, NSEI longline survey 1997-2003.

Shortspine Thornyhead												
	2003			2002			2001	2000	1999	1998	1997	1997-2001
	All	Males	Females	All	Males	Females	All	All	All	All	All	5 year average
<u>Lengths (cm)</u>												
n	483	na	na	832	na	na	718	913	393	849	87	Total 2960
Maximum length	66	na	na	72	na	na	67	76	80	68	54	80
Minimum length	28	na	na	26	na	na	28	23	30	31	32	31
Average length	40	na	na	41	na	na	40	39	43	42	41	41

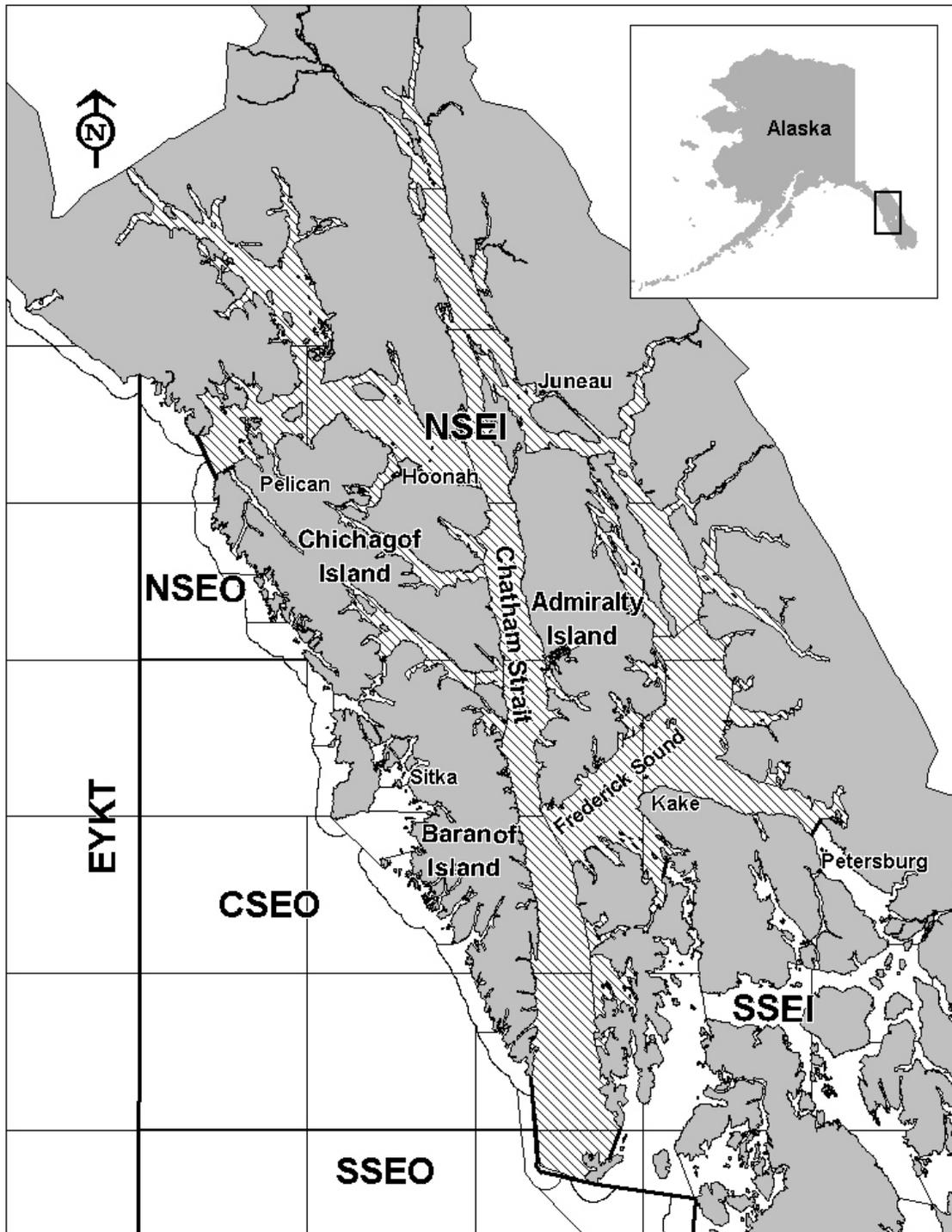


Figure 1. Northern Southeast Inside Subdistrict shown with hatch marks.

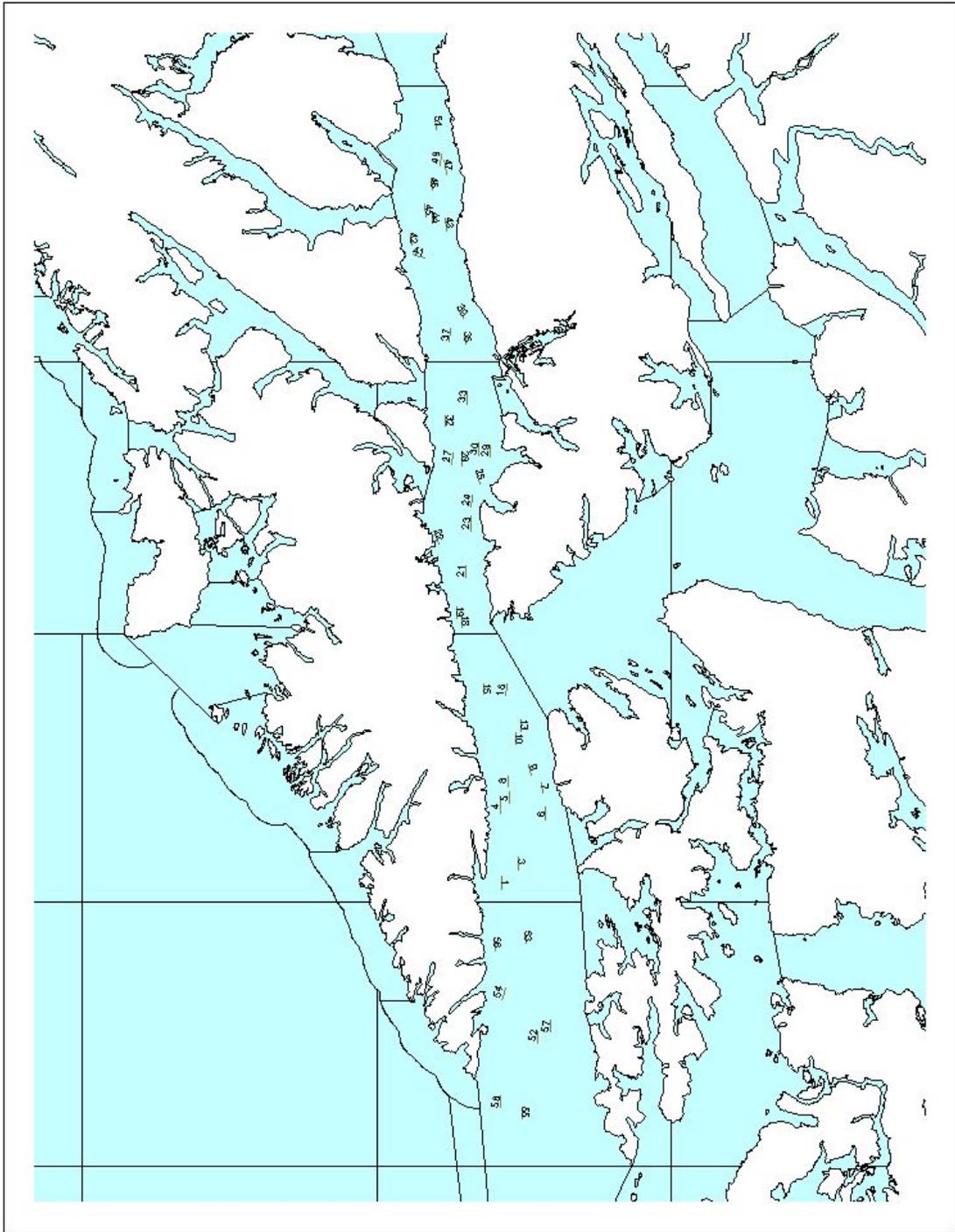


Figure 2. NSEI longline survey station locations as set, 2003.



Figure 3. Front (right) and back (left) threaded circle hook.



Figure 4. Bird avoidance device (BAD) or tori line deployed from the *F/V Archangel*, NSEI longline survey, 2002.



Figure 5. NSEI longline survey vessel, 2003, *F/V Masonic*.



Figure 6. NSEI longline survey vessel, 2003, *F/V Ida June*.



Figure 7. NSEI longline survey vessel 2003, *F/V Archangel*.



Figure 8. Chris Christensen (left) and Dane Lewis (right) baiting, *F/V Masonic*, NSEI longline survey, 2003.



Figure 9. Chris Christensen at roller, *F/V Masonic*, NSEI LL Survey, 2003.



Figure 10. Mike Vaughn tracking weights while the *F/V Masonic* unloaded to the tender *Traci C*, NSEI LL Survey, 2003.



Figure 11. Phil Wyman bleeding sablefish, *F/V Archangel*, NSEI longline survey, 2002.



Figure 12. Hauling gear with ADF&G staff Mike Vaughn prepared to count back hooks and biological sampling setup on hatch, *F/V Masonic*, NSEI longline survey, 2003.



