# 2002 NSEI (Chatham) Sablefish <br> Longline Survey Report 

## August 13 - August 18, 2002



## REGIONAL INFORMATION REPORT ${ }^{1}$ NO. 1J03-35



# Alaska Department of Fish and Game <br> Division of Commercial Fisheries <br> Juneau, Alaska 

November 2003

[^0]
#### Abstract

AUTHOR Beverly Richardson is a Research Analyst II for the Alaska Department of Fish and Game Groundfish Project in Region I, Southeast Alaska. Her address is P.O. Box 667, Petersburg, AK 99833-0667 and she can be reached through email at beverly_richardson@fishgame.state.ak.us.


## ACKNOWLEDGEMENTS

The author thanks Tory O'Connell and Becky Knight, for review of this document and Annabelle Reedy for review and formatting of this document. Cleo Brylinsky produced the map figures. Kamala Carroll and Beverly Richardson took the photos.

## TABLE OF CONTENTS

Page
LIST OF TABLES ..... iv
LIST OF FIGURES ..... v
LIST OF APPENDICES ..... vi
INTRODUCTION ..... 1
METHODS ..... 1
Survey Area ..... 1
Gear ..... 2
Vessels ..... 2
Vessel Crews ..... 3
Schedule ..... 3
Tides ..... 3
Bid to Purchase ADF\&G Fish ..... 3
Bait ..... 4
Set Information ..... 4
Soak Time ..... 5
Hook Accounting ..... 6
Biological Sampling ..... 7
Sablefish: length, weight, sex, stage of gonad maturity and age ..... 7
Sablefish Tags ..... 8
Rockfishes: length, weight, sex, stage of gonad maturity and age ..... 8
Shortspine Thornyheads: length only ..... 8
Other species ..... 8
Sampling for other agencies ..... 8
Data entry/management ..... 9
RESULTS ..... 9
Tides ..... 9
Set Information ..... 10
Soak Time ..... 10
Hook Accounting ..... 10
Bycatch ..... 11
Biological Sampling ..... 11
Sablefish Biological Sampling: length, weight, sex, stage of maturity and age ..... 11
Sablefish Tags ..... 12
Rockfishes Biological Sampling: length, weight, sex, stage of maturity and age. ..... 12
Shortspine Thornyhead Biological Sampling: lengths only ..... 13
Other species ..... 13
Sampling for other agencies ..... 13
LITERATURE CITED ..... 14

## LIST OF TABLES

Table Page
Table 1. Longline survey specifications, NSEI longline surveys 1988-2002 ..... 15
Table 2. Vessel and scientific crew, NSEI longline survey 2002. ..... 16
Table 3. Station assignments and station numbers by portion of survey area, NSEI longline survey 2002. ..... 16
Table 4. Actual locations of sets as set and time set, NSEI longline survey 2002. ..... 17
Table 5. Dates and time of set with soak and hauling times, NSEI longline survey 2002 ..... 18
Table 6. Status of hooks by station, NSEI longline survey 2002 ..... 19
Table 7. Overall status of hooks and catch (valid subsets only), NSEI longline survey 1997-2002. ..... 20
Table 8. Fish-per-hook, average weight, round kilogram-per-hook and round pound- per-hook by station and overall, NSEI longline survey 2002 ..... 21
Table 9. Shortspine thornyhead bycatch in numbers and by percent of total by statistical area, NSEI longline survey 1997-2002 ..... 22
Table 10. Sablefish lengths by survey area by sex 2001-2002, overall 2000-2002 NSEI longline survey ..... 22
Table 11. Sablefish percent males, NSEI longline survey 1997-2002 ..... 22
Table 12. Sablefish sex and maturities by trip and overall, NSEI longline survey 2002. ..... 23
Table 13. Sablefish sex and maturities overall, NSEI longline survey 2000-2002. ..... 23
Table 14. Estimated ages of sablefish by sex by trip, NSEI longline survey 2002. ..... 24
Table 15. Recoveries of ADF\&G released tags, NSEI longline survey 2002 ..... 24
Table 16. Shortraker rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002 ..... 25
Table 17. Rougheye rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002 ..... 26
Table 18. Redbanded rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002 ..... 27
Table 19. Shortspine thornyhead lengths, NSEI longline survey 1997-2002 ..... 28

## LIST OF FIGURES

Figure Page
Figure 1. Northern Southeast Inside subdistrict shown with hatch marks. ..... 29
Figure 2. NSEI longline survey station chart, 2002 ..... 30
Figure 3. Front and back threaded circle hook. ..... 31
Figure 4. Seabird Avoidance Device ..... 31
Figure 5. Seabird avoidance device (tori line) deployed from the F/V Archangel, 2002. ..... 31
Figure 6. NSEI Longline Survey Vessel, F/V Ida June, 2002. ..... 32
Figure 7. NSEI Longline Survey Vessel, F/V Charles T., 2002 ..... 32
Figure 8. NSEI longline survey vessel, F/V Archangel, 2002. ..... 32
Figure 9. Todd Wyman coiling down groundline, NSEI longline survey 2002. ..... 33
Figure 10. Unloading iced round sablefish at Sitka Sound Seafood, NSEI longline survey 2002 ..... 33
Figure 11. Phil Wyman bleeding sablefish, F/V Archangel, NSEI longline survey 2002 ..... 33
Figure 12. Skipper Phil Wyman and Beverly Richardson recording set data, F/V Archangel, NSEI longline survey 2002. ..... 34
Figure 13. Hauling gear with ADFG staff counting back, F/V Archangel, NSEI longline survey 2002 ..... 34
Figure 14. Beverly Richardson sampling sablefish, F/V Archangel, NSEI longline survey 2002 ..... 34
Figure 15. Sablefish gonads, NSEI longline survey 2002. ..... 35
Figure 16. Rockfish, NSEI longline survey 2002. ..... 35
Figure 17. Rockfish gonads, NSEI longline survey 2002 ..... 35
Figure 18. Taking DEC samples, F/V Archangel, NSEI longline survey 2002. ..... 36
Figure 19. Kamala Carroll entering data, F/V Archangel, NSEI Longline Survey 2002 ..... 36
Figure 20. Overall fish-per-hook, kilogram-per-hook and average weight of sampled sablefish, NSEI longline survey 1997-2002. ..... 37
Figure 21. Sablefish-per-hook by station with stations ordered south to north, NSEI longline survey 1997-2002. (continued) ..... 38
Figure 22. Length frequency of sampled sablefish, unadjusted, NSEI longline survey 2000-2002 ..... 40
Figure 23. Length frequency of sampled sablefish adjusted by the overall survey fish-per- hook, NSEI longline survey 2000-2002 ..... 40
Figure 24. Sablefish lengths by sex, NSEI longline survey 2002 ..... 41
Figure 25. Sablefish age frequency distributions by year, adjusted for survey CPUE (round pounds/hook), NSEI longline survey 1997-2002 ..... 41
Figure 26. Shortspine thornyhead length frequencies, NSEI longline survey 1998-2002 ..... 42

## LIST OF APPENDICES

Appendix ..... Page
Appendix A. Tide table, NSEI longline survey August 2002 ..... 44
Appendix B. Solicitation to bid to purchase fish, NSEI longline survey 2002. ..... 45
Appendix C. Sablefish Survey Set Form, 2002. ..... 47
Appendix D. Hook Accounting Form, 2002 ..... 48
Appendix E. Biological data form, NSEI longline survey 2002 ..... 49
Appendix F. Sablefish maturities chart, 2002 ..... 50
Appendix G. Otolith Instructions, 2002. ..... 51
Appendix H. Protocol for previously tagged sablefish, 2002 ..... 54
Appendix I. Gonad condition criteria applied to Sebastes from Alaska landings used in 1988 ..... 55

## INTRODUCTION

The Alaska Department of Fish and Game (ADF\&G) conducted the $15^{\text {th }}$ 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 13 through August 18, 2002 (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 2002 survey are:

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 subsample 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 this year, when we deleted a station. 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 ( $57^{\circ} 55.84^{\prime} \mathrm{N}$ latitude $\times 134^{\circ} 47.65^{\prime} \mathrm{W}$ longitude) located west of Point

Hepburn on Admiralty Island southward, down Chatham Strait to the southernmost station $\left(56^{\circ}\right.$ $05.2^{\prime} \mathrm{N}$ latitude x $134^{\circ} 30.4^{\prime} \mathrm{W}$ longitude) several miles southeast of Cape Ommaney on Baranof Island (Figure 2).

## Gear

This was the third year the department 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 (unfished) 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 beckets 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, beckets 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 deterrent device (Figure 4 and 5).

## 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 2002 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 $F / V$ Ida June was awarded an annual contract and conducted the longline survey in the southern portion (Trip \#1) (Figure 6). This was the sixth year that the F/V Ida June has participated in the survey. It fished 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 was owned and skippered by Greg Beam.

The $F / V$ Charles $T$ was awarded an annual contract and conducted the longline survey in the central portion (Trip \#2) (Figure 7). This was the sixth year that the $F / V$ Charles $T$ has participated in the survey. It fished the entire survey area in 1992 and fished the central portion in 1997, 1998, 2000, 2001 and 2002. In addition, in 1999, it fished the southern portion and half the stations in the central portion. The $F / V$ Charles $T$ was built in 1919, with a major renovation in 1999 and is a 59.6 foot-over-all (FOA) wooden vessel. It was owned and skippered by Jim Eastwood.

The $F / V$ Archangel was awarded an annual contract and conducted the longline survey in the northern portion (Trip \#3) (Figure 8). This was the first 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 was 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 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 departed Sitka at 0645 hours on August 13, 2002 and the $F / V$ Charles $T$ departed Petersburg on the same day. The F/V Ida June departed Sitka on August 12, 2002. The $F / V$ Archangel and the $F / V$ Charles $T$ fished 15 stations each and the $F / V$ Ida June fished 14; no test sets were made in 2002. 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 2002 survey was scheduled to fish during the period of minimal tides in mid August in order to complete the survey prior to the opening of the commercial fishery on September 1 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 2002 catch similar to the 2001
survey catch (Appendix B). The successful bidder was required to have a facility in Kake or 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 picked up fish from the F/V Ida June on the southern end, continued north and picked up fish from the F/V Charles $T$ at 1600 hours on August 16 at Warm Springs and unloaded the F/V Archangel a bit after midnight the following morning at Pt. Thatcher. At the end of the survey, both the F/V Ida June and the $F / V$ Archangel unloaded their fish at SSS on August 19 and the $F / V$ Charles $T$ unloaded to the $F / V$ Traci $C$ at the end of the day on August 18 (Figure 10).

Except for the sampled sablefish, which were eastern cut, the sablefish were delivered in the round. Rockfishes were delivered head on with the belly split, with or without the guts. The iced boats ( $F / V$ Archangel and $F / V$ Ida June) were requested to ice dressed sablefish and all rockfish separate from sablefish in the round. Refrigerated sea water (RSW) and slush boats ( $F / V$ Charles $T$ ) were requested to ice dressed fish and round rockfish in a separate hold or in totes. SSS wanted all iced fish bled and agreed this year that round RSW/slush sablefish could be delivered unbled (Figure 11).

