UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Oil Spill Damage
Assessment and Restoration
P.O. Box 210029
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DATE: September 19, 1991

MEMORANDUM FOR: Stan

FROM: John

SUBJECT: Additional Bycatch Data for Pacific High Seas Driftnet Fisheries

Enclosed for the RPWG is a copy of the latest information on bycatch associated with the Taiwanese high seas driftnet fisheries. A report summarizing bycatch data arising from the Korean high seas driftnet fisheries is not yet available. As there is interest in this subject among the RPWG, I also will try to obtain the full report dealing with bycatch for the Japanese fishery.

Apparently, the report describing the results of the 1989 Observer Program (pilot study) for the Japanese fleet is still undergoing review, but I will obtain a copy when the document is released. This is an important report as it also attempts to estimate bycatch for the total Japanese fishery. I suspect that the report will receive an extra measure of peer review due to the sensitive nature of the issue.

To extrapolate to the total Japanese fleet bycatch for a given species, I have learned that the authors of the forthcoming report will apply both a ratio estimation technique using log-linear models, and a more sophisticated Kernel estimation approach. Ratio estimation is a simplified approach that generally ignores certain explanatory variables, e.g., time, latitude, longitude. Kernel estimation allows the researcher to use such explanatory variables to more accurately (potentially) estimate total bycatch for the target species in time and by location. For each approach, the authors will then calculate variance estimates (standard error) following Cochran's derivation and by jacknifing. Assuming that similar input data are available for the Taiwanese and Korean fisheries, one should be able to use the same approach to extrapolate bycatch across all three driftnet fisheries. While this should be done, I haven't learned who will conduct this exercise and when.

I also learned that Japan operates from 400 to 500 boats each season. Taiwan and Korea operate another 100 to 200 boats in the same area. This must produce a phenomenal bycatch!

Enclosure

cc: Byron Morris
RPWG (w/o enclosure)

FINAL REPORT

1990 OBSERVATIONS OF THE TAIWANESE HIGH SEAS DRIFTNET FISHERIES IN THE NORTH PACIFIC OCEAN

Joint Report of:
REPUBLIC OF CHINA COUNCIL OF AGRICULTURE
UNITED STATES NATIONAL MARINE FISHERIES SERVICE
UNITED STATES FISH AND WILDLIFE SERVICE

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TABLE OF CONTENTS

LIST OF TABLES

FINAL REPORT OF 1990 OBSERVATIONS OF THE TAIWANESE HIGH SEAS DRIFTNET FISHERIES IN THE NORTH PACIFIC OCEAN

I. INTRODUCTION

The joint observer program for 1990 between the American Institute in Taiwan (AIT) and the Coordination Council for North American Affairs (CCNAA) is described in the Annex of letters between Mr. M. Ding and Mr. D. Laux, Chairman and Managing Director, AIT. The program was organized on the basis of the common understandings of the two nations on the necessity of collecting scientific information about the Taiwanese squid and large-mesh driftnet fisheries on the high seas of the North Pacific Ocean. In summary, the Annex contains detailed descriptions of the scientific observer program including: the number and deployment of observers on Taiwanese vessels, exchange of training manuals, data to be collected and forms to be used, the timing for exchange of observer and fishing effort data, reports to be produced and their contents, and the timing and location of meetings to discuss reports.

For the squid and large-mesh driftnet fisheries, May through December 1990, a scientific observer program was designed to collect data on the catch of target species and all species of bycatch throughout the driftnet fishing area. The program was expanded from the 1989 pilot program of one U.S. observer on a Taiwanese squid driftnet vessel. In 1990, 14 U.S. observers, and 10 Taiwanese observers were to be placed on 24 Taiwanese driftnet vessels (squid and large-mesh) from early May to December. Twelve U.S. and 9 Taiwanese observers were actually placed on Taiwanese commercial driftnet vessels in 1990 (Table 1). One U.S. observer monitored driftnet operations on two vessels, another was on a vessel which changed from the squid to the large mesh fishery while he was onboard.

Data collection and methods for data collection were the same for both high seas fisheries. Data included catch of target and all bycatch species, environmental and meteorological conditions (sea surface temperature, sea state, wind speed and direction), fishing methods (date, location, direction and configuration of the sets; number of vessels within 15 nm), gear specifications (mesh size, net panel length and depth, and number of net panels (tans) per section), and observed fishing effort (number of tans monitored).

Scientists representing the CCNAA and the AIT met in Seattle, Washington, March 25-28, 1991, to discuss results of the 1990 observations. The purpose of the meeting was to review data obtained in the observer programs, resolve differences and correct any known errors in the data, reach agreement on the details of the content and format of this report, and agree to a process for the completion of the report.

Areal observer coverage of the driftnet fisheries was not designed from a formal statistical sampling frame but was opportunistic. However, based on previous data on the temporal distribution of fishing effort, observer coverage was designed to reflect fishing effort over the fishing season. Vessels were chosen by lot and observers boarded in port or by transport vessel on the high seas. Vessels fished in areas according to the direction of the fishing captain and the observers did not direct when or where fishing operations took place.

II. OBSERVER TRAINING AND DEPLOYMENT

Prior to the 1990 season, observer training manuals were prepared and exchanged to ensure the material presented to the scientific observers was as consistent as possible. These manuals were based on agreed data collection elements and were developed from previous high seas driftnet monitoring programs. Due to logistical problems, trainers from each country were unable to meet to review training procedures until July 1990, after some observers were already trained and deployed on vessels. As a result, there were some differences in the content of training, and in data collection procedures used by U.S. and Taiwanese observers.

A. Taiwan

Observers were high school graduates who had participated in driftnet fisheries as radio operators. Scientific observers were hired on an annual basis as project employees of the Kaohsiung Fisheries Administration and were available after their cruise to address data collection problems. The training course was conducted for one week and included:

- Description of driftnet fisheries and joint scientific observer program
- Biology of flying squid in the North Pacific Ocean
- Scientific observer techniques for monitoring driftnet fisheries
- Logbook data format and standardized data forms
- Identification of squid, salmonids, other marine fish, marine mammals, seabirds and marine turtles
- Explanation of guideline to vessel officers and patrol vessel

Observers were trained in a single session in April for all deployments in 1990. Training was conducted at the Taiwan Fisheries Research Institute, Keelung, by staff scientists and driftnet program personnel from the Institute of Oceanography, National Taiwan University, Taipei. Three observers also participated in the July review involving representatives of the CCNAA and AIT which was held in Taiwan.

Immediately upon return from their sea assignment, each observer spent one week in formal debriefing at the Kaohsiung Fisheries Administration.

B. United States

Training classes were held at the Alaska Fisheries Science Center in Seattle and included:

- History and fishing techniques of the high seas driftnet fisheries
- Description of vessels, fishing operations, gear specifications, and onboard living conditions
- Description of the joint scientific observer programs
- Scientific observer techniques for monitoring driftnet fisheries
- Logbook data format, standardized data forms and completed examples
- Identification of salmonids, other marine fish, marine mammals, seabirds and marine turtles
- Marine mammal and seabird sighting survey methodology, standardized data forms and completed examples
- Marine mammal, turtle, and seabird dissection techniques and data collection forms
- Communication procedures while at sea
- Safety at sea, including survival suit training
- Data summarization, and debriefing procedures
- An introduction to Taiwanese language and culture

Training, gear acquisition and distribution, debriefing and data management were conducted by National Marine Fisheries Service and U.S. Fish and Wildlife Service personnel. All U.S. scientific observers had a university degree in biological science. When hiring observers, preference was given to those with previous experience at sea; three had previous experience as groundfish observers but none had previous driftnet fishery experience.

Training in specialty areas such as species identification was conducted by experts in those fields. Training was designed to emphasize observer preparedness, both for the collection of high quality data and for familiarity with daily routines and safety on driftnet vessels.

Letters of introduction and posters were written in English and translated into Chinese to explain the observer program and observer duties on the vessel. They were provided to the vessel captain prior to departure of the vessels for the fishing grounds or at the time the observer boarded the vessel.

Immediately upon return from their sea assignment, each observer spent 2 to 3 weeks in debriefing. During this time, the observers checked their logbooks and data forms for obvious errors and omissions, answered questions about their data and work experience and summarized bycatch data.

III. DATA COLLECTION PROCEDURES

Data collection procedures and training manuals were the same for the squid and large-mesh fishery observers. Procedures for processing the data were also the same. All data coding forms were translated into Chinese for the 1990 field season.

Due to the long duration of the driftnet retrieval operations (8 to 12 hours), and nearly constant activity during the fishing season, U.S. observers were instructed to monitor operations for five consecutive days and omit observations on the sixth day. U.S. observer data are, therefore, a subsample of the total operations conducted while the observer was on board a driftnet vessel. Observers did not record catch information from the operations not monitored. Taiwanese observers monitored all driftnet operations.

For each operation monitored, the scientific observer recorded dates and times of the start and end of the net set and retrieval, and environmental conditions. The predominant mesh size was recorded, as was the number of tans in each net section monitored.

A. Daily Sampling Schedule

Taiwanese scientific observers monitored the entire retrieval or selected one section in each operation which they did not monitor. Some Taiwanese observers assisted the crew with some of the net retrieval. In both of these cases, missing data on catch and bycatch were obtained from the vessel captain.

The total amount of gear deployed by Taiwanese vessels is equal to or less than that deployed by other nations, however the Taiwanese gear is deployed as 2 to 4 long net sections instead of 6 to 12 shorter net sections. Time to retrieve the nets is similar to that in other fisheries, requiring 8-12 hours or more. Therefore, methods developed to ensure a random sampling of bycatch rates in other driftnet fisheries and to allow observers rest periods during the long retrievals were difficult to employ in the Taiwanese fisheries.

To avoid fatigue, U.S. observers were instructed to treat each long net section as if it were three shorter net sections.

This allowed randomization of rest periods and monitoring subsections for fish dropouts. The amount of net monitored for each observed subsection was estimated from the proportion of total retrieval time for the entire section that was monitored and the total number of tans in the net section. The number of tans in each net section was obtained from the vessel fishing master.

U.S. observers, in treating each net section as three shorter subsections, were required to monitor either 6 or 7 net subsections during any one net retrieval, depending on the number of sections actually deployed. Seven subsections were monitored when ten or more subsections were set, six were monitored when fewer then ten were set. These monitored (observed) subsections were chosen randomly based upon commonly agreed procedures. Two of these monitored sections were randomly selected for dropout monitoring. To ensure that observers had sufficient time to accurately identify and count fish dropping from the net, they were not required to count the catch of flying squid and Pacific pomfret, if these species were very abundant. Accordingly, observed fishing effort for flying squid and/or pomfret may be less than for other species. Observed fishing effort is reported as "Total", "Squid", or "P. pomfret" in numbers of standardized 50m tans. Numbers of fishing operations monitored are also reported by vessel.

B. Dropout Monitoring

Procedures were introduced in the 1990 observer program to estimate the numbers of "dropouts" of fish occurring during net retrieval. Taiwanese observers counted dropouts when possible. A "dropout" is defined as a fish which emerges from the water entangled in the net but becomes disentangled and falls out of the net before it reaches the deck ("decked"), either of its own accord or due to deliberate shaking of the net by the crew. When monitoring "dropout sections", U.S. observers would count the number of each fish species dropping out and would continue to monitor the decked bycatch of all species except flying squid or pomfret when these were abundant. For seabirds, marine mammals and turtles, the condition of each animal entangled, whether decked or a dropout, was recorded as dead, released alive or unknown.

The dropout sampling procedure used by U.S. observers consisted of randomly selecting two sections from the set of 7-12 sampling subsections of driftnet and counting the number of fish decked and the number dropping from the net before they reached the deck of the vessel. Because retrieval of the driftnets usually began during darkness, subsampling was restricted to the fourth to last subsample sections retrieved to avoid the problem of poor visibility. Taiwanese observers often monitored dropouts during all net sections. Usually some visibility beyond the ship's rail was provided by the deck lights, but often in very low light conditions an observer could not clearly see the entire emerged part of the net. Dropouts may therefore have been underestimated.

The number of dropouts recorded by observers using the procedure described above does not include those animals lost from the nets while the fishing gear was in the water during the soaking period. The procedure does, however, provide a first approximation to the magnitude of the total loss rate. In the case of turtles, marine mammals, and seabirds, the report does not list dropout figures separately, but instead gives the total number of animals entangled, dead, alive, or of unknown condition, regardless of whether the animals dropped out, were cut from the net without being brought aboard, or were brought on board.

Observers monitored driftnet retrieval operations from an unobstructed vantage point above the work deck, generally atop the pilot house, or on a bridge wing. The catch of target species and bycatch of salmon, other marine fish, seabirds, sea turtles and marine mammals were recorded in a consistent format. Total catch of target and bycatch of non-target species was tallied (excluding dropout of squid and marine fish) for each sampling subsection of net. Total counts, by species and sampling subsection, were copied onto standardized data forms following the retrieval.

C. Species Identifications

Reliable species identifications were stressed during scientific observer training. There were differences in experience of trainers with different species groups, availability of experts and background experience of the observers. As a result, there are differences between Taiwanese and U.S. observers with respect to the use of species codes and in identifications.

Taiwanese observers used a limited species code list. Additionally, because there were no Taiwanese equivalents to some common names such as loggerhead turtle, no species codes were assigned in these cases. Due to the difficulty in making identifications to the species level, observers from Taiwan resorted to more extensive use of codes representing "unidentified" animals (i.e., unidentified turtle, unidentified shearwater, etc.). Three Taiwanese observers were provided cameras for verification of specimen identification.

Experts in each species group were available for training the U.S. observers. Detailed code lists were provided to the observers. Nonetheless, identification of animals caught in the nets was sometimes difficult, particularly for animals dropping from the net during retrieval. U.S. observers were instructed to identify animals to the species level only when certain of their identification. To verify species identification, observers recorded descriptions, took photographs and, where possible, collected voucher specimens for examination by experts back in the laboratory.

A list of common and scientific names of animals observed in the catch and bycatch is provided in Table 44.

IV. OBSERVED FISHING EFFORT BY TIME AND AREA

Tables 2 and 3 report the total amount of retrieval monitoring by U.S. and Taiwanese observers, respectively, in standardized tans by 1° latitude by 1° longitude blocks by 10-day periods from July to the last observed operation in November in the Taiwanese squid fishery. Table 4 gives the same information combined for U.S. and Taiwanese observers. Some vessels carrying observers fished outside the northern boundary. Rather than identifying each 1° x 1° block outside the fishing area, all out of area fishing is reported in the appropriate block for that month.

Tables 5 and 6 summarize observed fishing effort, catch and bycatch by month for U.S. and Taiwanese observers, respectively, in the squid fishery. Cephalopods (squid and pelagic octopus) are reported first, followed by salmon, other marine fishes, seabirds, marine mammals and marine turtles. Tables 7 and 8 summarize the same information by vessel. For more detailed information on the total number of species recorded and the total catch and bycatch, Tables 21-22 provide totals of all animals observed in the Taiwanese squid fishery.

The comparable information for observed fishing effort, and catch and bycatch by month and vessel for the large-mesh fishery are given in Tables 23 through 29. Tables 42-43 provide the totals in the large-mesh fishery for all species.

V. RESULTS FROM OBSERVATIONS OF THE SQUID AND LARGE-MESH FISHERIES

A. Differences in data and methods of reconciliation.

1. Classification of marine mammals, turtles and seabirds as Dead, Alive, or Unknown.

Each marine mammal, turtle and seabird incidentally taken in an observed net section was classified as "Dead", "Released Alive", or "Unknown" during retrieval. The definitions were:

Dead - the number of animals by species of entangled seabirds, mammals and turtles that showed no sign of life, whether they are brought on board or not.

Released Alive - the number of animals by species of entangled seabirds, mammals and turtles that were disentangled, released alive and were thought to have a high probability of survival.

Unknown - the number of animals by species of entangled seabirds, mammals and turtles whose condition was unknown plus the number that, having been released or that fell from the net, were still alive but were in such poor condition they were thought likely to die.

2. Treatment of data during compilation of the tables.

The date and time of day recorded for an operation was the calendar day (Taiwan Standard Time) on the beginning of net set. The location for an operation was the latitude and longitude recorded to the nearest minute at the beginning of setting the net. For most operations environmental data such as sea surface temperature was collected at the beginning and end of net set and retrieval; swell height and meteorological data were collected at the beginning of set and end of retrieval.

3. Procedures and problems inherent to specific species groups.

a. Squid

Counts of squid were recorded by observed section. The squid counts represent those individuals removed from the net by the crew and do not include squid dropping out of the net prior to or during the retrieval. When squid catches were large, Taiwanese observers used the number of freezer pans of squid and number of squid per pan to calculate the total number of squid caught in that operation. This same method was also used to calculate the catch of Pacific pomfret when it was high.

b. Fishes

Bycatch monitoring was conducted for as many species of fishes as possible. Observers were trained to identify the principal catch and bycatch species likely to be encountered and provided with guidelines to assist in the field classification of unfamiliar specimens. Observers were encouraged to take photographs of species they could not identify in the field.

Sometimes observers had difficulty in distinguishing between similar species (for example, striped marlin and blue marlin;

albacore and bigeye tuna) because they could only glimpse the fish briefly while the net was coming aboard, or were unable to inspect the fish. Observers used their best judgement in such cases, with instructions to classify fish in "unidentified" categories if they could not make a positive identification. For example, an observer unable to distinguish between striped marlin and blue marlin would classify such fish with the code provided for "unidentified marlin". In some cases voucher photographs were used later to confirm or alter initial fish species identifications. Despite precautions taken to avoid misidentifications, the fish catch and bycatch data undoubtedly contain undetectable classification errors. However, we believe such errors are negligible.

Other problems arose when the bycatch rates of species, particularly Pacific pomfret or pelagic armorhead, were very high. In such instances accurate counting of the bycatch of these species was impossible and observers had to resort to estimates. In extreme cases observers simply could not estimate the bycatch of pomfret or armorhead with reasonable precision and a special code was entered in the records to indicate that the bycatch of these species was "uncountable". Such data were not included in the summary tables, and the reported fishing effort in these cases was reduced accordingly.

Two salmonids were observed in the 1990 Taiwanese driftnet fisheries; a U.S. observer sampled scales from one pink salmon caught on July 19 at 41°N, 177°W in the squid fishery. An unidentified salmonid was recorded by a U.S. observer on July 1 at 40°N, 176°W in the large-mesh fishery. The scale samples were impressed in an acetate sheet and a copy was provided to Taiwanese scientists along with biological data corresponding to the fish sampled. Species identification determined from the analysis of scale samples was used in the data compilation.

c. Marine Mammals

The condition of all marine mammals observed entangled in the net were recorded as "Dead", "Released Alive", or "Unknown". For animals released, the observers recorded whether net remained on the animal. Animals brought on board the vessel were examined by the observer. Species, sex, body length, and the presence of lactation were recorded for all animals examined by U.S. scientific observers. If an animal had a tag, the number and country of origin were recorded. On occasion, animals taken in net sections not monitored were examined but those data are not included in this report.

Observers were instructed to record a marine mammal in an unidentified category (e.g., unidentified dolphin/porpoise) if they could not positively identify it to species. Species identifications were confirmed for U.S. observers by marine mammal experts using field notes, drawings and photographs taken by the observer. In a few cases, identifications were changed to an unidentified category because there was no confirming photograph and either the location where the animal was caught was outside the known range for that species, or the species was difficult to identify.

d. Turtles

Observation of turtles were a required duty of every U.S. observer. Observations were made on every turtle seen during a monitored net section. A special data form was provided for recording such information. Observers noted whether an entangled turtle was decked, was cut out of the net by the crew, or dropped out during retrieval.

Many U.S. observers also recorded observations of unentangled turtles seen during monitored retrievals (for instance, turtles seen swimming or floating near the net), and observations of turtles encountered during non-monitored retrievals. The tables in this summary report include only the observations of turtles that were seen entangled in monitored sections.

Uncertainty in species identification was the principal problem with monitoring turtle bycatch. Although detailed field guides and training were provided to assist identification, most driftnet observers had little or no prior experience observing turtles. In addition, observers sometimes did not have access to turtles on the deck or could not see dropouts clearly. Further, even when turtles were accessible some biological characteristics used to differentiate turtle species showed greater variability than expected.

To minimize such problems, every observer's initial turtle identifications were reviewed by a turtle expert taking into account photographs, drawings, and notes provided by the observer. Observers' identifications were sometimes revised by the expert. Unless an identification could be made with confidence the turtle was classified as an "unidentified turtle".

As with marine mammals and seabirds, the status of turtles was generally indicated with respect to the "dead", "alive", and "unknown" categories. The status of some turtles classified as condition unknown may have been alive but there was insufficient information to determine their status.

e. Seabirds

Seabirds entangled in driftnets were enumerated and identified using protocols developed and agreed to by scientists of both countries. For each entanglement, including individuals which dropped from the net before reaching the vessel, the seabird's status (dead, alive or unknown) was recorded.

Seabird counts are considered by observers and supervising scientists to be conservative but reliable. There were occasions when individual specimens were missed. Entanglements, especially dropouts, are difficult to see (1) during periods of darkness, high winds and heavy seas, and fog and rain; (2) when large numbers of other species such as squid either hide seabirds or monopolize the observer's attention; (3) when dropouts occur before nets are lifted from the water; and (4) when large numbers of seabirds are entangled together. Small or all-dark species are most likely to be missed under these conditions. Problems were compounded when decked specimens were not saved for the observer to double check his data. A few seabirds were not removed from nets during retrieval and may have been double-counted on the next retrieval.

U.S. observers were trained in seabird identification and provided with the best available field identification guides. Confirmation of identification was accomplished by use of specimen photographs and labeled frozen specimens reviewed by supervising scientists. In cases where the review of specimens and photographs or debriefing of the observer indicated that the observer had difficulty in identifying seabirds, the questionable data were changed to the next higher taxon (e.g., "sooty shearwater" was changed to "unidentified dark shearwater"). To avoid the most difficult problem, distinguishing between sooty and short-tailed shearwaters, U.S. observers were also instructed to confirm identifications by measuring the bill length of each specimen. Access to specimens, however, was not always possible. If measurements could not be made, the bird was recorded as an unidentified dark shearwater.

Incorrect identification resulted from (1) excessive damage to the specimen either in the net or while being taken from the net; and (2) squid ink on the plumage obscuring key identification characteristics. These problems were compounded when specimens were not retained for examination by the observer, by the inexperience of most observers, and by the availability of only museum skins during training. Specimens taken in driftnets look very different from specimens in a museum or pictures in a field guide.

B. Fishing Effort, Catch and Bycatch in the Squid and Large-mesh Driftnet Fisheries.

1. Observed fishing effort by 10-day period and month.

It was agreed among the authors that observed fishing effort would be summarized in units of 50 m long tans, from the data collected at the operation level of resolution, by 1° x 1° statistical area and 10-day time period. Any finer scale of areal resolution is unwarranted since the driftnets used are typically 30 - 60 km in length and the length of one degree of longitude varies from 77 to 90 km in the fishing area.

2. Summary tables of catch and bycatch by month and by vessel.

Catch and bycatch was summarized by species groups and major species within each group by month (Tables 5-6 and 26-27) and by observed vessel (Tables 7-8 and 28-29). The catch of squid and amount of observed fishing effort is also shown in these tables. The number of tans "observed" is the number of standardized tans of driftnet actually monitored by the observers during retrieval. Row totals are given for: (1) the total number of animals observed by species group which is the number decked for marine fish, and (2) the total number of animals observed by species group which is the sum of the categories dead, alive and unknown of marine mammals, turtles and seabirds.

3. Catch and bycatch tables by species groups by appropriate time period and area.

The catch of squid and bycatch of major species groups, and the catch rate (number of animals per 1000 tans) are summarized in a series of tables by 1° x 1° statistical area. Squid catch and Pacific pomfret bycatch (Tables 9-10, 30-31) are reported by 10-day period while the bycatch of other species is summarized by month. Catch rates were expressed in numbers of animals per 1000 tans to avoid small fractional rates.

The catch and bycatch were summarized separately for the squid and large-mesh fisheries and the U.S. and Taiwanese observers. The squid fishery bycatch of marine fishes was summarized in Tables 11-14 for species or species groups of blue sharks, tunas and billfish. These same groupings are repeated as bycatch or catch for the large-mesh fishery in Tables 32-35. Seabird bycatch was similarly summarized in Tables 15-16 and 36-37, as were marine mammals in Tables 17-18 and 38-39 and turtles in Tables 19-20 and 40-41.

VI. DISCUSSION OF SQUID AND LARGE-MESH FISHERY OBSERVATIONS

Any expansion of bycatch rate information in the tables of this report to produce estimates of total bycatch in the squid and large-mesh driftnet fisheries must be done with great caution. Any such computations must take into account the inconsistencies in data collection methods noted above. In all cases, it is necessary to carefully assess how well the sample coverage represents the temporal and spatial distribution of total driftnet fishing effort before any meaningful conclusions can be reached.

VII. FUTURE DRIFTNET OBSERVER PROGRAMS

An agreement was signed for the 1991 Driftnet Monitoring Program between David N. Laux representing the AIT and Dirig-Mou Shih representing the CCNAA on April 16, 1991. Under the Agreement, there will be 20 scientific observers placed on Taiwanese high seas driftnet vessels during the 1991 fishing season; 11 observers representing the AIT on board 11 vessels to monitor 45 driftnet retrievals each and 9 observers representing the CCNAA on board 9 vessels to monitor 60 driftnet retrievals each. The observers are to be distributed between squid and large-mesh vessels in proportion to the number of each type licensed for the 1991 fishing season. Data to be collected are the same as in 1990. For the 1991 season, all Taiwanese scientific observers will also be provided with cameras for photographing species for later verification by experts.

Table 1. Taiwanese squid and large-mesh driftnet vessels carrying observers in the 1990 observer program.