Figure 13. Sablefish gonads, NSEI longline survey, 2002.



Figure 14. Mike Vaughn sampling rockfish, NSEI longline survey, 2003.



Figure 15. Rockfish gonads, NSEI longline survey, 2003.



Figure 16. Shorttraker rockfish and Mike Vaughn, NSEI longline survey, 2003.

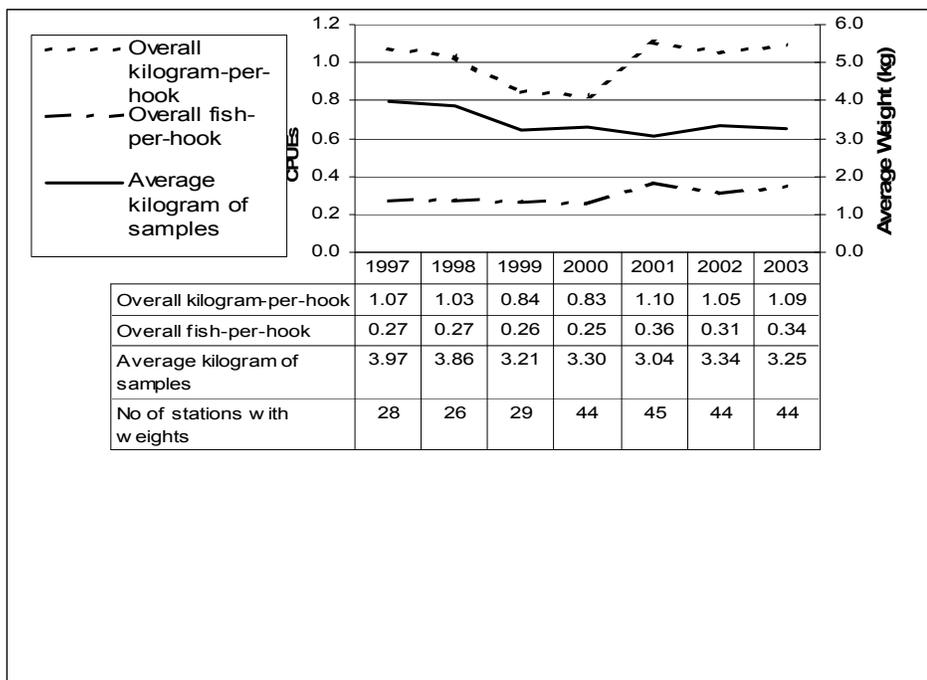


Figure 17. Overall fish-per-hook, kilogram-per-hook and average weight of sampled sablefish, NSEI longline survey, 1997-2003.

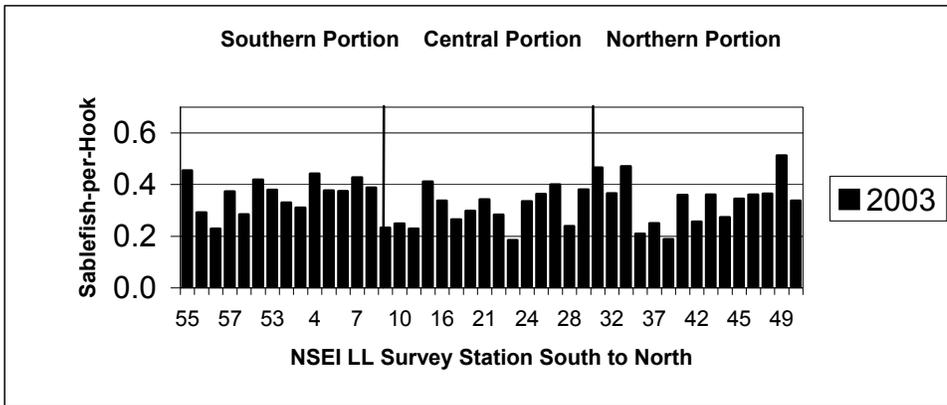
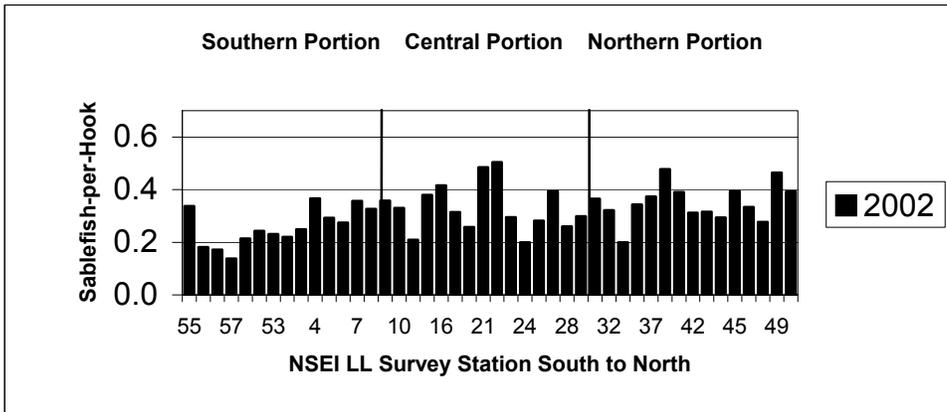
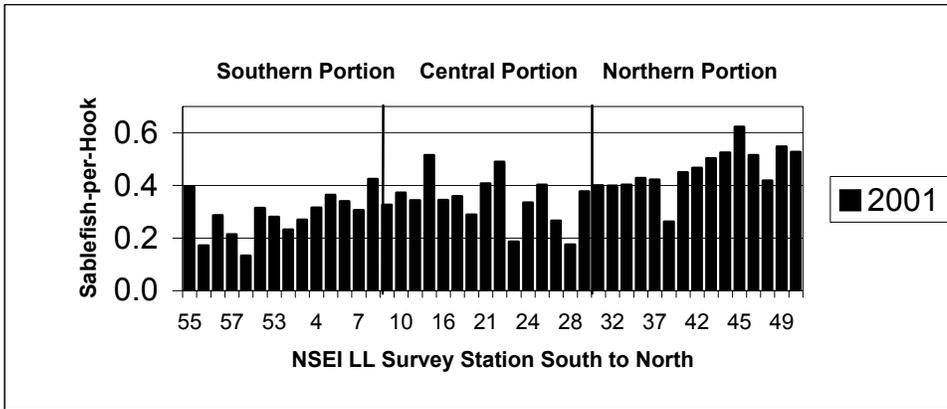


Figure 18. (continued from previous page).

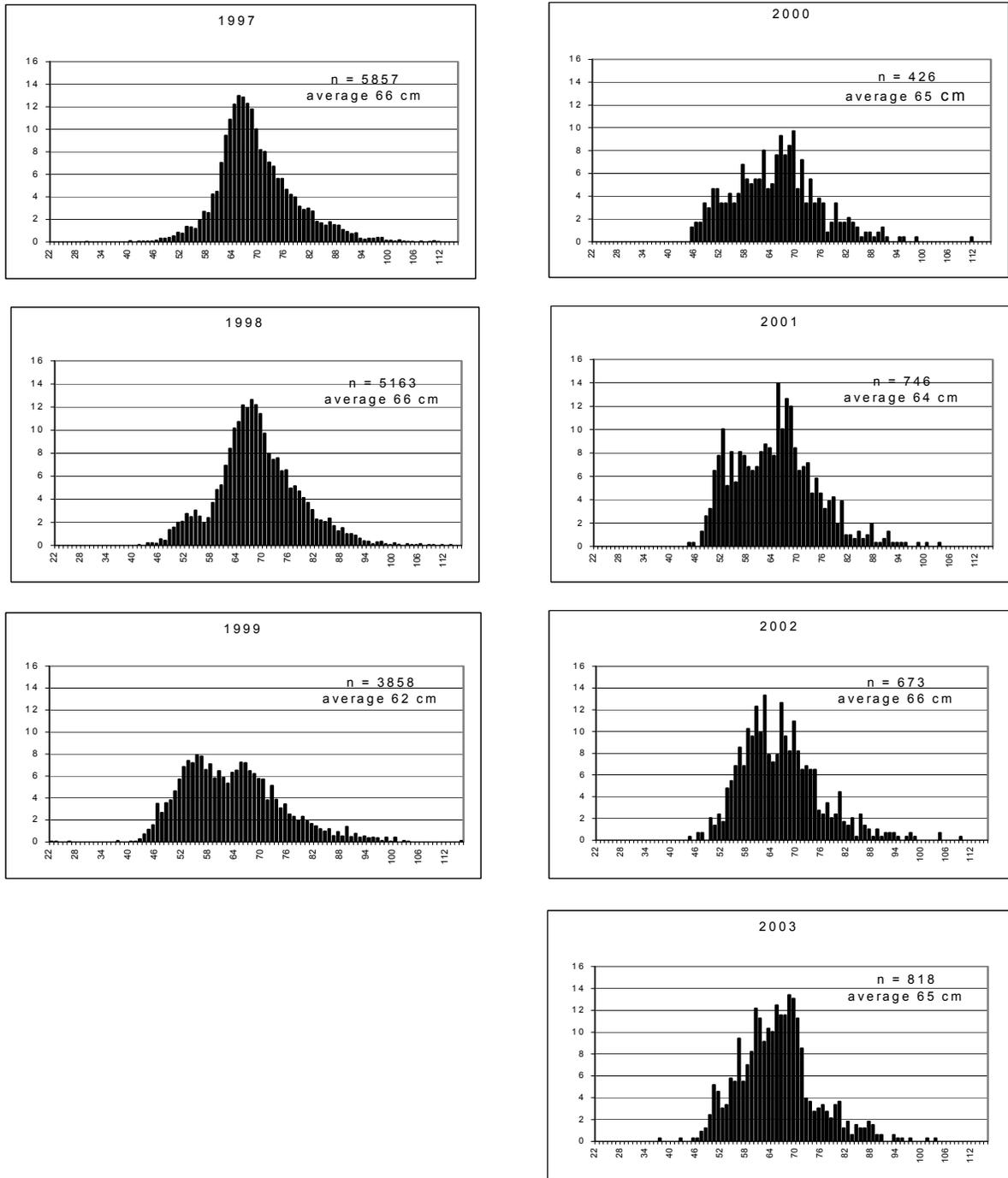


Figure 19. Length frequency of sampled sablefish adjusted by the overall survey CPUE (round pound-per-hook), NSEI longline survey, 2000-2003.