## Bait

International Marine Industries in Rhode Island won the 2002 bait bid (the 2 sablefish longline survey bait bids were bid as one bid) to provide 8,250 pounds of Argentina Illex, 100-200 gm squid for the NSEI survey. The winning bid was $\$ 0.40$ a pound plus per pound shipping costs of $\$ 0.1583$ for $1 / 3$ of the bait to Petersburg and $\$ 0.1843$ for $2 / 3$ to Sitka. This provided each vessel 2,750 pounds ( 6741 \# sacks) of squid. The reported usage was approximately 4 sacks of squid per set.

In 2002, 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 we discarded only the tentacles. 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. It included correcting latitudes and longitudes that
had been recorded improperly and extended some sets to be the length of the current sets. Stations 6 and 7, which had been problematic as they overlapped the same area, were adjusted. Station 1 was shortened and stations $4,24,37,45,47$ and 57 were adjusted to reflect the most consistent locations in the data 1997-2001. This master list 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, Figure 12). The beginning and ending latitude and longitude at retrieval were also recorded for every set this year for the first time. 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 with the exception of station 1 and 2. In 1997, we increased the number of hooks per station 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 19972001, these two stations were set as one continuous set with double the number of skates (and hooks) and were called station 1. In 2002, 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 1997-2002, 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. For 2002, each vessel made 3 sets a day with the $F / V$ Ida June making 2 sets on the last day. 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.

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 $F / V$ Sylvia 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 13). 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.

$$
\begin{equation*}
\text { cpue }_{i}=\frac{f_{i}}{h_{i}} \tag{1}
\end{equation*}
$$

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.

$$
\begin{equation*}
C P U E=\frac{\sum_{i} f_{i}}{\sum_{i} h_{i}} \tag{2}
\end{equation*}
$$

where $C P U E=$ 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.

$$
\begin{equation*}
\text { cрие }_{i: w t}=\text { cpue }_{i} \cdot w_{i} \tag{3}
\end{equation*}
$$

where cpue $_{i: w t}=$ the catch per unit of effort for Station $i$ in kilograms-per-hook
срие $_{i}=$ 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.

$$
\begin{equation*}
C P U E_{w t}=C P U E \cdot W \tag{4}
\end{equation*}
$$

where $C P U E_{w t}=$ the overall catch per unit of effort (kilograms-per-hook) for all stations
$C P U E=$ 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 subsample 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 14). 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: length, weight, sex, stage of gonad maturity and age

The sampling goal for sablefish for the survey was 750+ samples. This year's sampling goal was increased in light of the 2002 Review Panel's recommendations (Leaman, Bruce, Jeff Fujioka, Gordon Kruse, Mike Saunders and Mike Sigler. 2002) that we revisit our sampling goals due to concerns that our age and length data may not be tracking accurately, and this problem may be further exaggerated when tracking by sex. New sampling sizes for the various parameters were not calculated prior to the survey and this year's goal was chosen as it is nearly double previous sample goals and is reflective of what was sampled in 2001. Sample goals were previously 403415 sablefish for length and age, as described in the Region 1 Groundfish Project Port Sampling Objectives (Cartwright, Carlile 2000). "These sample sizes are based on an assumed multinomial distribution of age and length categories following the method of Thompson (1987). Given the $5 \%$ target precision level desired for estimating age and length distributions, Thompson's method prescribes sampling 403-415 fish per fishery, management area and season."

In 2002, 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 11 skates hauled at each station (Figure 15). Prior to leaving port, this sampling schedule was
calculated based on the survey catches in 2001 and the expectation that the 2002 survey catches would be close to the 2001 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 previously ADF\&G tagged sablefish captured were sacrificed and the recovery data was recorded. They were sacrificed to minimize affects of the longline survey on the 2002 mark-recapture project (Richardson 2003). Sablefish captured that had been tagged by other agencies were handled according to Protocol for previously tagged sablefish (Appendix H).

## Rockfish: length, weight, sex, stage of gonad maturity and age

The sampling goal for rockfish for the survey was 400 samples for each species. 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 16 and 17). 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 the 2001 Survey SOP and sent to ADF\&G Otolith Processing Lab in Juneau for aging.

## Shortspine Thornyheads: length only

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 11 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, JCSFOS. One hundred samples were requested. The $F / V$ Charles $T$ was able to provide 50 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 $\mathrm{DMSO} / \mathrm{EDTA} / \mathrm{NaCl}$. 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 for Ed Melvin of the Washington Sea Grant Program to aid the NPFMC in revisions to seabird avoidance measures in groundfish and halibut hook-andline fisheries of Alaska. The IPHC Protocol for Seabird Sampling and the Seabird Occurrence Form were used. 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.

## Sampling for Department of Environmental Conservation

Six whole sablefish were taken for the Department of Environmental Conservation Environmental (DEC) Health Fish Monitoring Project for sampling for heavy metals (arsenic, cadmium, lead, chromium, selenium, and nickel) and methyl mercury. The six fish were collected using nitrile gloves to avoid contamination and were killed and placed in food grade bags prior to being brought on board the vessel (Figure 18). The fish were then measured and weighed, a sampling form was completed and a sampling tag was placed on the outside of the sealed bag. The fish were placed in wet lock boxes and kept on ice until brought to Sitka where they were frozen and sent to DEC at a later date along with similar samples from other fish species.

## Data entry/management

All survey data (with the exception of the age data) from the $F / V$ Archangel and the majority of the data from the other two vessels was entered while at sea using an improved portable version of the regional integrated database Alexander (Alex) and uploaded to the main Region 1 Alex database at the completion of the survey (Figure 19). Later in the year, 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 on the first couple of days, vessels in areas below Point Gardner experienced problems (especially gear and anchor snarls) retrieving gear due to the strong tidal currents. The confluence of Frederick Sound and Chatham Strait creates strong tidal currents from Point Gardner south. Currents at depth often may not correspond to the tide book or surface currents.

## Set Information

Set information was collected from 44 stations. The latitude and longitude for each station as set are listed in Table 4 . Beginning this 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. A new location was established for station 6 so that it would no longer overlap station 7 . An onboard decision was made to move station 25 to a more north to south position to get it away from rocky shallows. In addition, several sets had drifted substantially prior to pickup. Pickup locations are available for this survey; however they are not entered onto the Alexander database.

The depths at the locations where the anchors went overboard ranged from a minimum of 214 fathoms at station 13 to 394 fathoms at station 8 . The mean of the average depths calculated at each station was 318 fathoms (Table 4).

The recorded winds during the survey varied from 0 to 15 knots with the exception of winds up to 25-35 knots recorded during one set on trip 1 and for 2 sets on trip 2.

## Soak Time

The soak time for a set, measured from the second anchor overboard to the first anchor onboard, ranged from 3 hours 6 minutes to 7 hours 36 minutes; the average soak time was 4 hours 36 minutes and the median was 4 hours 20 minutes (Table 5). The F/V Ida June (southern portiontrip 1) average soak time was 5 hours 34 minutes. The $F / V$ Charles $T$ (central portion-trip 2) average soak time was 4 hours 8 minutes. The F/V Archangel (northern portion-trip 3) average soak time was 4 hours 9 minutes.

The haul times averaged 1 hour 20 minutes for the $F / V$ Archangel and $F / V$ Ida June and 1 hour 35 minutes for the $F / V$ Charles $T$ (Table 5). All vessels experienced gear hang-ups and the $F / V$ Ida June parted gear at station 7 and the F/V Archangel parted gear at station 42 and lost the last 5 skates at station 39 due to a hang-up.

## Hook Accounting

Set information and CPUE data were collected from all 44 stations (Table 6 and Table 7). Of the 1,096 skates (subsets) set, 1,039 skates were valid and used to calculate CPUEs. Of the total 46,435 hooks set on valid subsets, 17,371 ( $37 \%$ ) still had bait on them, $9,927(21 \%)$ were bare, and $1,092(2 \%)$ were invalid; i.e. broken, bent, snarled or otherwise. Either sablefish or bycatch species occupied the remaining hooks ( $39 \%$ ).

On valid subsets, a total of 14,542 sablefish were caught on a total of 46,435 hooks set (Table 8 ). The overall fish-per-hook was 0.31 and ranged from 0.14 at station 57 to 0.50 at station 22
(Table 8, Figure 20 and 21). The per station fish-per-hook varied throughout the survey area and the overall fish-per-hook per survey portion ranged from a low of 0.26 for stations in the southern portion to 0.33 for stations in the central portion to a high of 0.35 for those stations in the northern portion. The fish-per-hook also varied widely within each of these portions (Figure 21).

Using the overall average weight of 2002 survey samples of 3.34 kg ( 7.36 lbs ) the overall kilograms-per-hook was 1.05 ( 2.30 pounds-per-hook) and ranged from a minimum kilograms-per-hook of 0.44 ( 0.96 pounds-per-hook) at station 33 to a maximum kilograms-per-hook of 1.64 ( 3.61 pounds-per-hook) at station 10 (Table 8, Figure 20).

## Bycatch

Bycatch included 1,950 shortspine thornyheads, 770 skates, 161 halibut, 153 rougheye rockfish, 141 arrowtooth flounder, 54 shortraker rockfish, 48 Pacific sleeper sharks and 17 redbanded rockfish (Table 6 and Table 7). Additionally, there were 195 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) and is summarized by statistical area in Table 9. There was a slight increase in 2002 over 2001 of total shortspine thornyhead bycatch and the central 2 statistical areas showed an increase while the northernmost and southernmost statistical areas in the survey area showed a decrease.

## Biological Sampling

## Sablefish: length, weight, sex, stage of maturity and age

Lengths were taken on 673 sablefish. The mean length recorded was 66 cm and the sablefish ranged in length from 44 to 109 cm (Figure 22). The mean length recorded in the southern portion was 68 cm and these sablefish ranged from 44 to 109 cm . The mean length recorded in the central portion showed a bit smaller fish with the mean at 67 cm with a range of 46 to 104 cm . The mean length recorded in the northern portion showed even smaller fish at 64 cm with a range of 50 to 92 cm (Table 10). To compare lengths with past years data the length frequency was adjusted by the fish-per-hook (Figure 23).

The mean length for male sablefish $(\mathrm{n}=363)$ was 63 cm and the samples ranged in length from 44 to 83 cm . The mean length for female sablefish ( $\mathrm{n}=308$ ) was 69 cm and they ranged in length from 46 to 109 cm (Table 10, Figure 24).

Weights were recorded for 665 sablefish. The mean weight of the sampled sablefish was 3.34 kg ( 7.4 round pounds). The mean weight per station ranged from 2.1 to 4.9 kg ( 4.8 to 11.0 lbs ) and the weights of individual fish ranged from 0.7 kg to 17 kg ( 1.5 to 37.5 lbs ).

Sex was noted on 674 sablefish. Fifty four percent of the fish were male (Table 11). Fourteen percent of the sablefish males and $6 \%$ of the females were immature (maturity code 1 ) (Table 12
and Table 13). There were 5 ripe (maturity code 4 ) sablefish noted, 4 were males with flowing milt and 1 was a female that had large clear loose eggs in her ovaries.

The age lab returned estimated ages for 668 samples. These sablefish ranged in age from 2 to 59 years with a mean age at 15 years (Table 14). Females appear to be 3 years younger than the males in both the southern and central portions and 2 years younger in the northern portion and overall. Overall the sablefish averaged the oldest, at 17 years, in the southern portion, a year younger in the central portion and an additional 3 years younger, at 13 , in the northern portion. The 2002 age frequency has a bimodal distribution with the first mode at 7 years of age and a second one at and around 23 (Figure 25).