Vessel Name	License Number	Length (m)	Tonnage (MT)	Month: May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Observer from: Taiwan	USA
SQUID VESSELS													
Jin Chan	60424	44.80	371.95				23------	------27					x
An San No. 66	60565	43.60	356.00				29------	------	------30				x
Yeong Shing Fu	60635	45.10	387.20		19------	------	------18					x	
Sheng Feng No. 6	60691	49.25	387.60				6------	------	------	------3			x
Hwa Wong No. 68	60901	42.78	329.92				13------	------	------17				x
Hou Chun No. 101	70119	60.00	737.00				19------	------10					x
Her Hung No. 1	70168	64.50	869.17			21------	------	------10				x	
Jui Ying No. 1	70218	50.70	772.70				24------	------	------21				x
Yung Man No. 11	70221	60.75	875.17				10------	------	------8			x	
Shiuh Fu No. 1	70256	54.20	712.68				19------	------	------7			x	
Chong Hui No. 1	70270	60.62	784.00					9-12					x
Ming Yu No. 1	70427	60.30	785.00			9---28							x
LARGE-MESH VESSELS													
Ming Shing No.202	60073	40.20	288.39			14------	------24					x	
Jinn Yinn No. 1	60510	41.50	375.00				12--23						x
Maan Wang No. 6	60595	37.60	223.20				11--31						x
Chen Chuan No. 6	60681	42.50	296.00	21------	------	------14						x	
Ching Hsin	60776	48.78	402.05		16------	------13							x
Jin Lai	60925	48.78	400.55		14------	------	------12					x	
Hung Kai No. 12	61218	50.90	496.00	29------	------	------12						x	
Ping Chieh No. 1	70149	54.85	711.39	27------	------	------17							x
Yu Chen Hsiang	70267	57.05	747.82		16------	------	------14					x	
Cheng Hui No. 1	70270	60.62	784.00			17------	------	------3					x
Lien Chun No. 1	70277	60.00	798.00		11------	------13							x

Table 2. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese squid driftnet fishery; U.S observer data only.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
July	1 - 10				
39	174 W	1	800	800	800
41	174 W	1	1201	1201	1201
July	11 - 20				
41	174 W	3	3202	3202	3202
41	173 W	5	4802	4802	4802
July	21 - 31				
41	177 W	4	2747	2499	2747
41	176 W	1	800	800	800
41	174 W	2	2402	2402	2402
August	1 - 10				
40	158 E	1	680	680	680
40	159 E	1	480	320	480
August	11 - 20				
40	157 E	1	596	436	596
40	161 E	7	3212	2132	3212
41	155 E	1	632	411	632
41	156 E	1	580	366	580
43	174 E	1	447	447	447
August	21 - 31				
40	161 E	1	480	480	480
41	153 E	2	692	600	692
41	154 E	5	1653	1233	1653
41	155 E	5	1424	1207	1424
41	156 E	4	2090	1388	2090
42	155 E	7	2355	1912	2355
42	156 E	1	206	206	206
42	157 E	4	1600	1148	1600
September	1 - 10				
41	154 E	4	1656	1281	1656
41	155 E	2	579	441	579
41	157 E	2	677	437	677
41	158 E	5	3125	2325	3125
41	164 E	5	972	739	972
41	165 E	2	687	525	687
41	166 E	1	446	297	446
41	167 E	1	443	295	443
42	155 E	6	2676	1816	2676
42	156 E	7	2918	1815	2918
42	157 E	5	2588	1788	2588

Table 2. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
September	11 - 20				
41	162 E	1	421	281	421
41	163 E	1	174	174	174
41	164 E	2	549	334	549
42	155 E	2	1116	788	1116
42	156 E	4	1610	1090	1610
42	162 E	3	1138	764	1138
42	163 E	1	385	232	385
42	166 E	1	179	179	179
42	167 E	4	1692	1177	1692
43	154 E	1	508	348	508
43	156 E	2	663	663	663
September	21 - 30				
40	158 E	1	450	375	450
40	159 E	1	233	141	233
41	153 E	1	150	150	150
41	155 E	2	998	763	998
41	156 E	4	2006	1455	2006
41	157 E	2	775	650	775
41	160 E	1	364	234	364
41	162 E	9	3389	2433	3389
42	154 E	2	908	588	908
42	155 E	1	508	348	508
October	1 - 10				
40	148 E	2	900	600	900
41	153 E	5	2439	1809	2439
41	154 E	1	480	400	480
41	157 E	1	440	280	440
41	158 E	2	888	728	888
41	160 E	1	247	247	247
41	161 E	3	1333	888	1333
41	162 E	4	1871	1282	1871
October	11 - 20				
39	146 E	1	750	750	750
39	147 E	1	600	525	600
40	148 E	1	600	600	600
40	149 E	3	1600	1300	1600
40	150 E	1	450	300	450
41	156 E	1	437	291	437
41	158 E	2	911	658	911
41	159 E	3	1624	1144	1624
41	160 E	5	2574	1886	2574
42	155 E	1	437	291	437
42	156 E	1	203	203	203
42	157 E	2	845	564	845

Table 2. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
October	21 - 31				
39	147 E	4	2175	2175	2175
40	150 E	1	560	400	560
41	159 E	1	458	323	458
November	1 - 10				
39	146 E	1	548	388	548

Table 3. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
June	11 - 20				
37	162 E	1	360	360	360
June	21 - 30				
38	167 E	1	720	720	720
38	174 E	1	540	540	540
38	177 E	3	1440	1440	1440
39	171 E	1	360	360	360
39	173 E	1	180	180	180
July	1 - 10				
38	178 E	3	2160	2160	2160
39	179 W	1	720	720	720
39	177 W	1	540	540	540
July	11 - 20				
38	178 E	1	720	720	720
39	178 E	1	360	360	360
40	175 W	1	720	720	720
40	174 W	2	1080	1080	1080
40	173 W	3	2160	2160	2160
41	173 W	1	720	720	720
July	21 - 31				
39	157 E	1	600	600	600
39	158 E	1	400	400	400
40	159 E	9	4400	4400	4400
40	175 W	4	2700	2700	2700
40	173 W	2	1260	1260	1260
41	175 W	1	720	720	720
41	174 W	1	720	720	720
41	173 W	3	1800	1800	1800
August	1 - 10				
40	156 E	2	800	800	800
40	157 E	2	695	695	695
40	158 E	2	1000	1000	1000
40	165 E	1	540	540	540
40	179 E	1	720	720	720

Table 3. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
August	11 - 20				
40	157 E	4	1142	1142	1142
40	158 E	2	960	960	960
40	160 E	2	587	587	587
41	155 E	2	787	787	787
41	156 E	9	3978	3978	3978
41	164 E	1	540	540	540
41	165 E	4	1800	1800	1800
41	166 E	1	180	180	180
August	21 - 31				
41	155 E	6	2272	2272	2272
41	156 E	5	2599	2599	2599
41	157 E	11	4838	4838	4838
42	155 E	1	396	396	396
September	1 - 10				
41	155 E	1	352	352	352
41	157 E	6	3584	3584	3584
41	158 E	11	4596	4596	4596
41	159 E	3	1484	1484	1484
42	155 E	2	552	552	552
42	156 E	4	2047	2047	2047
42	158 E	1	650	650	650
September	11 - 20				
42	154 E	5	2416	2416	2416
42	155 E	3	1376	1376	1376
42	156 E	2	1120	1120	1120
September	21 - 30				
40	157 E	1	672	672	672
41	156 E	2	1040	1040	1040
42	152 E	2	788	788	788
42	155 E	3	1704	1704	1704
42	156 E	6	2692	2692	2692
October	1 - 10				
41	154 E	5	2580	2580	2580
41	159 E	1	328	328	328
42	154 E	3	1148	1148	1148
42	155 E	2	648	648	648

Table 4. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese squid driftnet fishery; U.S. and Taiwanese observer data combined.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
June	11 - 20				
37	162 E	1	360	360	360
June	21 - 30				
38	167 E	1	720	720	720
38	174 E	1	540	540	540
38	177 E	3	1440	1440	1440
39	171 E	1	360	360	360
39	173 E	1	180	180	180
July	1 - 10				
38	178 E	3	2160	2160	2160
39	179 W	1	720	720	720
39	177 W	1	540	540	540
39	174 W	1	800	800	800
41	174 W	1	1201	1201	1201
July	11 - 20				
38	178 E	1	720	720	720
39	178 E	1	360	360	360
40	175 W	1	720	720	720
40	174 W	2	1080	1080	1080
40	173 W	3	2160	2160	2160
41	174 W	3	3202	3202	3202
41	173 W	6	5522	5522	5522
July	21 - 31				
39	157 E	1	600	600	600
39	158 E	1	400	400	400
40	159 E	9	4400	4400	4400
40	175 W	4	2700	2700	2700
40	173 W	2	1260	1260	1260
41	177 W	4	2747	2499	2747
41	176 W	1	800	800	800
41	175 W	1	720	720	720
41	174 W	3	3122	3122	3122
41	173 W	3	1800	1800	1800
August	1 - 10				
40	156 E	2	800	800	800
40	157 E	2	695	695	695
40	158 E	3	1680	1680	1680
40	159 E	1	480	320	480
40	165 E	1	540	540	540
40	179 E	1	720	720	720

Table 4. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
August	11 - 20				
40	157 E	5	1738	1578	1738
40	158 E	2	960	960	960
40	160 E	2	587	587	587
40	161 E	7	3212	2132	3212
41	155 E	3	1419	1198	1419
41	156 E	10	4558	4344	4558
41	164 E	1	540	540	540
41	165 E	4	1800	1800	1800
41	166 E	1	180	180	180
43	174 E	1	447	447	447
August	21 - 31				
40	161 E	1	480	480	480
41	153 E	2	692	600	692
41	154 E	5	1653	1233	1653
41	155 E	11	3696	3479	3696
41	156 E	9	4689	3987	4689
41	157 E	11	4838	4838	4838
42	155 E	8	2751	2308	2751
42	156 E	1	206	206	206
42	157 E	4	1600	1148	1600
September	1 - 10				
41	154 E	4	1656	1281	1656
41	155 E	3	931	793	931
41	157 E	8	4261	4021	4261
41	158 E	16	7721	6921	7721
41	159 E	3	1484	1484	1484
41	164 E	5	972	739	972
41	165 E	2	687	525	687
41	166 E	1	446	297	446
41	167 E	1	443	295	443
42	155 E	8	3228	2368	3228
42	156 E	11	4965	3862	4965
42	157 E	5	2588	1788	2588
42	158 E	1	650	650	650
September	11 - 20				
41	162 E	1	421	281	421
41	163 E	1	174	174	174
41	164 E	2	549	334	549
42	154 E	5	2416	2416	2416
42	155 E	5	2492	2164	2492
42	156 E	6	2730	2210	2730
42	162 E	3	1138	764	1138
42	163 E	1	385	232	385
42	166 E	1	179	179	179
42	167 E	4	1692	1177	1692
43	154 E	1	508	348	508
43	156 E	2	663	663	663

Table 4. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
September	21 - 30				
40	157 E	1	672	672	672
40	158 E	1	450	375	450
40	159 E	1	233	141	233
41	153 E	1	150	150	150
41	155 E	2	998	763	998
41	156 E	6	3046	2495	3046
41	157 E	2	775	650	775
41	160 E	1	364	234	364
41	162 E	9	3389	2433	3389
42	152 E	2	788	788	788
42	154 E	2	908	588	908
42	155 E	4	2212	2052	2212
42	156 E	6	2692	2692	2692
October	1 - 10				
40	148 E	2	900	600	900
41	153 E	5	2439	1809	2439
41	154 E	6	3060	2980	3060
41	157 E	1	440	280	440
41	158 E	2	888	728	888
41	159 E	1	328	328	328
41	160 E	1	247	247	247
41	161 E	3	1333	888	1333
41	162 E	4	1871	1282	1871
42	154 E	3	1148	1148	1148
42	155 E	2	648	648	648
October	11 - 20				
39	146 E	1	750	750	750
39	147 E	1	600	525	600
40	148 E	1	600	600	600
40	149 E	3	1600	1300	1600
40	150 E	1	450	300	450
41	156 E	1	437	291	437
41	158 E	2	911	658	911
41	159 E	3	1624	1144	1624
41	160 E	5	2574	1886	2574
42	155 E	1	437	291	437
42	156 E	1	203	203	203
42	157 E	2	845	564	845
October	21 - 31				
39	147 E	4	2175	2175	2175
40	150 E	1	560	400	560
41	159 E	1	458	323	458
November	1 - 10				
39	146 E	1	548	388	548

Table 5. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles and fishes by month in the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

	May	June	July	August	September	October	November	December	Total
Fishing Effort									
In tans (m)									
Total Effort	0	0	15953	17126	34976	22820	548	0	91423
Number of Ops	0	0	17	42	86	47	1	0	193
Squid Effort	0	0	15706	12966	24922	17643	388	0	71625
P.Pomfret Eff.	0	0	15953	17126	34976	22820	548	0	91423
Species/species group									
Squid, Unidentifed	0	0	0	0	3	1	0	0	4
Neon Flying Squid	0	0	36610	271720	537736	241197	1468	0	1088731
Eight-armed Squid	0	0	0	1	12	0	0	0	13
Boreal Clubhook Squid	0	0	0	22	4	21	0	0	47
Luminous Flying Squid	0	0	0	1	0	0	0	0	1
Pelagic Octopus, Unidentified	0	0	9	7	22	15	3	0	56
Pink Salmon	0	0	1	0	0	0	0	0	1
Shark, Unidentified	0	0	1	1	0	2	0	0	4
Blue Shark	0	0	217	108	5454	619	0	0	6398
Salmon Shark	0	0	0	1	3	0	0	0	4
Short-finned Mako Shark	0	0	0	1	0	0	0	0	1
Pygmy Shark	0	0	0	0	3	0	0	0	3
Basking Shark	0	0	0	0	1	0	0	0	1
Ray, Unidentified	0	0	1	2	1	1	0	0	5
Pelagic Stingray	0	0	0	2	0	0	0	0	2
Tuna, Unidentified	0	0	0	6	44	6	85	0	141
Albacore	0	0	767	322	428	106	2	0	1625
Skipjack Tuna	0	0	0	10545	20618	5110	65	0	36338
Bigeye Tuna	0	0	0	2	3	3	0	0	8
Yellowfin Tuna	0	0	0	1	0	0	0	0	1
Bullet Tuna	0	0	0	0	0	198	0	0	198
Swordfish	0	0	1	4	14	2	0	0	21
Marlin, Unidentified	0	0	0	18	0	1	0	0	19
Striped Marlin	0	0	0	11	1	0	0	0	12
Fish, Unidentified	0	0	299	112	81	56	0	0	548
Longnose Lancetfish	0	0	11	13	20	17	0	0	61
Flying Fish, Unidentified	0	0	0	1	1	0	0	0	2
California Flying Fish	0	0	0	0	0	5	0	0	5
Pacific Saury	0	0	6	72	338	90	1	0	507
Pilotfish	0	0	0	76	230	203	8	0	517
Jack, Unidentified	0	0	30	0	0	0	0	0	30
Yellowtail	0	0	12	119	157	28	0	0	316

Table 5. (Continued)

	May	June	July	August	September	October	November	December	Total
Mahi Mahi	0	0	0	35	10	21	0	0	66
Pacific Pomfret	0	0	34797	1496	9906	1048	1	0	47248
Wahoo	0	0	0	1	0	0	0	0	1
Pacific Barracuda	0	0	0	9	6	12	0	0	27
Snake Mackerel	0	0	0	2	2	0	0	0	4
Smalleye Squaretail	0	0	0	0	4	0	0	0	4
Louvar	0	0	2	0	0	0	0	0	2
Ocean Sunfish	0	0	103	11	70	14	0	0	198
Bird, Unidentified	0	0	0	1	3	2	0	0	6
Laysan Albatross	0	0	1	3	18	7	0	0	29
Black-footed Albatross	0	0	0	1	3	0	0	0	4
Northern Fulmar	0	0	0	1	1	10	0	0	12
Sooty Shearwater	0	0	0	1	14	0	0	0	15
Short-tailed Shearwater	0	0	1	0	0	0	0	0	1
Dark Shearwater, Unidentified	0	0	66	1	1	2	0	0	70
Leach's Storm-petrel	0	0	0	0	0	1	0	0	1
Fork-tailed Storm-petrel	0	0	1	0	0	0	0	0	1
Dolphin/Porpoise, Unidentified	0	0	0	0	1	0	0	0	1
Dall's Porpoise, Type Unknown	0	0	0	0	1	0	0	0	1
Northern Right Whale Dolphin	0	0	0	0	6	1	0	0	7
Large Whale, Unidentified	0	0	0	1	0	0	0	0	1
Green Turtle	0	0	1	0	0	0	0	0	1

Table 6. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

	May	June	July	August	September	October	November	December	Total
Fishing Effort In tans (m)									
Total Effort	0	3600	21780	23835	25073	4704	0	0	78992
Number of Ops	0	8	36	56	52	11	0	0	163
Squid Effort	0	3600	21780	23835	25073	4704	0	0	78992
P. Pomfret Effort	0	3600	21780	23835	25073	4704	0	0	78992
Species/species group									
Squid, Unidentifed	0	0	183	1032	42	0	0	0	1257
Neon Flying Squid	0	974	71010	596004	532680	120375	0	0	1321043
Eight-armed Squid	0	0	0	0	5	0	0	0	5
Shark, Unidentified	0	0	52	13	0	0	0	0	65
Blue Shark	0	0	0	4	0	0	0	0	4
Albacore	0	72	3631	234	575	0	0	0	4512
Skipjack Tuna	0	0	1786	9468	7374	1841	0	0	20469
Bigeye Tuna	0	0	0	0	2	0	0	0	2
Billfish, Unidentified	0	0	14	16	2	0	0	0	32
Fish, Unidentified	0	524	1081	1112	629	180	0	0	3526
Pacific Pomfret	0	0	0	161	111	97	0	0	369
Ocean Sunfish	0	0	0	6	11	0	0	0	17
Bird, Unidentified	0	0	1	0	0	0	0	0	1
Albatross, Unidentified	0	0	4	14	4	0	0	0	22
Shearwater, Unidentified	0	44	11	11	2	0	0	0	68
Dolphin/Porpoise, Unidentified	0	3	0	0	0	0	0	0	3
Dall's Porpoise, Type Unknown	0	0	0	0	1	0	0	0	1
Pacific White-sided Dolphin	0	3	0	1	1	0	0	0	5
Turtle, Unidentified	0	0	0	0	0	1	0	0	1

Table 7. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

	Vessel License Number								
	60424	60565	60691	60901	70119	70218	70270	70427	Total
Fishing Effort									
In tans (50m)									
Total Effort	3642	15338	23364	6641	8907	16104	1475	15953	91423
Number of Ops	18	36	47	14	18	39	4	17	193
Squid Effort	2894	12973	16844	4688	6502	11005	1012	15706	71625
P. Pomfret Effort	3642	15338	23364	6641	8907	16104	1475	15953	91423
Species/species group									
Squid, Unidentifed	0	0	0	1	0	2	1	0	4
Neon Flying Squid	141100	199609	191492	77859	137472	288687	15902	36610	1088731
Eight-armed Squid	0	0	0	1	0	12	0	0	13
Boreal Clubhook Squid	0	22	0	24	0	1	0	0	47
Luminous Flying Squid	1	0	0	0	0	0	0	0	1
Pelagic Octopus, Unidentified	0	4	16	2	17	8	0	9	56
Pink Salmon	0	0	0	0	0	0	0	1	1
Shark, Unidentified	0	0	0	0	1	2	0	1	4
Blue Shark	1659	113	154	94	15	2870	1276	217	6398
Salmon Shark	0	0	1	0	0	2	1	0	4
Short-finned Mako Shark	1	0	0	0	0	0	0	0	1
Pygmy Shark	0	3	0	0	0	0	0	0	3
Basking Shark	0	1	0	0	0	0	0	0	1
Ray, Unidentified	0	0	1	1	1	1	0	1	5
Pelagic Stingray	1	0	1	0	0	0	0	0	2
Tuna, Unidentified	1	8	125	0	0	7	0	0	141
Albacore	95	68	405	138	27	117	8	767	1625
Skipjack Tuna	9250	4534	7615	2535	2919	6218	3267	0	36338
Bigeye Tuna	0	3	0	0	0	5	0	0	8
Yellowfin Tuna	0	0	0	1	0	0	0	0	1
Bullet Tuna	0	198	0	0	0	0	0	0	198
Swordfish	2	3	10	3	1	1	0	1	21
Marlin, Unidentified	0	0	19	0	0	0	0	0	19
Striped Marlin	1	0	0	0	11	0	0	0	12
Fish, Unidentified	11	72	40	21	65	36	4	299	548
Longnose Lancetfish	3	24	9	1	12	0	1	11	61
Flying Fish, Unidentified	0	0	2	0	0	0	0	0	2
California Flying Fish	0	5	0	0	0	0	0	0	5
Pacific Saury	14	92	195	0	119	80	1	6	507
Pilotfish	55	91	46	14	79	212	20	0	517
Jack, Unidentified	0	0	0	0	0	0	0	30	30
Yellowtail	30	40	77	10	55	92	0	12	316

Table 7. (Continued)

	Vessel License Number								
	60424	60565	60691	60901	70119	70218	70270	70427	Total
Mahi Mahi	24	26	3	4	9	0	0	0	66
Pacific Pomfret	4570	359	1432	229	642	4758	461	34797	47248
Wahoo	0	0	1	0	0	0	0	0	1
Pacific Barracuda	0	0	0	0	0	27	0	0	27
Snake Mackerel	0	0	0	4	0	0	0	0	4
Smalleye Squaretail	3	0	0	0	0	0	1	0	4
Louvar	0	0	0	0	0	0	0	2	2
Ocean Sunfish	12	26	22	8	10	15	2	103	198
Bird, Unidentified	2	2	1	0	0	1	0	0	6
Laysan Albatross	1	2	8	1	4	6	6	1	29
Black-footed Albatross	1	1	1	0	1	0	0	0	4
Northern Fulmar	0	6	5	0	0	1	0	0	12
Sooty Shearwater	0	2	1	0	0	2	10	0	15
Short-tailed Shearwater	0	0	0	0	0	0	0	1	1
Dark Shearwater, Unidentified	0	0	2	0	2	0	0	66	70
Leach's Storm-petrel	0	0	0	0	0	1	0	0	1
Fork-tailed Storm-petrel	0	0	0	0	0	0	0	1	1
Dolphin/Porpoise, Unidentified	0	0	0	0	0	1	0	0	1
Dall's Porpoise, Type Unknown	1	0	0	0	0	0	0	0	1
Northern Right Whale Dolphin	5	0	1	0	0	1	0	0	7
Large Whale, Unidentified	0	0	0	0	1	0	0	0	1
Green Turtle	0	0	0	0	0	0	0	1	1

Table 8. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

	Vessel License Number				
	60635	70168	70221	70256	Total
Fishing Effort In tans (50m)					
Total Effort	23760	19949	14227	21056	78992
Number of Ops	41	43	42	37	163
Squid Effort	23760	19949	14227	21056	78992
P.Pomfret Effort	23760	19949	14227	21056	78992
Species/species group					
Squid, Unidentifed	0	1257	0	0	1257
Neon Flying Squid	124644	354801	436154	405444	1321043
Eight-armed Squid	0	0	0	5	5
Shark, Unidentified	0	65	0	0	65
Blue Shark	0	0	4	0	4
Albacore	1525	2960	25	2	4512
Skipjack Tuna	3103	6037	6550	4779	20469
Bigeye Tuna	0	0	2	0	2
Billfish, Unidentified	4	26	2	0	32
Fish, Unidentified	2076	10	899	541	3526
Pacific Pomfret	0	0	369	0	369
Ocean Sunfish	0	17	0	0	17
Bird, Unidentified	0	1	0	0	1
Albatross, Unidentified	8	14	0	0	22
Shearwater, Unidentified	48	18	2	0	68
Dolphin/Porpoise, Unidentified	3	0	0	0	3
Dall's Porpoise, Type Unknown	0	1	0	0	1
Pacific White-sided Dolphin	3	2	0	0	5
Turtle, Unidentified	0	0	0	1	1

Table 9. Observed catch of flying squid and bycatch of Pacific pomfret, observed fishing effort in standardized tans, and catch per 1000 tans of flying squid and Pacific pomfret by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

1°x1° Area		Observed Catch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
July 1-10							
41	174 W	7,327	1,393	1,201	1,201	6,100.7	1,159.87
39	174 W	603	8	800	800	753.8	10.00
July 11-20							
41	174 W	10,860	16,432	3,202	3,202	3,391.6	5,131.79
41	173 W	10,730	1,156	4,802	4,802	2,234.5	240.73
July 21-30							
41	177 W	3,751	158	2,499	2,747	1,501.0	57.52
41	176 W	430	1,556	800	800	537.5	1,945.00
41	174 W	2,909	14,094	2,402	2,402	1,211.1	5,867.61
August 1-10							
40	158 E	18,806	47	680	680	27,655.9	69.12
40	159 E	492	101	320	480	1,537.5	210.42
August 11-20							
43	174 E	3,760	14	447	447	8,411.6	31.32
41	155 E	5,961	70	411	632	14,503.6	110.76
41	156 E	11,417	121	366	580	31,194.0	208.62
40	157 E	5,385	77	436	596	12,350.9	129.19
40	161 E	27,388	236	2,132	3,212	12,846.2	73.47
August 21-31							
42	155 E	54,751	111	1,912	2,355	28,635.5	47.13
42	156 E	5,859	1	206	206	28,441.7	4.85
42	157 E	18,771	117	1,148	1,600	16,351.0	73.13
41	153 E	17,167	28	600	692	28,611.7	40.46
41	154 E	45,908	141	1,233	1,653	37,232.8	85.30
41	155 E	29,623	82	1,207	1,424	24,542.7	57.58
41	156 E	25,260	347	1,388	2,090	18,198.8	166.03
40	161 E	1,172	3	480	480	2,441.7	6.25
September 1-10							
42	155 E	25,664	179	1,816	2,676	14,132.2	66.89
42	156 E	39,384	87	1,815	2,918	21,699.2	29.81
42	157 E	23,254	195	1,788	2,588	13,005.6	75.35
41	154 E	22,024	17	1,281	1,656	17,192.8	10.27
41	155 E	7,470	46	441	579	16,938.8	79.45
41	157 E	4,465	142	437	677	10,217.4	209.75
41	158 E	52,808	49	2,325	3,125	22,713.1	15.68
41	164 E	27,902	78	739	972	37,756.4	80.25
41	165 E	28,429	6	525	687	54,150.5	8.73
41	166 E	5,405	30	297	446	18,198.7	67.26
41	167 E	5,339	477	295	443	18,098.3	1,076.75