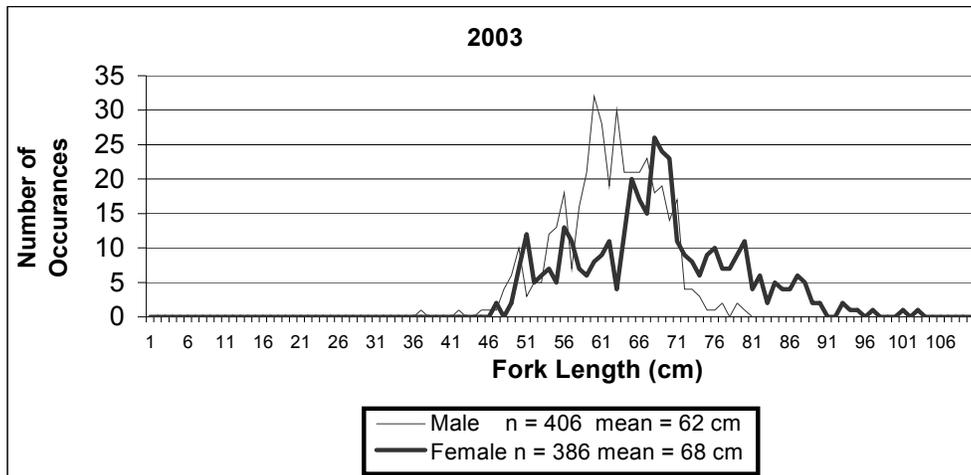


Figure 20. Sablefish lengths by sex, NSEI longline survey 2003.

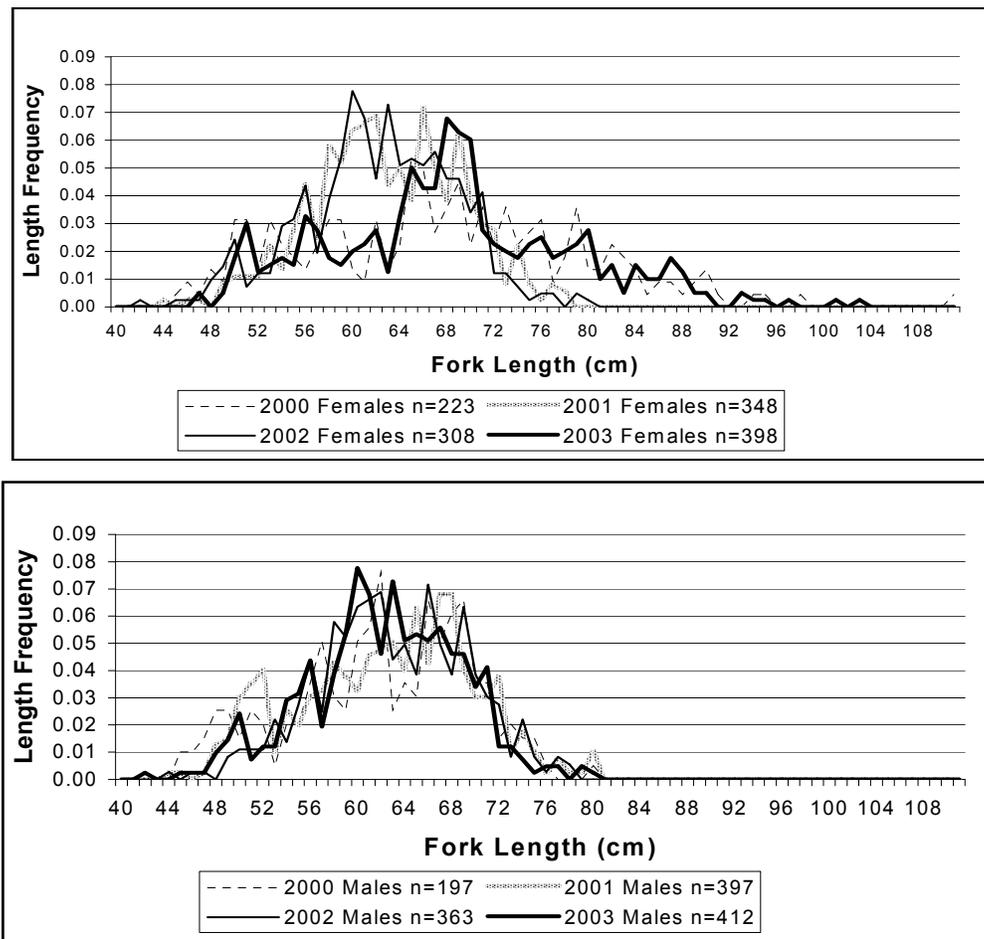


Figure 21. Sablefish lengths by sex, NSEI longline survey, 2000-2003.

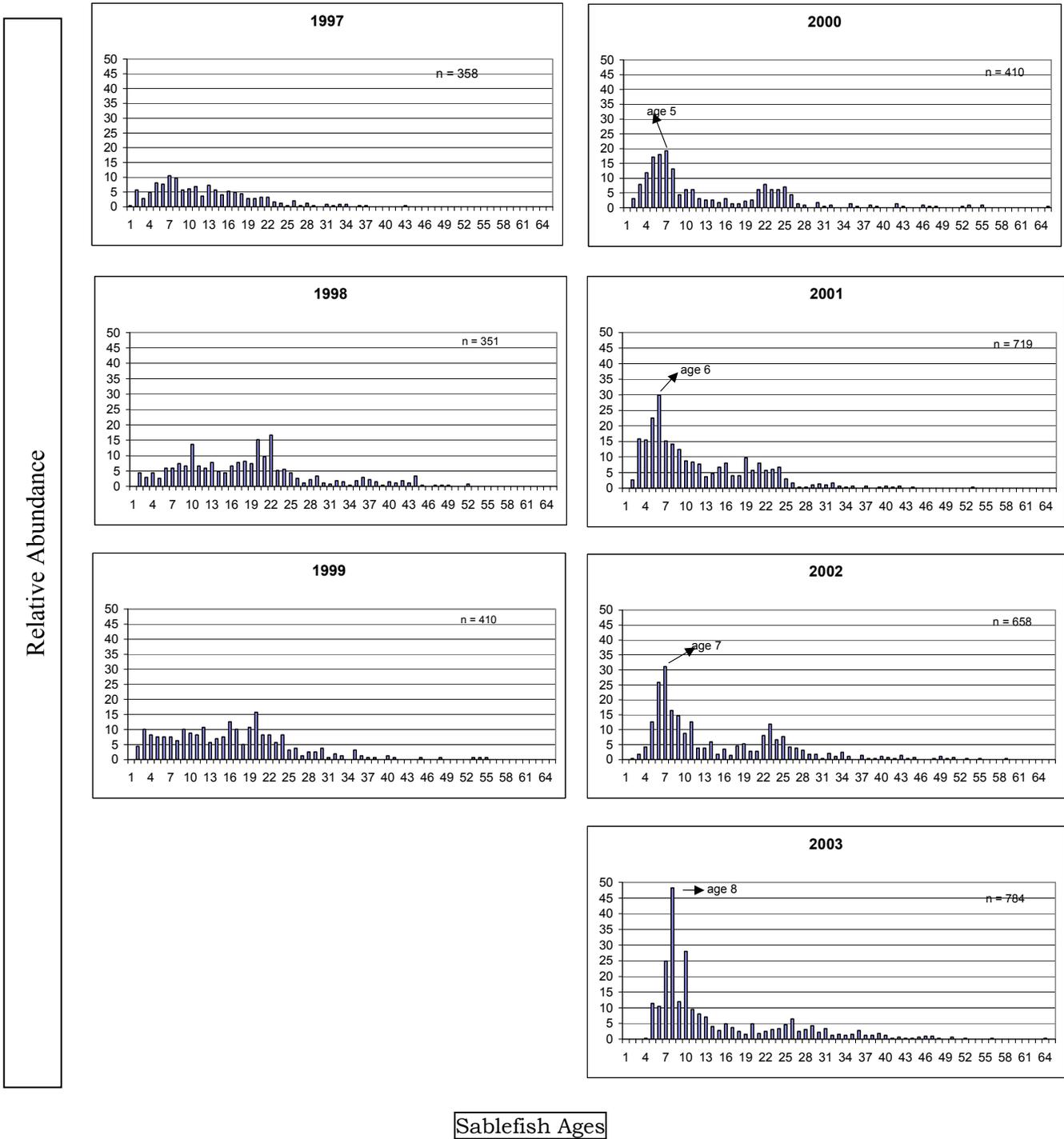


Figure 22. Sablefish age frequency distributions by year, adjusted for survey CPUE (round pounds/hook), NSEI longline survey, 1997-2003.