## Sablefish Tags

Seventy-six sablefish that were previously tagged by ADF\&G were recovered during the survey. All ADF\&G tags recovered were green tags from the 1997-2002 Chatham releases: 3 were from the 1997 longline release, 3 from the 1998 longline release, 6 from the 1999 longline release, 10 from the 2000 pot release, 15 from the 2001 pot release and 39 from the 2002 pot release (Table 15). In addition, 1 Canadian tag and 3 NMFS/ADFG Coop tags were recovered and sent to the appropriate agencies.

## Rockfish: length, weight, sex, stage of maturity and age.

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 54 shortraker rockfish caught, 48 were measured for length and weight. The mean length was 62 cm and the fish ranged in length from 42 to 96 cm . The mean weight was 4.4 kg $(9.7 \mathrm{lb})$ and ranged from 1.2 to $14 \mathrm{~kg}(2.6$ to 30.9 lb$)$. The sex ratio, noted on all 48 of the shortraker rockfish was roughly equal at $46 \%$ male. Sexual maturities were noted on 47 shortraker and showed 4\% "immature" plus 26\% "maturing" shortrakers (Table 16).

Of a total of 153 rougheye rockfish caught, 117 were measured for length and weight. The mean length was 43 cm and the fish ranged in length from 32 to 64 cm . The mean weight was 1.4 kg $(3.0 \mathrm{lb})$ and ranged from 0.6 to $4 \mathrm{~kg}(1.3$ to 8.8 lb$)$. The sex and sexual maturity were noted on all 117 of the rougheye rockfish resulting in $58 \%$ males and $39 \%$ percent of the samples were "immature" and 32\% "maturing" (Table 17).

Of a total of 17 redbanded rockfish caught, 17 were measured for length and weight. The mean length was 46 cm and the fish ranged in length from 41 to 53 cm . The mean weight was 1.9 kg $(4.3 \mathrm{lb})$ and ranged from 1.3 to $2.9 \mathrm{~kg}(2.9$ to 6.4 lb$)$. The sex and sexual maturities were noted on all 17 of the redbanded rockfish resulting in $59 \%$ males and $0 \%$ of the samples were "immature" and 0\% "maturing" (Table 18).

## Shortspine Thornyhead: lengths only

Of the 1,950 shortspine thornyhead captured, lengths were taken on 832 fish. The mean length was 41 cm and lengths ranged from 26 to 72 cm . (Table 19, Figure 26).

## Other species

Squid beaks, sablefish heads and a harbor seal were the only contents noted in examining the stomachs of dead, Pacific sleeper sharks.

## 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 many stations. The only other species of note were 4 blackfooted albatross observed on August 17 at station 55, the most southerly station in lower Chatham. An hour earlier, 3 black-footed albatross were noted at nearby station 58, but not during the observation period.

## Sampling for Department of Environmental Conservation

Six sablefish were provided to DEC per sampling protocol. The DEC report on the heavy metals and methyl mercury found in the sablefish (and other commercial and subsistence fish statewide) should be complete by the fall of 2003.

## LITERATURE CITED

Carlile David. W., Beverly Richardson, Margaret Cartwright, Victoria. M. O’Connell. 2002. Southeast Alaska sablefish stock assessment activities 1988-2001. Alaska Department of Fish and Game. RIR IJ02-02. 86 pp.

Leaman, Bruce, Jeff Fujioka, Gordon Kruse, Mark Saunders and Mike Sigler. 2002. An external review of the Chatham Strait sablefish stock assessment program. Appendix 1, Alaska Department of Fish and Game Regional Information Report 1J02-34.

Richardson, Beverly. 2003. 2002 NSEI sablefish marking pot survey cruise report: Miss Conception, June 21- July 7, 2002. Alaska Department of Fish and Game. RIR IJ03-12. 31 pp .

Richardson, Beverly and Victoria O’Connell. 2002. The Southeast Alaska Northern Southeast Inside Sablefish Fishery Information Report with Outlook to the 2002 Fishery. Alaska Department of Fish and Game. RIR 1J02-34. 55pp.

Sigler, M. F. 2000. Abundance estimation and capture of sablefish (Anoplopoma fimbria) by longline gear. Canadian Journal Aquatic Sciences. p.1270-1283.

Table 1. Longline survey specifications, NSEI longline survey 1988-2002.

| Year | Start | End | Vessels | Hooks Per Set | Hook Spacing | Hook Size | Gangion Length | Bait | $\begin{aligned} & \hline \text { Soak } \\ & \text { Time } \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Skate } \\ \text { Wts } \\ \hline \end{gathered}$ | $\begin{gathered} \text { Fish } \\ \text { Tagged }^{1} \end{gathered}$ | $\begin{gathered} \text { Sets } \\ \text { Made } \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 | F/V Carrie | 500 | 3 m | 13 C | NA | Herring | 1 hr | No | None | 44 |
| 1990 | 8/26 | 9/10 | F/V Isis | 500 | 3 m | 13 C | NA | Herring | 1 hr | No | None | 40 |
| 1991 | 8/13 | 8/30 | $R / V$ Stellar | 500 | 3 m | 13 C | 0.375 m | Herring | 1 hr | 2.3 kg | None | 40 |
| 1992 | 8/17 | 8/31 | F/V Charles $T$ | 500 | 3 m | 13 C | 0.375 m | Herring | 1 hr | 2.3 kg | None | 40 |
| 1993 | 8/23 | 9/8 | $R / V$ Medeia | 500 | 3 m | 13 C | 0.375 m | Herring | 1 hr | 2.3 kg | None | 38 |
| 1994 | 8/23 | 9/5 | $R / V$ Medeia | 500 | 3 m | 13 C | 0.375 m | Herring | 1 hr | 2.3 kg | None | 38 |
| 1995 | 8/23 | 9/8 | $R / V$ Medeia | 500 | 3 m | 13 C | 0.375 m | Herring Squid Squid | $\begin{aligned} & 1 \mathrm{hr} \\ & 3 \mathrm{hr} \\ & 3 \mathrm{hr} \\ & \hline \end{aligned}$ | 2.3 kg | None | $\begin{gathered} \hline 30 \\ 6 \\ 24 \\ \hline \end{gathered}$ |
| 1996 | $\begin{aligned} & \hline 8 / 17 \\ & 8 / 19 \end{aligned}$ | $\begin{aligned} & \hline 8 / 31 \\ & 8 / 23 \end{aligned}$ | $R / V$ Medeia F/V Ida June | $\begin{aligned} & 500 \\ & 750 \end{aligned}$ | $\begin{aligned} & 3 \mathrm{~m} \\ & 1 \mathrm{~m} \end{aligned}$ | $\begin{aligned} & \hline 13 \mathrm{C} \\ & 13 \mathrm{C} \end{aligned}$ | $\begin{gathered} \hline 0.375 \mathrm{~m} \\ 0.2 \mathrm{~m} \end{gathered}$ | Herring Squid | $\begin{gathered} 1 \mathrm{hr} \\ 3-7 \mathrm{hr} \end{gathered}$ | $\begin{aligned} & 2.3 \mathrm{~kg} \\ & 1.0 \mathrm{~kg} \\ & \hline \end{aligned}$ | None <br> None | $\begin{aligned} & \hline 38 \\ & 16 \end{aligned}$ |
| 1997 | 8/7 | 8/13 | F/V Ida June F/V Charles $T$ F/V Kruzof | $\begin{aligned} & \hline 923- \\ & 1217 \end{aligned}$ | 2 m | 13 C | $0.2-0.3 \mathrm{~m}$ | Squid | $\begin{gathered} 3-11 \\ \mathrm{hr} \end{gathered}$ | $1-3.2 \mathrm{~kg}$ | 5579 tu | 45 |
| 1998 | 8/13 | 8/19 | F/V Ida June <br> F/V Charles T <br> F/V Ocean Cape | $\begin{aligned} & \hline 831- \\ & 1267 \end{aligned}$ | 2 m | 13 C | $0.2-0.3 \mathrm{~m}$ | Squid | $\begin{gathered} \hline 3-11 \\ \mathrm{hr} \end{gathered}$ | $1-3.2 \mathrm{~kg}$ | 4998 tl | 45 |
| 1999 | 8/15 | 8/23 | F/V Ida June <br> F/V Charles $T$ | $\begin{aligned} & 1002- \\ & 1129 \\ & \hline \end{aligned}$ | 2 m | 13 C | $0.2-0.3 \mathrm{~m}$ | Squid | $\begin{gathered} 3-11 \\ \mathrm{hr} \end{gathered}$ | 1.4 kg | 3568 t | 45 |
| 2000 | 8/16 | 8/23 | F/V Ida June <br> F/V Charles $T$ <br> F/V Spirit | 1125 | 2 m | 13 C | 0.375 m | Squid | $\begin{gathered} 3-11 \\ \mathrm{hr} \end{gathered}$ | 3.2 kg |  | 45 |
| 2001 | 8/08 | 8/13 | F/V Ida June F/V Charles $T$ F/V Sylvia | 1125 | 2 m | 13 C | 0.375 m | Squid | $\begin{gathered} 3-11 \\ \mathrm{hr} \end{gathered}$ | 3.2 kg | none | 45 |
| 2002 | 8/13 | 8/18 | F/V Ida June <br> F/V Charles T <br> F/V Archangel | 1125 | 2 m | 13 C | 0.375 m | Squid | $\begin{gathered} \hline 3-11 \\ \mathrm{hr} \end{gathered}$ | 3.2 kg | none | 44 |

${ }^{1}$ Notation on tags: $\mathrm{t}=\mathrm{t}$-bar tag, $\mathrm{u}=$ upper fin clip, $\mathrm{l}=$ lower fin clip.
${ }^{2}$ In 199530 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 2002.

| $\underline{F / V \text { Charles } T}$ | $\underline{\text { F/V Archangel }}$ | $\underline{\text { F/V Ida June }}$ |
| :--- | :--- | :--- |
| Skipper: Jim Eastwood | Skipper: Phil Wyman | Skipper: Greg Beam |
| Crew: Tom Williams | Crew: Todd Nevers | Crew: Audrey Beam |
| Crew: Mike Stainbrook | Crew: Todd Bayne | Crew: Kevin Beam |
| Crew: Dan (Bo) Varsano | Crew: Todd Wyman | Crew: Caanan Beam |
|  |  | Crew: Ameriah Beam |
|  |  |  |
| ADFG: Deidra Holum | ADFG: Beverly Richardson | 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 2002.

| F/V Ida June <br> Southern Portion <br> Trip 1 | F/V Charles T <br> Central Portion <br> Trip 2 | F/V Archangel <br> Northern Portion <br> 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 as set and time set, NSEI longline survey 2002.