Table 9. (Continued)

1°x1° Area		Observed Catch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
September 11-20							
43	154 E	5,928	12	348	508	17,034.5	23.62
43	156 E	19,210	54	663	663	28,974.4	81.45
42	155 E	12,309	20	788	1,116	15,620.6	17.92
42	156 E	25,590	61	1,090	1,610	23,477.1	37.89
42	162 E	18,249	3,438	764	1,138	23,886.1	3,021.09
42	163 E	3,054	393	232	385	13,163.8	1,020.78
42	166 E	7,158	113	179	179	39,988.8	631.28
42	167 E	38,165	316	1,177	1,692	32,425.7	186.76
41	162 E	6,739	486	281	421	23,982.2	1,154.39
41	163 E	4,888	2	174	174	28,092.0	11.49
41	164 E	4,367	135	334	549	13,074.9	245.90
September 21-30							
42	154 E	4,711	10	588	908	8,011.9	11.01
42	155 E	2,851	22	348	508	8,192.5	43.31
41	153 E	5,032	2	150	150	33,546.7	13.33
41	155 E	9,271	3	763	998	12,150.7	3.01
41	156 E	17,152	22	1,455	2,006	11,788.3	10.97
41	157 E	9,354	26	650	775	14,390.8	33.55
41	160 E	1,142	60	234	364	4,880.3	164.84
41	162 E	93,361	3,412	2,433	3,389	38,372.8	1,006.79
40	158 E	3,329	1	375	450	8,877.3	2.22
40	159 E	3,732	12	141	233	26,468.1	51.50
October 1-10							
41	153 E	24,471	13	1,809	2,439	13,527.4	5.33
41	154 E	3,592	0	400	480	8,980.0	5.33
41	157 E	3,271	2	280	440	11,682.1	4.55
41	158 E	4,498	3	728	888	6,178.6	3.38
41	160 E	8,127	12	247	247	32,902.8	48.58
41	161 E	15,358	3	888	1,333	17,295.0	2.25
41	162 E	53,495	361	1,282	1,871	41,727.8	192.94
40	148 E	8,335	3	600	900	13,891.7	3.33
October 11-20							
42	155 E	982	7	291	437	3,374.6	16.02
42	156 E	1,390	2	203	203	6,847.3	9.85
42	157 E	14,493	42	564	845	25,696.8	49.70
41	156 E	2,751	9	291	437	9,453.6	20.59
41	158 E	3,175	4	658	911	4,825.2	4.39
41	159 E	14,750	180	1,144	1,624	12,893.4	110.84
41	160 E	24,505	337	1,886	2,574	12,993.1	130.92
40	148 E	5,127	0	600	600	8,545.0	0.00
40	149 E	14,881	23	1,300	1,600	11,446.9	14.38
40	150 E	3,649	2	300	450	12,163.3	4.44
39	146 E	1,935	3	750	750	2,580.0	4.00
39	147 E	3,904	3	525	600	7,436.2	5.00

Table 9. (Continued)

1°x1° Area Lat.	Long.	Observed Catch in Number Flying squid	Pomfret	Tans(50m) Squid	Pomfret	CPUE (No. per 1000 tans) Flying squid	Pomfret
October 21-31							
41	159 E	4,708	39	323	458	14,575.9	85.15
40	150 E	1,531	0	400	560	3,827.5	0.00
39	147 E	22,269	0	2,175	2,175	10,238.6	0.00
November 1-10							
39	146 E	1,468	1	388	548	3,783.5	1.82

Table 10. Observed catch of flying squid and bycatch of Pacific pomfret, observed fishing effort in standardized tans, and catch per 1000 tans of flying squid and Pacific pomfret by 1° x 1°statistical area and 10-day period in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

1°x1° Area		Observed Catch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
June 11-20							
37	162 E	132	0	360	360	366.7	0.00
June 21-30							
38	167 E	79	0	720	720	109.7	0.00
38	174 E	11	0	540	540	20.4	0.00
38	177 E	752	0	1,440	1,440	522.2	0.00
July 1-10							
39	179 W	74	0	720	720	102.8	0.00
39	177 W	206	0	540	540	381.5	0.00
38	178 E	1,569	0	2,160	2,160	726.4	0.00
July 11-20							
41	173 W	1,560	0	720	720	2,166.7	0.00
40	175 W	717	0	720	720	995.8	0.00
40	174 W	3,210	0	1,080	1,080	2,972.2	0.00
40	173 W	4,544	0	2,160	2,160	2,103.7	0.00
39	178 E	390	0	360	360	1,083.3	0.00
38	178 E	345	0	720	720	479.2	0.00
July 21-30							
41	175 W	390	0	720	720	541.7	0.00
41	174 W	615	0	720	720	854.2	0.00
41	173 W	5,445	0	1,800	1,800	3,025.0	0.00
40	159 E	39,881	0	4,400	4,400	9,063.9	0.00
40	175 W	6,215	0	2,700	2,700	2,301.9	0.00
40	173 W	2,739	0	1,260	1,260	2,173.8	0.00
39	157 E	2,850	0	600	600	4,750.0	0.00
39	158 E	260	0	400	400	650.0	0.00
August 1-10							
40	156 E	11,810	0	800	800	14,762.5	0.00
40	157 E	33,480	20	695	695	48,172.7	28.78
40	158 E	27,172	0	1,000	1,000	27,172.0	0.00
40	165 E	3,075	0	540	540	5,694.4	0.00
40	179 E	2,336	0	720	720	3,244.4	0.00
August 11-20							
41	155 E	17,708	21	787	787	22,500.6	26.68
41	156 E	118,297	0	3,978	3,978	29,737.8	0.00
41	164 E	26,055	0	540	540	48,250.0	0.00
41	165 E	59,685	0	1,800	1,800	33,158.3	0.00
41	166 E	4,500	0	180	180	25,000.0	0.00
40	157 E	23,408	27	1,142	1,142	20,497.4	23.64
40	158 E	14,123	36	960	960	14,711.5	37.50
40	160 E	3,841	23	587	587	6,543.4	39.18

Table 10. (Continued)

1°x1° Area Lat.	Long.	Observed Catch in Number Flying squid	Pomfret	Tans(50m) Squid	Pomfret	CPUE (No. per 1000 tans) Flying squid	Pomfret
August 21-31							
42	155 E	17,448	18	396	396	44,060.6	45.45
41	155 E	77,090	16	2,272	2,272	33,930.5	7.04
41	156 E	72,810	0	2,599	2,599	28,014.6	0.00
41	157 E	83,166	0	4,838	4,838	17,190.2	0.00
September 1-10							
42	155 E	12,340	0	552	552	22,355.1	0.00
42	156 E	36,106	0	2,047	2,047	17,638.5	0.00
42	158 E	1,155	0	650	650	1,776.9	0.00
41	155 E	5,080	0	352	352	14,431.8	0.00
41	157 E	69,654	0	3,584	3,584	19,434.7	0.00
41	158 E	117,854	0	4,596	4,596	25,642.7	0.00
41	159 E	23,200	0	1,484	1,484	15,633.4	0.00
September 11-20							
42	154 E	82,398	0	2,416	2,416	34,105.1	0.00
42	155 E	9,274	0	1,376	1,376	6,739.8	0.00
42	156 E	15,990	0	1,120	1,120	14,276.8	0.00
September 21-30							
42	152 E	10,333	12	788	788	13,112.9	15.23
42	155 E	47,111	17	1,704	1,704	27,647.3	9.98
42	156 E	96,175	82	2,692	2,692	35,726.2	30.46
41	156 E	3,490	0	1,040	1,040	3,355.8	0.00
40	157 E	2,520	0	672	672	3,750.0	0.00
October 1-10							
42	154 E	35,053	24	1,148	1,148	30,534.0	20.91
42	155 E	13,366	33	648	648	20,626.5	50.93
41	154 E	69,420	21	2,580	2,580	26,907.0	8.14
41	159 E	2,536	19	328	328	7,731.7	57.93

Table 11. Observed bycatch of albacore, skipjack tuna and blue shark and observed fishing effort in standardized tans, and bycatch per 1000 tans of albacore, skipjack tuna and blue shark by 1° x 1° statistical area and month in the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

1° x 1° Area		Observed Byatch in Number				CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skip-jack	Tans (50m)	Blue Shark	Albacore	Skip-jack
July								
39	174 W	0	137	0	800	0.00	171.16	0.00
41	177 W	117	245	0	2,747	42.60	89.19	0.00
41	176 W	0	8	0	800	0.00	10.00	0.00
41	174 W	68	232	0	6,803	10.00	34.10	0.00
41	173 W	32	145	0	4,802	6.66	30.19	0.00
August								
40	157 E	1	0	227	596	1.68	0.00	380.87
40	158 E	4	280	83	680	5.88	411.76	122.06
40	159 E	5	0	95	480	10.42	0.00	197.92
40	161 E	48	0	3,089	3,692	13.00	0.00	836.67
41	153 E	3	0	1,324	692	4.33	0.00	1913.02
41	154 E	11	0	1,841	1,652	6.66	0.00	1114.14
41	155 E	6	1	823	2,057	2.92	0.49	400.08
41	156 E	5	0	1,846	2,670	1.87	0.00	691.39
42	155 E	3	3	618	2,354	1.27	1.27	262.51
42	156 E	0	0	1	206	0.00	0.00	4.86
42	157 E	13	5	356	1,600	8.13	3.13	222.53
43	174 E	9	33	242	447	20.13	73.83	541.39
September								
40	158 E	3	4	68	450	6.67	8.89	151.11
40	159 E	314	56	912	233	1350.54	240.86	3922.58
41	153 E	0	0	1	150	0.00	0.00	6.67
41	154 E	3	6	685	1,656	1.81	3.62	413.65
41	155 E	1	10	267	1,577	0.63	6.34	169.31
41	156 E	2	85	531	2,006	1.00	42.36	264.65
41	157 E	17	15	783	1,451	11.71	10.34	539.58
41	158 E	1	22	1,116	3,125	0.32	7.04	357.14
41	160 E	23	0	926	364	63.15	0.00	2542.56
41	162 E	1,468	78	1,209	3,807	385.58	20.49	317.55
41	163 E	9	2	282	174	51.72	11.49	1620.69
41	164 E	1,112	31	5,178	1,520	731.82	20.40	3407.70
41	165 E	214	0	1,890	687	311.43	0.00	2750.45
41	166 E	156	1	384	446	349.65	2.24	860.68
41	167 E	15	1	265	443	33.86	2.26	598.14
42	154 E	10	1	234	908	11.01	1.10	257.71
42	155 E	5	79	616	4,299	1.16	18.38	143.29
42	156 E	11	13	1,487	4,528	2.43	2.87	328.40
42	157 E	7	2	328	2,588	2.70	0.77	126.74
42	162 E	1,503	9	1,092	1,137	1321.76	7.91	960.32
42	163 E	322	7	523	385	837.23	18.20	1359.85
42	166 E	37	0	23	179	206.24	0.00	128.21
42	167 E	220	3	1,757	1,692	130.02	1.77	1038.37
43	154 E	1	3	1	508	1.97	5.91	1.97
43	156 E	0	0	60	663	0.00	0.00	90.57

Table 11. (Continued)

1° x 1° Area		Observed Bycatch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skip-jack	(50m)	Blue Shark	Albacore	Skip-jack
October								
39	146 E	1	0	47	750	1.33	0.00	62.67
39	147 E	42	4	515	2,775	15.14	1.44	185.59
40	148 E	28	0	219	1,500	18.67	0.00	146.00
40	149 E	4	0	270	1,600	2.50	0.00	168.75
40	150 E	13	3	38	1,010	12.87	2.97	37.62
41	153 E	7	35	1,229	2,439	2.87	14.35	503.90
41	154 E	0	0	32	480	0.00	0.00	66.67
41	156 E	2	11	210	437	4.58	25.18	480.77
41	157 E	4	0	56	440	9.09	0.00	127.27
41	158 E	14	5	500	1,799	7.78	2.78	277.86
41	159 E	10	18	200	2,082	4.80	8.65	96.08
41	160 E	46	7	415	2,821	16.31	2.48	147.10
41	161 E	190	14	950	1,332	142.62	10.51	713.08
41	162 E	246	6	243	1,870	131.53	3.21	129.92
42	155 E	2	0	49	437	4.58	0.00	112.18
42	156 E	3	0	7	203	14.79	0.00	34.52
42	157 E	7	3	130	845	8.28	3.55	153.85
November								
39	146 E	0	2	65	548	0.00	3.65	118.61

Table 12. Observed bycatch of albacore, skipjack tuna and blue shark and observed fishing effort in standardized tans, and bycatch per 1000 tans of albacore, skipjack tuna and blue shark by 1° x 1° statistical area and month in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

1°x1° Area		Observed Bycatch in Number				CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skipjack	Tans (50m)	Blue Shark	Albacore	Skipjack
June								
38	167 E	0	3	0	720	0.00	4.17	0.00
38	177 E	0	4	0	1,440	0.00	2.78	0.00
39	171 E	0	59	0	360	0.00	163.89	0.00
39	173 E	0	6	0	180	0.00	33.33	0.00
July								
38	178 E	0	355	0	2,880	0.00	123.26	0.00
39	157 E	0	129	321	600	0.00	215.00	535.00
39	158 E	0	55	126	400	0.00	137.50	315.00
39	178 E	0	15	0	360	0.00	41.67	0.00
39	179 W	0	161	0	720	0.00	223.61	0.00
39	177 W	0	104	0	540	0.00	192.59	0.00
40	159 E	0	2,033	348	4,400	0.00	462.05	79.09
40	175 W	0	395	313	3,420	0.00	115.50	91.52
40	174 W	0	12	33	1,080	0.00	11.11	30.56
40	173 W	0	349	292	3,420	0.00	102.05	85.38
41	175 W	0	23	87	720	0.00	31.94	120.83
41	174 W	0	0	179	720	0.00	0.00	248.61
41	173 W	0	0	87	2,520	0.00	0.00	34.52
August								
40	156 E	0	30	55	800	0.00	37.50	68.75
40	157 E	0	7	490	1,837	0.00	3.81	266.77
40	158 E	0	78	335	1,960	0.00	39.80	170.94
40	160 E	1	0	2,317	588	1.70	0.00	3943.16
40	165 E	0	0	1,485	540	0.00	0.00	2750.00
40	179 E	0	0	374	720	0.00	0.00	519.44
41	155 E	3	2	936	3,060	0.98	0.65	305.92
41	156 E	0	78	1,734	6,577	0.00	11.86	263.65
41	157 E	0	0	1,280	4,838	0.00	0.00	264.57
41	164 E	0	0	66	540	0.00	0.00	122.22
41	165 E	0	39	176	1,800	0.00	21.67	97.78
41	166 E	0	0	11	180	0.00	0.00	61.11
42	155 E	0	0	209	396	0.00	0.00	527.78
September								
40	157 E	0	0	45	672	0.00	0.00	66.96
41	155 E	0	1	19	352	0.00	2.84	53.98
41	156 E	0	22	98	1,040	0.00	21.15	94.23
41	157 E	0	2	702	3,584	0.00	0.56	195.87
41	158 E	0	48	2,239	4,596	0.00	10.44	487.16
41	159 E	0	252	767	1,484	0.00	169.81	516.85
42	152 E	0	0	24	788	0.00	0.00	30.46
42	154 E	0	0	500	2,416	0.00	0.00	206.95
42	155 E	0	0	817	3,632	0.00	0.00	224.94
42	156 E	0	0	712	5,859	0.00	0.00	121.52
42	158 E	0	250	1,451	650	0.00	384.62	2232.31
October								
41	154 E	0	0	773	2,580	0.00	0.00	299.61
41	159 E	0	0	628	328	0.00	0.00	1914.63
42	154 E	0	0	216	1,148	0.00	0.00	188.15
42	155 E	0	0	199	648	0.00	0.00	307.10

Table 13. Observed bycatch and bycatch per 1000 tans of other tunas, billfishes, marlins, and unidentified tunas, billfishes and marlins by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

Start of Retrieval Month	Location Lat°N	Location Long°	Bycatch (No.)	Tans (50m)	CPUE	Code	Species Name
7	41	174 W	1	6,803	0.15	141	Swordfish
8	40	158 E	1	680	1.47	120	Tuna, Unidentified
8	40	161 E	1	3,692	0.27	120	Tuna, Unidentified
8	42	155 E	4	2,354	1.70	120	Tuna, Unidentified
8	41	155 E	2	2,057	0.97	124	Bigeye Tuna
8	41	154 E	1	1,652	0.61	125	Yellowfin Tuna
8	40	158 E	1	680	1.47	141	Swordfish
8	40	161 E	1	3,692	0.27	141	Swordfish
8	41	154 E	2	1,652	1.21	141	Swordfish
8	40	157 E	2	596	3.36	142	Marlin, Unidentified
8	40	159 E	8	480	16.67	142	Marlin, Unidentified
8	40	161 E	2	3,692	0.54	142	Marlin, Unidentified
8	41	156 E	5	2,670	1.87	142	Marlin, Unidentified
8	42	157 E	1	1,600	0.63	142	Marlin, Unidentified
8	41	153 E	4	692	5.78	143	Striped Marlin
8	41	154 E	1	1,652	0.61	143	Striped Marlin
8	41	156 E	6	2,670	2.25	143	Striped Marlin
9	41	154 E	1	1,656	0.60	120	Tuna, Unidentified
9	41	155 E	22	1,577	13.95	120	Tuna, Unidentified
9	41	162 E	1	3,807	0.26	120	Tuna, Unidentified
9	41	164 E	1	1,520	0.66	120	Tuna, Unidentified
9	41	166 E	1	446	2.24	120	Tuna, Unidentified
9	42	154 E	10	908	11.01	120	Tuna, Unidentified
9	42	155 E	4	4,299	0.93	120	Tuna, Unidentified
9	42	156 E	3	4,528	0.66	120	Tuna, Unidentified
9	42	167 E	1	1,692	0.59	120	Tuna, Unidentified
9	41	162 E	1	3,807	0.26	124	Bigeye Tuna
9	41	166 E	1	446	2.24	124	Bigeye Tuna
9	42	155 E	1	4,299	0.23	124	Bigeye Tuna
9	41	154 E	1	1,656	0.60	141	Swordfish
9	41	155 E	2	1,577	1.27	141	Swordfish
9	41	158 E	1	3,125	0.32	141	Swordfish
9	41	162 E	2	3,807	0.53	141	Swordfish
9	42	154 E	1	908	1.10	141	Swordfish
9	42	155 E	1	4,299	0.23	141	Swordfish
9	42	156 E	2	4,528	0.44	141	Swordfish
9	42	157 E	3	2,588	1.16	141	Swordfish
9	43	156 E	1	663	1.51	141	Swordfish
9	41	158 E	1	3,125	0.32	143	Striped Marlin
10	39	147 E	6	2,775	2.16	120	Tuna, Unidentified
10	41	156 E	3	437	6.87	124	Bigeye Tuna
10	39	146 E	5	750	6.67	126	Bullet Tuna
10	39	147 E	133	2,775	47.93	126	Bullet Tuna
10	40	148 E	40	1,500	26.67	126	Bullet Tuna
10	40	149 E	20	1,600	12.50	126	Bullet Tuna
10	41	153 E	1	2,439	0.41	141	Swordfish
10	41	160 E	1	2,821	0.35	141	Swordfish
10	41	154 E	1	480	2.08	142	Marlin, Unidentified
11	39	146 E	85	548	155.11	120	Tuna, Unidentified

Table 14. Observed bycatch and bycatch per 1000 tans of other tunas, billfishes, marlins, and unidentified tunas, billfishes and marlins by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
7	40	159 E	10	4,400	2.27	140	Billfish, Unidentified
7	41	173 W	4	2,520	1.59	140	Billfish, Unidentified
8	40	156 E	2	800	2.50	140	Billfish, Unidentified
8	40	157 E	2	1,837	1.09	140	Billfish, Unidentified
8	40	158 E	2	1,960	1.02	140	Billfish, Unidentified
8	41	156 E	8	6,577	1.22	140	Billfish, Unidentified
8	41	157 E	2	4,838	0.41	140	Billfish, Unidentified
9	42	152 E	2	788	2.54	124	Bigeye Tuna
9	41	158 E	1	4,596	0.22	140	Billfish, Unidentified
9	42	152 E	1	788	1.27	140	Billfish, Unidentified

Table 15. Observed bycatch and bycatch per 1000 tans of seabirds by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
7	41	174 W	1	6,803	0.15	421	Laysan Albatross
7	41	177 W	1	2,747	0.36	458	Dark Shearwater, Unidentified
7	41	176 W	2	800	2.50	458	Dark Shearwater, Unidentified
7	41	174 W	60	6,803	8.82	458	Dark Shearwater, Unidentified
7	41	173 W	3	4,802	0.62	458	Dark Shearwater, Unidentified
7	41	174 W	1	6,803	0.15	457	Short-tailed Shearwater
7	41	174 W	1	6,803	0.15	475	Fork-tailed Storm-petrel
8	41	155 E	1	2,057	0.49	400	Bird, Unidentified
8	41	154 E	1	1,652	0.61	421	Laysan Albatross
8	42	157 E	2	1,600	1.25	421	Laysan Albatross
8	41	156 E	1	2,670	0.37	423	Black-footed Albatross
8	41	156 E	1	2,670	0.37	431	Northern Fulmar
8	42	155 E	1	2,354	0.42	458	Dark Shearwater, Unidentified
8	41	156 E	1	2,670	0.37	456	Sooty Shearwater
9	40	158 E	1	450	2.22	400	Bird, Unidentified
9	41	162 E	1	3,807	0.26	400	Bird, Unidentified
9	41	164 E	1	1,520	0.66	400	Bird, Unidentified
9	41	154 E	1	1,656	0.60	421	Laysan Albatross
9	41	158 E	4	3,125	1.28	421	Laysan Albatross
9	41	162 E	2	3,807	0.53	421	Laysan Albatross
9	41	164 E	1	1,520	0.66	421	Laysan Albatross
9	41	165 E	4	687	5.82	421	Laysan Albatross
9	41	166 E	1	446	2.24	421	Laysan Albatross
9	42	156 E	1	4,528	0.22	421	Laysan Albatross
9	42	157 E	2	2,588	0.77	421	Laysan Albatross
9	42	163 E	1	385	2.60	421	Laysan Albatross
9	42	167 E	1	1,692	0.59	421	Laysan Albatross
9	41	154 E	1	1,656	0.60	423	Black-footed Albatross
9	41	158 E	1	3,125	0.32	423	Black-footed Albatross
9	41	163 E	1	174	5.75	423	Black-footed Albatross
9	41	162 E	1	3,807	0.26	431	Northern Fulmar
9	41	158 E	1	3,125	0.32	458	Dark Shearwater, Unidentified
9	41	154 E	1	1,656	0.60	456	Sooty Shearwater
9	41	165 E	10	687	14.55	456	Sooty Shearwater
9	41	167 E	1	443	2.26	456	Sooty Shearwater
9	42	156 E	1	4,528	0.22	456	Sooty Shearwater
9	42	167 E	1	1,692	0.59	456	Sooty Shearwater
10	41	159 E	1	2,082	0.48	400	Bird, Unidentified
10	41	162 E	1	1,870	0.53	400	Bird, Unidentified
10	40	149 E	1	1,600	0.63	421	Laysan Albatross
10	41	158 E	1	1,799	0.56	421	Laysan Albatross
10	41	159 E	2	2,082	0.96	421	Laysan Albatross
10	41	160 E	3	2,821	1.06	421	Laysan Albatross
10	39	147 E	6	2,775	2.16	431	Northern Fulmar
10	40	150 E	4	1,010	3.96	431	Northern Fulmar
10	41	159 E	1	2,082	0.48	458	Dark Shearwater, Unidentified
10	41	160 E	1	2,821	0.35	458	Dark Shearwater, Unidentified
10	41	162 E	1	1,870	0.53	473	Leach's Storm-petrel

Table 16. Observed bycatch and bycatch per 1000 tans of seabirds by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
6	37	162 E	27	360	75.00	450	Shearwater, Unidentified
6	38	167 E	17	720	23.61	450	Shearwater, Unidentified
7	40	159 E	1	4,400	0.23	400	Bird, Unidentified
7	40	159 E	2	4,400	0.45	420	Albatross, Unidentified
7	40	175 W	2	3,420	0.58	420	Albatross, Unidentified
7	39	157 E	1	600	1.67	450	Shearwater, Unidentified
7	40	159 E	7	4,400	1.59	450	Shearwater, Unidentified
7	40	173 W	1	3,420	0.29	450	Shearwater, Unidentified
7	41	173 W	2	2,520	0.79	450	Shearwater, Unidentified
8	40	156 E	1	800	1.25	420	Albatross, Unidentified
8	40	158 E	4	1,960	2.04	420	Albatross, Unidentified
8	41	156 E	3	6,577	0.46	420	Albatross, Unidentified
8	41	164 E	2	540	3.70	420	Albatross, Unidentified
8	41	165 E	4	1,800	2.22	420	Albatross, Unidentified
8	40	156 E	3	800	3.75	450	Shearwater, Unidentified
8	40	158 E	1	1,960	0.51	450	Shearwater, Unidentified
8	41	157 E	2	4,838	0.41	450	Shearwater, Unidentified
8	41	164 E	1	540	1.85	450	Shearwater, Unidentified
8	40	160 E	1	588	1.70	450	Shearwater, Unidentified
8	41	155 E	1	3,060	0.33	450	Shearwater, Unidentified
8	41	156 E	2	6,577	0.30	450	Shearwater, Unidentified
9	41	158 E	2	4,596	0.44	420	Albatross, Unidentified
9	41	159 E	2	1,484	1.35	420	Albatross, Unidentified
9	41	159 E	1	1,484	0.67	450	Shearwater, Unidentified
9	42	156 E	1	5,859	0.17	450	Shearwater, Unidentified

Table 17. Observed bycatch and bycatch per 1000 tans of northern right whale dolphin, Dall's porpoise, unidentified porpoise and unidentified large whales by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

Start of Retrieval Month	Location Lat°N	Location Long°	Bycatch (No.)	Tans (50m)	CPUE	Code	Species Name
8	42	155 E	1	2,354	0.42	770	Large Whale, Unidentified
9	42	167 E	1	1,692	0.59	710	Dolphin/Porpoise, Unidentified
9	42	162 E	1	1,137	0.88	711	Dall's Porpoise, Type Unknown
9	41	162 E	5	3,807	1.31	720	Northern Right Whale Dolphin
9	42	162 E	1	1,137	0.88	720	Northern Right Whale Dolphin
10	41	159 E	1	2,082	0.48	720	Northern Right Whale Dolphin

Table 18. Observed bycatch and bycatch per 1000 tans of Pacific white-sided dolphin, Dall's porpoise and unidentified porpoise by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

Start of Retrieval Month	Location Lat°N	Location Long°	Bycatch (No.)	Tans (50m)	CPUE	Code	Species Name
6	37	162 E	3	360	8.33	710	Dolphin/Porpoise, Unidentified
6	38	174 E	1	540	1.85	721	Pacific White-sided Dolphin
6	38	177 E	2	1,440	1.39	721	Pacific White-sided Dolphin
8	40	158 E	1	1,960	0.51	721	Pacific White-sided Dolphin
9	42	158 E	1	650	1.54	711	Dall's Porpoise, Type Unknown
9	42	158 E	1	650	1.54	721	Pacific White-sided Dolphin

Table 19. Observed bycatch and bycatch per 1000 tans of turtles by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

Start of Retrieval							
	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
7	41	174 W	1	6,803	0.15	903	Green Turtle

Table 20. Observed bycatch and bycatch per 1000 tans of turtles by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

Start of Retrieval							
	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
10	41	154 E	1	2,580	0.39	900	Turtle, Unidentified

Table 21. Total numbers of catch and bycatch observed by species, total number of observed operations in which a species was taken and total number of vessels on which observers recorded the species in the 1990 Taiwanese squid driftnet fishery; U.S. observer data only.