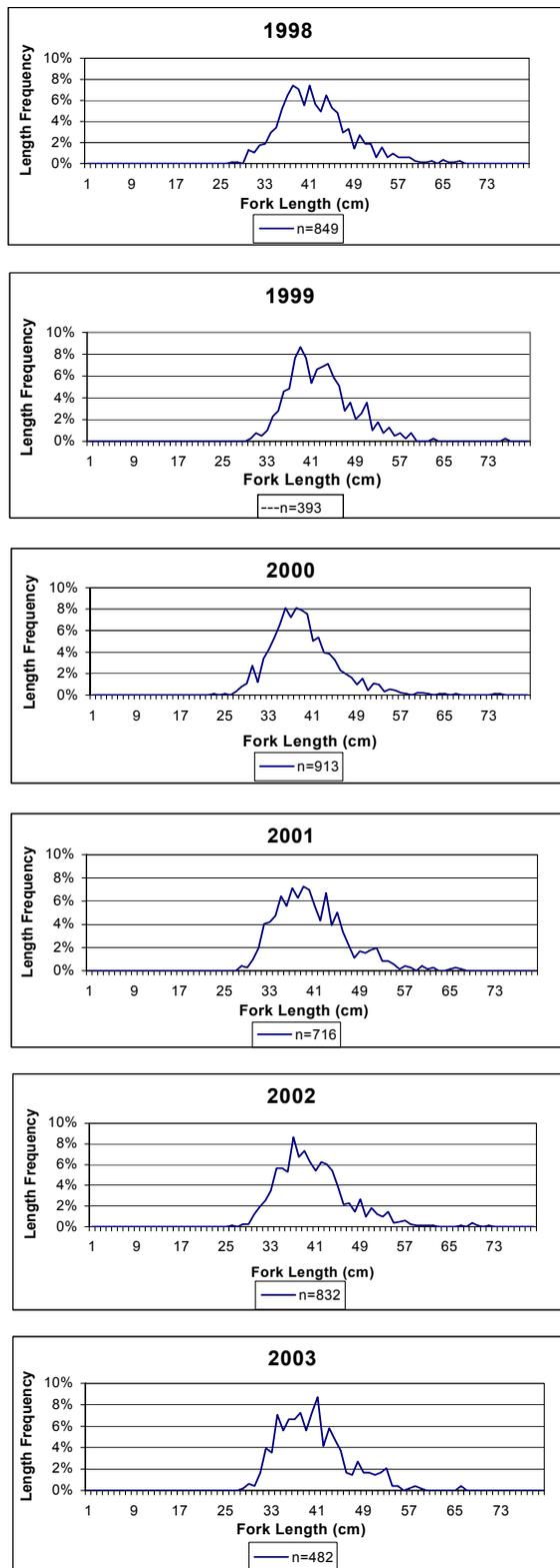


Figure 23. Shortspine thornyhead length frequencies, NSEI longline survey, 1998-2003.



Figure 24. A gathering of blackfooted albatross, southern end of Chatham Straits, NSEI longline survey, 2003.



Figure 25. Blackfooted albatross, NSEI longline survey, 2003.

APPENDICES

APPENDIX

Appendix A. August tide table showing tides for survey dates August 3 –August 7, NSEI longline survey August 2003.

2003 Tide Predictions; Red Bluf Bay													
Date	Day	Time	Height	H or L									
8/1/2003	Fri	03:07AM	12.6	H	09:57AM	-1.2	L	04:12PM	11.9	H	10:15PM	1.9	L
8/2/2003	Sat	03:54AM	12.1	H	10:34AM	-0.6	L	04:48PM	12.1	H	11:05PM	1.6	L
8/3/2003	Sun	04:46AM	11.3	H	11:14AM	0.3	L	05:28PM	12.3	H			
8/4/2003	Mon	12:02AM	1.3	L	05:46AM	10.5	H	11:58AM	1.4	L	06:13PM	12.3	H
8/5/2003	Tue	01:07AM	1.0	L	06:58AM	9.7	H	12:49PM	2.4	L	07:05PM	12.3	H
8/6/2003	Wed	02:20AM	0.6	L	08:26AM	9.2	H	01:53PM	3.3	L	08:06PM	12.3	H
8/7/2003	Thu	03:35AM	0.0	L	09:58AM	9.3	H	03:09PM	3.9	L	09:13PM	12.4	H
8/8/2003	Fri	04:45AM	-0.6	L	11:15AM	9.8	H	04:27PM	4.0	L	10:20PM	12.6	H
8/9/2003	Sat	05:46AM	-1.3	L	12:14PM	10.4	H	05:36PM	3.7	L	11:21PM	12.9	H
8/10/2003	Sun	06:38AM	-1.8	L	01:02PM	11.0	H	06:33PM	3.2	L			
8/11/2003	Mon	12:16AM	13.2	H	07:24AM	-2.0	L	01:44PM	11.4	H	07:23PM	2.7	L
8/12/2003	Tue	01:05AM	13.3	H	08:05AM	-2.0	L	02:21PM	11.8	H	08:09PM	2.2	L
8/13/2003	Wed	01:50AM	13.2	H	08:43AM	-1.7	L	02:56PM	12.0	H	08:51PM	1.9	L
8/14/2003	Thu	02:32AM	12.8	H	09:19AM	-1.2	L	03:29PM	12.0	H	09:33PM	1.7	L
8/15/2003	Fri	03:13AM	12.3	H	09:52AM	-0.5	L	04:01PM	12.0	H	10:13PM	1.7	L
8/16/2003	Sat	03:54AM	11.5	H	10:24AM	0.4	L	04:32PM	11.8	H	10:55PM	1.7	L
8/17/2003	Sun	04:37AM	10.7	H	10:56AM	1.4	L	05:04PM	11.6	H	11:40PM	1.8	L
8/18/2003	Mon	05:24AM	9.9	H	11:28AM	2.3	L	05:38PM	11.3	H			
8/19/2003	Tue	12:32AM	1.9	L	06:21AM	9.1	H	12:04PM	3.3	L	06:17PM	11.0	H
8/20/2003	Wed	01:34AM	2.0	L	07:37AM	8.5	H	12:50PM	4.1	L	07:07PM	10.8	H
8/21/2003	Thu	02:47AM	1.9	L	09:16AM	8.4	H	01:59PM	4.7	L	08:11PM	10.7	H
8/22/2003	Fri	04:01AM	1.5	L	10:44AM	8.7	H	03:27PM	4.9	L	09:22PM	10.8	H
8/23/2003	Sat	05:02AM	0.9	L	11:41AM	9.3	H	04:43PM	4.6	L	10:25PM	11.3	H
8/24/2003	Sun	05:51AM	0.2	L	12:20PM	9.9	H	05:39PM	4.1	L	11:18PM	11.8	H
8/25/2003	Mon	06:32AM	-0.5	L	12:53PM	10.5	H	06:25PM	3.5	L			
8/26/2003	Tue	12:05AM	12.4	H	07:09AM	-1.0	L	01:24PM	11.2	H	07:07PM	2.7	L
8/27/2003	Wed	12:49AM	12.9	H	07:44AM	-1.3	L	01:54PM	11.8	H	07:47PM	2.0	L
8/28/2003	Thu	01:31AM	13.2	H	08:18AM	-1.4	L	02:25PM	12.3	H	08:28PM	1.2	L
8/29/2003	Fri	02:14AM	13.2	H	08:53AM	-1.1	L	02:57PM	12.8	H	09:10PM	0.6	L
8/30/2003	Sat	02:59AM	12.9	H	09:28AM	-0.6	L	03:31PM	13.0	H	09:55PM	0.2	L
8/31/2003	Sun	03:46AM	12.3	H	10:05AM	0.3	L	04:07PM	13.1	H	10:44PM	0.0	L

Appendix B. Solicitation to bid to purchase fish, NSEI longline survey 2003.

2003 SOLICITATION TO BID
CHATHAM STRAIT TEST FISHERY SABLEFISH

The Alaska Department of Fish and Game will be conducting the annual sablefish longline survey in Chatham Straits between Cape Ommaney and Pt. Hepburn. The department has contracted three vessels to simultaneously fish the survey area. The *F/V Masonic*, *F/V Archangel* and the *F/V Ida June* will begin fishing on or about August 2nd. The *F/V Masonic* will depart from and return to Petersburg. The *F/V Ida June* and the *F/V Archangel* will depart from and return to Sitka. Weather permitting, the survey is expected to take 6-7 days. The survey may be extended until August 15 if necessary.

The department is soliciting bids from area processors to purchase the fish caught during the survey. The total expected landed catch for 2003 is estimated to be approximately 90,000-110,000 round pounds of sablefish plus an additional 1,000-2,000 round pounds of rockfish bycatch. Bidders must have both a facility and a tender capable of handling up to 50,000 pounds of round sablefish and be able to provide sufficient high-quality ice for each vessel. The facility and tender must be available to offload fish 7 days a week.