| YEAR | Trip No | $\begin{array}{\|c\|} \hline \text { Effort } \\ \text { No } \\ \hline \end{array}$ | Statistical Area | Station No. | Start Latitude | Start Longitude | End Latitude | End Longitude | Day \& Time Set | Start <br> Fm | End Fm | Avg Fm |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2002 | 1 | 7 | 345631 | 1 | 5632.88 | 13434.59 | 5631.28 | 13434.59 | 8/15/2002 7:42 | 277 | 284 | 287 |
| 2002 | 1 | 6 | 345631 | 3 | 5635.14 | 13431.31 | 5633.47 | 13431.11 | 8/14/2002 9:48 | 355 | 357 | 356 |
| 2002 | 1 | 5 | 345631 | 4 | 5641.58 | 13434.78 | 5640.03 | 13434.85 | 8/14/2002 7:57 | 375 | 366 | 371 |
| 2002 | 1 | 4 | 345631 | 5 | 5642.30 | 13433.01 | 5640.89 | 13433.08 | 8/14/2002 7:24 | 383 | 375 | 379 |
| 2002 | 1 | 3 | 345631 | 6 | 5639.23 | 13425.67 | 5640.61 | 13425.61 | 8/13/2002 11:55 | 277 | 279 | 292 |
| 2002 | 1 | 2 | 345631 | 7 | 5641.73 | 13426.13 | 5643.17 | 13426.52 | 8/13/2002 8:23 | 251 | 275 | 268 |
| 2002 | 1 | 1 | 345631 | 8 | 5642.85 | 13433.21 | 5644.29 | 13433.21 | 8/13/2002 7:25 | 385 | 401 | 394 |
| 2002 | 2 | 2 | 345631 | 9 | 5645.55 | 13429.21 | 5644.36 | 13428.65 | 8/14/2002 7:42 | 359 | 359 | 361 |
| 2002 | 2 | 3 | 345631 | 10 | 5648.75 | 13431.80 | 5647.33 | 13431.80 | 8/14/2002 11:41 | 363 | 386 | 380 |
| 2002 | 2 | 1 | 345631 | 13 | 5649.25 | 13430.80 | 5650.53 | 13430.77 | 8/14/2002 5:28 | 225 | 211 | 214 |
| 2002 | 2 | 5 | 345631 | 15 | 5654.30 | 13438.36 | 5652.79 | 13438.41 | 8/15/2002 8:13 | 360 | 367 | 364 |
| 2002 | 2 | 4 | 345631 | 16 | 5652.85 | 13433.75 | 5654.24 | 13433.75 | 8/15/2002 5:00 | 368 | 338 | 359 |
| 2002 | 2 | 6 | 345701 | 18 | 5701.93 | 13442.64 | 5700.63 | 13442.64 | 8/15/2002 12:29 | 350 | 336 | 343 |
| 2002 | 2 | 9 | 345701 | 19 | 5702.87 | 13443.95 | 5701.44 | 13443.95 | 8/16/2002 11:00 | 361 | 345 | 351 |
| 2002 | 2 | 8 | 345701 | 21 | 5706.11 | 13442.09 | 5707.37 | 13442.08 | 8/16/2002 7:00 | 355 | 340 | 347 |
| 2002 | 2 | 7 | 345701 | 22 | 5710.14 | 13447.43 | 5711.38 | 13448.39 | 8/16/2002 4:59 | 325 | 320 | 319 |
| 2002 | 2 | 11 | 345701 | 23 | 5711.47 | 13440.90 | 5712.89 | 13440.90 | 8/17/2002 8:34 | 272 | 334 | 363 |
| 2002 | 2 | 10 | 345701 | 24 | 5714.10 | 13440.75 | 5715.47 | 13440.75 | 8/17/2002 5:45 | 261 | 263 | 229 |
| 2002 | 2 | 12 | 345701 | 25 | 5718.01 | 13439.92 | 5716.79 | 13438.90 | 8/17/2002 11:40 | 281 | 236 | 265 |
| 2002 | 2 | 15 | 345701 | 27 | 5718.87 | 13444.79 | 5720.20 | 13444.78 | 8/18/2002 10:00 | 405 | 373 | 384 |
| 2002 | 2 | 14 | 345701 | 28 | 5718.70 | 13442.71 | 5719.98 | 13442.73 | 8/18/2002 6:45 | 261 | 345 | 292 |
| 2002 | 2 | 13 | 345701 | 29 | 5720.85 | 13436.99 | 5719.63 | 13437.00 | 8/18/2002 4:14 | 276 | 284 | 293 |
| 2002 | 3 | 11 | 345701 | 30 | 5721.38 | 13439.18 | 5720.00 | 13439.58 | 8/17/2002 11:26 | 365 | 326 | 298 |
| 2002 | 3 | 10 | 345701 | 32 | 5722.70 | 13446.13 | 5724.07 | 13446.15 | 8/17/2002 8:53 | 360 | 387 | 357 |
| 2002 | 3 | 12 | 345701 | 33 | 5726.74 | 13441.53 | 5725.30 | 13441.50 | 8/17/2002 14:47 | 308 | 292 | 297 |
| 2002 | 3 | 13 | 345731 | 35 | 5731.58 | 13442.14 | 5733.01 | 13442.20 | 8/18/2002 7:12 | 327 | 263 | 304 |
| 2002 | 3 | 15 | 345731 | 37 | 5732.24 | 13445.23 | 5733.66 | 13445.11 | 8/18/2002 10:40 | 349 | 321 | 331 |
| 2002 | 3 | 14 | 345731 | 39 | 5734.66 | 13442.07 | 5735.96 | 13443.62 | 8/18/2002 8:47 | 225 | 259 | 229 |
| 2002 | 3 | 9 | 345731 | 41 | 5741.64 | 13452.21 | 5741.34 | 13449.16 | 8/16/2002 10:57 | 325 | 286 | 277 |
| 2002 | 3 | 8 | 345731 | 42 | 5743.76 | 13453.04 | 5742.35 | 13452.68 | 8/16/2002 9:15 | 296 | 322 | 305 |
| 2002 | 3 | 6 | 345731 | 43 | 5745.508 | 13446.01 | 5744.03 | 13445.94 | 8/15/2002 12:14 | 281 | 272 | 288 |
| 2002 | 3 | 7 | 345731 | 44 | 5744.59 | 13448.91 | 5746.04 | 13448.83 | 8/16/2002 7:44 | 291 | 278 | 280 |
| 2002 | 3 | 4 | 345731 | 45 | 5747.04 | 13450.08 | 5745.58 | 13449.94 | 8/15/2002 6:41 | 296 | 285 | 289 |
| 2002 | 3 | 5 | 345731 | 46 | 5750.094 | 13448.93 | 5748.67 | 13448.64 | 8/15/2002 8:33 | 242 | 266 | 253 |
| 2002 | 3 | 1 | 345731 | 47 | 5752.05 | 13446.21 | 5750.64 | 13445.98 | 8/14/2002 7:19 | 268 | 252 | 263 |
| 2002 | 3 | 3 | 345731 | 49 | 5751.084 | 13447.15 | 5752.50 | 13446.98 | 8/14/2002 12:38 | 280 | 271 | 275 |
| 2002 | 3 | 2 | 345731 | 51 | 5755.00 | 13447.69 | 5756.29 | 13448.15 | 8/14/2002 8:27 | 303 | 262 | 296 |
| 2002 | 1 | 10 | 345603 | 52 | 5614.04 | 13427.31 | 5615.57 | 13427.38 | 8/16/2002 7:07 | 395 | 390 | 393 |
| 2002 | 1 | 8 | 345603 | 53 | 5626.81 | 13429.81 | 5625.10 | 13429.80 | 8/15/2002 8:31 | 383 | 390 | 387 |
| 2002 | 1 | 12 | 345603 | 54 | 5620.18 | 13433.87 | 5618.57 | 13434.85 | 8/16/2002 11:35 | 239 | 353 | 296 |
| 2002 | 1 | 14 | 345603 | 55 | 5605.23 | 13430.59 | 5606.74 | 13430.59 | 8/17/2002 8:50 | 283 | 292 | 287 |
| 2002 | 1 | 9 | 345603 | 56 | 5626.12 | 13436.29 | 5624.41 | 13435.96 | 8/15/2002 9:33 | 311 | 313 | 307 |
| 2002 | 1 | 11 | 345603 | 57 | 5616.56 | 13424.75 | 5615.17 | 13424.69 | 8/16/2002 7:44 | 398 | 366 | 378 |
| 2002 | 1 | 13 | 345603 | 58 | 5608.25 | 13434.78 | 5606.85 | 13434.85 | 8/17/2002 8:05 | 303 | 286 | 297 |

Table 5. Dates and time of set with soak and hauling times, NSEI longline survey 2002.