Species/Taxon	Total Numbers	Number of Observed Operations	Number of Observed Vessels
Squid, Unidentifed	4	4	3
Neon Flying Squid	1,088,731	193	8
Eight-armed Squid	13	3	2
Boreal Clubhook Squid	47	10	3
Luminous Flying Squid	1	1	1
Pelagic Octopus, Unidentified	56	31	6
Pink Salmon	1	1	1
Shark, Unidentified	4	3	3
Blue Shark	6,398	141	8
Salmon Shark	4	4	3
Short-finned Mako Shark	1	1	1
Pygmy Shark	3	1	1
Basking Shark	1	1	1
Ray, Unidentified	5	5	5
Pelagic Stingray	2	2	2
Tuna, Unidentified	141	18	4
Albacore	1,625	97	8
Skipjack Tuna	36,338	173	7
Bigeye Tuna	8	5	2
Yellowfin Tuna	1	1	1
Bullet Tuna	198	7	1
Swordfish	21	20	7
Marlin, Unidentified	19	8	1
Striped Marlin	12	5	2
Fish, Unidentified	548	89	8
Longnose Lancetfish	61	36	7
Flying Fish, Unidentified	2	2	1
California Flying Fish	5	3	1
Pacific Saury	507	100	7
Pilotfish	517	81	7
Jack, Unidentified	30	6	1
Yellowtail	316	75	7
Mahi Mahi	66	16	5
Pacific Pomfret	47,248	180	8
Wahoo	1	1	1
Pacific Barracuda	27	7	1
Snake Mackerel	4	4	1
Smalleye Squaretail	4	2	2
Louvar	2	1	1
Ocean Sunfish	198	66	8
Bird, Unidentified	6	6	4
Laysan Albatross	29	23	8
Black-footed Albatross	4	4	4
Northern Fulmar	12	5	3
Sooty Shearwater	15	6	4
Short-tailed Shearwater	1	1	1
Dark Shearwater, Unidentified	70	12	3
Leach's Storm-petrel	1	1	1
Fork-tailed Storm-petrel	1	1	1
Dolphin/Porpoise, Unidentified	1	1	1
Dall's Porpoise, Type Unknown	1	1	1
Northern Right Whale Dolphin	7	3	3
Large Whale, Unidentified	1	1	1
Green Turtle	1	1	1

Table 22. Total numbers of observed catch and bycatch observed by species, total number of observed operations in which a species was taken and total number of vessels on which observers recorded the species in the 1990 Taiwanese squid driftnet fishery; Taiwanese observer data only.

Species/Taxon	Total Numbers	Number of Observed Operations	Number of Observed Vessels
Squid, Unidentifed	1,257	18	1
Neon Flying Squid	1,321,043	160	4
Eight-armed Squid	5	1	1
Shark, Unidentified	65	20	1
Blue Shark	4	3	1
Albacore	4,512	51	4
Skipjack Tuna	20,469	143	4
Bigeye Tuna	2	1	1
Billfish, Unidentified	32	18	3
Fish, Unidentified	3,526	83	4
Pacific Pomfret	369	22	1
Ocean Sunfish	17	9	1
Bird, Unidentified	1	1	1
Albatross, Unidentified	22	14	2
Shearwater, Unidentified	68	18	3
Dolphin/Porpoise, Unidentified	3	1	1
Dall's Porpoise, Type Unknown	1	1	1
Pacific White-sided Dolphin	5	5	2
Turtle, Unidentified	1	1	1

Table 23. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese large-mesh driftnet fishery; U.S observer data only.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
May	21 - 31				
33	175 E	1	494	494	494
34	176 W	2	827	827	827
34	175 W	1	442	442	442
June	1 - 10				
35	173 W	1	442	442	442
36	176 E	1	602	602	602
36	176 W	2	1173	1173	1173
36	175 W	1	571	571	571
36	174 W	1	578	578	578
36	173 W	1	581	581	581
37	176 W	1	403	403	403
June	11 - 20				
36	170 E	2	1074	1074	1074
36	175 E	5	2690	2690	2690
37	175 E	5	2503	2503	2503
37	176 E	5	2515	2515	2515
37	177 E	1	496	496	496
38	175 E	1	535	535	535
38	176 E	2	863	863	863
38	178 E	1	744	744	744
39	175 E	1	489	489	489
June	21 - 30				
37	177 E	1	347	347	347
37	170 W	1	744	744	744
38	175 E	1	516	516	516
38	174 W	1	602	602	602
38	168 W	1	585	585	585
38	164 W	1	744	744	744
38	163 W	1	744	744	744
38	161 W	1	744	744	744
38	156 W	1	744	744	744
39	175 E	6	3170	3170	3170
39	179 E	1	347	347	347
39	174 W	1	217	217	217

Table 23. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
July	1 - 10				
39	178 W	2	1165	1165	1165
39	177 W	2	1116	1116	1116
39	156 W	1	744	744	744
39	155 W	2	1488	1488	1488
40	175 E	1	552	552	552
40	179 E	1	601	601	601
40	179 W	1	574	574	574
40	178 W	3	1646	1646	1646
40	177 W	4	1773	1773	1773
40	176 W	1	637	637	637
40	171 W	1	602	602	602
40	168 W	1	744	744	744
40	159 W	1	744	744	744
40	157 W	1	744	744	744
July	11 - 20				
40	178 E	1	550	550	550
40	179 E	2	1091	1091	1091
40	172 W	1	602	602	602
40	171 W	1	601	601	601
40	170 W	3	1414	1414	1414
40	169 W	1	744	744	744
41	169 W	2	1149	681	1149
41	168 W	1	591	367	591
41	167 W	1	586	341	586
July	21 - 31				
41	167 W	1	590	394	590
41	166 W	3	1766	1065	1766
41	159 W	4	2317	1363	2317
42	158 W	1	560	350	560
August	1 - 10				
42	161 W	3	1760	1066	1760
42	160 W	4	2262	1460	2262
43	161 W	1	570	338	570
August	11 - 20				
41	178 E	4	1700	1700	1700
42	175 E	1	160	160	160
42	178 E	2	850	850	850
42	179 E	2	1200	1200	1200
42	179 W	1	480	480	480
42	163 W	1	580	348	451
43	179 E	1	480	480	480
43	169 W	3	1750	1053	1750
43	162 W	3	1720	1039	1720
43	161 W	1	580	342	580

Table 23. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
August	21 - 31				
41	174 E	1	425	425	425
42	176 E	1	720	720	720
43	178 W	2	960	960	960
43	172 W	3	1760	1047	1760
43	169 W	2	1145	696	1145
43	168 W	3	1740	1041	1740
43	167 W	1	570	336	570
September	1 - 10				
43	172 W	1	580	348	580
44	172 W	1	570	351	570

Table 24. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
May	21 - 31				
32	175 E	2	1136	1136	1136
33	173 E	1	440	440	440
33	175 E	2	1248	1248	1248
33	174 W	4	1728	1728	1728
35	178 W	4	2440	2440	2440
June	1 - 10				
35	178 W	2	1328	1328	1328
35	175 W	1	432	432	432
35	174 W	3	1152	1152	1152
35	173 W	1	432	432	432
35	172 W	1	432	432	432
35	171 W	1	432	432	432
36	177 E	1	648	648	648
36	178 W	2	1296	1296	1296
36	175 W	2	864	864	864
37	178 W	1	640	640	640
June	11 - 20				
35	176 E	1	648	648	648
35	177 E	1	648	648	648
36	170 E	3	1140	1140	1140
36	175 E	1	276	276	276
36	177 E	1	648	648	648
37	175 E	6	3100	3100	3100
37	176 E	3	1098	1098	1098
38	175 E	9	5444	5444	5444
38	177 E	1	420	420	420
39	175 E	2	1088	1088	1088
June	21 - 30				
36	179 E	1	700	700	700
37	167 W	3	552	552	552
38	175 E	11	5232	5232	5232
38	177 E	1	360	360	360
38	175 W	1	467	467	467
38	174 W	1	700	700	700
38	168 W	1	138	138	138
38	167 W	2	276	276	276
39	175 E	5	3112	3112	3112
39	176 E	1	648	648	648
39	175 W	1	467	467	467
39	170 W	1	700	700	700

Table 24. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
July	1 - 10				
39	175 E	10	4440	4440	4440
39	178 W	1	664	664	664
39	177 W	3	2100	2100	2100
39	172 W	1	300	300	300
39	171 W	1	414	414	414
40	175 E	1	664	664	664
40	179 W	1	664	664	664
40	178 W	6	3528	3528	3528
40	177 W	2	1400	1400	1400
40	175 W	1	700	700	700
40	172 W	3	840	840	840
40	171 W	3	2129	2129	2129
40	169 W	1	276	276	276
40	167 W	1	138	138	138
July	11 - 20				
39	175 E	1	480	480	480
40	175 E	1	720	720	720
40	177 E	1	480	480	480
40	178 E	1	240	240	240
40	179 E	1	480	480	480
40	179 W	2	896	896	896
40	178 W	1	656	656	656
40	172 W	2	696	696	696
40	171 W	12	7151	7151	7151
40	170 W	4	1974	1974	1974
41	176 W	1	480	480	480
41	171 W	1	708	708	708
July	21 - 30				
40	172 E	4	2640	2640	2640
40	173 E	4	2321	2321	2321
40	174 E	1	711	711	711
40	175 E	1	711	711	711
40	176 E	6	4308	4308	4308
40	178 W	2	1128	1128	1128
40	171 W	2	690	690	690
40	170 W	1	420	420	420
41	172 E	2	1422	1422	1422
41	173 E	1	711	711	711
41	175 E	3	1260	1260	1260
41	176 E	1	420	420	420
41	172 W	1	420	420	420

Table 24. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
August	1 - 10				
41	171 E	5	3120	3120	3120
41	172 E	4	2880	2880	2880
41	173 E	2	1422	1422	1422
41	176 E	3	1260	1260	1260
42	175 E	2	1422	1422	1422
42	176 E	5	2391	2391	2391
42	178 E	2	840	840	840
42	177 W	1	711	711	711
43	176 W	3	1956	1956	1956
August	11 - 20				
41	170 E	2	1440	1440	1440
41	171 E	2	1440	1440	1440
41	172 E	1	720	720	720
42	170 E	1	720	720	720
42	171 E	1	720	720	720
43	177 W	1	534	534	534
43	176 W	5	2796	2796	2796
August	21 - 31				
40	156 E	1	720	720	720
40	160 E	1	720	720	720
41	161 E	1	480	480	480

Table 25. Observed fishing effort in standardized tans (50m) and number of operations by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese large-mesh driftnet fishery; U.S. and Taiwanese observer data combined.

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
May	21 - 31				
32	175 E	2	1136	1136	1136
33	173 E	1	440	440	440
33	175 E	3	1742	1742	1742
33	174 W	4	1728	1728	1728
34	176 W	2	827	827	827
34	175 W	1	442	442	442
35	178 W	4	2440	2440	2440
June	1 - 10				
35	178 W	2	1328	1328	1328
35	175 W	1	432	432	432
35	174 W	3	1152	1152	1152
35	173 W	2	874	874	874
35	172 W	1	432	432	432
35	171 W	1	432	432	432
36	176 E	1	602	602	602
36	177 E	1	648	648	648
36	178 W	2	1296	1296	1296
36	176 W	2	1173	1173	1173
36	175 W	3	1435	1435	1435
36	174 W	1	578	578	578
36	173 W	1	581	581	581
37	178 W	1	640	640	640
37	176 W	1	403	403	403
June	11 - 20				
35	176 E	1	648	648	648
35	177 E	1	648	648	648
36	170 E	5	2214	2214	2214
36	175 E	6	2966	2966	2966
36	177 E	1	648	648	648
37	175 E	11	5603	5603	5603
37	176 E	8	3613	3613	3613
37	177 E	1	496	496	496
38	175 E	10	5979	5979	5979
38	176 E	2	863	863	863
38	177 E	1	420	420	420
38	178 E	1	744	744	744
39	175 E	3	1577	1577	1577

Table 25. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
June	21 - 30				
36	179 E	1	700	700	700
37	177 E	1	347	347	347
37	170 W	1	744	744	744
37	167 W	3	552	552	552
38	175 E	12	5748	5748	5748
38	177 E	1	360	360	360
38	175 W	1	467	467	467
38	174 W	2	1302	1302	1302
38	168 W	2	723	723	723
38	167 W	2	276	276	276
38	164 W	1	744	744	744
38	163 W	1	744	744	744
38	161 W	1	744	744	744
38	156 W	1	744	744	744
39	175 E	11	6282	6282	6282
39	176 E	1	648	648	648
39	179 E	1	347	347	347
39	175 W	1	467	467	467
39	174 W	1	217	217	217
39	170 W	1	700	700	700
July	1 - 10				
39	175 E	10	4440	4440	4440
39	178 W	3	1829	1829	1829
39	177 W	5	3216	3216	3216
39	172 W	1	300	300	300
39	171 W	1	414	414	414
39	156 W	1	744	744	744
39	155 W	2	1488	1488	1488
40	175 E	2	1216	1216	1216
40	179 E	1	601	601	601
40	179 W	2	1238	1238	1238
40	178 W	9	5174	5174	5174
40	177 W	6	3173	3173	3173
40	176 W	1	637	637	637
40	175 W	1	700	700	700
40	172 W	3	840	840	840
40	171 W	4	2731	2731	2731
40	169 W	1	276	276	276
40	168 W	1	744	744	744
40	167 W	1	138	138	138
40	159 W	1	744	744	744
40	157 W	1	744	744	744

Table 25. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
July	11 - 20				
39	175 E	1	480	480	480
40	175 E	1	720	720	720
40	177 E	1	480	480	480
40	178 E	2	790	790	790
40	179 E	3	1571	1571	1571
40	179 W	2	896	896	896
40	178 W	1	656	656	656
40	172 W	3	1298	1298	1298
40	171 W	13	7752	7752	7752
40	170 W	7	3388	3388	3388
40	169 W	1	744	744	744
41	176 W	1	480	480	480
41	171 W	1	708	708	708
41	169 W	2	1149	681	1149
41	168 W	1	591	367	591
41	167 W	1	586	341	586
July	21 - 31				
40	172 E	4	2640	2640	2640
40	173 E	4	2321	2321	2321
40	174 E	1	711	711	711
40	175 E	1	711	711	711
40	176 E	6	4308	4308	4308
40	178 W	2	1128	1128	1128
40	171 W	2	690	690	690
40	170 W	1	420	420	420
41	172 E	2	1422	1422	1422
41	173 E	1	711	711	711
41	175 E	3	1260	1260	1260
41	176 E	1	420	420	420
41	172 W	1	420	420	420
41	167 W	1	590	394	590
41	166 W	3	1766	1065	1766
41	159 W	4	2317	1363	2317
42	158 W	1	560	350	560
August	1 - 10				
41	171 E	5	3120	3120	3120
41	172 E	4	2880	2880	2880
41	173 E	2	1422	1422	1422
41	176 E	3	1260	1260	1260
42	175 E	2	1422	1422	1422
42	176 E	5	2391	2391	2391
42	178 E	2	840	840	840
42	177 W	1	711	711	711
42	161 W	3	1760	1066	1760
42	160 W	4	2262	1460	2262
43	176 W	3	1956	1956	1956
43	161 W	1	570	338	570

Table 25. (Continued)

1°X 1° Area		Number of	Fishing Effort in Tans (50m)		
Lat N	Long	Operations	Total	Squid	Pomfret
August	11 - 20				
41	170 E	2	1440	1440	1440
41	171 E	2	1440	1440	1440
41	172 E	1	720	720	720
41	178 E	4	1700	1700	1700
42	170 E	1	720	720	720
42	171 E	1	720	720	720
42	175 E	1	160	160	160
42	178 E	2	850	850	850
42	179 E	2	1200	1200	1200
42	179 W	1	480	480	480
42	163 W	1	580	348	451
43	179 E	1	480	480	480
43	177 W	1	534	534	534
43	176 W	5	2796	2796	2796
43	169 W	3	1750	1053	1750
43	162 W	3	1720	1039	1720
43	161 W	1	580	342	580
August	21 - 31				
40	156 E	1	720	720	720
40	160 E	1	720	720	720
41	161 E	1	480	480	480
41	174 E	1	425	425	425
42	176 E	1	720	720	720
43	178 W	2	960	960	960
43	172 W	3	1760	1047	1760
43	169 W	2	1145	696	1145
43	168 W	3	1740	1041	1740
43	167 W	1	570	336	570
September	1 - 10				
43	172 W	1	580	348	580
44	172 W	1	570	351	570

Table 26. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of tunas and billfishes and bycatch of squid and certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

	May	June	July	August	September	October	November	December	Total
Fishing Effort									
<u>In tans (m)</u>									
Total Effort	1763	25759	25689	21410	1150	0	0	0	75771
Number of Ops	4	48	44	40	2	0	0	0	138
Squid Effort	1763	25759	22691	15738	698	0	0	0	66649
P. Pomfret Effort	1763	25759	25689	21281	1150	0	0	0	75642
<u>Species/species group</u>									
Squid, Unidentifed	0	3	7	0	0	0	0	0	10
Squid, Other Identified	0	1	0	0	0	0	0	0	1
Neon Flying Squid	4	112	179	72	4	0	0	0	371
Pelagic Octopus, Unidentified	1	36	16	2	0	0	0	0	55
Salmonid, Unidentifed	0	0	1	0	0	0	0	0	1
Shark, Unidentified	2	37	4	1	0	0	0	0	44
Blue Shark	41	1997	1526	1820	65	0	0	0	5449
Salmon Shark	0	5	100	58	0	0	0	0	163
Common Thresher Shark	0	0	4	6	0	0	0	0	10
Short-finned Mako Shark	0	1	8	0	0	0	0	0	9
Ray, Unidentified	0	17	3	0	0	0	0	0	20
Pelagic Stingray	0	7	7	11	0	0	0	0	25
Diamond Stingray	0	3	4	10	0	0	0	0	17
Tuna, Unidentified	1	19	31	2	0	0	0	0	53
Albacore	704	10534	25219	17614	338	0	0	0	54409
Skipjack Tuna	11	56	0	6849	88	0	0	0	7004
Northern Bluefin Tuna	0	26	8	0	0	0	0	0	34
Bigeye Tuna	0	3	0	0	0	0	0	0	3
Yellowfin Tuna	0	3	1	33	0	0	0	0	37
Bullet Tuna	0	1	0	0	0	0	0	0	1
Billfish, Unidentified	0	0	1	4	0	0	0	0	5
Swordfish	4	53	127	339	17	0	0	0	540
Marlin, Unidentified	1	2	6	67	2	0	0	0	78
Striped Marlin	0	1	22	25	1	0	0	0	49
Pacific Blue Marlin	0	6	9	28	0	0	0	0	43
Shortnose Spearfish	0	4	24	22	1	0	0	0	51
Fish, Unidentified	8	275	33	27	0	0	0	0	343
Lancetfish/Daggertooth, Unidentified	0	1	3	0	0	0	0	0	4
Longnose Lancetfish	3	3	4	14	0	0	0	0	24
Flying Fish, Unidentified	0	5	0	0	0	0	0	0	5
Pacific Saury	0	0	7	21	0	0	0	0	28

Table 26. (Continued)

	May	June	July	August	September	October	November	December	Total
Opah	0	0	8	5	0	0	0	0	13
Pilotfish	0	0	0	0	1	0	0	0	1
Jack, Unidentified	0	0	0	1	0	0	0	0	1
Jackmackerel	0	1	0	0	0	0	0	0	1
Yellowtail	1	14	111	41	0	0	0	0	167
Mahi Mahi	43	167	23	249	0	0	0	0	482
Pomfret, Unidentified	0	0	1	0	0	0	0	0	1
Pacific Pomfret	43	836	7476	30806	2	0	0	0	39163
Pelagic Armorhead	0	0	213	326	0	0	0	0	539
Escolar	0	2	0	0	0	0	0	0	2
Oilfish	0	54	1	1	0	0	0	0	56
Louvar	0	68	327	152	0	0	0	0	547
Ragfish	0	14	0	0	1	0	0	0	15
Oceanic Puffer	0	0	1	2	0	0	0	0	3
Ocean Sunfish	0	71	418	325	4	0	0	0	818
Bird, Unidentified	0	2	5	1	0	0	0	0	8
Laysan Albatross	0	2	1	3	0	0	0	0	6
Black-footed Albatross	0	0	0	3	0	0	0	0	3
Fulmar/Petrel, Unidentified	0	1	0	0	0	0	0	0	1
Shearwater, Unidentified	0	2	0	0	0	0	0	0	2
Buller's Shearwater	0	0	1	3	0	0	0	0	4
Sooty Shearwater	0	3	1	0	0	0	0	0	4
Short-tailed Shearwater	0	0	0	1	0	0	0	0	1
Dark Shearwater, Unidentified	0	5	0	1	0	0	0	0	6
Storm-petrel, Unidentified	0	0	0	3	0	0	0	0	3
Tristram's Storm-petrel	0	0	0	1	0	0	0	0	1
Northern Fur Seal	0	3	2	7	0	0	0	0	12
Dolphin/Porpoise, Unidentified	3	4	1	2	0	0	0	0	10
Dall's Porpoise, Type Unknown	0	1	0	0	0	0	0	0	1
Northern Right Whale Dolphin	0	8	18	14	0	0	0	0	40
Pacific White-sided Dolphin	0	1	0	0	1	0	0	0	2
Common Dolphin	4	41	0	2	0	0	0	0	47
Striped Dolphin	1	18	1	1	0	0	0	0	21
Bottlenose Dolphin	0	0	2	0	0	0	0	0	2
Risso's Dolphin	0	1	0	0	0	0	0	0	1
Kogia, unidentified	0	0	1	0	0	0	0	0	1
Pygmy Sperm Whale	0	2	1	0	0	0	0	0	3
Dwarf Sperm Whale	0	1	0	0	0	0	0	0	1
Black Whale, Unidentified	0	0	3	0	0	0	0	0	3
Beaked Whale, Unidentified	0	0	3	0	0	0	0	0	3
Turtle, Unidentified	2	12	3	1	0	0	0	0	18
Leatherback Turtle	0	1	3	4	0	0	0	0	8
Loggerhead Turtle	0	8	0	0	0	0	0	0	8

Table 27. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of tunas and billfishes and bycatch of squid and certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