Bidders must provide tender service in Chatham Strait. Tender deliveries will be made mid-way through the survey, and again at the end of the survey. If weather or other conditions extend the survey, additional tender service may be required. The quoted price of the fish shall include the cost of the required tender service. It is the responsibility of the successful bidder to provide ice from a local processor for all vessels including those departing other ports.

The sablefish will be delivered round. All vessels will deliver iced sablefish. In addition, a total of approximately 500-800 eastern cut sablefish will be delivered. Rockfish will be delivered head on with the bellies split. Please include, under general information, the number of days allowed to fish before off-loading and any other special handling instructions.

No 1's	Cut		dr pound	Price per pound	Extended price
Sablefish	Eastern cut	under 2	887		
Sablefish	Eastern cut	2-3	6,449		
Sablefish	Eastern cut	3-4	9,825		
Sablefish	Eastern cut	4-5	12,880		
Sablefish	Eastern cut	5-7	14,915		
Sablefish	Eastern cut	7 up	10,275		
No 2's and Jellybellies					
Sablefish	Eastern cut	under 2	140		
Sablefish	Eastern cut	2-3	566		
Sablefish	Eastern cut	3-4	593		
Sablefish	Eastern cut	4-5	996		
Sablefish	Eastern cut	5-7	2,390		
Sablefish	Eastern cut	7 up	2,570		
Rougheye	Head-on	belly split	772		
Shorotraker	Head-on	belly split	374		
				Total price of bid	

Quantities listed above are estimated catches based on the 2002 survey and are for evaluation purposes only. The state may catch a comparable amount of fish this year; however, the state does not guarantee a minimum or maximum amount of fish. The total poundage delivered and the breakdown by size category for sablefish from the 2002 NSEI survey is not a guarantee for sablefish or miscellaneous rockfish deliveries for the 2003 survey.

All survey fish landed will be the property of the successful bidder and payment for the fish to the state will be based on the price bid by the company. All survey fish will be landed on a Department of Fish and Game limited entry gear card. Payment in the form of a check for the delivered survey fish is expected at the time of each landing. All checks will be made payable to the State of Alaska.

The bid will be awarded based on the above highest quoted Total price of bid and the fish will be purchased based on the quoted price per pound for the appropriate size category of the landed fish. Species delivered and not specified in the bid quote will be paid at the current market price.

For further information contact Beverly Richardson in Petersburg at 907-772-5233.

CONTRACTOR'S INFORMATION FORM:

Bidders must complete the information form below. A bidder's failure to provide this information may cause the state to reject the bid as non-responsive.

Processing Company Name: _____

Address: _____

Phone: () _____ **Cell ()** _____

Fax (Optional): () _____

Email (Optional): _____

Processor Type (Shoreside/Floater/Catcher-Processors): _____

Processor Location: _____

Ssb Call Numbers And Stand-By Frequency: _____

Contact Person: _____

Business Hours In August _____

The Following Is For Informational Purposes Only:

Maximum Number Of Days Allowed To Fish Before Off-Loading _____

Any Special Instructions:

Appendix C. Sablefish Survey Set Form, 2003.

YEAR 2003	PROJECT Chatham Strait Longline	TRIP NUMBER	SET NUMBER	STATION NUMBER	STATAREA
START LAT(DM)	START LONG(DM)	X		END LAT(DM)	END LONG(DM)
Set					
Rtvd					
DATE AND (military)TIME SECOND ANCHOR OVER	DATE AND TIME FIRST BUOY ONBOARD	DATE AND TIME FIRST ANCHOR ONBOARD	DATE AND TIME SECOND ANCHOR ONBOARD		
START DEPTH	END DEPTH	AVERAGE DEPTH	HAULBACK same as set opposite of set	SUBSTRATE	WIND DIRECTION Calm, N,NE,E,SE,S,SW,W,NW
				Mud Mud/gravel Mud/clay Mud/shell Mud/soft Mud/hard Clay Sand Gravel Boulder Cobble Rock Hard Soft Shell Coral Mixed Unknown	WIND SPEED 0 0-5 5-15 15-25 25-35 35-45 45-55
comments: whales? Y/N sharks? Y/N problems? Y/N				SEABIRD Info for IPHC In place of Seabird Form A Direction @ setting (looking aft): H: Headwind T: Tailwind C: Crosswind V: Variable N: no wind Sea State: Beaufort scale BAD type: TL TO OT NU BAD performance: meters Swell height @ setting meters	
ANCHOR	Bottom Profile (record depth at each skate)				ANCHOR

Appendix D. Hook Accounting Form, 2003.

HOOK ACCOUNTING

Date: August 2003 Observer

Year: **2003** Project: **CHATHAM STRAIT LL Sablefish Survey** Trip: Set Station

1st Buoy: time: 1st Anchor: time: substrate 2nd Anchor: time substrate

SUBSET	Bare(1):	Invalids(3):				
#	Bait(2):					
	(710) Sable(1):	Discard(2):	Sm(3):	lost(4):		
	(200) Halibut:					
	(143) Thorneyhead:					
	Rockfish: (151) RE:	(152) SR:	(153) RB:			
	(691) Dogfish:	(692) Pacific Sleeper				
VALID?	(701) LNSK:	(700) OSK:	(121) ATF:	(110) PCOD:	(270) POL:	(124) Dover
Y or N	TOTAL					

SUBSET	Bare(1):	Invalids(3):				
#	Bait(2):					
	(710) Sable(1):	Discard(2):	Sm(3):	lost(4):		
	(200) Halibut:					
	(143) Thorneyhead:					
	Rockfish: (151) RE:	(152) SR:	(153) RB:			
	(691) Dogfish:	(692) Pacific Sleeper				
VALID?	(701) LNSK:	(700) OSK:	(121) ATF:	(110) PCOD:	(270) POL:	(124) Dover
Y or N	TOTAL					

SUBSET	Bare(1):	Invalids(3):				
#	Bait(2):					
	(710) Sable(1):	Discard(2):	Sm(3):	lost(4):		
	(200) Halibut:					
	(143) Thorneyhead:					
	Rockfish: (151) RE:	(152) SR:	(153) RB:			
	(691) Dogfish:	(692) Pacific Sleeper				
VALID?	(701) LNSK:	(700) OSK:	(121) ATF:	(110) PCOD:	(270) POL:	(124) Dover
Y or N	TOTAL					

SUBSET	Bare(1):	Invalids(3):				
#	Bait(2):					
	(710) Sable(1):	Discard(2):	Sm(3):	lost(4):		
	(200) Halibut:					
	(143) Thorneyhead:					
	Rockfish: (151) RE:	(152) SR:	(153) RB:			
	(691) Dogfish:	(692) Pacific Sleeper				
VALID?	(701) LNSK:	(700) OSK:	(121) ATF:	(110) PCOD:	(270) POL:	(124) Dover
Y or N	TOTAL					

SUBSET	Bare(1):	Invalids(3):				
#	Bait(2):					
	(710) Sable(1):	Discard(2):	Sm(3):	lost(4):		
	(200) Halibut:					
	(143) Thorneyhead:					
	Rockfish: (151) RE:	(152) SR:	(153) RB:			
	(691) Dogfish:	(692) Pacific Sleeper				
VALID?	(701) LNSK:	(700) OSK:	(121) ATF:	(110) PCOD:	(270) POL:	(124) Dover
Y or N	TOTAL					

Appendix F. Sablefish maturities chart, 2003.

SABLEFISH MATURITY CODES

MATURITY CODE	GONAD CONDITION	MALES (1) DESCRIPTION	FEMALES (2) DESCRIPTION
1	IMMATURE	Testes very narrow, parallel, flat and ribbon-like, almost clear in color. Longitudinal creases are easily discernable. (It may be easiest to determine 2-1 from 2-2 while ovaries are intact in fish)	Ovaries appear as two narrow(slender) ovoids. May be vained.
2	MATURING JUVENILE	Testes enlarging, not ribbon-like, with four discernable creases running full length. Light pink in color. Has not spawned before.	Ovaries enlarging, translucent and pinkish to clear: eggs not yet discernable. Has not spawned before. Will spawn coming year. More veined. Cloudy, but not necessarily throughout.
3	MATURE/ DEVELOPING	Testes large and white, each with four distinct lobes. No milt present.	Ovaries large and becoming white to yellowish white with developing eggs discernable and firmly attached.
4	SPAWNING	Testes very large and white, extruding milt freely under slight pressure or when cut.	Ovaries very large with large translucent eggs loose within ovary or extruding from the oviduct.
5	SPENT/ POST SPAWNING	Testes large, shriveled, often with wrinkles, and bloodshot. No milt present.	Ovaries shriveled and opaque, soft and flaccid, often reddish in color.
6	RESTING	Testes large and firm, light brown to off-white in color. No milt present. Has spawned previously. May have wrinkles.	Ovaries large, firm and opaque, not shriveled. No eggs discernable. Has spawned previously. Noticeable follicle structure.