| YEAR | $\begin{aligned} & \text { Trip } \\ & \text { No } \end{aligned}$ | Station No. | Time Set | First anchor on board | $\left\|\begin{array}{c}\text { Soak } \\ \text { time (to } \\ \text { 1st } \\ \text { anchor) }\end{array}\right\|$ | Second anchor on board | Haul time (anchor to anchor) | Haulback order |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2002 | 1 | 1 | 8/15/2002 7:42 | 8/15/2002 11:24 | 3:42 | 8/15/2002 12:31 | 1:07 | Same |
| 2002 | 1 | 3 | 8/14/2002 9:48 | 8/14/2002 16:51 | 7:03 | 8/14/2002 18:15 | 1:24 | Same |
| 2002 | 1 | 4 | 8/14/2002 7:57 | 8/14/2002 13:59 | 6:02 | 8/14/2002 15:25 | 1:26 | Same |
| 2002 | 1 | 5 | 8/14/2002 7:24 | 8/14/2002 11:44 | 4:20 | 8/14/2002 12:56 | 1:12 | Same |
| 2002 | 1 | 6 | 8/13/2002 11:55 | 8/13/2002 18:55 | 7:00 | 8/13/2002 20:17 | 1:22 | Opposite |
| 2002 | 1 | 7 | 8/13/2002 8:23 | 8/13/2002 15:59 | 7:36 | 8/13/2002 18:21 | 2:22 | Opposite |
| 2002 | 1 | 8 | 8/13/2002 7:25 | 8/13/2002 12:51 | 5:26 | 8/13/2002 14:30 | 1:39 | Opposite |
| 2002 | 1 | 52 | 8/16/2002 7:07 | 8/16/2002 12:40 | 5:33 | 8/16/2002 13:42 | 1:02 | Same |
| 2002 | 1 | 53 | 8/15/2002 8:31 | 8/15/2002 13:40 | 5:09 | 8/15/2002 14:55 | 1:15 | Same |
| 2002 | 1 | 54 | 8/16/2002 11:35 | 8/16/2002 16:45 | 5:10 | 8/16/2002 17:49 | 1:04 | Opposite |
| 2002 | 1 | 55 | 8/17/2002 8:50 | 8/17/2002 13:30 | 4:40 | 8/17/2002 14:35 | 1:05 | Opposite |
| 2002 | 1 | 56 | 8/15/2002 9:33 | 8/15/2002 16:02 | 6:29 | 8/15/2002 17:20 | 1:18 | Same |
| 2002 | 1 | 57 | 8/16/2002 7:44 | 8/16/2002 14:25 | 6:41 | 8/16/2002 15:30 | 1:05 | Same |
| 2002 | 1 | 58 | 8/17/2002 8:05 | 8/17/2002 11:11 | 3:06 | 8/17/2002 12:37 | 1:26 | Same |
| 2002 | 2 | 9 | 8/14/2002 7:42 | 8/14/2002 13:42 | 6:00 | 8/14/2002 15:15 | 1:33 | Opposite |
| 2002 | 2 | 10 | 8/14/2002 11:41 | 8/14/2002 16:12 | 4:31 | 8/14/2002 17:45 | 1:33 | Opposite |
| 2002 | 2 | 13 | 8/14/2002 5:28 | 8/14/2002 8:54 | 3:26 | 8/14/2002 10:59 | 2:05 | Opposite |
| 2002 | 2 | 15 | 8/15/2002 8:13 | 8/15/2002 13:52 | 5:39 | 8/15/2002 15:16 | 1:24 | Opposite |
| 2002 | 2 | 16 | 8/15/2002 5:00 | 8/15/2002 9:06 | 4:06 | 8/15/2002 10:45 | 1:39 | Same |
| 2002 | 2 | 18 | 8/15/2002 12:29 | 8/15/2002 16:49 | 4:20 | 8/15/2002 18:13 | 1:24 | Opposite |
| 2002 | 2 | 19 | 8/16/2002 11:00 | 8/16/2002 14:54 | 3:54 | 8/16/2002 16:31 | 1:37 | Opposite |
| 2002 | 2 | 21 | 8/16/2002 7:00 | 8/16/2002 12:16 | 5:16 | 8/16/2002 13:46 | 1:30 | Opposite |
| 2002 | 2 | 22 | 8/16/2002 4:59 | 8/16/2002 8:15 | 3:16 | 8/16/2002 9:42 | 1:27 | Opposite |
| 2002 | 2 | 23 | 8/17/2002 8:34 | 8/17/2002 12:34 | 4:00 | 8/17/2002 14:33 | 1:59 | Opposite |
| 2002 | 2 | 24 | 8/17/2002 5:45 | 8/17/2002 9:00 | 3:15 | 8/17/2002 10:46 | 1:46 | Same |
| 2002 | 2 | 25 | 8/17/2002 11:40 | 8/17/2002 15:37 | 3:57 | 8/17/2002 17:04 | 1:27 | Opposite |
| 2002 | 2 | 27 | 8/18/2002 10:00 | 8/18/2002 13:17 | 3:17 | 8/18/2002 14:58 | 1:41 | Opposite |
| 2002 | 2 | 28 | 8/18/2002 6:45 | 8/18/2002 10:37 | 3:52 | 8/18/2002 11:58 | 1:21 | Opposite |
| 2002 | 2 | 29 | 8/18/2002 4:14 | 8/18/2002 7:29 | 3:15 | 8/18/2002 8:49 | 1:20 | Opposite |
| 2002 | 3 | 30 | 8/17/2002 11:26 | 8/17/2002 15:39 | 4:13 | 8/17/2002 16:46 | 1:07 | Same |
| 2002 | 3 | 32 | 8/17/2002 8:53 | 8/17/2002 12:27 | 3:34 | 8/17/2002 13:37 | 1:10 | Opposite |
| 2002 | 3 | 33 | 8/17/2002 14:47 | 8/17/2002 18:37 | 3:50 | 8/17/2002 20:05 | 1:28 | Same |
| 2002 | 3 | 35 | 8/18/2002 7:12 | 8/18/2002 11:12 | 4:00 | 8/18/2002 12:23 | 1:11 | Opposite |
| 2002 | 3 | 37 | 8/18/2002 10:40 | 8/18/2002 15:56 | 5:16 | 8/18/2002 17:16 | 1:20 | Opposite |
| 2002 | 3 | 39 | 8/18/2002 8:47 | 8/18/2002 13:08 | 4:21 | 8/18/2002 14:36 | 1:28 | Same |
| 2002 | 3 | 41 | 8/16/2002 10:57 | 8/16/2002 16:10 | 5:13 | 8/16/2002 17:22 | 1:12 | Same |
| 2002 | 3 | 42 | 8/16/2002 9:15 | 8/16/2002 13:37 | 4:22 | 8/16/2002 15:27 | 1:50 | Same |
| 2002 | 3 | 43 | 8/15/2002 12:14 | 8/15/2002 16:10 | 3:56 | 8/15/2002 17:12 | 1:02 | Opposite |
| 2002 | 3 | 44 | 8/16/2002 7:44 | 8/16/2002 11:45 | 4:01 | 8/16/2002 12:53 | 1:08 | Same |
| 2002 | 3 | 45 | 8/15/2002 6:41 | 8/15/2002 10:12 | 3:31 | 8/15/2002 11:20 | 1:08 | Opposite |
| 2002 | 3 | 46 | 8/15/2002 8:33 | 8/15/2002 13:16 | 4:43 | 8/15/2002 14:13 | 12:05 | Opposite |
| 2002 | 3 | 47 | 8/14/2002 7:19 | 8/14/2002 10:25 | 3:06 | 8/14/2002 11:58 | 1:33 | Opposite |
| 2002 | 3 | 49 | 8/14/2002 12:38 | 8/14/2002 16:02 | 3:24 | 8/14/2002 17:18 | 1:16 | Same |
| 2002 | 3 | 51 | 8/14/2002 8:27 | 8/14/2002 13:23 | 4:56 | 8/14/2002 15:03 | 1:40 | Opposite |
|  |  |  |  |  | 4:36 | average | 1:24 | average |
|  |  |  |  |  | 7:36 | maximun |  |  |
|  |  |  |  |  | 3:06 | minimum |  |  |
|  |  |  |  |  | 4:20 | median |  |  |

Table 6. Status of hooks by station, NSEI longline survey 2002.

| Station | Fish-perhook | Trip | Hooks | Bare | Bait | Invalid | Sablefish | Halibut | Thornyhead | SR | RE | RB | Skate | ATF | Other criters | Pacific sleeper | Coral |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Valid subsets only. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0.22 | 1 | 1121 | 230 | 513 | 19 | 246 | 14 | 67 | 2 | 1 | 0 | 25 | 3 | 0 | 1 | 0 |
| 3 | 0.25 | 1 | 1122 | 239 | 476 | 25 | 280 | 2 | 84 | 2 | 0 | 0 | 8 | 0 | 3 | 1 | 2 |
| 4 | 0.37 | 1 | 1121 | 449 | 175 | 22 | 410 | 3 | 38 | 0 | 0 | 0 | 19 | 2 | 1 | 2 | 0 |
| 5 | 0.29 | 1 | 1108 | 366 | 363 | 22 | 324 | 3 | 23 | 0 | 1 | 0 | 3 | 1 | 2 | 0 | 0 |
| 6 | 0.27 | 1 | 1077 | 634 | 70 | 25 | 296 | 7 | 15 | 0 | 0 | 0 | 23 | 0 | 6 | 1 | 0 |
| 7 | 0.36 | 1 | 849 | 253 | 186 | 10 | 303 | 5 | 70 | 2 | 4 | 0 | 7 | 3 | 3 | 3 | 0 |
| 8 | 0.33 | 1 | 719 | 300 | 134 | 27 | 235 | 2 | 13 | 0 | 1 | 0 | 3 | 2 | 2 | 0 | 0 |
| 9 | 0.36 | 2 | 1044 | 404 | 123 | 34 | 374 | 3 | 90 | 0 | 0 | 0 | 11 | 0 | 4 | 1 | 0 |
| 10 | 0.33 | 2 | 898 | 278 | 231 | 27 | 296 | 2 | 42 | 0 | 0 | 0 | 17 | 2 | 1 | 2 | 0 |
| 13 | 0.21 | 2 | 1076 | 159 | 318 | 31 | 225 | 8 | 220 | 1 | 82 | 4 | 14 | 6 | 5 | 0 | 3 |
| 15 | 0.42 | 2 | 1083 | 208 | 357 | 22 | 450 | 1 | 28 | 0 | 0 | 0 | 9 | 1 | 5 | 2 | 0 |
| 16 | 0.38 | 2 | 1072 | 216 | 331 | 31 | 407 | 1 | 61 | 1 | 0 | 0 | 8 | 11 | 4 | 1 | 0 |
| 18 | 0.31 | 2 | 1117 | 304 | 350 | 37 | 351 | 1 | 38 | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 3 |
| 19 | 0.26 | 2 | 1072 | 257 | 422 | 7 | 276 | 2 | 63 | 1 | 0 | 0 | 22 | 3 | 17 | 1 | 0 |
| 21 | 0.49 | 2 | 993 | 359 | 105 | 7 | 482 | 1 | 20 | 0 | 0 | 0 | 15 | 1 | 3 | 0 | 0 |
| 22 | 0.50 | 2 | 1076 | 168 | 283 | 19 | 542 | 0 | 29 | 0 | 0 | 0 | 34 | 0 | 0 | 1 | 0 |
| 23 | 0.29 | 2 | 1076 | 184 | 454 | 31 | 317 | 0 | 66 | 10 | 1 | 0 | 9 | 0 | 2 | 2 | 0 |
| 24 | 0.20 | 2 | 1125 | 169 | 474 | 7 | 224 | 4 | 147 | 4 | 37 | 13 | 29 | 7 | 9 | 0 | 0 |
| 25 | 0.28 | 2 | 1080 | 273 | 380 | 26 | 304 | 3 | 64 | 1 | 1 | 0 | 14 | 8 | 4 | 2 | 0 |
| 27 | 0.39 | 2 | 1044 | 192 | 365 | 29 | 412 | 2 | 24 | 0 | 0 | 0 | 3 | 1 | 16 | 0 | 0 |
| 28 | 0.26 | 2 | 1113 | 198 | 535 | 28 | 289 | 1 | 49 | 4 | 3 | 0 | 5 | 1 | 0 | 0 | 0 |
| 29 | 0.30 | 2 | 949 | 109 | 484 | 23 | 283 | 2 | 38 | 0 | 0 | 0 | 2 | 2 | 6 | 0 | 0 |
| 30 | 0.36 | 3 | 1124 | 163 | 472 | 28 | 410 | 3 | 28 | 3 | 0 | 0 | 10 | 1 | 3 | 1 | 0 |
| 32 | 0.32 | 3 | 1076 | 167 | 496 | 11 | 346 | 0 | 26 | 0 | 0 | 0 | 5 | 1 | 21 | 2 | 0 |
| 33 | 0.20 | 3 | 1105 | 88 | 704 | 24 | 221 | 0 | 21 | 0 | 0 | 0 | 45 | 2 | 0 | 0 | 0 |
| 35 | 0.34 | 3 | 1119 | 188 | 506 | 6 | 384 | 2 | 17 | 1 | 0 | 0 | 14 | 1 | 0 | 0 | 0 |
| 37 | 0.37 | 3 | 1117 | 206 | 431 | 26 | 417 | 1 | 17 | 0 | 0 | 0 | 17 | 2 | 0 | 0 | 0 |
| 39 | 0.48 | 3 | 852 | 173 | 212 | 13 | 407 | 9 | 19 | 1 | 5 | 0 | 3 | 2 | 8 | 0 | 0 |
| 41 | 0.39 | 3 | 1106 | 174 | 402 | 31 | 432 | 7 | 28 | 1 | 2 | 0 | 21 | 5 | 2 | 1 | 0 |
| 42 | 0.31 | 3 | 1040 | 110 | 509 | 33 | 325 | 1 | 14 | 1 | 0 | 0 | 40 | 2 | 0 | 5 | 0 |
| 43 | 0.32 | 3 | 1121 | 168 | 514 | 14 | 354 | 2 | 4 | 0 | 1 | 0 | 56 | 4 | 3 | 1 | 0 |
| 44 | 0.29 | 3 | 1124 | 149 | 579 | 35 | 330 | 0 | 11 | 0 | 0 | 0 | 18 | 1 | 0 | 1 | 0 |
| 45 | 0.39 | 3 | 1036 | 148 | 426 | 16 | 408 | 1 | 7 | 0 | 0 | 0 | 28 | 1 | 0 | 1 | 0 |
| 46 | 0.33 | 3 | 1092 | 202 | 444 | 37 | 365 | 8 | 9 | 4 | 3 | 0 | 15 | 0 | 5 | 0 | 0 |
| 47 | 0.28 | 3 | 1114 | 163 | 525 | 35 | 309 | 14 | 10 | 0 | 0 | 0 | 49 | 3 | 2 | 4 | 0 |
| 49 | 0.46 | 3 | 1118 | 165 | 313 | 33 | 519 | 3 | 5 | 0 | 0 | 0 | 76 | 3 | 1 | 0 | 0 |
| 51 | 0.39 | 3 | 991 | 275 | 240 | 55 | 389 | 6 | 1 | 0 | 0 | 0 | 15 | 2 | 5 | 3 | 0 |
| 52 | 0.17 | 1 | 1034 | 203 | 549 | 27 | 177 | 0 | 45 | 1 | 0 | 0 | 11 | 9 | 10 | 2 | 0 |
| 53 | 0.23 | 1 | 1122 | 256 | 484 | 15 | 259 | 5 | 72 | 0 | 2 | 0 | 8 | 21 | 0 | 0 | 0 |
| 54 | 0.21 | 1 | 942 | 170 | 428 | 21 | 202 | 6 | 77 | 5 | 1 | 0 | 8 | 7 | 13 | 4 | 0 |
| 55 | 0.34 | 1 | 1033 | 287 | 293 | 52 | 349 | 6 | 21 | 0 | 5 | 0 | 3 | 14 | 0 | 3 | 0 |
| 56 | 0.24 | 1 | 1124 | 185 | 545 | 20 | 273 | 6 | 70 | 0 | 0 | 0 | 19 | 2 | 3 | 1 | 0 |
| 57 | 0.14 | 1 | 983 | 212 | 517 | 26 | 135 | 5 | 61 | 8 | 0 | 0 | 4 | 2 | 13 | 0 | 0 |
| 58 | 0.18 | 1 | 1127 | 126 | 653 | 25 | 205 | 9 | 98 | 1 | 3 | 0 | 3 | 2 | 2 | 0 | 0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| overall | 0.31 |  | 46,435 | 9,927 | 17,371 | 1,092 | 14,542 | 161 | 1,950 | 54 | 153 | 17 | 770 | 141 | 195 | 48 | 8 |
|  | 0.14 | min | @ 57 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.50 | Max | - @ 22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.32 | med | dian |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Table 7. Overall status of hooks and catch (valid subsets only), NSEI longline survey 19972002.