	May	June	July	August	September	October	November	December	Total
Fishing Effort									
In tans (m)									
Total Effort	6992	35516	50380	26294	0	0	0	0	119182
Number of Ops	13	72	92	43	0	0	0	0	220
Squid Effort	6992	35516	50380	26294	0	0	0	0	119182
P. Pomfret Effort	6992	35516	50380	26294	0	0	0	0	119182
Species/species group									
Squid, Unidentifed	0	0	6	0	0	0	0	0	6
Neon Flying Squid	0	27	110	14	0	0	0	0	151
Eight-armed Squid	0	7	40	124	0	0	0	0	171
Boreal Clubhook Squid	0	32	0	0	0	0	0	0	32
Shark, Unidentified	0	278	1406	314	0	0	0	0	1998
Blue Shark	103	383	205	0	0	0	0	0	691
Salmon Shark	1	0	0	0	0	0	0	0	1
White Shark	0	0	54	411	0	0	0	0	465
Ray, Unidentified	0	0	8	1	0	0	0	0	9
Albacore	2629	17113	58293	20481	0	0	0	0	98516
Skipjack Tuna	104	20	426	5026	0	0	0	0	5576
Northern Bluefin Tuna	0	2	0	0	0	0	0	0	2
Bigeye Tuna	24	32	26	9	0	0	0	0	91
Yellowfin Tuna	0	22	0	2	0	0	0	0	24
Billfish, Unidentified	0	1	24	100	0	0	0	0	125
Swordfish	1	10	146	85	0	0	0	0	242
Striped Marlin	0	3	117	18	0	0	0	0	138
Fish, Unidentified	504	3818	3133	202	0	0	0	0	7657
Opah	0	0	104	88	0	0	0	0	192
Yellowtail	3	1	0	0	0	0	0	0	4
Mahi Mahi	0	15	31	34	0	0	0	0	80
Pacific Pomfret	0	327	176	104	0	0	0	0	607
Wahoo	0	2	0	43	0	0	0	0	45
Oilfish	0	0	0	18	0	0	0	0	18
Ocean Sunfish	0	0	77	110	0	0	0	0	187
Shearwater, Unidentified	0	12	4	1	0	0	0	0	17
Dolphin/Porpoise, Unidentified	4	164	14	9	0	0	0	0	191
Northern Right Whale Dolphin	0	1	0	0	0	0	0	0	1
Pacific White-sided Dolphin	4	0	0	0	0	0	0	0	4
Turtle, Unidentified	5	25	10	2	0	0	0	0	42

Table 28. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of tunas and billfishes and bycatch of squid and certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

	Vessel License Number						
	60510	60595	60776	70149	70270	70277	Total
Fishing Effort							
In tans (50m)							
Total Effort	2974	4000	11736	19661	23144	14256	75771
Number of Ops	7	8	17	39	40	27	138
Squid Effort	2974	4000	11736	19661	14023	14256	66649
P. Pomfret Effort	2974	4000	11736	19661	23015	14256	75642
Species/species group							
Squid, Unidentifed	0	0	0	0	0	10	10
Squid, Other Identified	0	0	1	0	0	0	1
Neon Flying Squid	8	2	5	120	104	132	371
Pelagic Octopus, Unidentified	0	2	0	53	0	0	55
Salmonid, Unidentifed	0	0	0	1	0	0	1
Shark, Unidentified	0	1	0	5	3	35	44
Blue Shark	196	245	1717	1075	1802	414	5449
Salmon Shark	1	0	0	97	59	6	163
Common Thresher Shark	0	2	0	1	6	1	10
Short-finned Mako Shark	0	0	5	4	0	0	9
Ray, Unidentified	0	0	0	18	1	1	20
Pelagic Stingray	5	0	0	0	13	7	25
Diamond Stingray	0	10	7	0	0	0	17
Tuna, Unidentified	1	0	1	4	31	16	53
Albacore	321	1413	1724	15965	21536	13450	54409
Skipjack Tuna	4489	1208	56	11	1240	0	7004
Northern Bluefin Tuna	0	0	28	0	0	6	34
Bigeye Tuna	0	0	0	0	0	3	3
Yellowfin Tuna	33	0	3	0	0	1	37
Bullet Tuna	0	0	1	0	0	0	1
Billfish, Unidentified	4	0	0	0	1	0	5
Swordfish	53	51	38	56	325	17	540
Marlin, Unidentified	46	5	0	6	21	0	78
Striped Marlin	0	15	0	17	17	0	49
Pacific Blue Marlin	0	28	15	0	0	0	43
Shortnose Spearfish	2	14	12	13	10	0	51
Fish, Unidentified	10	5	181	47	20	80	343

Table 28. (Continued)

	Vessel License Number						
	60510	60595	60776	70149	70270	70277	Total
Lancetfish/Daggertooth, Unidentified	0	0	0	4	0	0	4
Longnose Lancetfish	0	0	3	3	16	2	24
Flying Fish, Unidentified	0	0	0	5	0	0	5
Pacific Saury	0	4	0	0	24	0	28
Opah	0	0	2	0	11	0	13
Pilotfish	0	0	0	0	1	0	1
Jack, Unidentified	0	0	0	0	1	0	1
Jackmackerel	0	0	1	0	0	0	1
Yellowtail	1	8	1	56	39	62	167
Mahi Mahi	205	43	20	195	1	18	482
Pomfret, Unidentified	0	0	0	0	1	0	1
Pacific Pomfret	6	21	28	4186	34110	812	39163
Pelagic Armorhead	0	0	0	0	539	0	539
Escolar	0	0	0	2	0	0	2
Oilfish	0	0	0	21	1	34	56
Louvar	1	7	91	127	296	25	547
Ragfish	0	0	10	4	1	0	15
Oceanic Puffer	2	0	0	1	0	0	3
Ocean Sunfish	19	10	45	155	508	81	818
Bird, Unidentified	0	0	1	1	5	1	8
Laysan Albatross	0	0	0	0	4	2	6
Black-footed Albatross	0	0	0	0	3	0	3
Fulmar/Petrel, Unidentified	0	0	0	1	0	0	1
Shearwater, Unidentified	0	0	0	2	0	0	2
Buller's Shearwater	0	0	0	0	3	1	4
Sooty Shearwater	0	0	0	0	0	4	4
Short-tailed Shearwater	0	0	0	0	1	0	1
Dark Shearwater, Unidentified	0	0	0	0	1	5	6
Storm-petrel, Unidentified	0	0	0	0	3	0	3
Tristram's Storm-petrel	0	0	0	0	1	0	1
Northern Fur Seal	0	0	1	2	9	0	12
Dolphin/Porpoise, Unidentified	0	2	2	4	0	2	10
Dall's Porpoise, Type Unknown	0	0	1	0	0	0	1
Northern Right Whale Dolphin	0	0	12	8	18	2	40
Pacific White-sided Dolphin	0	0	0	1	1	0	2
Common Dolphin	0	2	0	31	0	14	47
Striped Dolphin	0	0	11	6	1	3	21
Bottlenose Dolphin	0	0	0	2	0	0	2

Table 28. (Continued)

	Vessel License Number						
	60510	60595	60776	70149	70270	70277	Total
Risso's Dolphin	0	0	1	0	0	0	1
Kogia, unidentified	0	0	0	0	0	1	1
Pygmy Sperm Whale	0	0	0	3	0	0	3
Dwarf Sperm Whale	0	0	0	0	0	1	1
Black Whale, Unidentified	0	0	0	3	0	0	3
Beaked Whale, Unidentified	0	0	0	1	2	0	3
Turtle, Unidentified	1	0	1	16	0	0	18
Leatherback Turtle	0	3	2	0	3	0	8
Loggerhead Turtle	0	0	0	0	0	8	8

Table 29. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of tunas and billfishes and bycatch of squid and certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

	Vessel License Number					
	60073	60681	60925	61218	70267	Total
Fishing Effort In tans (50m)						
Total Effort	22320	26696	17558	18672	33936	119183
Number of Ops	34	44	50	42	50	220
Squid Effort	22320	26696	17558	18672	33936	119183
P. Pomfret Effort	22320	26696	17558	18672	33936	119183
Species/species group						
Squid, Unidentifed	0	0	0	0	6	6
Neon Flying Squid	0	35	3	44	69	151
Eight-armed Squid	158	0	0	0	13	171
Boreal Clubhook Squid	0	0	0	31	1	32
Shark, Unidentified	12	0	0	0	1986	1998
Blue Shark	0	690	0	1	0	691
Salmon Shark	0	1	0	0	0	1
White Shark	465	0	0	0	0	465
Ray, Unidentified	7	0	0	0	2	9
Albacore	11885	15215	16866	29443	25107	98516
Skipjack Tuna	5083	124	0	0	369	5576
Northern Bluefin Tuna	0	0	0	1	1	2
Bigeye Tuna	4	6	1	26	54	91
Yellowfin Tuna	2	22	0	0	0	24
Billfish, Unidentified	111	0	0	0	14	125
Swordfish	0	0	0	22	220	242
Striped Marlin	0	0	0	4	134	138
Fish, Unidentified	284	855	0	6496	22	7657
Opah	6	0	0	0	186	192
Yellowtail	0	1	0	3	0	4
Mahi Mahi	31	0	0	0	49	80
Pacific Pomfret	40	2	0	0	565	607

Table 29. (Continued)

	Vessel License Number					
	60073	60681	60925	61218	70267	Total
Wahoo	43	0	0	2	0	45
Oilfish	18	0	0	0	0	18
Ocean Sunfish	9	0	0	0	178	187
Shearwater, Unidentified	0	1	6	4	6	16
Dolphin/Porpoise, Unidentified	9	44	11	79	48	191
Northern Right Whale Dolphin	0	1	0	0	0	1
Pacific White-sided Dolphin	0	4	0	0	0	4
Turtle, Unidentified	3	14	0	14	11	42

Table 30. Observed bycatch of flying squid and Pacific pomfret, observed fishing effort in standardized tans, and bycatch per 1000 tans of flying squid and Pacific pomfret by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

1°x1° Area		Observed Bycatch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
May 21-31							
34	176 W	0	33	827	827	0.0	39.90
34	175 W	0	2	442	442	0.0	4.52
33	175 E	4	8	494	494	8.1	16.19
June 1-10							
37	176 W	6	12	403	403	14.9	29.78
36	176 E	1	4	602	602	1.7	6.64
36	176 W	0	33	1,173	1,173	0.0	28.13
36	175 W	2	5	571	571	3.5	8.76
36	174 W	0	1	578	578	0.0	1.73
36	173 W	0	5	581	581	0.0	8.61
35	173 W	1	10	442	442	2.3	22.62
June 11-20							
39	175 E	1	2	489	489	2.0	4.09
38	175 E	2	6	535	535	3.7	11.21
38	176 E	2	7	863	863	2.3	8.11
37	175 E	8	8	2,503	2,503	3.2	3.20
37	176 E	29	23	2,515	2,515	11.5	9.15
36	175 E	27	97	2,690	2,690	10.0	36.06
June 21-30							
39	175 E	16	38	3,170	3,170	5.0	11.99
39	179 E	3	354	347	347	8.6	1,020.17
39	174 W	0	189	217	217	0.0	870.97
38	175 E	1	0	516	516	1.9	0.00
38	174 W	1	15	602	602	1.7	24.92
38	168 W	0	12	585	585	0.0	20.51
38	164 W	0	3	744	744	0.0	4.03
38	163 W	0	1	744	744	0.0	1.34
38	161 W	0	1	744	744	0.0	1.34
38	156 W	0	1	744	744	0.0	1.34
37	177 E	12	4	347	347	34.6	11.53
37	170 W	0	5	744	744	0.0	6.72
July 1-10							
40	175 E	0	11	552	552	0.0	19.93
40	179 E	0	175	601	601	0.0	291.18
40	179 W	0	26	574	574	0.0	45.30
40	178 W	0	74	1,646	1,646	0.0	44.96
40	177 W	2	160	1,773	1,773	1.1	90.24
40	176 W	18	2,282	637	637	28.3	3,582.42
40	171 W	1	0	602	602	1.7	3,582.42
40	159 W	0	5	744	744	0.0	6.72
40	157 W	0	4	744	744	0.0	5.38
39	178 W	0	72	1,165	1,165	0.0	61.80
39	177 W	0	138	1,116	1,116	0.0	123.66
39	156 W	0	2	744	744	0.0	2.69
39	155 W	5	3	1,488	1,488	3.4	2.02

Table 30. (Continued)

1°x1° Area		Observed Bycatch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
July 11-20							
41	169 W	1	96	681	1,149	1.5	83.55
41	168 W	1	473	367	591	2.7	800.34
41	167 W	0	632	341	586	0.0	1,078.50
40	178 E	101	70	550	550	183.6	127.27
40	179 E	1	323	1,091	1,091	0.9	296.06
40	172 W	2	288	602	602	3.3	478.41
40	171 W	1	192	601	601	1.7	319.47
40	170 W	10	319	1,414	1,414	7.1	225.60
40	169 W	0	3	744	744	0.0	4.03
July 21-30							
42	158 W	16	3	350	560	45.7	5.36
41	167 W	13	607	394	590	33.0	1,028.81
41	166 W	3	1,507	1,065	1,766	2.8	853.34
41	159 W	4	11	1,363	2,317	2.9	4.75
August 1-10							
43	161 W	3	117	338	570	8.9	205.26
42	161 W	11	955	1,066	1,760	10.3	542.61
42	160 W	11	1,053	1,460	2,262	7.5	465.52
August 11-20							
43	179 E	0	1	480	480	0.0	2.08
43	169 W	9	273	1,053	1,750	8.5	156.00
43	162 W	8	449	1,039	1,720	7.7	261.05
43	161 W	3	8	342	580	8.8	13.79
42	178 E	0	2	850	850	0.0	2.35
42	179 E	1	16	1,200	1,200	0.8	13.33
42	163 W	0	309	348	451	0.0	532.76
41	178 E	8	4	1,700	1,700	4.7	2.35
August 21-31							
43	178 W	1	1	960	960	1.0	1.04
43	172 W	5	174	1,047	1,760	4.8	98.86
43	169 W	7	80	696	1,145	10.1	69.87
43	168 W	5	14,738	1,041	1,740	4.8	8,470.12
43	167 W	0	12,623	336	570	0.0	22,145.61
42	176 E	0	3	720	720	0.0	4.17
September 1-10							
44	172 W	1	1	351	570	2.8	1.75
43	172 W	3	1	348	580	8.6	1.72

Table 31. Observed bycatch of flying squid and Pacific pomfret, observed fishing effort in standardized tans, and bycatch per 1000 tans of flying squid and Pacific pomfret by 1° x 1° statistical area and 10-day period in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

1°x1° Area		Observed Bycatch in Number		Tans(50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Pomfret	Squid	Pomfret	Flying squid	Pomfret
June 1-10							
36	178 W	2	2	1,296	1,296	1.5	1.54
June 11-20							
38	175 E	4	0	5,444	5,444	0.7	0.00
36	177 E	3	0	648	648	4.6	0.00
35	177 E	1	0	648	648	1.5	0.00
June 21-30							
39	175 E	8	0	3,112	3,112	2.6	0.00
39	176 E	1	0	648	648	1.5	0.00
39	170 W	6	320	700	700	8.6	457.14
38	175 E	2	0	5,232	5,232	0.4	0.00
38	174 W	0	5	700	700	0.0	7.14
July 1-10							
40	175 E	2	0	664	664	3.0	0.00
40	178 W	15	0	3,528	3,528	4.3	0.00
40	177 W	6	25	1,400	1,400	4.3	17.86
40	175 W	2	50	700	700	2.9	71.43
40	171 W	9	0	2,129	2,129	4.2	0.00
39	175 E	43	0	4,440	4,440	9.7	0.00
39	177 W	0	11	2,100	2,100	0.0	5.24
July 11-20							
41	176 W	0	20	480	480	9.7	41.67
41	171 W	1	20	708	708	1.4	28.25
40	179 E	0	16	480	480	0.0	33.33
40	171 W	16	18	7,151	7,151	2.2	2.52
40	170 W	0	12	1,974	1,974	0.0	6.08
July 21-30							
41	172 E	15	0	1,422	1,422	10.5	0.00
40	172 E	0	2	2,640	2,640	0.0	0.76
40	176 E	0	2	4,308	4,308	0.0	0.46
40	178 W	1	0	1,128	1,128	0.9	0.00
August 1-10							
43	176 W	0	51	1,956	1,956	0.0	26.07
42	175 E	3	0	1,422	1,422	2.1	26.07
42	177 W	5	53	711	711	7.0	74.54
August 11-20							
43	176 W	6	0	2,796	2,796	2.1	0.00

Table 32. Observed catch of albacore, skipjack tuna and bycatch of blue shark, observed fishing effort in standardized tans, and catch per 1000 tans of albacore, skipjack tuna and bycatch per 1000 tans of blue shark by 1° x 1° statistical area and month in the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

1° x 1° Area		Observed Catch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skip-jack	(50m)	Blue Shark	Albacore	Skip-jack
May								
33	175 E	24	214	3	494	48.58	433.20	6.07
34	176 W	16	460	0	827	19.35	556.36	0.00
34	175 W	1	30	8	442	2.26	67.87	18.10
June								
35	173 W	41	89	0	442	92.76	201.36	0.00
36	170 E	112	54	6	1,074	104.32	50.30	5.59
36	175 E	95	1,664	44	2,689	35.33	618.84	16.36
36	176 E	19	324	0	602	31.56	538.21	0.00
36	176 W	44	475	0	1,173	37.53	405.12	0.00
36	175 W	24	77	0	571	42.07	134.97	0.00
36	174 W	2	10	0	578	3.46	17.32	0.00
36	173 W	50	316	0	581	86.06	543.89	0.00
37	175 E	16	1,203	0	2,503	6.39	480.58	0.00
37	176 E	166	2,494	0	2,515	66.00	991.61	0.00
37	177 E	89	120	0	843	105.64	142.43	0.00
37	176 W	1	26	0	403	2.48	64.60	0.00
37	170 W	194	33	0	744	260.75	44.35	0.00
38	175 E	78	546	0	1,051	74.20	519.41	0.00
38	176 E	81	592	0	863	93.84	685.82	0.00
38	178 E	7	0	0	744	9.41	0.00	0.00
38	174 W	58	15	0	602	96.35	24.92	0.00
38	168 W	235	40	0	585	402.05	68.43	0.00
38	164 W	214	92	0	744	287.63	123.66	0.00
38	163 W	30	2	0	744	40.32	2.69	0.00
38	161 W	97	63	3	744	130.38	84.68	4.03
38	156 W	165	131	3	744	221.77	176.08	4.03
39	175 E	172	2,156	0	3,659	47.00	589.20	0.00
39	179 E	4	11	0	347	11.54	31.75	0.00
39	174 W	3	1	0	217	13.82	4.61	0.00
July								
39	178 W	13	2,889	0	1,165	11.16	2480.25	0.00
39	177 W	31	3,521	0	1,116	27.78	3155.58	0.00
39	156 W	186	249	0	744	250.00	334.68	0.00
39	155 W	267	499	0	1,488	179.44	335.35	0.00
40	175 E	10	35	0	552	18.12	63.41	0.00
40	178 E	2	37	0	550	3.64	67.32	0.00
40	179 E	33	3,897	0	1,692	19.50	2303.19	0.00
40	179 W	1	928	0	574	1.74	1615.60	0.00
40	178 W	8	1,167	0	1,646	4.86	708.82	0.00
40	177 W	19	2,080	0	1,772	10.72	1173.55	0.00
40	176 W	23	44	0	637	36.11	69.07	0.00
40	172 W	26	1,733	0	602	43.19	2878.74	0.00
40	171 W	141	519	0	1,203	117.25	431.56	0.00
40	170 W	40	1,815	0	1,414	28.29	1283.59	0.00

Table 32. (Continued)

1° x 1° Area		Observed Catch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skip-jack	(50m)	Blue Shark	Albacore	Skip-jack
July (Continued)								
40	169 W	34	77	0	744	45.70	103.49	0.00
40	168 W	196	178	0	744	263.44	239.25	0.00
40	159 W	40	47	0	744	53.76	63.17	0.00
40	157 W	98	186	0	744	131.72	250.00	0.00
41	169 W	16	449	0	1,149	13.93	390.84	0.00
41	168 W	11	99	0	591	18.61	167.46	0.00
41	167 W	35	1,818	0	1,177	29.74	1544.87	0.00
41	166 W	80	1,508	0	1,766	45.31	854.10	0.00
41	159 W	165	1,278	0	2,316	71.24	551.81	0.00
42	158 W	51	166	0	560	91.07	296.43	0.00
August								
41	174 E	38	21	319	425	89.45	49.44	750.94
41	178 E	132	111	2,527	1,699	77.68	65.32	1487.17
42	175 E	9	17	85	160	56.25	106.25	531.25
42	176 E	29	26	344	720	40.28	36.11	477.78
42	178 E	26	189	1,643	850	30.60	222.46	1933.85
42	179 E	85	825	271	1,200	70.83	687.50	225.83
42	179 W	42	56	81	480	87.50	116.67	168.75
42	163 W	28	462	0	580	48.28	796.55	0.00
42	161 W	74	3,744	0	1,761	42.03	2126.31	0.00
42	160 W	67	3,173	0	2,262	29.63	1402.99	0.00
43	179 E	20	69	50	480	41.67	143.75	104.17
43	178 W	60	420	377	960	62.50	437.50	392.71
43	172 W	398	304	1,052	1,760	226.14	172.73	597.73
43	169 W	250	3,306	7	2,894	86.37	1142.21	2.42
43	168 W	197	288	91	1,740	113.22	165.52	52.30
43	167 W	233	45	2	570	409.06	79.00	3.51
43	162 W	76	2,118	0	1,720	44.19	1231.40	0.00
43	161 W	56	2,440	0	1,150	48.71	2122.48	0.00
September								
43	172 W	58	99	62	580	100.00	170.69	106.90
44	172 W	7	239	26	570	12.29	419.59	45.65

Table 33. Observed catch of albacore, skipjack tuna and bycatch of blue shark, observed fishing effort in standardized tans, and catch per 1000 tans of albacore, skipjack tuna and bycatch per 1000 tans of blue shark by 1° x 1° statistical area and month in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

1° x 1° Area		Observed Catch in Number				CPUE (Number per 1000 tans)		
Lat.	Long.	Blue Shark	Albacore	Skip-jack	Tans (50m)	Blue Shark	Albacore	Skip-jack
May								
32	175 E	16	180	22	1,136	14.08	158.45	19.37
33	173 E	12	67	0	440	27.27	152.27	0.00
33	175 E	24	357	23	1,248	19.23	286.06	18.43
33	174 W	1	1,036	0	1,728	0.58	599.54	0.00
35	178 W	50	989	59	2,440	20.49	405.33	24.18
June								
35	176 E	26	10	0	648	40.12	15.43	0.00
35	177 E	21	39	0	648	32.41	60.19	0.00
35	178 W	27	439	20	1,328	20.33	330.57	15.06
35	175 W	0	807	0	432	0.00	1868.06	0.00
35	174 W	0	156	0	1,152	0.00	135.42	0.00
35	173 W	0	171	0	432	0.00	395.83	0.00
35	172 W	0	78	0	432	0.00	180.56	0.00
35	171 W	0	22	0	432	0.00	50.93	0.00
36	170 E	0	560	0	1,140	0.00	491.23	0.00
36	175 E	0	7	0	276	0.00	25.36	0.00
36	177 E	96	104	0	1,296	74.07	80.25	0.00
36	179 E	0	2	0	700	0.00	2.86	0.00
36	178 W	16	124	0	1,296	12.35	95.68	0.00
36	175 W	0	479	0	864	0.00	554.40	0.00
37	175 E	0	3,347	0	3,100	0.00	1079.73	0.00
37	176 E	0	492	0	1,098	0.00	448.09	0.00
37	178 W	12	211	0	640	18.75	329.69	0.00
37	167 W	0	70	0	552	0.00	126.81	0.00
38	175 E	105	7,050	0	10,676	9.84	660.39	0.00
38	177 E	0	460	0	780	0.00	589.74	0.00
38	174 W	0	20	0	700	0.00	28.58	0.00
38	168 W	0	20	0	138	0.00	144.93	0.00
38	167 W	0	20	0	276	0.00	72.46	0.00
39	175 E	74	2,248	0	4,200	17.62	535.24	0.00
39	176 E	6	149	0	648	9.26	229.94	0.00
39	175 W	0	28	0	467	0.00	60.01	0.00
July								
39	175 E	0	19,627	0	4,920	0.00	3989.23	0.00
39	178 W	14	2,858	0	664	21.08	4304.22	0.00
39	177 W	0	2,264	0	2,100	0.00	1078.34	0.00
39	172 W	0	775	0	300	0.00	2583.33	0.00
39	171 W	0	730	0	414	0.00	1763.29	0.00
40	172 E	0	1,200	33	2,640	0.00	454.55	12.50
40	173 E	0	3,847	191	2,321	0.00	1657.79	82.31
40	174 E	0	570	32	711	0.00	801.28	44.98
40	175 E	9	329	166	2,095	4.30	157.01	79.22
40	176 E	0	5,681	0	4,308	0.00	1318.56	0.00
40	177 E	0	16	0	480	0.00	33.33	0.00
40	178 E	0	29	0	240	0.00	120.83	0.00

Table 33. (Continued)