(Revised 1982, 1987, 1994, 1997. Maturity code 6 (resting) added April 1994)
c:\document\maturity.doc

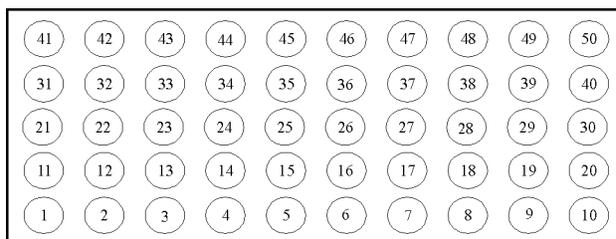
INSTRUCTIONS FOR LABELING AND SHIPPING OTOLITHS

by Deidra Holum

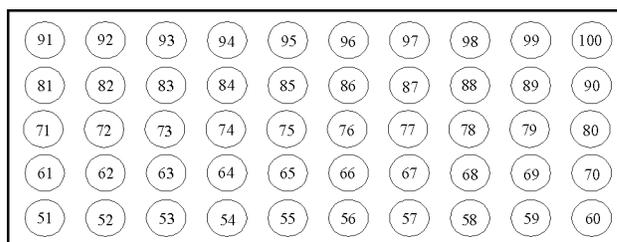
ON THE DECK

Materials needed: measuring board, scale, otolith form, tweezers, and otolith collection tray.

1. Select a sablefish and number appropriately.
2. Record a weight and a length then cut a thin slice off the top of the head starting just back of the eyes to expose the otoliths.
3. Using tweezers, remove both otoliths from the sablefish. Gently rub off any tissue connected to otoliths.
4. Starting in the **LOWER, LEFT HAND CORNER** of the collection tray, and place the first pair of otoliths in the first open plastic vial. Immediately close the lid tightly! Leave tweezers in the next open vial to avoid losing between samples.



5. Since there are no physical numbers in or on these plastic otolith vials, it is imperative the correct otoliths go in the corresponding container! For every 4-5 sablefish sampled, verify the sample number with the corresponding vial number (i.e., on the page the sample number reads #4, are you filling vial #4?).
6. Once 50 pairs of otoliths have been collected the tray is full and its ready to take inside to prepare the otoliths for storage. At this point, get a new collection tray (each vessel should have 2 trays of 50 vials each) and continue the numbering system starting with the lower, left-hand vial. The second tray will start with #51, the third tray will start with #101, the fourth tray will start with #151 etc. Always make sure the sample number corresponds to the correct vial no matter how many new trays are started!



DON'T FORGET: Complete the sample form by recording the SEX and SEXUAL MATURITY CODE for each sample. After this point, you can toss the sampled sablefish head overboard and clean the body.

INSIDE

At the counter top or the table, you will need the 24-cell otolith trays correctly labeled, acetates, paper napkins, electrical tape, rubber bands, and a black, permanent marker.

1. Complete the labels with the appropriate sampling information (see next page for examples). The sequence of numbers to be entered under "Sample Range/Species" are year, area code (01=SSEI, 03=NSEI), trip #, and sample #. For example the 10th sample on trip 2 in the 1999 SSEI survey would be "99-01-02-10." Turn the label over and begin numbering the cells with pencil. Make sure you begin in the corner marked "A1."
2. Once the label information is completed, fully--but lightly--wet the tray label using a damp sponge or paper napkin. To attach the label to the otolith cell tray, **use the alphanumeric grid stamped on the plastic unit to orient the cell tray with A1 in the upper left hand corner and cell D6 in the lower right hand corner.**
3. Align the label with the bottom of the tray. A1 should be in the upper left hand corner with penciled numbers facing into the plastic cells. Rub label into place. Check that edges are securely in place or re-wet the edges and rub into place again.

Now you are ready to transfer the otoliths to storage in a 24-cell otolith tray. At this point you will also need:

- a bowl of warm water with a small amount of dish soap mixed in
 - a stack of colored paper napkins
 - tweezers or a knife
4. Open an otolith vial (you may want to use the edge of the tweezers or a knife edge to help pry open some of these vials).
 5. Dump contents into the bowl of warm, soapy water (there should be two otoliths unless noted on the sample form). Swish gently through the water to remove any remaining blood or tissue.
 6. Remove otoliths from the water and blot dry on colored paper napkins (the colored background makes it easier to keep track of tiny otoliths).
 7. Using tweezers, place the cleaned, dried otoliths into the appropriate storage cell. Place the first pair of otoliths in cell **A1**, located in the upper left hand corner of the tray. Continue filling cells from left to right, top to bottom until the **last cell, D6, lower right hand corner,** is filled.
 8. Once all the cells are filled, place 2 acetates and a folded paper napkin to fit over the cells (to prevent otoliths from slipping out of their numbered chamber) and then add the lid. Secure all with a continuous loop of electrical tape around the seam of the tray.

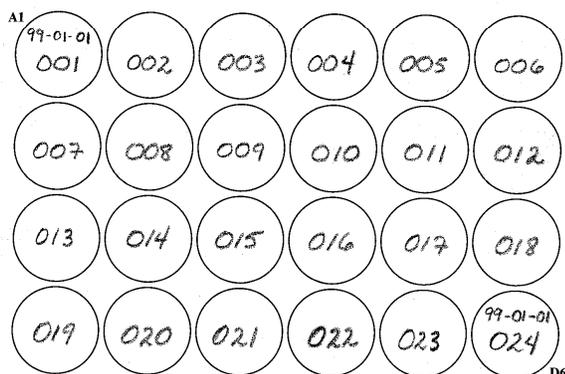
9. When all is secured, label the lid in the upper, right hand corner with a permanent marker

TRIP # _____
Cruise number (i.e. 99-01)
Case #1 of _____
(fill in end of cruise when total known)

If you do not completely fill a 24-cell tray at one sitting, place acetates over the cells as usual, cover with a lid, but secure the otolith tray with 2 rubber bands until the next use.

10. Rinse all plastic vials, Styrofoam holders, and outdoor otolith trays in soapy, warm water to clean in preparation for additional samples or storage.

Example labels for 24 Cell Otolith Trays



ALASKA DEPT. OF FISH & GAME - CFMD/GROUNDFISH MNGMT.

SAMPLE DATE: May 4-10, 1999 TRAY # 1 OF _____

PORT/LOCATION: 99-SSE1-Trip #1

SAMPLE RANGE/SPECIES: Sablefish (710)

99-01-01-001 — 99-01-01-024

SAMPLER(S): Holum, Castoright

COMMENTS: _____

Return filled 24 Cell Otolith Trays to:
Kris Munk, ADF&G CWT & Otolith Processing Lab, Box 25526, Juneau, Alaska 99802

Appendix H. Protocol for previously tagged sablefish, 2003.

Protocol for previously tagged sablefish.(2003)

Tagging Agency	Condition of fish	Re-release with old tag	Re-tag	Otolith	Otolith Storage	Biological data data	Recovery data. Put on ADFG recovery form
ADF&G Tag (current year)	in good health	no	no	no		length & weight, sex and maturity	Project, trip and set number, the tag.
	in poor health/dead	no	no	no		length & weight, sex and maturity	Project, trip and set number, the tag.
ADF&G Tag (previous years)	in good health	yes	no	no		length	Project, trip and set number, tag #
	in poor health/dead	no	no	no		length & weight, sex and maturity	Project, trip and set number, the tag.
NMFS tag	in good health	yes	no	no		length	date, latxlong, depth, gear, tag #.
	in poor health/dead	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
Auke Bay tag	in good health	yes	no	no		length	date, latxlong, depth, gear, tag #.
	in poor health/dead	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
Japanese tag	in good health	yes	no	no		length	date, latxlong, depth, gear, tag #.
	in poor health/dead	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
COOP (ADFG/AB)	in good health	yes	no	no		length	date, latxlong, depth, gear, tag #.
	in poor health/dead	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
PINK tag	in good health	no	no	yes	Vial with Alchohol	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
Auke Bay	in poor health/dead	no	no	yes	Vial with Alchohol	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
Canadian tag	in good health	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag
	in poor health/dead	no	no	yes	dry, ship immediately	length & weight, sex and maturity	date, latxlong, depth, gear, the tag

*Do not release current year ADFG preiously tagged fish

* For ADFG recoveries on surveys note project, trip and set. Alex will then provide recovery data.

*All other agency tagged fish recaptured should be recorded on **ADFG Tag Recovery Forms**. All data, including tags, date of recapture, latXlong, depth, recovery gear must be recorded. Note if the fish was re-release, or sacrificed.

*All other agency's otoliths must be shipped promptly to release agency.

*NMFS, Auke Bay, Japanese and Pink NMFS Growth Study tags, data and otoliths should be shipped to Nancy Maloney at Auke Bay Lab.

*Canadian tags, data and otoliths should be sent to Wendy Milton: Pacific Bio Station:Nanaimo BC V9R 5K6

*ADFG tags, data and otoliths should be sent to Sitka or Pbg ADFG office.

Appendix I. Gonad condition criteria applied to *Sebastes* from Alaska landings used in 1988.

(Stages in bold are for externally examined fish, all other stages apply to internally examined fish only).