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

| Valid subsets only. |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Station (south to north) | Hooks Set | Sablefish | Fish-perhook | $\begin{array}{c\|} \hline \text { Average } \\ \text { round } \\ \text { kilogram } \end{array}$ | Round kilogram per-hook | Average round pound | $\begin{gathered} \text { Round } \\ \text { pound-per. } \\ \text { hook } \end{gathered}$ |
| 55 | 1,033 | 349 | 0.34 | 2.85 | 0.96 | 6.27 | 2.12 |
| 58 | 1,127 | 205 | 0.18 | 2.97 | 0.54 | 6.55 | 1.19 |
| 52 | 1,034 | 177 | 0.17 | 4.01 | 0.69 | 8.84 | 1.51 |
| 57 | 983 | 135 | 0.14 | 3.89 | 0.53 | 8.56 | 1.18 |
| 54 | 942 | 202 | 0.21 | 3.72 | 0.80 | 8.19 | 1.76 |
| 56 | 1,124 | 273 | 0.24 | 2.79 | 0.68 | 6.15 | 1.49 |
| 53 | 1,122 | 259 | 0.23 | 2.98 | 0.69 | 6.57 | 1.52 |
| 1 | 1,121 | 246 | 0.22 | 3.39 | 0.74 | 7.47 | 1.64 |
| 3 | 1,122 | 280 | 0.25 | 4.54 | 1.13 | 10.01 | 2.50 |
| 4 | 1,121 | 410 | 0.37 | 3.94 | 1.44 | 8.69 | 3.18 |
| 5 | 1,108 | 324 | 0.29 | 4.37 | 1.28 | 9.62 | 2.81 |
| 6 | 1,077 | 296 | 0.27 | 3.58 | 0.98 | 7.88 | 2.17 |
| 7 | 849 | 303 | 0.36 | 3.37 | 1.20 | 7.42 | 2.65 |
| 8 | 719 | 235 | 0.33 | 3.77 | 1.23 | 8.30 | 2.71 |
| 9 | 1,044 | 374 | 0.36 | 3.46 | 1.24 | 7.63 | 2.73 |
| 10 | 898 | 296 | 0.33 | 4.98 | 1.64 | 10.96 | 3.61 |
| 13 | 1,076 | 225 | 0.21 | 3.88 | 0.81 | 8.56 | 1.79 |
| 16 | 1,072 | 407 | 0.38 | 3.60 | 1.37 | 7.93 | 3.01 |
| 15 | 1,083 | 450 | 0.42 | 2.97 | 1.23 | 6.55 | 2.72 |
| 18 | 1,117 | 351 | 0.31 | 3.38 | 1.06 | 7.45 | 2.34 |
| 19 | 1,072 | 276 | 0.26 | 4.18 | 1.08 | 9.22 | 2.37 |
| 21 | 993 | 482 | 0.49 | 3.08 | 1.49 | 6.78 | 3.29 |
| 22 | 1,076 | 542 | 0.50 | 2.27 | 1.14 | 5.01 | 2.52 |
| 23 | 1,076 | 317 | 0.29 | 4.93 | 1.45 | 10.86 | 3.20 |
| 24 | 1,125 | 224 | 0.20 | 3.69 | 0.73 | 8.13 | 1.62 |
| 25 | 1,080 | 304 | 0.28 | 3.12 | 0.88 | 6.88 | 1.94 |
| 28 | 1,113 | 289 | 0.26 | 3.66 | 0.95 | 8.07 | 2.10 |
| 27 | 1,044 | 412 | 0.39 | 3.44 | 1.36 | 7.58 | 2.99 |
| 29 | 949 | 283 | 0.30 | 2.72 | 0.81 | 5.99 | 1.79 |
| 30 | 1,124 | 410 | 0.36 | 3.86 | 1.41 | 8.50 | 3.10 |
| 32 | 1,076 | 346 | 0.32 | 2.16 | 0.69 | 4.76 | 1.53 |
| 33 | 1,105 | 221 | 0.20 | 2.19 | 0.44 | 4.82 | 0.96 |
| 35 | 1,119 | 384 | 0.34 | 3.34 | 1.14 | 7.35 | 2.52 |
| 37 | 1,117 | 417 | 0.37 | 3.73 | 1.39 | 8.21 | 3.06 |
| 39 | 852 | 407 | 0.48 | 3.01 | 1.44 | 6.64 | 3.17 |
| 41 | 1,106 | 432 | 0.39 | 3.27 | 1.28 | 7.20 | 2.81 |
| 42 | 1,040 | 325 | 0.31 | 2.68 | 0.84 | 5.90 | 1.84 |
| 43 | 1,121 | 354 | 0.32 | 2.32 | 0.73 | 5.11 | 1.61 |
| 44 | 1,124 | 330 | 0.29 | 2.43 | 0.71 | 5.36 | 1.57 |
| 45 | 1,036 | 408 | 0.39 | 2.32 | 0.92 | 5.12 | 2.02 |
| 46 | 1,092 | 365 | 0.33 | 3.36 | 1.12 | 7.41 | 2.48 |
| 47 | 1,114 | 309 | 0.28 | 3.33 | 0.92 | 7.34 | 2.03 |
| 49 | 1,118 | 519 | 0.46 | 3.27 | 1.52 | 7.21 | 3.35 |
| 51 | 991 | 389 | 0.39 | 3.76 | 1.48 | 8.30 | 3.26 |
| Overall | 46,435 | 14,542 | 0.31 | 3.34 | 1.05 | 7.36 | 2.30 |
| Maximum | 1,127 | 542 | 0.50 | 4.98 | 1.64 | 10.96 | 3.61 |
| Minimum | 719 | 135 | 0.14 | 2.16 | 0.44 | 4.76 | 0.96 |

Table 9. Shortspine thornyhead bycatch in numbers and by percent of total by statistical area, NSEI longline survey 1997-2002.

| Statistical <br> Area | 2002 |  | 2001 |  | 2000 |  | 1999 | 1998 |  | 1997 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 345603 | 444 | $23 \%$ | 488 | $29 \%$ | 726 | $29 \%$ | 237 | $15 \%$ | 440 | $23 \%$ | 261 |
| 345631 | 751 | $39 \%$ | 621 | $36 \%$ | 868 | $35 \%$ | 585 | $38 \%$ | 728 | $38 \%$ | 621 |
| $45 \%$ |  |  |  |  |  |  |  |  |  |  |  |
| 345701 | 613 | $31 \%$ | 434 | $25 \%$ | 723 | $29 \%$ | 610 | $40 \%$ | 610 | $32 \%$ | 389 |
| 345731 | 142 | $7 \%$ | 161 | $9 \%$ | 174 | $7 \%$ | 109 | $7 \%$ | 131 | $7 \%$ | 110 |
| $8 \%$ |  |  |  |  |  |  |  |  |  |  |  |
| Total 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 2001-2002, overall 2000-2002 NSEI longline survey.

| Fork Lengths cm |  | 2002 |  |  | 2001 |  |  | $\begin{array}{\|c} \hline 2000 \\ \hline \text { All } \\ \hline \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Trip |  | All | Male | Female | All | Male | Female |  |
| Trip 1 Southern | n | 178 | 92 | 86 |  |  |  |  |
|  | Maximum | 109 | 83 | 109 | 103 |  |  | 111 |
|  | Minimum | 44 | 44 | 46 | 47 |  |  | 45 |
|  | Average | 68 | 65 | 71 | 67 |  |  | 66 |
| Trip 2 Central | n | 233 | 121 | 111 |  |  |  |  |
|  | Maximum | 104 | 78 | 104 | 98 |  |  | 90 |
|  | Minimum | 46 | 46 | 49 | 44 |  |  | 45 |
|  | Average | 67 | 63 | 71 | 65 |  |  | 66 |
| Trip 3 Northern | n | 262 | 150 | 111 |  |  |  |  |
|  | Maximum | 92 | 77 | 92 | 91 |  |  | 86 |
|  | Minimum | 50 | 50 | 51 | 45 |  |  | 46 |
|  | Average | 64 | 62 | 66 | 61 |  |  | 63 |
| All | n | 673 | 363 | 308 | 746 | 397 | 348 | 422 |
|  | Maximum | 109 | 83 | 109 | 103 | 80 | 103 | 111 |
|  | Minimum | 44 | 44 | 46 | 44 | 44 | 47 | 45 |
|  | Average | 66 | 63 | 69 | 64 | 62 | 67 | 65 |

Table 11. Sablefish percent males, NSEI longline survey 1997-2002.

|  | 2002 | 2001 | 2000 | 1999 | 1998 | 1997 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Males | 366 | 398 | 198 | 188 | 165 | 298 |
| Females | 308 | 348 | 226 | 157 | 203 | 283 |
| Total | 674 | 746 | 424 | 345 | 368 | 581 |
| $\%$ male | $54 \%$ | $53 \%$ | $47 \%$ | $54 \%$ | $45 \%$ | $51 \%$ |

Table 12. Sablefish sex and maturities by trip and overall, NSEI longline survey 2002.