1° x 1° Area Lat.	Long.	Observed Catch in Number: Blue Shark	Albacore	Skip-jack	Tans (50m)	CPUE (Number per 1000 tans): Blue Shark	Albacore	Skip-jack
July (Continued)								
40	179 E	0	21	0	480	0.00	43.75	0.00
40	179 W	40	2,274	0	1,560	25.64	1457.69	0.00
40	178 W	142	2,972	0	5,312	26.73	559.44	0.00
40	177 W	0	775	0	1,400	0.00	553.70	0.00
40	175 W	0	35	0	700	0.00	50.01	0.00
40	172 W	0	1,600	0	1,536	0.00	1041.67	0.00
40	171 W	0	7,444	0	9,968	0.00	746.77	0.00
40	170 W	0	1,324	0	2,394	0.00	552.99	0.00
40	169 W	0	30	0	276	0.00	108.70	0.00
40	167 W	0	12	0	138	0.00	86.96	0.00
41	172 E	0	900	4	1,423	0.00	632.59	2.81
41	173 E	0	905	0	711	0.00	1272.21	0.00
41	175 E	0	1,340	0	1,260	0.00	1063.49	0.00
41	176 E	0	600	0	420	0.00	1428.57	0.00
41	176 W	0	30	0	480	0.00	62.50	0.00
41	172 W	0	45	0	420	0.00	107.14	0.00
41	171 W	0	60	0	708	0.00	84.69	0.00
August								
40	156 E	0	0	350	720	0.00	0.00	486.11
40	160 E	0	18	550	720	0.00	25.00	763.89
41	161 E	0	0	285	480	0.00	0.00	593.75
41	170 E	0	28	50	1,440	0.00	19.44	34.72
41	171 E	0	3,254	3,318	4,560	0.00	713.60	727.63
41	172 E	0	1,324	236	3,600	0.00	367.78	65.56
41	173 E	0	845	0	1,423	0.00	593.93	0.00
41	176 E	0	780	0	1,260	0.00	619.05	0.00
42	170 E	0	30	75	720	0.00	41.67	104.17
42	171 E	0	53	145	720	0.00	73.61	201.39
42	175 E	0	750	17	1,423	0.00	527.16	11.95
42	176 E	0	2,620	0	2,391	0.00	1095.61	0.00
42	178 E	0	1,860	0	840	0.00	2214.29	0.00
42	177 W	0	720	0	711	0.00	1012.15	0.00
43	177 W	0	670	0	534	0.00	1255.81	0.00
43	176 W	0	7,529	0	4,752	0.00	1584.23	0.00

Table 34. Observed catch and catch per 1000 tans of other tunas, billfishes and marlins, and unidentified tunas, billfishes and marlins by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

Start of Retrieval	Location		Catch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
5	33	175 E	1	494	2.02	120	Tuna, Unidentified
5	33	175 E	1	494	2.02	141	Swordfish
5	34	176 W	2	827	2.42	141	Swordfish
5	34	175 W	1	442	2.26	141	Swordfish
5	33	175 E	1	494	2.02	142	Marlin, Unidentified
6	35	173 W	1	442	2.26	120	Tuna, Unidentified
6	36	170 E	1	1,074	0.93	120	Tuna, Unidentified
6	36	176 E	1	602	1.66	120	Tuna, Unidentified
6	37	175 E	16	2,503	6.39	120	Tuna, Unidentified
6	36	170 E	1	1,074	0.93	123	Northern Bluefin Tuna
6	36	175 E	7	2,689	2.60	123	Northern Bluefin Tuna
6	37	177 E	5	843	5.93	123	Northern Bluefin Tuna
6	37	170 W	7	744	9.41	123	Northern Bluefin Tuna
6	39	175 E	6	3,659	1.64	123	Northern Bluefin Tuna
6	39	175 E	3	3,659	0.82	124	Bigeye Tuna
6	36	170 E	1	1,074	0.93	125	Yellowfin Tuna
6	38	163 W	1	744	1.34	125	Yellowfin Tuna
6	39	175 E	1	3,659	0.27	125	Yellowfin Tuna
6	38	163 W	1	744	1.34	126	Bullet Tuna
6	35	173 W	3	442	6.79	141	Swordfish
6	36	170 E	4	1,074	3.73	141	Swordfish
6	36	175 E	1	2,689	0.37	141	Swordfish
6	36	173 W	1	581	1.72	141	Swordfish
6	37	175 E	3	2,503	1.20	141	Swordfish
6	37	176 E	3	2,515	1.19	141	Swordfish
6	37	177 E	1	843	1.19	141	Swordfish
6	37	170 W	7	744	9.41	141	Swordfish
6	38	175 E	6	1,051	5.71	141	Swordfish
6	38	174 W	3	602	4.98	141	Swordfish
6	38	168 W	9	585	15.40	141	Swordfish
6	38	161 W	4	744	5.38	141	Swordfish
6	38	156 W	2	744	2.69	141	Swordfish
6	39	175 E	6	3,659	1.64	141	Swordfish
6	36	175 E	1	2,689	0.37	142	Marlin, Unidentified
6	38	168 W	1	585	1.71	142	Marlin, Unidentified
6	38	168 W	1	585	1.71	143	Striped Marlin
7	40	177 W	1	1,772	0.56	120	Tuna, Unidentified
7	41	169 W	30	1,149	26.11	120	Tuna, Unidentified
7	40	168 W	6	744	8.06	123	Northern Bluefin Tuna
7	40	157 W	2	744	2.69	123	Northern Bluefin Tuna
7	39	155 W	1	1,488	0.67	125	Yellowfin Tuna
7	42	158 W	1	560	1.79	140	Billfish, Unidentified
7	39	177 W	2	1,116	1.79	141	Swordfish
7	39	156 W	1	744	1.34	141	Swordfish
7	39	155 W	3	1,488	2.02	141	Swordfish
7	40	175 E	1	552	1.81	141	Swordfish
7	40	179 W	1	574	1.74	141	Swordfish
7	40	172 W	3	602	4.98	141	Swordfish
7	40	171 W	14	1,203	11.64	141	Swordfish
7	40	170 W	13	1,414	9.19	141	Swordfish
7	40	169 W	3	744	4.03	141	Swordfish
7	40	168 W	12	744	16.13	141	Swordfish

Table 34. (Continued)

Start of Retrieval Month	Location Lat°N	Long°	Catch (No.)	Tans (50m)	CPUE	Code	Species Name
7	40	157 W	1	744	1.34	141	Swordfish
7	41	169 W	3	1,149	2.61	141	Swordfish
7	41	167 W	1	1,177	0.85	141	Swordfish
7	41	166 W	2	1,766	1.13	141	Swordfish
7	41	159 W	64	2,316	27.63	141	Swordfish
7	42	158 W	3	560	5.36	141	Swordfish
7	40	170 W	3	1,414	2.12	142	Marlin, Unidentified
7	41	159 W	3	2,316	1.30	142	Marlin, Unidentified
7	40	171 W	15	1,203	12.47	143	Striped Marlin
7	40	170 W	1	1,414	0.71	143	Striped Marlin
7	41	159 W	2	2,316	0.86	143	Striped Marlin
7	42	158 W	4	560	7.14	143	Striped Marlin
8	41	178 E	1	1,699	0.59	120	Tuna, Unidentified
8	42	161 W	1	1,761	0.57	120	Tuna, Unidentified
8	41	178 E	11	1,699	6.47	125	Yellowfin Tuna
8	42	178 E	22	850	25.89	125	Yellowfin Tuna
8	42	178 E	4	850	4.71	140	Billfish, Unidentified
8	41	174 E	3	425	7.06	141	Swordfish
8	41	178 E	38	1,699	22.36	141	Swordfish
8	42	175 E	2	160	12.50	141	Swordfish
8	42	176 E	6	720	8.33	141	Swordfish
8	42	178 E	12	850	14.12	141	Swordfish
8	42	179 E	16	1,200	13.33	141	Swordfish
8	42	179 W	6	480	12.50	141	Swordfish
8	42	163 W	12	580	20.69	141	Swordfish
8	42	161 W	26	1,761	14.77	141	Swordfish
8	42	160 W	39	2,262	17.24	141	Swordfish
8	43	179 E	3	480	6.25	141	Swordfish
8	43	178 W	18	960	18.75	141	Swordfish
8	43	172 W	22	1,760	12.50	141	Swordfish
8	43	169 W	51	2,894	17.62	141	Swordfish
8	43	168 W	58	1,740	33.33	141	Swordfish
8	43	167 W	8	570	14.04	141	Swordfish
8	43	162 W	6	1,720	3.49	141	Swordfish
8	43	161 W	13	1,150	11.31	141	Swordfish
8	41	174 E	7	425	16.48	142	Marlin, Unidentified
8	41	178 E	31	1,699	18.24	142	Marlin, Unidentified
8	42	175 E	1	160	6.25	142	Marlin, Unidentified
8	42	176 E	2	720	2.78	142	Marlin, Unidentified
8	42	178 E	8	850	9.42	142	Marlin, Unidentified
8	43	179 E	1	480	2.08	142	Marlin, Unidentified
8	43	178 W	1	960	1.04	142	Marlin, Unidentified
8	43	172 W	7	1,760	3.98	142	Marlin, Unidentified
8	43	169 W	9	2,894	3.11	142	Marlin, Unidentified
8	42	179 E	12	1,200	10.00	143	Striped Marlin
8	42	179 W	3	480	6.25	143	Striped Marlin
8	43	172 W	8	1,760	4.55	143	Striped Marlin
8	43	169 W	2	2,894	0.69	143	Striped Marlin
9	43	172 W	12	580	20.69	141	Swordfish
9	44	172 W	5	570	8.78	141	Swordfish
9	43	172 W	2	580	3.45	142	Marlin, Unidentified
9	43	172 W	1	580	1.72	143	Striped Marlin

Table 35. Observed catch and catch per 1000 tans of other tunas, billfishes and marlins, and unidentified tunas, billfishes and marlins by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

Start of Retrieval	Location		Catch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
5	33	173 E	1	440	2.27	124	Bigeye Tuna
5	33	174 W	23	1,728	13.31	124	Bigeye Tuna
5	33	174 W	1	1,728	0.58	141	Swordfish
5	43	176 W	8	178	44.98	141	Swordfish
6	35	174 W	1	1,152	0.87	123	Northern Bluefin Tuna
6	38	175 E	1	10,676	0.09	123	Northern Bluefin Tuna
6	35	178 W	1	1,328	0.75	124	Bigeye Tuna
6	35	174 W	1	1,152	0.87	124	Bigeye Tuna
6	35	172 W	1	432	2.31	124	Bigeye Tuna
6	35	171 W	1	432	2.31	124	Bigeye Tuna
6	36	179 E	3	700	4.29	124	Bigeye Tuna
6	37	175 E	1	3,100	0.32	124	Bigeye Tuna
6	37	167 W	1	552	1.81	124	Bigeye Tuna
6	38	175 E	16	10,676	1.50	124	Bigeye Tuna
6	39	175 E	2	4,200	0.48	124	Bigeye Tuna
6	39	175 W	5	467	10.72	124	Bigeye Tuna
6	39	175 E	22	4,200	5.24	125	Yellowfin Tuna
6	39	175 W	1	467	2.14	140	Billfish, Unidentified
6	35	174 W	1	1,152	0.87	141	Swordfish
6	35	173 W	1	432	2.31	141	Swordfish
6	35	171 W	1	432	2.31	141	Swordfish
6	36	175 W	1	864	1.16	141	Swordfish
6	37	175 E	2	3,100	0.65	141	Swordfish
6	38	175 E	4	10,676	0.37	141	Swordfish
6	43	176 W	8	178	44.98	141	Swordfish
6	36	175 W	1	864	1.16	143	Striped Marlin
6	38	175 E	2	10,676	0.19	143	Striped Marlin
7	39	177 W	1	2,100	0.48	124	Bigeye Tuna
7	40	172 E	2	2,640	0.76	124	Bigeye Tuna
7	40	173 E	2	2,321	0.86	124	Bigeye Tuna
7	40	174 E	1	711	1.41	124	Bigeye Tuna
7	40	177 W	6	1,400	4.29	124	Bigeye Tuna
7	40	175 W	4	700	5.72	124	Bigeye Tuna
7	40	171 W	8	9,968	0.80	124	Bigeye Tuna
7	40	170 W	2	2,394	0.84	124	Bigeye Tuna
7	40	172 E	2	2,640	0.76	140	Billfish, Unidentified
7	40	176 E	9	4,308	2.09	140	Billfish, Unidentified
7	40	171 W	13	9,968	1.30	140	Billfish, Unidentified
7	39	175 E	13	4,920	2.64	141	Swordfish
7	39	177 W	6	2,100	2.86	141	Swordfish
7	40	173 E	3	2,321	1.29	141	Swordfish
7	40	174 E	2	711	2.81	141	Swordfish
7	40	175 E	2	2,095	0.95	141	Swordfish
7	40	176 E	5	4,308	1.16	141	Swordfish
7	40	178 W	1	5,312	0.19	141	Swordfish
7	40	171 W	103	9,968	10.33	141	Swordfish
7	40	170 W	2	2,394	0.84	141	Swordfish
7	41	172 E	3	1,423	2.11	141	Swordfish
7	41	173 E	4	711	5.62	141	Swordfish
7	41	171 W	2	708	2.82	141	Swordfish
7	43	176 W	8	178	44.98	141	Swordfish
7	39	175 E	1	4,920	0.20	143	Striped Marlin

Table 35. (Continued)

Start of Retrieval Month	Location Lat°N	Long°	Catch (No.)	Tans (50m)	CPUE	Code	Species Name
7	40	173 E	12	2,321	5.17	143	Striped Marlin
7	40	174 E	3	711	4.22	143	Striped Marlin
7	40	175 E	2	2,095	0.95	143	Striped Marlin
7	40	176 E	5	4,308	1.16	143	Striped Marlin
7	40	178 W	4	5,312	0.75	143	Striped Marlin
7	40	177 W	1	1,400	0.71	143	Striped Marlin
7	40	171 W	79	9,968	7.93	143	Striped Marlin
7	40	170 W	3	2,394	1.25	143	Striped Marlin
7	41	172 E	5	1,423	3.51	143	Striped Marlin
7	41	173 E	2	711	2.81	143	Striped Marlin
8	41	171 E	2	4,560	0.44	124	Bigeye Tuna
8	42	177 W	4	711	5.62	124	Bigeye Tuna
8	43	177 W	1	534	1.87	124	Bigeye Tuna
8	43	176 W	2	4,752	0.42	124	Bigeye Tuna
8	40	156 E	2	720	2.78	125	Yellowfin Tuna
8	40	156 E	2	720	2.78	140	Billfish, Unidentified
8	40	160 E	16	720	22.22	140	Billfish, Unidentified
8	41	170 E	12	1,440	8.33	140	Billfish, Unidentified
8	41	171 E	53	4,560	11.62	140	Billfish, Unidentified
8	41	172 E	15	3,600	4.17	140	Billfish, Unidentified
8	42	170 E	1	720	1.39	140	Billfish, Unidentified
8	42	171 E	1	720	1.39	140	Billfish, Unidentified
8	41	173 E	4	1,423	2.81	141	Swordfish
8	42	175 E	10	1,423	7.03	141	Swordfish
8	42	176 E	5	2,391	2.09	141	Swordfish
8	42	177 W	9	711	12.65	141	Swordfish
8	43	177 W	8	534	14.99	141	Swordfish
8	43	176 W	49	4,752	10.31	141	Swordfish
8	42	175 E	11	1,423	7.73	143	Striped Marlin
8	42	176 E	6	2,391	2.51	143	Striped Marlin
8	43	177 W	1	534	1.87	143	Striped Marlin
9	43	176 W	8	178	44.98	141	Swordfish
10	43	176 W	8	178	44.98	141	Swordfish
11	43	176 W	8	178	44.98	141	Swordfish
12	43	176 W	8	178	44.98	141	Swordfish

Table 36. Observed bycatch and bycatch per 1000 tans of seabirds by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
6	36	175 E	1	2,689	0.37	400	Bird, Unidentified
6	37	177 E	1	843	1.19	400	Bird, Unidentified
6	37	175 E	1	2,503	0.40	421	Laysan Albatross
6	39	175 E	1	3,659	0.27	421	Laysan Albatross
6	35	173 W	1	442	2.26	430	Fulmar/Petrel, Unidentified
6	36	175 E	2	2,689	0.74	450	Shearwater, Unidentified
6	39	175 E	3	3,659	0.82	456	Sooty Shearwater
6	39	175 E	5	3,659	1.37	458	Dark Shearwater, Unidentified
7	40	175 E	1	552	1.81	400	Bird, Unidentified
7	41	166 W	2	1,766	1.13	400	Bird, Unidentified
7	41	159 W	2	2,316	0.86	400	Bird, Unidentified
7	41	168 W	1	591	1.69	421	Laysan Albatross
7	40	178 W	1	1,646	0.61	455	Buller's Shearwater
7	39	178 W	1	1,165	0.86	456	Sooty Shearwater
8	43	169 W	1	2,894	0.35	400	Bird, Unidentified
8	42	161 W	2	1,761	1.14	421	Laysan Albatross
8	43	161 W	1	1,150	0.87	421	Laysan Albatross
8	43	172 W	1	1,760	0.57	423	Black-footed Albatross
8	43	169 W	1	2,894	0.35	423	Black-footed Albatross
8	43	167 W	1	570	1.76	423	Black-footed Albatross
8	43	169 W	2	2,894	0.69	455	Buller's Shearwater
8	43	161 W	1	1,150	0.87	455	Buller's Shearwater
8	43	161 W	1	1,150	0.87	457	Short-tailed Shearwater
8	42	161 W	1	1,761	0.57	458	Dark Shearwater, Unidentified
8	42	160 W	1	2,262	0.44	470	Storm-petrel, Unidentified
8	43	169 W	1	2,894	0.35	470	Storm-petrel, Unidentified
8	43	168 W	1	1,740	0.57	470	Storm-petrel, Unidentified
8	43	169 W	1	2,894	0.35	476	Tristram's Storm-petrel

Table 37. Observed bycatch and bycatch per 1000 tans of seabirds by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
6	36	170 E	6	1,140	5.26	450	Shearwater, Unidentified
6	37	175 E	4	3,100	1.29	450	Shearwater, Unidentified
6	38	175 E	2	10,676	0.19	450	Shearwater, Unidentified
7	40	179 W	1	1,560	0.64	450	Shearwater, Unidentified
7	40	175 W	2	700	2.86	450	Shearwater, Unidentified
7	41	173 E	1	711	1.41	450	Shearwater, Unidentified
8	43	176 W	1	4,752	0.21	450	Shearwater, Unidentified

Table 38. Observed bycatch and bycatch per 1000 tans of marine mammals by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

Start of Retrieval Month	Location Lat°N	Location Long°	Bycatch (No.)	Tans (50m)	CPUE	Code	Species Name
Northern right whale dolphin, common dolphin and striped dolphin							
6	38	178 E	1	744	1.34	720	Northern Right Whale Dolphin
6	37	176 E	2	2,515	0.80	720	Northern Right Whale Dolphin
6	37	176 W	1	403	2.48	720	Northern Right Whale Dolphin
6	36	176 W	2	1,173	1.71	720	Northern Right Whale Dolphin
6	36	174 W	1	578	1.73	720	Northern Right Whale Dolphin
6	36	170 E	1	1,074	0.93	720	Northern Right Whale Dolphin
7	42	158 W	4	560	7.14	720	Northern Right Whale Dolphin
7	40	178 W	1	1,646	0.61	720	Northern Right Whale Dolphin
7	40	177 W	2	1,772	1.13	720	Northern Right Whale Dolphin
7	40	169 W	1	744	1.34	720	Northern Right Whale Dolphin
7	39	178 W	1	1,165	0.86	720	Northern Right Whale Dolphin
7	39	155 W	9	1,488	6.05	720	Northern Right Whale Dolphin
8	43	169 W	12	2,894	4.15	720	Northern Right Whale Dolphin
8	43	167 W	1	570	1.76	720	Northern Right Whale Dolphin
8	43	162 W	1	1,720	0.58	720	Northern Right Whale Dolphin
5	34	176 W	3	827	3.63	722	Common Dolphin
5	34	175 W	1	442	2.26	722	Common Dolphin
6	39	175 E	3	3,659	0.82	722	Common Dolphin
6	38	176 E	1	863	1.16	722	Common Dolphin
6	38	174 W	3	602	4.98	722	Common Dolphin
6	37	177 E	2	843	2.37	722	Common Dolphin
6	37	176 E	4	2,515	1.59	722	Common Dolphin
6	37	175 E	10	2,503	3.99	722	Common Dolphin
6	36	176 W	1	1,173	0.85	722	Common Dolphin
6	36	176 E	1	602	1.66	722	Common Dolphin
6	36	175 E	15	2,689	5.58	722	Common Dolphin
6	36	175 W	1	571	1.75	722	Common Dolphin
8	42	176 E	2	720	2.78	722	Common Dolphin
5	34	176 W	1	827	1.21	723	Striped Dolphin
6	39	175 E	2	3,659	0.55	723	Striped Dolphin
6	38	178 E	2	744	2.69	723	Striped Dolphin
6	37	177 E	2	843	2.37	723	Striped Dolphin
6	37	175 E	1	2,503	0.40	723	Striped Dolphin
6	36	175 E	10	2,689	3.72	723	Striped Dolphin
6	35	173 W	1	442	2.26	723	Striped Dolphin
7	40	168 W	1	744	1.34	723	Striped Dolphin
8	42	160 W	1	2,262	0.44	723	Striped Dolphin
Northern fur seal							
6	38	178 E	1	744	1.34	701	Northern Fur Seal
6	36	176 W	1	1,173	0.85	701	Northern Fur Seal
6	36	174 W	1	578	1.73	701	Northern Fur Seal
7	41	159 W	2	2,316	0.86	701	Northern Fur Seal
8	43	162 W	4	1,720	2.33	701	Northern Fur Seal
8	43	161 W	1	1,150	0.87	701	Northern Fur Seal
8	42	161 W	2	1,761	1.14	701	Northern Fur Seal

Table 38. (Continued)

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
Dall's porpoise and other cetaceans							
6	36	170 E	1	1,074	0.93	711	Dall's Porpoise, Type Unknown
6	39	179 E	1	347	2.89	721	Pacific White-sided Dolphin
9	44	172 W	1	570	1.76	721	Pacific White-sided Dolphin
7	40	172 W	2	602	3.32	730	Bottlenose Dolphin
6	36	175 E	1	2,689	0.37	732	Risso's Dolphin
7	39	178 W	1	1,165	0.86	735	Kogia, unidentified
6	38	168 W	1	585	1.71	736	Pygmy Sperm Whale
6	37	176 E	1	2,515	0.40	736	Pygmy Sperm Whale
7	40	177 W	1	1,772	0.56	736	Pygmy Sperm Whale
6	37	175 E	1	2,503	0.40	737	Dwarf Sperm Whale
7	40	172 W	3	602	4.98	740	Black Whale, Unidentified
7	41	159 W	2	2,316	0.86	750	Beaked Whale, Unidentified
7	40	170 W	1	1,414	0.71	750	Beaked Whale, Unidentified
5	34	176 W	2	827	2.42	710	Dolphin/Porpoise,Unidentified
5	34	175 W	1	442	2.26	710	Dolphin/Porpoise,Unidentified
6	37	175 E	2	2,503	0.80	710	Dolphin/Porpoise,Unidentified
6	36	175 E	1	2,689	0.37	710	Dolphin/Porpoise,Unidentified
6	36	170 E	1	1,074	0.93	710	Dolphin/Porpoise,Unidentified
7	40	159 W	1	744	1.34	710	Dolphin/Porpoise,Unidentified
8	42	176 E	2	720	2.78	710	Dolphin/Porpoise,Unidentified

Table 39. Observed bycatch and bycatch per 1000 tans of marine mammals by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

Start of Retrieval	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
5	32	175 E	1	1,136	0.88	710	Dolphin/Porpoise,Unidentified
5	33	174 W	2	1,728	1.16	710	Dolphin/Porpoise,Unidentified
5	35	178 W	1	2,440	0.41	710	Dolphin/Porpoise,Unidentified
5	35	178 W	4	2,440	1.64	721	Pacific White-sided Dolphin
6	35	176 E	5	648	7.72	710	Dolphin/Porpoise,Unidentified
6	35	177 E	3	648	4.63	710	Dolphin/Porpoise,Unidentified
6	35	178 W	7	1,328	5.27	710	Dolphin/Porpoise,Unidentified
6	35	175 W	3	432	6.94	710	Dolphin/Porpoise,Unidentified
6	35	174 W	21	1,152	18.23	710	Dolphin/Porpoise,Unidentified
6	35	171 W	16	432	37.04	710	Dolphin/Porpoise,Unidentified
6	36	170 E	7	1,140	6.14	710	Dolphin/Porpoise,Unidentified
6	36	177 E	19	1,296	14.66	710	Dolphin/Porpoise,Unidentified
6	36	179 E	36	700	51.44	710	Dolphin/Porpoise,Unidentified
6	36	175 W	5	864	5.79	710	Dolphin/Porpoise,Unidentified
6	37	175 E	5	3,100	1.61	710	Dolphin/Porpoise,Unidentified
6	37	176 E	3	1,098	2.73	710	Dolphin/Porpoise,Unidentified
6	37	167 W	2	552	3.62	710	Dolphin/Porpoise,Unidentified
6	38	175 E	23	10,676	2.15	710	Dolphin/Porpoise,Unidentified
6	38	175 W	2	467	4.28	710	Dolphin/Porpoise,Unidentified
6	38	174 W	5	700	7.14	710	Dolphin/Porpoise,Unidentified
6	39	175 E	2	4,200	0.48	710	Dolphin/Porpoise,Unidentified
6	38	175 E	1	10,676	0.09	720	Northern Right Whale Dolphin
7	39	175 E	7	4,920	1.42	710	Dolphin/Porpoise,Unidentified
7	39	178 W	1	664	1.51	710	Dolphin/Porpoise,Unidentified
7	40	175 E	2	2,095	0.95	710	Dolphin/Porpoise,Unidentified
7	40	178 W	1	5,312	0.19	710	Dolphin/Porpoise,Unidentified
7	40	177 W	1	1,400	0.71	710	Dolphin/Porpoise,Unidentified
7	40	175 W	2	700	2.86	710	Dolphin/Porpoise,Unidentified
8	40	160 E	3	720	4.17	710	Dolphin/Porpoise,Unidentified
8	41	170 E	1	1,440	0.69	710	Dolphin/Porpoise,Unidentified
8	41	171 E	3	4,560	0.66	710	Dolphin/Porpoise,Unidentified
8	41	172 E	1	3,600	0.28	710	Dolphin/Porpoise,Unidentified
8	42	171 E	1	720	1.39	710	Dolphin/Porpoise,Unidentified

Table 40. Observed bycatch and bycatch per 1000 tans of turtles by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

Start of Retrieval							
	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
5	33	175 E	1	494	2.02	900	Turtle, Unidentified
5	34	175 W	1	442	2.26	900	Turtle, Unidentified
6	35	173 W	2	442	4.52	900	Turtle, Unidentified
6	36	175 E	3	2,689	1.12	900	Turtle, Unidentified
6	36	173 W	1	581	1.72	900	Turtle, Unidentified
6	37	176 E	5	2,515	1.99	900	Turtle, Unidentified
6	37	170 W	1	744	1.34	900	Turtle, Unidentified
6	38	178 E	1	744	1.34	901	Leatherback Turtle
6	37	175 E	1	2,503	0.40	902	Loggerhead Turtle
6	39	175 E	7	3,659	1.91	902	Loggerhead Turtle
7	39	177 W	2	1,116	1.79	900	Turtle, Unidentified
7	40	177 W	1	1,772	0.56	900	Turtle, Unidentified
7	39	156 W	1	744	1.34	901	Leatherback Turtle
7	41	166 W	2	1,766	1.13	901	Leatherback Turtle
8	41	178 E	1	1,699	0.59	900	Turtle, Unidentified
8	43	178 W	3	960	3.13	901	Leatherback Turtle
8	43	167 W	1	570	1.76	901	Leatherback Turtle

Table 41. Observed bycatch and bycatch per 1000 tans of turtles by net retrieval month and 1° x 1° statistical area for the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

Start of Retrieval							
	Location		Bycatch	Tans			
Month	Lat°N	Long°	(No.)	(50m)	CPUE	Code	Species Name
5	32	175 E	1	1,136	0.88	900	Turtle, Unidentified
5	33	173 E	1	440	2.27	900	Turtle, Unidentified
5	33	175 E	2	1,248	1.60	900	Turtle, Unidentified
5	35	178 W	1	2,440	0.41	900	Turtle, Unidentified
6	35	177 E	1	648	1.54	900	Turtle, Unidentified
6	35	174 W	1	1,152	0.87	900	Turtle, Unidentified
6	35	172 W	1	432	2.31	900	Turtle, Unidentified
6	35	171 W	2	432	4.63	900	Turtle, Unidentified
6	37	175 E	1	3,100	0.32	900	Turtle, Unidentified
6	37	176 E	4	1,098	3.64	900	Turtle, Unidentified
6	37	178 W	1	640	1.56	900	Turtle, Unidentified
6	38	175 E	12	10,676	1.12	900	Turtle, Unidentified
6	38	174 W	1	700	1.43	900	Turtle, Unidentified
6	39	175 E	1	4,200	0.24	900	Turtle, Unidentified
7	39	175 E	1	4,920	0.20	900	Turtle, Unidentified
7	39	177 W	3	2,100	1.43	900	Turtle, Unidentified
7	40	175 E	1	2,095	0.48	900	Turtle, Unidentified
7	40	179 W	1	1,560	0.64	900	Turtle, Unidentified
7	40	178 W	4	5,312	0.75	900	Turtle, Unidentified
8	40	156 E	1	720	1.39	900	Turtle, Unidentified
8	41	171 E	1	4,560	0.22	900	Turtle, Unidentified

Table 42. Total numbers of catch and bycatch observed by species, total number of observed operations in which a species was taken and total number of vessels on which observers recorded the species in the 1990 Taiwanese large-mesh driftnet fishery; U.S. observer data only.