SEX	CODE	CONDITION	GONAD DESCRIPTION
MALE (1)	1	Immature	Very small, string-like, translucent
	2	Maturing	Small size, translucent, white testes with slight swelling
	3	Mature	Medium size, swollen brown to white, ribbon-like testes
	4	Developing	Large size, swollen testes easily broken, milt in sperm duct
	5	Spawning	Large size, white swollen testes with milt flowing when pressure applied to testes
	6	Spent	Large to medium size, swollen, brown testes with white center and milt in sperm duct
	7	Resting	Medium size, flat, ribbon-like tan or brown testes
	9	Externally Indiscernible	
FEMALE (2)	1	Immature	Very small size, translucent, pink ovaries
	2	Maturing	Small size, translucent or opaque, yellow or pink
	3	Mature	Large ovary, yellow opaque eggs
	4	Fertilized	Large ovary, orange-yellow, translucent eggs, eggs run easily
	5	Ripe	Large ovaries, translucent yellow or gray with embryos and larvae (eyed embryos look black)
	6	Spent	Large, flaccid, red ovaries. A few larvae may be present
	7	Resting	Moderate size, firm, red-gray, some black blotches
	9	Externally Indiscernible	
UNKNOWN (99)			
NOT OBSERVED (00)			

1. Seabird Observance Sampling Procedures – Setting the Gear

- A. Determine and record BAD performance
- B. Determine and record swell height
- C. Wind direction

The following information will be recorded in the Rite in the Rain books and transferred to Set Form A. The Set Form A will be linked in our database to the Seabird Occurrence Form. We will use this information to determine the effectiveness of the bird avoidance measures being deployed.

A. DETERMINE AND RECORD BAD PERFORMANCE

BAD PERFORMANCE – Record the distance behind the vessel where the body of the tori line (not streamers) touches the water. Use the 5-meter spacing of the streamer as a reference. Estimate the distance three times for the tori line. Calculate the average distance the record the numbers in meters. Do not use decimals- round up!

B. DETERMINE AND RECORD SWELL HEIGHT

Swell height will be recorded in meters. You may use decimals. Consult with the captain and other crewmembers if you have difficulty determining the swell height.

C. DETERMINE AND RECORD WIND DIRECTION

In the morning during setting you will stand at the stern of the vessel and face aft. Consider a clock: directly in front of you is 12 o'clock, to the right is 3 o'clock, left is 9 o'clock, etc.

- **CODE H** – Head wind. If the wind is in your face (11 o'clock to 1 o'clock) as you look from the stern this is a head wind.
- **CODE T** – Tailwind. If the wind is at your back (5 o'clock to 7 o'clock) this is a tail wind.
- **CODE C** – Cross wind. If the wind is on your left or right hand side (1:01 to 4:59 and 7:01 to 10:59) this is a crosswind.
- **CODE V** - If the wind changes direction constantly during the setting this is a variable wind direction.
- **CODE N** - If no wind is present during setting, enter N for none.

Note: the direction is relative to the stern, not the bow of the vessel. For example: a head wind to the bow of the vessel is actually a tail wind to the sampler standing on the stern.

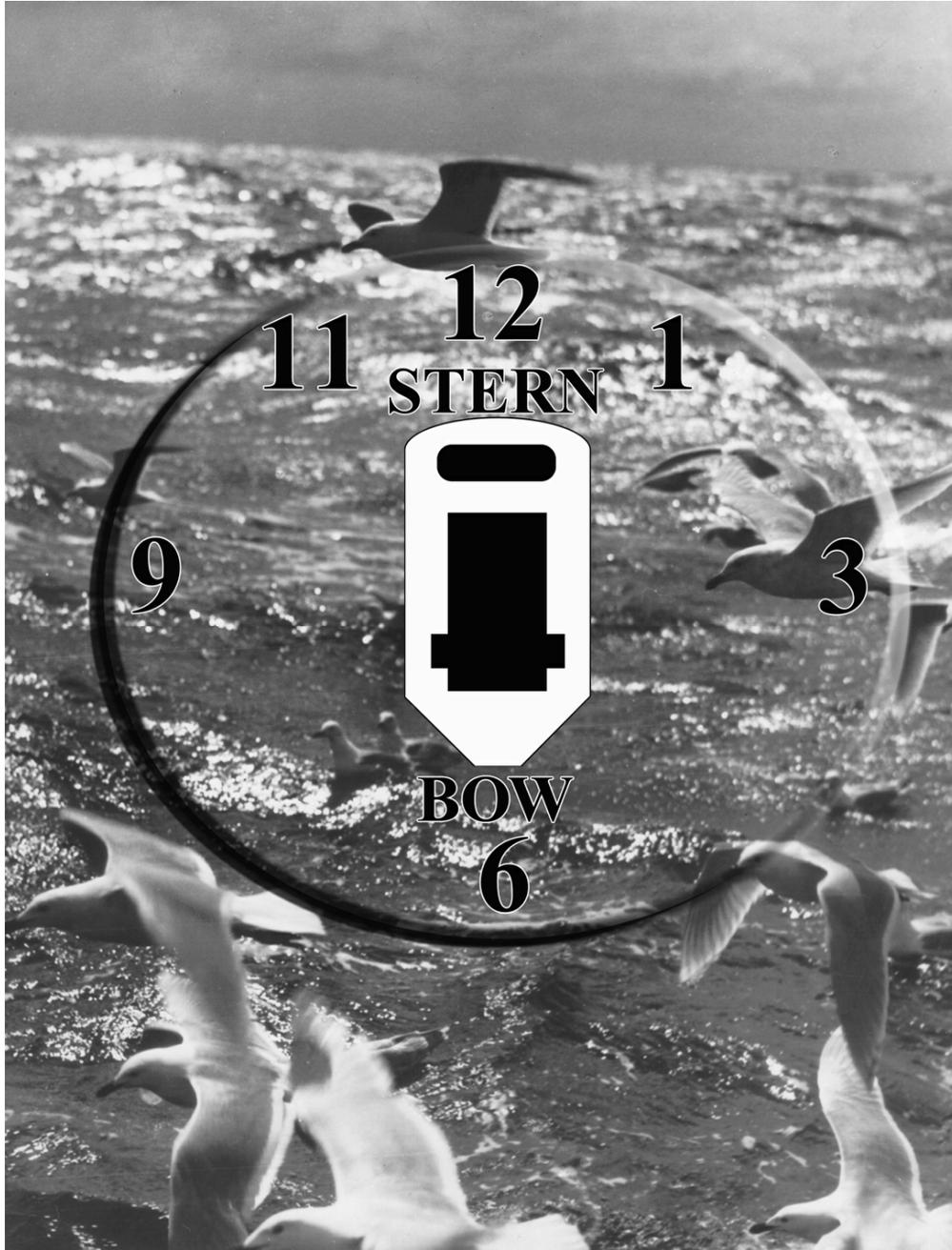


Figure 1. Sampler Position and Clock diagram for wind direction

2. SAMPLING PROCEDURES –HAULING THE GEAR

COMPLETING BIRD COUNTS

Why: Sampling seabird abundance after the haul will address the question of where and when certain seabird species occur. We will do this by taking a “snapshot” estimate of seabirds in the vicinity of the vessels after hauling each set. This concept is similar to performing a bird feeder count. Ultimately these data might be used to identify appropriate seabird deterrent needs (requirements) in certain geographic locations, especially for the halibut fleet.

Where: All birds in a 50 m radius of the stern.

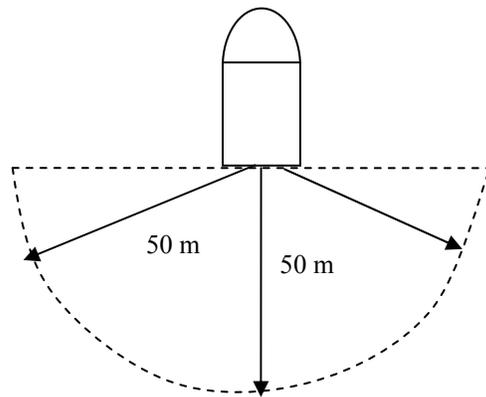


Figure 2. Areas for Occurrence Estimates

Hauling Protocol

At the end of every set when the roller man indicates he has hit the running line, the sampler should stop all halibut sampling and go to the stern. The sampler should go to the highest safe point on the stern of vessel. Try to get the best view without compromising your safety. Estimate the number of birds, by species and/or type within a 50 m radius of the stern. Record this information in your Rite in Rain book and transfer it to the Seabird Occurrence Form.

Take time to make sure you see all of the birds in the area, including those flying and those on the water. If it is at all wavy, wait several swell cycles to make sure that you are seeing birds, which may be rafting a swell period beyond the vessel. Use your binoculars to:

- Confirm the identification of any Short-tailed albatross
- Confirm your identifications. Note potential differences between:
 - Dark phase Northern Fulmar and any Shearwater
 - Dark phase Northern Fulmar and juvenile Gull spp.
 - Light phase Northern Fulmar and small Gulls
 - Large Gulls and Laysan albatross (at a distance)

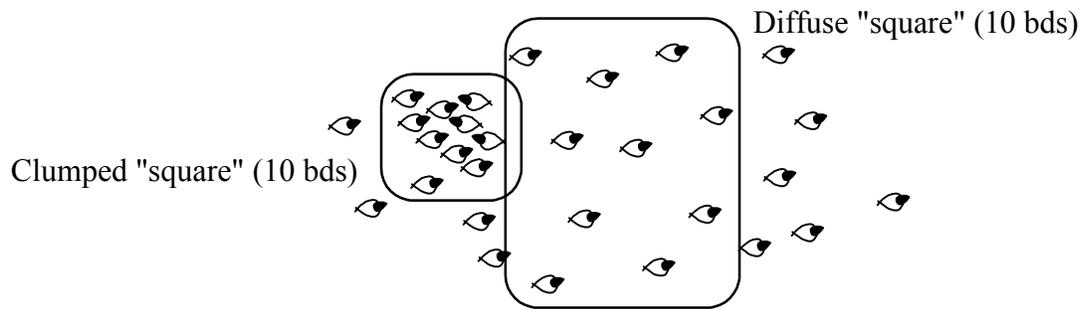


Figure 3. Aerial Estimation Techniques

HOW TO ESTIMATE BIRD ABUNDANCE

For small numbers (0-10), each species can be counted. Even though it is possible to count into the hundreds, it takes time; therefore, for larger numbers (15-infinity), you will have to estimate abundance.