Table 13. Sablefish sex and maturities overall, NSEI longline survey 2000-2002.

| Sexand maturities |  | 2002 |  |  |  |  |  | 2001 |  |  |  |  |  | 2000 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Both sex |  | Male |  | Female |  | Both sex |  | Male |  | Female |  | Both sex |  | Male |  | Female |  |
|  |  | n | \% | n | \% | n | \% | n | \% | n | \% | n | \% | n | \% | n | \% | n | \% |
| All | Immature | 73 | 11\% | 53 | 14\% | 20 | 6\% | 88 | 12\% | 63 | 16\% | 25 | 7\% | 34 | 8\% | 30 | 15\% | 4 | 2\% |
|  | Maturing juwerile | 143 | 21\% | 52 | 14\% | 91 | 30\% | 176 | 24\% | 64 | 16\% | 112 | 32\% | 98 | 23\% | 22 | 11\% | 76 | 34\% |
|  | Mature developing | 221 | 33\% |  | 33\% |  | 32\% | 162 | 22\% |  | 27\% | 53 | 15\% | 138 | 33\% | 60 | 30\% | 78 | 35\% |
|  | Spawning | 5 | 1\% | 4 | 1\% | 1 | 0\% | 2 | 0\% | 0 | 0\% | 2 | 1\% | 1 | 0\% | 0 | 0\% | 1 | 0\% |
|  | Spent | 49 | 7\% | 29 | 8\% | 20 | 6\% | 76 | 10\% | 20 |  | 56 | 16\% | 33 | 8\% | 14 | 7\% | 19 | 9\% |
|  | Resting | 183 | 27\% |  | 29\% | 76 | 25\% | 242 | 32\% |  | 36\% | 100 | 29\% | 117 | 28\% | 72 | 36\% | 45 | 20\% |
|  | Total | 674 | 100\% | 366 | 100\% | 308 | 100\% | 746 | 100\% | 398 | 100\% | 348 | 100\% | 421 | 100\% | 198 | 100\% | 223 | 100\% |

Table 14. Estimated ages of sablefish by sex by trip, NSEI longline survey 2002.

| 2002 | Estimated ages | Total | Male | Female |
| :---: | :---: | :---: | :---: | :---: |
| Trip 1 Southern | n | 178 | 92 | 86 |
|  | Maximum age | 59 | 59 | 49 |
|  | Minimum age | 3 | 3 | 3 |
|  | Average age | 17 | 18 | 15 |
| Trip 2 Central | n | 231 | 122 | 108 |
|  | Maximum age | 55 | 55 | 41 |
|  | Minimum age | 3 | 3 | 3 |
|  | Average age | 16 | 17 | 14 |
| Trip 3 <br> Northern | n | 259 | 148 | 110 |
|  | Maximum age | 50 | 50 | 43 |
|  | Minimum age | 2 | 4 | 2 |
|  | Average age | 13 | 14 | 12 |
| All | n | 668 | 362 | 304 |
|  | Maximum age | 59 | 59 | 49 |
|  | Minimum age | 2 | 3 |  |
|  | Average age | 15 | 16 | 14 |

Table 15. Recoveries of ADF\&G released tags, NSEI longline survey 2002.

| Release Tagging Cruise gear | Recoverd Southern Portion 2002 | Recovered Center Portion 2002 | Recovered Northern Portion 2002 | Total Recovere d 2002 | Total Released | Percent of <br> Total <br> Release <br> Recovered <br> 2002 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1997 Longline |  | 3 |  | 3 | 5,579 | 0.05\% |
| 1998 Longline | 3 |  |  | 3 | 4,998 | 0.06\% |
| 1999 Longline | 2 | 1 | 3 | 6 | 3,568 | 0.17\% |
| 2000 Pots | 1 | 6 | 3 | 10 | 5,768 | 0.17\% |
| 2001 Pots | 5 | 6 | 4 | 15 | 4,551 | 0.33\% |
| 2002 Pots | 6 | 20 | 13 | 39 | 5,229 | 0.75\% |
| Total | 17 | 36 | 23 | 76 |  |  |

Table 16. Shortraker rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002.

| Shortraker Rockfish |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2002 |  |  | 2001 | 2000 | 1999 | 1998 | 1997 | $\begin{gathered} 1997-2001 \\ 5 \text { year } \\ \text { average } \\ \hline \end{gathered}$ |
|  | All | Males | Females | All | All | All | All | All |  |
| Lengths (cm) |  |  |  |  |  |  |  |  |  |
| n | 48 | 22 | 26 | 225 | 175 | 124 | 203 | 136 | Total 862 |
| Maximum length | 96 | 89 | 96 | 95 | 100 | 98 | 97 | 102 | 102 |
| Minimum length | 42 | 46 | 42 | 44 | 38 | 41 | 45 | 43 | 38 |
| Average length | 62 | 65 | 59 | 64 | 63 | 66 | 68 | 68 | 66 |
| Weights |  |  |  |  |  |  |  |  |  |
| n | 48 | 22 | 26 | 225 | 151 |  |  |  |  |
| Maximum kg | 14 | 11.8 | 14 | 11.8 | 17.2 |  |  |  |  |
| Minimum kg | 1.2 | 1.3 | 1.2 | 1.0 | 0.9 |  |  |  |  |
| Average kg | 4.4 | 5.1 | 3.9 | 4.6 | 4.4 |  |  |  |  |
| Maximum lb | 30.9 | 26.0 | 30.9 | 26.0 | 37.9 |  |  |  |  |
| Minimum lb | 2.6 | 2.9 | 2.6 | 2.2 | 2.0 |  |  |  |  |
| Average lb | 9.7 | 11.1 | 8.5 | 10.1 | 9.7 |  |  |  |  |
| Sex |  |  |  |  |  |  |  |  |  |
| n | 48 | 22 | 26 | 223 | 170 |  |  |  |  |
| \% male | 46\% |  |  | 49\% | 47\% |  |  |  |  |
| Maturities |  |  |  |  |  |  |  |  |  |
|  | 47 | 22 | 25 | 178 | 148 |  |  |  |  |
| Immature | 2 | 1 | 1 | 2 | 9 |  |  |  |  |
| Maturing | 12 | 2 | 10 | 30 | 29 |  |  |  |  |
| Mature | 12 | 8 | 4 | 37 | 11 |  |  |  |  |
| Developing | 0 | 0 | 0 | 0 | 0 |  |  |  |  |
| Spawning | 1 | 0 | 1 | 0 | 1 |  |  |  |  |
| Spent | 11 | 6 | 5 | 18 | 44 |  |  |  |  |
| Resting | 9 | 5 | 4 | 91 | 54 |  |  |  |  |
| \% Immatures | 4\% | 5\% | 4\% | 1\% | 6\% |  |  |  |  |
| \% Maturing | 26\% | 9\% | 40\% | 17\% | 20\% |  |  |  |  |
| 2002 age data not yet available |  |  |  |  |  |  |  |  |  |

Table 17. Rougheye rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002.

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

Table 18. Redbanded rockfish length, weight, sex and stage of maturity, NSEI longline survey 1997-2002.

| Redbanded Rockfish |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2002 |  |  | 2001 | 2000 | 1999 | 1998 | 1997 | 1997-20015 year average |
|  | All | Males | Females | All | All | All | All | All |  |
| Lengths (cm) |  |  |  |  |  |  |  |  |  |
| n | 17 | 10 | 7 | 21 | 18 | 37 | 45 |  | 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 |
| Weights |  |  |  |  |  |  |  |  |  |
| 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 |  |  |  |  |
| Sex |  |  |  |  |  |  |  |  |  |
| n | 17 | 10 | 7 | 20 | 16 |  |  |  |  |
| \% male | 59\% |  |  | 60\% | 38\% |  |  |  |  |
| Maturities |  |  |  |  |  |  |  |  |  |
| 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\% |  |  |  |  |
| 2002 age data not yet available |  |  |  |  |  |  |  |  |  |

Table 19. Shortspine thornyhead lengths, NSEI longline survey 1997-2002.

| Shortspine Thornyhead |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2002 |  |  | 2001 | 2000 | 1999 | 1998 | 1997 | $\begin{gathered} \hline 1997-2001 \\ 5 \text { year } \\ \text { average } \\ \hline \end{gathered}$ |
|  | All | Males | Females | All | All | All | All | AIII |  |
| Lengths (cm) |  |  |  |  |  |  |  |  |  |
| n | 832 | na | na | 718 | 913 | 393 | 849 |  | Total 2960 |
| Maximum length | 72 | na | na | 67 | 76 | 80 | 68 | 54 | 80 |
| Minimum length | 26 | na | na | 28 | 23 | 30 | 31 | 32 | 31 |
| Average length | 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 chart, 2002.


Figure 3. Front and back threaded circle hook.


Figure 4. Seabird Avoidance Device.


Figure 5. Seabird avoidance device (tori line) deployed from the F/V Archangel, 2002.


Figure 6. NSEI Longline Survey Vessel, F/V Ida June, 2002.


Figure 7. NSEI Longline Survey Vessel, F/V Charles T., 2002.


Figure 8. NSEI Longline Survey Vessel, F/V Archangel, 2002.


Figure 9. Todd Wyman coiling down groundline, NSEI longline survey 2002.


Figure 10. Unloading iced round sablefish at Sitka Sound Seafood, NSEI longline survey 2002.


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


Figure 12. Skipper Phil Wyman and Beverly Richardson recording set data, $F / V$ Archangel, NSEI longline survey 2002.


Figure 13. Hauling gear with ADFG staff counting back, F/V Archangel, NSEI longline survey 2002.


Figure 14. Beverly Richardson sampling sablefish, F/V Archangel, NSEI longline survey 2002.


Figure 15. Sablefish gonads, NSEI longline survey 2002.


Figure 16. Rockfish, NSEI longline survey 2002.


Figure 17. Rockfish gonads, NSEI longline survey 2002.


Figure 18. Taking DEC samples, F/V Archangel, NSEI longline survey 2002.


Figure 19. Kamala Carroll entering data, F/V Archangel, NSEI longline survey 2002.


Figure 20. Overall fish-per-hook, kilogram-per-hook and average weight of sampled sablefish, NSEI longline survey 1997-2002.




Figure 21. Sablefish-per-hook by station with stations ordered south to north, NSEI longline survey 1997-2002. (continued)




Figure 21. Sablefish-per-hook by station with stations ordered south to north, NSEI longline survey 1997-2002.


Figure 22. Length frequency of sampled sablefish, unadjusted, NSEI longline survey 2000-2002.


Figure 23. Length frequency of sampled sablefish adjusted by the overall survey fish-per-hook, NSEI longline survey 2000-2002.


Figure 24. Sablefish lengths by sex, NSEI longline survey 2002.


Sablefish Ages
Figure 25. Sablefish age frequency distributions by year, adjusted for survey CPUE (round pounds-per-hook), NSEI longline survey 1997-2002.


Figure 26. Shortspine thornyhead length frequencies, NSEI longline survey 1998-2002.

## APPENDICES

Appendix A. August Tide table, NSEI longline survey 2002.