Species/Taxon	Total Numbers	Number of Observed Operations	Number of Observed Vessels
Squid, Unidentifed	10	6	1
Squid, Other Identified	1	1	1
Neon Flying Squid	371	77	6
Pelagic Octopus, Unidentified	55	16	2
Salmonid, Unidentifed	1	1	1
Shark, Unidentified	44	9	4
Blue Shark	5,449	134	6
Salmon Shark	163	16	4
Common Thresher Shark	10	9	4
Short-finned Mako Shark	9	4	2
Ray, Unidentified	20	16	3
Pelagic Stingray	25	16	3
Diamond Stingray	17	9	2
Tuna, Unidentified	53	10	5
Albacore	54,409	137	6
Skipjack Tuna	7,004	30	5
Northern Bluefin Tuna	34	7	2
Bigeye Tuna	3	1	1
Yellowfin Tuna	37	10	3
Bullet Tuna	1	1	1
Billfish, Unidentified	5	2	2
Swordfish	540	91	6
Marlin, Unidentified	78	23	4
Striped Marlin	49	12	3
Pacific Blue Marlin	43	12	2
Shortnose Spearfish	51	21	5
Fish, Unidentified	343	56	6
Lancetfish/Daggertooth, Unidentified	4	4	1
Longnose Lancetfish	24	17	4
Flying Fish, Unidentified	5	4	1
Pacific Saury	28	13	2
Opah	13	8	2
Pilotfish	1	1	1
Jack, Unidentified	1	1	1
Jackmackerel	1	1	1
Yellowtail	167	35	6
Mahi Mahi	482	44	6
Pomfret, Unidentified	1	1	1
Pacific Pomfret	39,163	122	6
Pelagic Armorhead	539	16	1
Escolar	2	2	1
Oilfish	56	12	3
Louvar	547	79	6
Ragfish	15	10	3
Oceanic Puffer	3	2	2
Ocean Sunfish	818	100	6
Bird, Unidentified	8	7	4
Laysan Albatross	6	5	2
Black-footed Albatross	3	3	1
Fulmar/Petrel, Unidentified	1	1	1
Shearwater, Unidentified	2	2	1
Buller's Shearwater	4	4	2
Sooty Shearwater	4	3	1

Table 42. (Continued)

Species/Taxon	Total Numbers	Number of Observed Operations	Vessels
Short-tailed Shearwater	1	1	1
Dark Shearwater, Unidentified	6	2	2
Storm-petrel, Unidentified	3	3	1
Tristram's Storm-petrel	1	1	1
Northern Fur Seal	12	7	3
Dolphin/Porpoise, Unidentified	10	7	4
Dall's Porpoise, Type Unknown	1	1	1
Northern Right Whale Dolphin	40	17	4
Pacific White-sided Dolphin	2	2	2
Common Dolphin	47	20	3
Striped Dolphin	21	11	4
Bottlenose Dolphin	2	1	1
Risso's Dolphin	1	1	1
Kogia, unidentified	1	1	1
Pygmy Sperm Whale	3	3	1
Dwarf Sperm Whale	1	1	1
Black Whale, Unidentified	3	1	1
Beaked Whale, Unidentified	3	2	2
Turtle, Unidentified	18	13	3
Leatherback Turtle	8	6	3
Loggerhead Turtle	8	5	1

Table 43. Total numbers of catch and bycatch observed by species, total number of observed operations in which a species was taken and total number of vessels on which observers recorded the species in the 1990 Taiwanese large-mesh driftnet fishery; Taiwanese observer data only.

Species/Taxon	Total Numbers	Number of Observed Operations	Number of Observed Vessels
Squid, Unidentifed	6	2	1
Neon Flying Squid	151	42	4
Eight-armed Squid	171	26	2
Boreal Clubhook Squid	32	3	2
Shark, Unidentified	1,998	54	2
Blue Shark	691	45	2
Salmon Shark	1	1	1
White Shark	465	28	1
Ray, Unidentified	9	6	2
Albacore	98,516	215	5
Skipjack Tuna	5,576	34	3
Northern Bluefin Tuna	2	2	2
Bigeye Tuna	91	31	5
Yellowfin Tuna	24	2	2
Billfish, Unidentified	125	21	2
Swordfish	242	53	2
Striped Marlin	138	29	2
Fish, Unidentified	7,657	110	4
Opah	192	28	2
Yellowtail	4	3	2
Mahi Mahi	80	22	2
Pacific Pomfret	607	18	3
Wahoo	45	13	2
Oilfish	18	3	1
Ocean Sunfish	187	32	2
Shearwater, Unidentified	17	9	4
Dolphin/Porpoise, Unidentified	191	51	5
Northern Right Whale Dolphin	1	1	1
Pacific White-sided Dolphin	4	1	1
Turtle, Unidentified	42	33	4

Table 44. Common and scientific names of species observed in the 1990 Taiwanese squid and large-mesh driftnet fisheries.

Common Name	Scientific Name
CEPHALOPODS	
Neon flying squid	*Ommastrephes bartramii*
Eight-armed squid	*Gonatopsis borealis*
Boreal clubhook squid	*Onychoteuthis borealijaponica*
Purpleback flying squid	*Sthenoteuthis oualaniensis*
Luminous flying squid	*Eucleoteuthis luminosa*
Squid, unidentified	
Pelagic octopus, unidentified	
(Considered likely to be one of the following)	
Pelagic octopus	*Tremoctopus violacea*
Pelagic octopus	*Ocythoe tuberculata*
SALMONIDS	
Pink salmon	*Oncorhynchus gorbuscha*
Salmonid, unidentified	
ELASMOBRANCHS	
Blue shark	*Prionace glauca*
Salmon shark	*Lamna ditropis*
Common thresher shark	*Alopias vulpinus*
Short-finned mako shark	*Isurus oxyrinchus*
Pygmy shark	*Euprotomicrus bispinatis*
Shark, unidentified	
Spiny dogfish	*Squalus acanthias*
White shark	*Carcharodon carcharias*
Basking Shark	*Cetirhinus maximus*
Pelagic stingray	*Dasyatis violacea*
Diamond stingray	*Dasyatis brevis*
Ray, unidentified	
TUNAS AND BILLFISHES	
Albacore	*Thunnus alalunga*
Skipjack	*Katsuwonus pelamis*
Northern bluefin tuna	*Thunnus thynnus*
Bigeye tuna	*Thunnus obesus*
Yellowfin tuna	*Thunnus albacares*
Bullet tuna	*Auxis rochei*
Tuna, unidentified	
Swordfish	*Xiphias gladius*
Billfish, unidentified	
Striped marlin	*Tetrapturus audax*
Pacific blue marlin	*Makaira mazara*
Marlin, unidentified	
Shortnose spearfish	*Tetrapturus angustirostris*
OTHER MARINE FISHES	
Longnose lancetfish	*Alepisaurus ferox*
Lancetfish/Daggertooth, unidentified	*Alepisaurus ferox or Anatopterus pharo*
California flyingfish	*Cypselurus californicus*
Pacific saury	*Cololabis saira*
Opah	*Lampris guttatus*
Pilotfish	*Naucrates ductor*
Jack mackerel	*Trachurus symmetricus*
Yellowtail	*Seriola lalandi*

Table 44. Continued.

Common Name	Scientific Name
Mahi mahi	*Coryphaena hippurus*
Pacific pomfret	*Brama japonica*
Pomfret, unidentified	
Pelagic armorhead	*Pseudopentaceros wheeleri*
Wahoo	*Acanthocybium solandri*
Pacific barracuda	*Sphyraena argentea*
Snake mackeral	*Gempylus serpens*
Escolar	*Lepidocybium flavobrunneum*
Oilfish	*Ruvettus pretiosus*
Smalleye squaretail	*Tetragonurus cuvieri*
Louvar	*Luvarus imperialis*
Ragfish	*Icosteus aenigmaticus*
Oceanic puffer	*Lagocephalus lagocephalus*
Ocean sunfish	*Mola mola*
SEABIRDS	
Bird, unidentified	*Aves*
Laysan albatross	*Diomedea immutabilis*
Black-footed albatross	*Diomedea nigripes*
Albatross, unidentified	*Diomedea sp.*
Northern fulmar	*Fulmarus glacialis*
Buller's shearwater	*Puffinus bulleri*
Sooty shearwater	*Puffinus griseus*
Short-tailed shearwater	*Puffinus tenuirostris*
Shearwater, unidentified	*Calonectris sp. or Puffinus sp. or Procellaria sp.*
Dark shearwater, unidentified	*Puffinus griseus or Puffinus tenuirostris*
Leach's storm-petrel	*Oceanodroma leucorhoa*
Fork-tailed storm-petrel	*Oceanodroma furcata*
Tristram's storm-petrel	*Oceanodroma tristrami*
Storm-petrel, unidentified	*Oceanites sp. or Oceanodroma sp. or Nesofregetta sp. or Garrodia sp. or Pelagodroma sp. or Fregetta sp. or Halocyptena sp.*
MARINE MAMMALS	
Northern fur seal	*Callorhinus ursinus*
Dolphin/Porpoise, unidentified	
Dall's porpoise, type unknown	*Phocoenoides dalli*
Northern right whale dolphin	*Lissodelphis borealis*
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*
Common dolphin	*Delphinus delphis*
Striped dolphin	*Stenella coeruleoalba*
Bottlenose dolphin	*Tursiops truncatus*
Risso's dolphin	*Grampus griseus*
Kogia, unidentified	*Kogia sp.*
Pygmy sperm whale	*Kogia breviceps*
Dwarf sperm whale	*Kogia simus*
Black whale, unidentified	
Beaked whale, unidentified	
Large whale, unidentified	
TURTLES	
Turtle, unidentified	
Leatherback turtle	*Dermochelys coriacea*
Loggerhead turtle	*Caretta caretta*
Green turtle	*Chelonia mydas*

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FINAL REPORT OF 1990 OBSERVATIONS
OF THE
JAPANESE HIGH SEAS SQUID DRIFTNET FISHERY
IN THE NORTH PACIFIC OCEAN

Joint Report of:

FISHERIES AGENCY OF JAPAN
CANADIAN DEPARTMENT OF FISHERIES AND OCEANS
UNITED STATES NATIONAL MARINE FISHERIES SERVICE
UNITED STATES FISH AND WILDLIFE SERVICE

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

FINAL REPORT OF 1990 OBSERVATIONS
OF THE
JAPANESE HIGH SEAS SQUID DRIFTNET FISHERY
IN THE NORTH PACIFIC OCEAN

I. INTRODUCTION

The cooperative observer programs for 1990 and early 1991 between Japan and Canada and Japan and the United States are described in the Annex of letters from Mr. K. Imamura, Councillor, Fisheries Agency of Japan to Dr. J.C. Davis, Regional Director - Science, Pacific Region, Canadian Department of Fisheries and Oceans and to Mr. E. Wolfe, Deputy Assistant Secretary, United States Department of State, and Dr. W. Fox, Assistant Administrator, National Oceanic and Atmospheric Administration. The programs were organized on the basis of the recognition by the three nations on the necessity of collecting scientific information about the Japanese squid and large-mesh driftnet fisheries on the high seas of the North Pacific Ocean. In summary, the Annex contains the detailed descriptions of the observer programs including: the number and deployment of observers on Japanese vessels, the exchange of training manuals, the data to be collected and forms to be used, the timing for exchange of observer and fishing effort data, the reports to be produced, their contents and the timing and location of meetings to produce reports.

For the squid driftnet fishery, June through December, 1990, a scientific observer program was designed to collect data on the catch of squid and all species of bycatch and dropouts of catch and bycatch throughout the squid driftnet fishing area. The program was expanded from the pilot program of 1989 of 9 U.S. observers, 5 Canadian observers, and 32 Japanese observers on 32 Japanese squid driftnet vessels. In 1990, 35 U.S observers, 10 Canadian and 29 Japanese observers were placed on 75 Japanese squid driftnet vessels from late May to December. Data collection was also expanded to include the recording of all bycatch species, rather than a specified list of species.

For the large-mesh fishery for tuna and billfish, a pilot program was designed to collect data on the catches of target and all bycatch species and on fishing operations. Twelve U.S. and 12 Japanese scientific observers were to be placed on 24 large-mesh vessels in late 1990 and early 1991. Data from these scientific observers will be summarized in a separate report to be issued on September 30, 1991.

Data collection and methods for data collection were the same for both high seas fisheries. Data included catch of target and all bycatch species, environmental conditions (sea surface temperature, sea state, wind speed and direction,), fishing methods (date, location, direction, and configuration of the sets; number of vessels within 15 nm), gear specifications (mesh size, net panel length and depth, and number of panels per section), and observer effort (number of net panels monitored).

Scientists from the Canadian Department of Fisheries and Oceans (CDFO), the Fisheries Agency of Japan (FAJ), Hokkaido University, the U.S. National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) met in Tokyo, Japan in February, 1991, to review the 1990 observations. The purpose of the meeting was to resolve differences and correct any known errors in the data, to reach agreement on the details of the content and format of this report and to agree to a process for the completion of the report in a timely fashion.

For practical reasons, areal observer coverage of the squid driftnet fishery could not be designed from a formal statistical sampling frame. Instead, sampling effort was apportioned temporally based on the temporal distribution of fishing effort during the 1989 season and representative spatial coverage was assumed. The FAJ reported that vessels were chosen by lot by fishing port and observers generally boarded in port. Vessels fished in areas according to the direction of the fishing masters and the observers had no influence over when or where fishing operations took place.

II. OBSERVER TRAINING AND DEPLOYMENT

Observer training was coordinated among the three countries in 1990. Observer training manuals were prepared and exchanged to ensure the material presented to the scientific observers was as similar as possible. Trainers from each of the three countries met to review training procedures prior to the start of the training sessions. Canadian scientific observers were included in the U.S. training courses and were provided with additional training in Canada. One Canadian scientific observer, who had also been deployed in the 1989 squid fishing season, attended the Japanese training session in Shimizu, Japan, to observe training procedures. Additionally, one Japanese scientist participated in the June U.S. training session to ensure techniques and procedures were similar.

During 1990, five training sessions were conducted at the Alaska Fisheries Science Center for observers to be deployed to Japanese squid and large-mesh vessels. Observers from Canada and the U.S. shared a common observer manual, sampling techniques and duties, and were trained in joint sessions. The training manual was produced through a cooperative effort between Canadian and U.S. scientists and trainers, as were training topics, procedures, and materials included in training. Of the five sessions, Canadian observers participated in the May and June sessions. Additional sessions conducted in the U.S. included only U.S. observers but followed the protocol established in the earlier sessions.

The training included:

- History and fishing techniques of the high seas driftnet fisheries
- Description of vessels, fishing operations, gear specifications, and onboard living conditions
- Description of the cooperative scientific observer programs
- Scientific observer techniques for monitoring driftnet fisheries
- Logbook data format, standardized data collection elements, forms and completed examples
- Identification of salmonids, other marine fish, marine mammals, seabirds and turtles
- Marine mammal and seabird sighting survey methodology, standardized data forms and completed examples
- Marine mammal, turtle, and seabird dissection techniques and data collection forms
- Communication procedures while at sea
- Safety at sea, including survival suit training
- Data summarization, report format and debriefing procedures
- An introduction to Japanese language and culture

Training in specialty areas such as species identification was conducted by experts in those fields. Training was designed to emphasize observer preparedness, both for the collection of high quality data and for familiarity with daily routines on driftnet vessels and safety considerations.

Observers boarded their assigned vessels either from the port of departure in Japan or on the fishing grounds via a transfer vessel. Letters of introduction and posters written in English and Japanese explaining the observer program and the observer duties on the vessel were provided to the vessel fishing master prior to departure of the vessels for the fishing grounds or at the time the observer boarded the vessel. Observers were also provided with translations of common phrases to further facilitate communication.

Immediately upon return from their sea assignment, each U.S. observer spent 2 to 3 weeks in debriefing; Canadian observers spent 3-6 days in debriefing. During this time, the observers checked their logbooks and data forms for obvious errors and omissions, answered questions about their data and work experience, and summarized bycatch data.

A. Canada

The Department of Fisheries and Oceans entered into a contract with Archipelago Marine Research Ltd. (AMR) of Victoria, B.C. to implement the operational aspects of the 1990 program. Preparation of the Canadian portion of the observer program included observer selection, training and briefing, gear acquisition and the design of program communications and logistics. Observers selected for this work had worked with AMR for one or more seasons. On average, Canadian observers had 140 days of experience (range 80 - 180) aboard factory trawlers from the Republic of Korea, Poland, the Soviet Union and Japan. The observers were experienced enough to be comfortable with an extended period of time at sea.

Observer training and initial briefing was carried out in conjunction with U.S. observers at the National Marine Fisheries Service (NMFS) facilities in Seattle, Washington. Final briefing for the observers took place prior to their departure. These meetings included a brief review of procedures but primarily involved discussion of logistics such as travel arrangements, scheduled meetings, contact points, etc. Other recent developments in the program were also relayed at this time.

B. Japan

The Fisheries Agency of Japan (FAJ) conducted training for a total of 25 Japanese squid driftnet observers and a total of 12 Japanese large-mesh driftnet observers. The full course of training was conducted five times at the National Research Institute of Far Seas Fisheries in Shimizu. The first training session was held on 17-21 April 1990 for 10 observers, the second on 14-18 May for 13 observers and the third on 15-16 June for two observers for the squid driftnet fishery. The fourth training session was held on 13-17 November 1990 for 13 observers, and the fifth on 11-14 March 1991 for two observers in the large-mesh driftnet fishery. Furthermore, two short training courses were conducted for one or two days for trained observers immediately before their departure, in order to reconfirm their understanding of the training manual. With respect to the short training course, for the large-mesh driftnet fishery, the first course was held on 7 January 1991 for five observers and the second on 5 February for one observer, in Shimizu.

The training included 1) an explanation of the squid driftnet observer program and duties, 2) confirmation of a contract between the FAJ and the observer, 3) life onboard driftnet vessels, 4) usage of the observer manual, 5) how to monitor the retrieval and fill out the data sheets, 6) use of the identification guide for squids, fishes, marine mammals, seabirds and turtles, 7) biological sampling procedures, and 8) practice of data recording. Five observers had prior experience in the 1989 Japanese squid driftnet observer program.

C. United States

The U.S. training classes were conducted at the Alaska Fisheries Science Center in Seattle. Training, gear acquisition and distribution, debriefing and data management were conducted by AFSC and USFWS personnel. U.S. scientific observers hired had a strong biological background, preferably a degree in one of the biological sciences. Preference was given to those with previous experience at sea in driftnet or other fisheries. In the 1990 program, 13 of 32 observers had previous at-sea experience and 2 were scientific observers in the 1989 driftnet program.

III. DATA COLLECTION PROCEDURES

A. General Procedures

Due to the long duration of the squid driftnet retrieval operations (8 to 12 hours daily), and nearly constant activity during the fishing season, observers were instructed to monitor operations for five consecutive days and omit observations on the sixth day. Observer data are, therefore, a subset of the total operations conducted during their period aboard a driftnet vessel. The observers did not record catch information from the operations not monitored.

Observers were required to monitor either 6 or 7 net sections during any one net retrieval, depending on the number of sections deployed. Seven sections were monitored when ten or more sections were set, six were monitored when fewer then ten were set. These monitored (observed) sections were chosen randomly based upon commonly agreed procedures. Two of these monitored sections were randomly selected for dropout monitoring of marine fish. To ensure that observers had sufficient time to identify and count animals dropping from the net, they were not required to count the catch of flying squid, Pacific pomfret, and pelagic armorhead, if abundant, as these species are known to potentially occur in large numbers. Accordingly, observer effort for flying squid and/or Pacific pomfret and/or pelagic armorhead can be less than for other species. Observer effort is reported in this report as "Total", "Squid", "Pacific pomfret" or "pelagic armorhead" in numbers of standardized 50m tans (unit length of net). Numbers of fishing operations are also reported. Estimates of overall catch rates of Pacific pomfret and pelagic armorhead will be biased slightly low as a result of not counting the high catches of these species.

For each operation monitored, the scientific observer recorded dates and times of the start and end of the net set and retrieval, and environmental and oceanographic conditions. The mesh size was recorded as was the number of tans (net panels) in each net section monitored and total number of sections set.

Observers monitored driftnet retrieval operations from an unobstructed vantage point above the work deck, generally atop the pilot house, or on a bridge wing. The catch of squid species and bycatch of salmon, other marine fish, seabirds, turtles and marine mammals (here for squid, salmon and other marine fish, catch and bycatch refer to the number of animals hauled aboard in the nets; for marine mammals, seabird and turtles, catch and bycatch refers to all individuals entangled) were recorded in a consistent format. Total catch of squid and bycatch of non-target species was tallied for each net section. Total counts, by species and net section, were copied onto standardized data forms following the retrieval.

Positions, set and retrieval begin and end dates and times, and gear specifications were provided to the observers by vessel officers using a translated Bridge log form. Observers were instructed to collect this information directly or verify the data if provided by the vessel officers. Normally, there was no disagreement between the observers and the officers of the vessels. On one vessel carrying a Canadian scientific observer, there were differences in the information provided by the vessel master and that obtained independently by the observer from the vessel's navigational equipment for 9 of 32 fishing operations. During these nine operations, the vessel was fishing out of bounds. The differences related to the fishing locations and the number of vessels within a 15 nautical mile radius. Only Start of Set and End of Retrieval locations were independently recorded by the observer. Because of the unusual circumstances, the observer did not record the number of vessels within a 15 nautical mile radius, but determined the number of vessels in a 1 degree latitude by 2 degree longitude block from the radio officers set plot and independently verified these numbers on the radar during fishing operations.

The following list shows the differences between the two:

Operation Number	Number of Vessels (Vessel)	Number of Vessels (Observer)
24	1	15
25	0	15
26	2	16
27	4	21
28	3	20
29	2	29
30	2	32
31	2	29
32	1	26

B. Dropout Monitoring

Procedures were introduced in the 1990 observer program to estimate the numbers of "dropouts" of fish occurring during net retrieval. A "dropout" is defined as an animal which emerges from the water entangled in the net but becomes disentangled and falls out of the net before it reaches the deck, either of its own accord or due to deliberate shaking of the net by the crew.