We use aerial estimation. In this technique, you count a reasonable number of birds in a contiguous patch of water or air (say 5-25), visually "lock-in" on the area encompassed by those birds, and repeat that area in your mind's eye as you survey the entire area in which you need to estimate abundance. This is like imposing a grid on the water, where each square holds the number of birds you originally counted. You are then tallying the squares. Obviously the size of the "square" will depend on the total number of birds in the area. If there are thousands of fulmars in the port/starboard hemisphere, don't estimate by 5's. Use the following table as a guide to estimation ranges:

Number Range	You Should
1,2,3,4,5	Count
10, 15, 20, 25	Estimate by 5's (could also be counted)
30,40,50,60,70,80,90	Estimate by 10's
100, 125, 150, 175	Estimate by 25's (can also use 10's)
200, 250, 300, 350, etc	Estimate by 50's
500, 600, 700, etc	Estimate by 100's
1000, 1200, 1400, 1600, 1800, 2000	Estimate by 100's
2000, 2500, 3000, etc	Estimate by 500's

A complicating factor is that birds are rarely spread evenly over the surface of the water or in the air. Many birds will be clumped around pieces of offal, whereas others will be more evenly distributed over the area surrounding the vessel. The solution is to estimate the number of birds in each clump and then count the clumps in addition to aerial estimation of the more evenly distributed birds.

3. FORMS

- A. ADFG Seabird Occurrence Set Form A
- B. Seabird Occurrence Form

A. ADFG SEABIRD OCCURRENCE SET FORM A

This form should be completed for each station and contains information on the set, gear, and the catch.

SET NUMBER - Sequentially number the hauls made by the vessel in the current year. Each set number is used only once for each vessel.

VESSEL – For the Jennifer Lynn please use JEN. For the Providence, please use PRO. We realize this is a different code than the ADFG assigned code. The IPHC database holds three alphanumeric.

DATE - Month, day, and year in which the gear is set.

TRIP NO. – Trip number indicates the number of trips a vessel completes during a calendar year while under ADFG charter. A trip ends when fish are offloaded.

IPHC STAT AREA – LEAVE BLANK. This is the IPHC statistical area. This is not the NMFS or ADF&G stat area. IPHC Stat areas are either three or six digits long. We will enter this post-season.

AVERAGE NO. HOOKS/SKATE - Record the average number of hooks per skate.

HOOK SPACE - The space (in meters) between gangions on the groundline.

TIME HAULED - Record the time of flag recovery at the beginning (Start) and end of the set (Finish). Add 24 hrs for each day that passed since the gear was set. For example, if the gear was set at midnight on 7/3 but hauling did not begin until 10:30 on 7/5, the start time will be 58:30. If the haul takes 45 min., the finish time will be 59:15.

BAIT – Use SQ for squid.

GEAR - The gear code used during SSA is “**FH**”, for fixed hook.

BIRD AVOIDANCE DEVICE (BAD) – Record the type of bird avoidance device deployed by the vessel using the codes listed on the form. Multiple codes may be used if the vessel is employing more than one method. If the vessel uses two of the same BADs (i.e. two tori lines), list the code twice (one TL in two boxes).

- Tori Line (**TL**): A towed line with streamers attached (flagging tape, rubber tubing etc.) in order to scare birds.
- Towed Object (**TO**): An object towed behind the vessel during setting. This may be a broom, board, buoy, or milk jug.
- Other (**OT**): Any BAD not mentioned. Please include a detailed description in the logbook.

- Not Used (**NU**): This code should only be used if a crewmember forgets to put out BAD or is prohibited by bad weather.

Setting in darkness is not an acceptable BAD.

BAD PERFORMANCE – Record the distance behind the vessel where the body of the tori line (not streamers) touches the water. Use the 5-meter spacing of the streamer as a reference. Estimate the distance three times for the tori line. Calculate the average distance the record the numbers in meters. Do not use decimals- round up!

SWELL HEIGHT – Record during setting. Swell height will be recorded in meters. You may use decimals. Consult with the captain and other crewmembers if you have difficulty determining the swell height.

WIND DIRECTION – During setting you will stand at the stern of the vessel and face aft. Consider a clock: directly in front of you is 12 o'clock, to the right is 3 o'clock, left is 9 o'clock, etc.

- **CODE H** – Head wind. If the wind is in your face (11 o'clock to 1 o'clock) as you look from the stern this is a head wind.
- **CODE T** – Tailwind. If the wind is at your back (5 o'clock to 7 o'clock) this is a tail wind.
- **CODE C** – Cross wind. If the wind is on your left or right hand side (1:01 to 4:59 and 7:01 to 10:59) this is a crosswind.
- **CODE V** - If the wind changes direction constantly during the setting this is a variable wind direction.
- **CODE N** - If no wind is present during setting, enter N for none.

Note: the direction is relative to the stern, not the bow of the vessel. For example: a head wind to the bow of the vessel is actually a tail wind to the sampler standing on the stern.

This information will be coded on the Set Form A. The Set Form A will be linked to Seabird Occurrence Form.

SEA STATE – Enter the appropriate Sea State code during hauling.

Table 1. Beaufort Sea State Descriptions

Code	Knots	Air	Sea Description
0	0	Calm Air	Sea like a mirror.
1	1-3	Light Air	Ripples with the appearance of scales are formed, without foam crests.
2	4 - 6	Light Breeze	Small wavelets, still short, but more pronounced, crests have a glassy appearance but do not break.
3	7 - 10	Gentle Wind	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses (white caps).
4	11 - 16	Moderate	Small waves, becoming longer; fairly frequent white horses.
5	17 - 21	Fresh Wind	Moderate waves, taking a more pronounced long form; many white horses are formed (chance of some spray).
6	22 - 27	Strong Wind	Large waves begin to form; the white foam crests are more extensive everywhere (probably some spray).
7	28 - 33	Near Gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks the direction of the wind.
8	34 - 40	Gale	Moderately high waves of greater length; edges of crests begin to break into the spindrift; the foam is blown in well-marked streaks along the direction of the wind.
9	41 - 47	Strong Gale	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble, and roll over; spray may affect visibility.
10	48 - 55	Storm	Very high waves with long overhanging crests; the resulting foam, in great patches, is blown in dense white streaks along the direction of the wind; on the whole, the sea surface takes a white appearance; the tumbling of the sea becomes heavy and shock-like; visibility affected.
11	56 - 63	Violent Storm	Exceptionally high waves (small and medium-sized ships might be lost to view for time behind the waves); the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility affected.
12	64+	Hurricane	The air is filled with foam and spray; sea completely white with driving sprays; visibility very seriously affected.

B. SEABIRD OCCURRENCE FORM

Part 1: General Information

SET - Enter the set number of the observation. This should be the same as the set number on the corresponding Set Form A. Remember; all set numbers should be sequential.

VESSEL - The IPHC database holds three alphanumeric.

DATE - Month, day, and year in which the gear is set.

TRIP # - Enter the trip number. This should be the same as the trip number on the corresponding Set Form A.

STATION NUMBER - Enter the station number. This should be the same as the station number on the corresponding Set Form A.

MAXIMUM VISIBILITY - Record the maximum visibility during hauling using the following codes:

Maximum Visibility

1= <50 m

2= Between 50-100 m

3= Between 100 m and 1 kilometer

4= Over 1 kilometer

5= Night

TIME OBSERVED - Record the start time of the observation.

OFFAL DISCHARGE - Record "Y" if offal was discharged during the observation period or "N" if offal was not discharged. For example, if the crew was gutting fish and throwing the entrails over during your observation period, mark "Y".

SPECIES COMPOSITION DIFFERENT - After you have completed your bird count, observe birds in other areas surrounding the vessel. If you notice that there are different species surrounding the vessel, than what occurred in your bird abundance sampling area, record a Y in this box. In the comments section, describe the area where you encountered the bird and its species name. For example, "Three Black footed Albatross were within 75 m on the portside but none in observation area." We are trying to determine if the sampling area is representative.

If the species composition in the bird abundance sampling area is the same as the other areas surrounding the vessel record an N.

Part 2: Observation Record

Record the number of birds of each species present during the count.

Differentiate between the morphs when possible. For example, if you encounter a Dark Northern Fulmar you should record it on the row labeled Dark Northern Fulmar. If you are unable to differentiate between the morphs, enter on the Northern Fulmar row. The same principal applies with the Shearwater and Kittiwake spp.

If you have encountered a species/morph that is not present, please write the name of the species in the “other” row and circle it in green. Also place a paperclip on the Seabird Occurrence Form so we know the form needs extra editing.

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