Survey dates, August 13-August 18, 2002

| Petersburg District |  | Petersburg, Alaska |
| :---: | :---: | :---: |
| August 02 High | Tides | LOW TIDES |
| AUGUST 12.M. FT. | P.M. $\quad$ F. | A.M. F. P.M. FT. |
| 1 Thu ${ }^{\text {a }}$ 6:52 $10: 8$ | 7:17 12.9 |  |
| 2 Fri 8:06 10.2 | 8:15 12.9 | 2:17 3.41815650 |
| 3 Sat 9:31 10.2 | 9:19 13.3 | $3: 28 \quad 2.8$ 3:08 5.5 |
| 4 Sun $-10: 4610.8$ | 10:20 14.0 | 4:34 $1.8818: 195.4$ |
| 5 Mon - 11:43 11.8 | 11:15 15.0 | $\begin{array}{llllll}5: 29 & 0.5 & 5: 21 & 4.8\end{array}$ |
| 6 Tue | 12:30 13.0 | 6:17-0.8 6:13 3.9 |
| 7 Wed - 0:05 16.0 | 1:11 14.1 | 7:00-2.1 7 7:00 2.9 |
| 8 Thu - $0: 5117.0$ | 1:51 15.1 | 7:42-3.0 7 7:45 1.9 |
| 9 Fri - 1:3617.7 | 2:30 16.0 | 8:23-3.6 8:30 1.0 |
| 10 Sat - $2: 2117.9$ | 3:09 16.6 | 9:03-3.6 $9: 150.4$ |
| 11 Sun - 3:0717.6 | 3:49 16.8 | 9:44-3.1 10:03 0.1 |
| 12 Mon - 3:55 16.8 | 4:31 16.8 | 10:26-2.0 10:53 0.2 |
| 13 Tue - 4:4615.5 | 5:16 16.4 | 11:10-0.6 11:48 0.5 |
| 14 Wed - 5:43 13.9 | 6:06 15.9 | $11: 591.1$ |
| 15 Thu $6: 5112.5$ | 7:03 15.2 | $\begin{array}{lllll}0.52 & 0.9 & 12: 55 \\ 2.8\end{array}$ |
| 16 Fri - $8: 1311.5$ | 8:10 14.6 | 2:06 1.2 2:03 4.2 |
| 17 Sat - 9:43 11.4 | 9:23 14.5 | $3: 2611.130: 234.8$ |
| 18 Sun - 10:59 11.9 | 10:32 14.8 | 4:41 0.6 4:39 4.7 |
| 19 Mon 11:58 12.8 | 11:31 15.3 | 5:41-0.2 5 5:41 4.2 |
| 20 Tue | 12:43 13.6 | 6:30 -0.9 6:32 3.4 |
| 21 Wed 0:19 15.9 | 1:22 14.3 | 7:11-1.4 $7: 142.7$ |
| 22 Thu $-1: 0116.3$ | 1:56 14.8 | 7:47-1.6 7 7:52 2.1 |
| $23 \mathrm{Fri}-1: 3916.4$ | 2:27 15.1 | 8:19-1.6 8:27 1.6 |
| 24 Sat - 2:14 16.3 | 2:56 15.3 | 8:50-1.3 9:01 1.4 |
| 25 Sun - 2:4815.9 | 3:25 15.2 | 9:19 -0.7 9 9:35 1.3 |
| 26 Mon 3:22 15.2 | 3:53 14.9 | $\begin{array}{llllllllllllll}9: 48 & 0.1 & 10: 09 & 1.5\end{array}$ |
| 27 Tue - 3:5714.3 | 4:21 14.6 | 10:17 $1.1110: 461.8$ |
| 28 Wed - 4:33 13.3 | 4:52 14.1 | 10:47 2.2 11:27 2.2 |
| 29 Thu - 5:15 12.2 | 5:27 13.5 | 11:21 3.4 |
| 30 Fri -6:08 11.1 | 6:11 13.0 | 0:17 $2.712: 024.6$ |
| 31 Sat $\rightarrow$ 7:20 10.2 | 7:13 12.7 | $\begin{array}{lllll}1: 21 & 3.0 & 1: 00 & 5.6\end{array}$ |
| 13815 ( 22 (\%) | 303 Lite | Te Type $=$ A.M. . Bold Type $=$ P.M. |

## Appendix B. Solicitation to bid to purchase fish, NSEI longline survey 2002.

## 2002 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 Charles-T, F/V Archangel and the F/V Ida June will begin fishing on or about August $13^{\text {th }}$. The $F / V$ Charles- $T$ 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 26 if necessary.

The Department is soliciting bids from area processors to purchase the fish caught during the survey. The total expected landed catch is estimated to be approximately 90,000 to 111,000 round pounds of sablefish plus an additional 2,500 round pounds of rockfish bycatch. Bidders must have a facility or tender must be 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 or tender must be available to offload fish 7 days a week.

It is the responsibility of the successful bidder to provide ice from a local processor for all vessels including those departing other ports. Bidders must have processing capabilities in Kake or provide tender service in Chatham Strait. 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.

The sablefish will be delivered round. They will be iced on the F/V Ida Iune and the F/V Archangel, and slush-iced on the $F / V$ Charles $T$. In addition, a total of approximately 400-800 eastern cut sablefish will be delivered. Rockfish will be delivered gutted/head on. Please include as 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 | 5,993 |  |  |
| Sablefish | Eastern cut | $2-3$ | 10,124 |  |  |
| Sablefish | Eastern cut | $3-4$ | 15,463 |  |  |
| Sablefish | Eastern cut | $4-5$ | 22,522 |  |  |
| Sablefish | Eastern cut | $5-7$ | 25,929 |  |  |
| Sablefish | Eastern cut | 7 up | 20,928 |  |  |

No 2's and Jelly-bellies

| Sablefish | Eastern cut | under 2 | 615 |  |  |
| :--- | :--- | :--- | ---: | ---: | ---: |
| Sablefish | Eastern cut | $2-3$ | 1,039 |  |  |
| Sablefish | Eastern cut | $3-4$ | 1,587 |  |  |
| Sablefish | Eastern cut | $4-5$ | 2,311 |  |  |
| Sablefish | Eastern cut | $5-7$ | 2,661 |  |  |
| Sablefish | Eastern cut | 7 up | 2,148 |  |  |


| Rougheye | gutted | gutted | 282 |  |  |
| :--- | :--- | :--- | ---: | ---: | ---: |
| Shortraker | gutted | gutted | 2179 |  |  |



Quantities listed above are estimated catches based on the 2001 survey, with size breakdown extrapolated from samples, 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 poundage breakdown by size category for sablefish from the 2001 NSEI survey samples is not a guarantee for sablefish or miscellaneous rockfish deliveries for the 2002 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 lowest 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 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: | ) |
| :---: | :---: |
| 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 $\qquad$

## THE FOLLOWING IS FOR INFORMATIONAL PURPOSES ONLY:

MAXIMUM NUMBER OF DAYS ALLOWED TO FISH BEFORE OFF-LOADING $\qquad$

ANY
SPECIAL
INSTRUCTIONS:

Appendix C. Sablefish Survey Set Form, 2002.


Appendix D. Hook Accounting Form, 2002.

| HOOK ACCOUNTING |  |  | Date:_August 2002 |  | Observer |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year: 2002 1stBuo | Project: CHATHAM STRAIT :time: $\qquad$ 1st Anchor:time: | blefish Survey substrate |  | Set $\qquad$ Station 2nd Anchor:time $\qquad$ | 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 |  |  |
| $\begin{aligned} & \hline \text { VALID? } \\ & \text { Y or } \mathrm{N} \end{aligned}$ | (701) LNSK: (700) OSK: | (121) ATF: | (110) PCOD: | (270) POL: | ( 124) | Dover |
|  | 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: |  |  |  |  |
|  | (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: |  |  |  |  |
|  | (691) Dogfish: |  |  | (692) Pacific Sleeper |  |  |  |
| VALID? | (701) LNSK: | (700) OSK: | (121) ATF: | (110) PCOD: | (270) POL: | ( 124) | Dover |
| Y or ${ }^{\text {N }}$ | 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: |  |  |  |  |
|  | (691) Dogfish: |  |  | (692) Pacific Sleeper |  |  |  |
| VALID? | (701) LNSK: | (700) OSK: | (121) ATF: | (110) PCOD: | (270) POL: | (124) | Dover |
| Y or ${ }^{\text {N }}$ | 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 E. Biological Data Form, NSEI longline survey 2002.

## BIOLOGICAL DATA COLLECTION FORM

$$
\text { DATE: August__ } 2002 \text { Set___ Station_ }
$$

$\qquad$
YEAR: 2002 PROJECT: Chatham Strait Sablefish Survey TRIP NO.: $\qquad$
Sablefish are to be on 1 series of pages, all rockfish will be together on seperate series.
Sablefish Oto \# begins with 1 for each trip. Rockfish Oto \# begins with 1001 for each trip.
****** Each set starts with Alex (specimen) \# 1 and is numbered consectutively including all species for that set.


Sampler
Recorder

SABLEFISH MATURITY CODES

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

(Revised 1982, 1987, 1994, 1997. Maturity code 6 (resting) added April 1994.)
c:documentlmaturity.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, 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 alpha-numeric 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. A1should 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


$$
\begin{aligned}
& \text { ALASKA DEPT. OF FISH \& GAME. CFMD/GROUNDFISH MNGMT: } \\
& \text { Sample date: May 4-10, } 1999_{\text {TRaY } \# 110-1} \\
& \text { PORTYLOCATION: } 99=\text { SSEL }- \text { TAip } \# 1 \\
& \text { Sample rangespecies: Sab/efish ( } 710 \text { ) } \\
& \text {-99-01-01-001 }-99-01-01-024 \\
& \text { SAMPLER(S): Noleen, Cesturigit ___ } \\
& \text { COMMENTS: }
\end{aligned}
$$

Appendix H. Protocol for previously tagged sablefish, 2002.
Protocol for previously tagged sablefish.(2002)

| Tagging <br> Agency | Condition Of Fish | Re-release <br> With Old Tag | $\mathrm{Re}-\mathrm{Tag}$ | Otolith | Otolith <br> Storage | Biological Data | Recovery data. <br> Put on ADFG recovery form |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ADF\&G Tag | in good health | no | no | no |  | length | date, latxlong, depth, gear, new \# |
|  | in poor health/dead | no | no | no |  | length \& weight, sex and maturity | date, latxlong, depth, gear, the tag |
| NMFS tag | in good health | yes | no | no |  | length | date, latxlong, depth, gear, tag no. |
|  | 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 no. |
|  | 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 no. |
|  | in poor health/dead | no | no | yes | dry, ship immediately | length \& weight, sex and maturity | date, latxlong, depth, gear, the tag |
| $\begin{aligned} & \text { COOP } \\ & (A D F G / A B) \end{aligned}$ | in good health | yes | no | no |  | length | date, latxlong, depth, gear, tag no. |
|  | in poor health/dead | no | no | yes | dry, ship immediately | length \& weight, sex and maturity | date, latxlong, depth, gear, the tag |
| PINK tag <br> Auke Bay | in good health | no | no | yes | Vial with Alcohol | length \& weight, sex and maturity | date, latxlong, depth, gear, tag no. |
|  | in poor health/dead | no | no | yes | Vial with Alcohol | 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, tag no. |
|  | in poor health/dead | no | no | yes | dry, ship immediately | length \& weight, sex and maturity | date, latxlong, depth, gear, the tag |

[^1]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 <br> Observed <br> (00) |  |  |  |

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF\&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfield Drive, Suite 300, Arlington, VA 22203; or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (FAX) 907-465-2440.


[^0]:    1 The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data, this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

[^1]:    *All 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