The sampling procedure consisted of randomly selecting two sections from the usual set of 7-10 sections of driftnet and counting animals dropping from the net before it reached the deck of the vessel. Because driftnet retrieval usually begins during darkness, subsampling was restricted to the fourth to last section retrieved to avoid the problem of poor visibility. During some retrievals late in the year, when sunrise occurred later in the day, observers could not count all the animals dropping from the net during the early portion of the retrieval. Also, during some retrievals the abundance of Pacific pomfret or pelagic armorhead was so great that it was not possible to accurately count all Pacific pomfret or pelagic armorhead dropping from the net. When this occurred, observers ceased counting pomfret or armorhead but continued recording dropouts of species other than Pacific pomfret and pelagic armorhead. The estimates of dropout mortality measured by the procedure described above does not include those animals lost from the nets while the fishing gear was in the water during the soaking period. The procedure used does, however, provide a first approximation to the magnitude of dropout mortality. This does not include dropouts which occurred over the period of the net deployment (soak time). In the estimation of catch and bycatch rates for flying squid, Pacific pomfret and pelagic armorhead, allowances were made for the suspension of counts of these species during the monitoring of dropout sections; levels of sampling effort were reduced appropriately.

In the case of turtles, mammals, and birds the report does not include dropout figures, but instead indicates the number of animals entangled by condition (dead, alive, or condition unknown) regardless of whether the animals dropped out, were cut from the net without being brought aboard, or were brought on board.

C. Extended Retrievals

Fishing effort is frequently computed as the product of an amount of gear and the duration the gear is deployed and fishing. In the Japanese squid fishery, a convention was adopted for computing and reporting effort data. Observer monitoring effort and fishing effort are reported as an amount of gear in standardized 50m tans. There is an implicit assumption that the gear is deployed for one night only. In general, this assumption holds. It held for all observed operations in 1989, however during 1990, squid catches were occasionally so great that it was not possible to retrieve all of the net sections from an operation in one day.

During extended retrievals some net sections soaked for an additional night or two before retrieval. Any net section that remained in the water for more than one night was identified using the Japanese phrase, tome ami. As the soaking time for extended retrievals was not consistent with the assumption of a single night soak, these sections needed to be identified and reported separately.

IV. OBSERVED FISHING EFFORT BY TIME AND AREA

Table 2 contains the amount of retrieval monitoring by observers in standardized tans by 1° latitude by 1° longitude blocks by 10 day periods from June 1 to the last observed operation in December. Some vessels carrying observers fished outside the western and northern boundaries. Rather than identifying each 1°X 1° block outside the fishing area, all out of boundary fishing is reported in the column headed "<170°E" for violations of the western boundary, and in the appropriate row (depending on the month) for the northern boundary.

V. RESULTS FROM OBSERVATIONS OF THE SQUID FISHERY

Tables 3a to 4 summarize fishing effort and catch by month. Cephalopods (squid and octopus) are reported first, followed by the bycatch of salmon, marine fishes, seabirds, marine mammals and turtles. Table 3a excludes extended retrieval sections, Table 3b reports only extended retrieval sections, and Table 4 is the total monitoring effort including both regular sections and extended retrieval sections.

Tables 5a to 6 summarize catch and bycatch information by vessel. Note that the vessel with license number 797 is reported twice. This vessel carried different observers on two separate fishing trips. Some of the tables in this report contain total number of animals released alive in the last column of the table.

In Tables 3 to 6, the bycatch of some species has been combined and reported in groups (e.g., Other fishes). For more detailed information on the total number of species recorded and the total bycatch, Table 24 provides totals for all species.

A. Differences in data and methods of reconciliation.

1. Problems with classifying marine mammals, turtles, and seabirds as: Dead, Alive, or Unknown.

Each marine mammal and seabird incidentally taken in an observed net section was classified as "Dead", "Alive", or "Unknown" during retrieval. The definitions of the categories are:

Dead - the numbers of animals by species of entangled birds, mammals, and turtles entangled which showed no sign of life, whether they are brought on board or not.

Alive - the numbers of animals by species of entangled birds, mammals and turtles which were disentangled, released alive and are thought to have a high probability of survival.

Unknown - the numbers of animals by species of entangled birds, mammals and turtles whose fate is unknown plus the number that, having been released or fallen from the net, are still alive but are likely to die soon.

In 1989, in the case of northern fur seals, a sub-category "Momentary entanglement" was included under "Released Alive" by U.S. observers. This category was designed to include fur seals which played at the nets during retrieval and became momentarily caught in the net. This category of take was very subjective and resulted in poor information on the numbers of animals taken and so was not included in 1990.

2. Treatment of data during compilation of the tables.

The date and time of day logged for an operation was the calendar day (Japan Standard Time, JST) on the beginning of net retrieval; on some days there were two operations. The location for an operation was the latitude and longitude recorded to the nearest minute at the beginning of setting of the net.

For most operations environmental data such as sea surface temperature and meteorological data were collected at the beginning of set and end of retrieval, or beginning and end of set and retrieval.

3. Procedures and problems inherent to specific species groups.

a. Squid

Counts of squid were recorded by observed net section. The squid counts represent those individuals removed from the net by the crew and do not include squid dropping out of the net during the retrieval.

b. Fishes

In the 1990 observer program bycatch monitoring was conducted for as many species of fishes and cephalopods as possible. Observers were trained to identify the principal bycatch species likely to be encountered and provided with guidelines to assist in the field classification of unfamiliar specimens. Observers were encouraged to take photographs for species they couldn't identify in the field.

Sometimes observers had difficulty in distinguishing between similar species (for example, striped marlin and blue marlin; albacore and bigeye tuna) because they could only glimpse the fish briefly while the net was coming aboard or were unable to inspect it closely. Observers used their best judgement in such cases, with instructions to classify fish in "unidentified" categories when appropriate. For example, an observer unable to distinguish between striped marlin and blue marlin would classify such fish with the code provided for "unidentified marlin". In some cases voucher photographs were used later to confirm or alter initial fish species identifications. Despite precautions taken to avoid misidentifications the fish and cephalopod bycatch data undoubtedly contain undetectable classification errors. However, we believe such errors are negligible.

Other problems arose when the catch rates of bycatch species, particularly Pacific pomfret or pelagic armorhead, were very high. In such instances accurate counting of the bycatch of these species was impossible and observers had to resort to rough estimates. In addition, when large numbers of Pacific pomfret and/or pelagic armorhead were caught they were not always removed from the net. In these situations some of these species may have been counted again in the following operation. In extreme cases observers simply could not estimate the bycatch of pomfret or armorhead with reasonable precision and a special code was entered in the records to indicate that the bycatch of these species could not be counted accurately.

Salmonids were enumerated as they were removed from the net, and in many instances biological samples and data such as scales and body lengths were obtained by the observers. In some cases, gonad weight was measured and recorded on the cards used for collecting scales but not all observers were equipped with balances for weighing gonads. Gonad weight data are used to determine the state of maturity of salmonids captured at sea.

Salmonid scale samples were impressed in acetate sheets and copies were provided to each national section along with biological data corresponding to the fish sampled. Species determined from scale samples were used in the data compilation. In cases where scales were not available, the competence of the observer was examined to determine whether or not to accept their identification or assign the individual fish to the category "unknown". The competence of the observer in identifying salmonids was measured by their ability to correctly identify fish which were sampled for scales and results of the scale analysis confirmed the identification recorded by the observer.

c. Marine Mammals

All marine mammals observed entangled in the net were classified and recorded, as "Dead", "Alive", or "Unknown" condition. For animals released, the observers recorded whether net remained on the animal. Animals brought on board the vessel were examined by the observer. Species, sex, body length, and the presence of lactation were recorded for all animals examined. If an animal had a tag, the number and country of origin were recorded.

Observers were instructed to record a marine mammal in an unidentified category (e.g., unidentified dolphin) if they could not positively identify it to species. Species identifications were confirmed for each observer using photographs taken by the observer, or in the case of Japanese observers, using biological specimen material (teeth or gonads). In a few cases identifications were changed to unidentified because no confirming photograph was available and the location where the animal was caught was outside the known range for that species. This was done with identifications of truei-type of Dall's porpoise caught outside their range. Some identifications were changed from "unidentified" to a species when materials such as photographs provided positive identification.

d. Seabirds

Seabirds entangled in driftnets were enumerated and identified using protocols developed and agreed to by scientists of the three countries. For each entanglement, including individuals which dropped from the net before reaching the vessel, the bird's status (alive, dead or unknown) was recorded.

Bird counts are considered by observers and supervising scientists to be conservative but reliable. There were occasions when individual specimens were missed. Entanglements, especially dropouts, are difficult to see 1) during periods of darkness, high winds and heavy seas, and fog and rain, 2) when large numbers of other species such as squid either hide birds or monopolize the observer's attention, 3) when dropouts occur before nets are lifted from the water, and 4) when large numbers of birds are entangled together. Small or all-dark species are most likely to be missed under these conditions. Problems were compounded when decked specimens were not saved for the observer to verify his counts. Infrequently, dead birds were not removed from nets during retrieval and may have been counted again during the next retrieval.

Observers were trained in seabird identification and provided with the best available field identification guides. Confirmation of identifications was accomplished by use of specimen photographs and labeled frozen specimens reviewed by supervising scientists. In a few cases where the review of specimens and photographs, or debriefing of the observer, indicated that the observer had difficulty in identifications, the questionable data were converted to the next higher taxon, e.g., "sooty shearwater" was changed to "unidentified dark shearwater". To avoid the most difficult problem, distinguishing sooty and short-tailed shearwaters, observers were also instructed to confirm identifications by measuring the bill length of each specimen. If measurements could not be made, the bird was listed as an "unidentified dark shearwater". The category of "unidentified dark shearwater" thus contains both sooty and short-tailed shearwaters. It is also highly likely that a few pale-footed shearwaters have also been included.

Incorrect identifications resulted from 1) excessive damage to the specimen either in the net or while being taken from the net, and 2) squid ink on the plumage obscuring key identification characteristics. These problems were compounded when specimens were not retained for examination by the observer, by the inexperience of most of the observers, and by the availability of only museum skins during training. Specimens in driftnets look very different from specimens in a museum or pictures in a field guide.

d. Turtles

Turtle observations were a duty of every observer. Observations were made on every turtle seen during a monitored net section. A special data form was provided for recording such information. Observers noted whether an entangled turtle was decked, was cut out of the net by the crew, or dropped out during retrieval.

Many observers also recorded observations of unentangled turtles seen during monitored section retrievals (for instance, turtles seen swimming or floating near the net), and observations of turtles encountered during non-monitored section retrievals. The figures in this summary report include only the observations of turtles that were seen entangled in monitored sections.

Uncertainty in species identification was the principal problem with turtle bycatch monitoring. Although detailed field guides and training were provided to assist identification, most driftnet observers had little or no prior experience observing turtles. In addition, observers sometimes did not have access to turtles retrieved on the deck or could not see dropouts clearly. Further, even when turtles were accessible, some biological characteristics used to differentiate turtle species showed greater variability than expected.

To minimize such problems every observer's initial turtle identifications were reviewed by a turtle expert taking into account photographs, drawings, and notes provided by the observer. Observers' identifications were sometimes revised by the expert. Unless an identification could be made with confidence the turtle was classified as 'species unknown'.

As with marine mammals and seabirds, the status of turtles was recorded with respect to the "alive", "dead", and "unknown" categories. Of the 35 turtles taken in the observed net section retrievals, 27 were reported as being alive. The status of some turtles classified as "unknown" may have been released alive but there was insufficient information to determine their status.

B. Fishing Effort, Catch and Bycatch in the Squid Driftnet Fishery.

1. Observed Fishing Effort by 10-day period and month.

It was agreed among the authors that observed fishing effort in standardized tans (50m) would be summarized, from the data collected at the operation level of resolution, by 1°x 1° statistical area and 10-day time period. Any finer scale of areal resolution is unwarranted because the driftnets are typically 50 - 60 km in length and the length of one degree of longitude varies from 77 to 90 km in the fishing area.

2. Summary tables of bycatch by month and by vessel.

Bycatch was summarized by species groups and major species within each group by month (Table 3a and 3b) and by observed vessel (Table 5a and 5b) for operations with and without extended retrievals. Tables 4 and 6 summarize these catches for all observed operations, June-December. The catch of squid and amount of observed fishing effort is also shown on these four tables. Row totals are given for: 1) the total number of animals observed by species group which is the sum of <u>decked and dropouts</u> for marine fish and salmonids, 2) the total number of animals observed by species group which is the sum of the categories dead, alive and unknown for marine mammals, turtles and seabirds, and 3) the total number of animals observed (for marine mammals, seabirds and turtles) in the category "alive", reported in Tables 5a-6. Dropouts of squid were not counted by observers.

3. Catch and bycatch tables by species groups by appropriate time period and area.

The catch of squid and bycatch of major species groups, and the catch rate (number of animals per standardized 1000 tans) are summarized in a series of tables by 1°x 1° statistical area and either 10-day or monthly time period. Squid catch and salmonid bycatch (Table 7), salmonid bycatch by species (Table 8), and dark shearwater (sooty, short-tailed and unidentified dark shearwater) bycatch (Table 13) are reported by 10-day period while the bycatch of other species is summarized by monthly time period. Catch rates were expressed in numbers of animals per 1000 tans to avoid small fractional values and because a typical driftnet operation consisted of about 1000 tans of gear.

The catch of marine mammals was summarized separately for northern fur seal and other pinnipeds (Table 9), dolphins and porpoises (Table 10), and other and unidentified cetaceans (Table 11). The bycatch of seabirds was summarized by the major species groups of: albatrosses (Table 12), sooty, short-tailed and unidentified dark shearwaters (Table 13), shearwaters (Table 14), storm petrels (Table 15), alcids (Table 16), northern fulmar and other seabirds (Table 17) and other identified seabirds (Table 18). The bycatch of non-salmonid fishes was summarized by major species groups of: sharks and rays (Table 19); tunas and billfishes (Table 20); Pacific pomfret, pelagic armorhead and yellowtail (Table 21); and louvar, ocean sunfish and other fishes (Table 22). The bycatch of turtles is summarized in Table 23. Table 24 summarizes total numbers observed by species for all operations. Table 25 lists scientific and common names of species used in this report.

In Tables 6-23, data from the second day and beyond of an extended retrieval and those from subsurface net sections, dropouts of cephalopods and fishes were excluded.

4. Recovery of tagged animals.

a. Salmonids

Two coded-wire tagged steelhead trout were recovered from the bycatch of salmonids. Both fish were recovered on 3 August in 1°x 1° statistical areas 44°N, 158°W and 45°N, 160°W. Both fish originated from the USFWS Dworshak hatchery which is located on the Snake River, a tributary to the Columbia River. Two other steelhead trout missing the adipose fin were recovered but neither snout sample contained a coded-wire tag.

b. Marine Mammals

Nine northern fur seals which were tagged were captured during the 1990 squid fishing season. Of these, three were tagged on the Pribilof Islands, four by the U.S.S.R. and two for which origin could not be determined.

c. Seabirds

Five banded Laysan albatross and one banded black-footed albatross were recovered by observers during the 1990 program. The Laysan albatross were from the Leeward Hawaiian Islands while the black-footed albatross was from Japan.

d. Turtles

No tagged turtles were recovered in 1990.

VI. DISCUSSION OF OBSERVATIONS OF THE SQUID FISHERY

The 1990 squid driftnet observer program was improved in several ways over the 1989 pilot observer program. The observer coverage was expanded to produce better estimates of the bycatch of most of the species for which there was particular concern about fishery impacts. In addition, all animals caught were identified to species, or the lowest taxon possible. Data were collected on the number of dropouts for most fish species. Data on marine mammals, seabirds, salmonids, and turtles were recorded the same as in 1989.

Any expansion of bycatch rate information in the tables of this report to produce estimates of total bycatch in the squid driftnet fishery must be done with great caution. It is also necessary to consider that catch rates for some species may vary from year to year and that data from one year may not be an accurate representation of the average catch rate. In all cases, it is necessary to carefully assess how well the sample coverage represents the temporal and spatial distribution of total squid driftnet fishing effort before any meaningful conclusions can be reached.

VII. FUTURE SQUID DRIFTNET OBSERVER PROGRAMS

Agreements for 1991 through June 30, 1992 were signed on April 23, 1991 between Mr. K. Imamura, Councillor General, Fisheries Agency of Japan, and Mr. D. Colson, Department of State and Dr. W. Fox, Department of Commerce, and with Dr. J. Davis, Regional Director-Science, Pacific Region, Canadian Department of Fisheries and Oceans. Based on the catch rates and 1990 fishing effort, the number of driftnet observations in the squid fishery will be a minimum of 2,626 operations. Of these, 45 will be on large class vessels (over 100 gross tons in the previous tonnage classification or over 130 gross tons in the new Japanese tonnage classification) and 16 on small class vessels. The number of observer will be 10 Canadian, 21 Japanese and 30 U.S. The observers will be placed on vessels throughout the fishing season, in proportion to the amount of monthly fishing effort based on the 1990 fishing effort data. The number of driftnet sets monitored by each observer will be tallied weekly to ensure observer coverage the agreed minimum will be met for the season and for each month. Data to be collected by observers in 1991 is the same as for 1990.

The number of observations and scientific observers for the large-mesh fleet will be agreed upon by September 30, 1991, after the 1990 scientific observer data have been examined.

Japan will test subsurface nets on one research and six commercial vessels in 1991. Scientific observers will be placed on the commercial vessels which will use both subsurface and surface nets in individual driftnet operations in June and July. In addition, one research vessel will test biodegradable net material.

Japan will deploy research vessels to study the squid fishery area and one in the large-mesh fishery area. U.S. and Canadian scientists have been invited and will participate in these cruises. The U.S. will deploy one research vessel to study marine mammals and seabirds, oceanography, and salmon distribution in the squid fishing grounds in 1991 and one research vessel to study the dropout problem, and to sample squid and fish. Scientists from Japan, Canada, Korea and Taiwan are

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Table 1. Japanese squid driftnet vessels carrying observers in the 1990 observer program.

Vessel Name	License No.	Length (m)	Month: May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Observer Nationality: Canada	Japan	USA
Nittou maru No. 58	203	30.10		----	----							x	
Seitoku maru No. 17	205	28.10		----	----						x		
Yahata maru No. 88	225	29.40				----	----						x
Shou-ei maru No. 15	231	31.40		----	----								x
Houshin maru No. 83	232	29.00			----								x
Houki maru No. 8	233	30.50		----	----							x	
Seishou maru No. 38	259	29.30		----	----								x
Keiyou maru No. 51	267	27.40		----	----								x
Hiromasa maru No. 33	269	26.10			----								x
Houtoku maru No. 21	275	28.70		----	----							x	
Hanasaki maru No. 62	287	29.70			----							x	
Tsune maru No. 1	292	28.60			----								x
Kinsei maru No. 31	303	28.40				----							x
Kin-ei maru No. 26	305	28.20				----							x
Tokoaki maru No. 2	313	29.50					----	----					x
Tokachi maru No. 82	317	28.20		----	----							x	
Inari maru No. 38	323	27.40			----							x	
Tokuju maru No. 5	341	31.50			----								x
Kouei maru No. 11	344	30.80		----	----							x	
Yoneyama maru No. 5	366	30.80		----	----							x	
Ari-iso maru No. 18	379	29.50		----	----								x
Seihou maru No. 63	382	27.10			----							x	
Fukuyoshi maru No. 53	389	30.10				----	----						x
Hokkou maru No. 137	607	51.00			----	----							x
Sankichi maru No. 8	608	49.70		----	----	----						x	
Hokusen maru No. 1	614	48.60			----	----						x	
Shunyou maru No. 178	619	70.20			----	----	----						x
Ryou-un maru No. 3	620	57.00						----	----				x
Ryo-un maru No. 16	624	69.90			----	----	----						x
Shinsei maru No. 8	636	44.20			----	----						x	
Suzu maru No. 8	638	42.50			----	----						x	
Kinpo maru No. 18	642	50.40		----	----	----					x		
Shoutoku maru No. 63	648	59.00		----	----	----	----						x
Tomi maru No. 88	655	51.70		----	----							x	
Eikyu maru No. 86	668	51.00		----	----	----							x
Hatsue maru No. 68	669	51.70		----	----	----							x
Manryou maru No. 52	675	51.00		----	----	----							x
Keiyou maru No. 28	680	58.00		----	----	----						x	
Chouyou maru No. 57	686	47.40		----	----	----							x
Yamasan maru No. 58	692	63.50			----	----	----	----				x	
Daian maru No. 118	694	49.60		----	----	----					x		

Vessel Name	License No.	Length (m)	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Canada	Japan	USA
			Month								Observer Nationality		
Kaiyou maru No. 35	704	50.30		----	----	----							x
Syoushin maru No. 83	705	47.20			----	----						x	
Shoushin maru No. 85	706	47.20		----	----	----							x
Shinsei maru No. 51	723	47.10	----	----	----							x	
Choukou maru No. 68	728	60.00			----	----	----						x
Taisei maru No. 35	734	49.60					----	----					x
Tomi maru No. 63	737	45.10				----	----	----				x	
Chiyo maru No. 75	743	44.50		----	----	----					x		
Ryou-an maru No. 21	747	50.00			----	----	----						x
Ryuhou maru No. 25	765	46.20	----	----	----							x	
Chou-un maru No. 31	768	50.70		----	----	----							x
Ten-yu maru No. 28	776	67.10					----	----				x	
Daikichi maru No. 3	778	41.20	----	----	----							x	
Daitoku maru No. 51	779	44.30		----	----	----	----				x		
Kashima maru No. 8	783	51.00		----	----	----	----						x
Hakkou maru No. 51	784	62.90			----	----	----	----			x		
Kyowa maru No. 1	785	59.40		----	----	----							x
Koufuku maru No. 88	788	48.70					----	----				x	
Ryoufuku maru No. 23	789	57.50							----	----			x
Suwa maru No. 18	797	44.80					----	----					x
Suwa maru No. 18	797	44.80		----	----							x	
Suwa maru No. 38	800	63.00			----							x	
Fuji maru No. 63	804	63.00	----	----	----							x	
Fuju maru No. 11	805	43.60	----	----	----							x	
Anyou maru No. 7	806	54.40		----	----	----					x		
Houshin maru No. 30	816	43.10		----	----								x
Kin-ei maru No. 58	818	46.20		----	----	----					x		
Housei maru No. 38	819	49.30	----	----	----	----						x	
Kouyou maru No. 23	832	44.10	----	----	----	----					x		
Eihou maru No. 32	834	44.10		----	----	----						x	
Akebono maru No. 65	837	43.10	----	----	----							x	
Hakurei maru No. 18	842	43.10		----	----	----							x
Eihou maru No. 62	848	50.70	----	----	----	----	----						x
Kyoshin maru No. 28	861	44.20		----	----						x		

Table 2. Observed fishing effort in standardized tans (50m) and number of operations by 1 x 1 degree statistical area and 10-day period in the 1990 Japanese squid driftnet fishery.

WESTERN REGION

Fishing Period: June 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
39	Total	0	700	0	0	0	0	0	750	2326	4696	8661	6741	0	4932	2757	0	0	0	0	0	4720
	Squid	0	420	0	0	0	0	0	750	1551	3207	6212	4725	0	3364	1952	0	0	0	0	0	3395
	Pomfret	0	700	0	0	0	0	0	750	2326	4696	8661	6741	0	4932	2757	0	0	0	0	0	4720
	Armorhead	0	700	0	0	0	0	0	750	2326	4696	8661	6741	0	4932	2757	0	0	0	0	0	4720
	No. ops.	0	1	0	0	0	0	0	1	3	6	11	9	0	6	4	0	0	0	0	0	6
38	Total	0	0	924	0	0	0	0	0	0	0	3059	1598	0	8589	810	0	0	0	0	1313	913
	Squid	0	0	616	0	0	0	0	0	0	0	2152	1101	0	5681	540	0	0	0	0	974	609
	Pomfret	0	0	924	0	0	0	0	0	0	0	3059	1598	0	8589	810	0	0	0	0	1313	913
	Armorhead	0	0	924	0	0	0	0	0	0	0	3059	1598	0	8589	810	0	0	0	0	1313	913
	No. ops.	0	0	1	0	0	0	0	0	0	0	4	2	0	10	1	0	0	0	0	2	1
37	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	725
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	486
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	725
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	725
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Fishing Period: June 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
39	Total	0	0	0	0	684	684	1938	6516	3313	0	3094	4582	10239	19277	12806	0	1809	0	0	0	25505
	Squid	0	0	0	0	456	456	1368	4479	2209	0	2140	3204	6918	13031	8441	0	1206	0	0	0	17548
	Pomfret	0	0	0	0	684	684	1938	6516	3313	0	3094	4582	10239	19125	12806	0	1809	0	0	0	25505
	Armorhead	0	0	0	0	684	684	1938	6516	3313	0	3094	4582	10239	19277	12806	0	1809	0	0	0	25505
	No. ops.	0	0	0	0	1	1	3	9	4	0	4	6	13	23	15	0	2	0	0	0	28
38	Total	0	0	0	0	0	0	0	0	0	0	672	672	0	3527	672	0	0	0	0	1008	8268
	Squid	0	0	0	0	0	0	0	0	0	0	448	448	0	2430	448	0	0	0	0	720	6081
	Pomfret	0	0	0	0	0	0	0	0	0	0	672	672	0	3527	672	0	0	0	0	1008	8268
	Armorhead	0	0	0	0	0	0	0	0	0	0	672	672	0	3527	672	0	0	0	0	1008	8268
	No. ops.	0	0	0	0	0	0	0	0	0	0	1	1	0	4	1	0	0	0	0	1	9

Fishing Period: June 21 - End of June

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
41	Total	0	0	0	0	0	0	0	0	3004	0	0	0	0	0	0	0	0	0	0	1020	0
	Squid	0	0	0	0	0	0	0	0	2076	0	0	0	0	0	0	0	0	0	0	680	0
	Pomfret	0	0	0	0	0	0	0	0	3004	0	0	0	0	0	0	0	0	0	0	1020	0
	Armorhead	0	0	0	0	0	0	0	0	3004	0	0	0	0	0	0	0	0	0	0	1020	0
	No. ops.	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0
40	Total	0	0	0	0	0	0	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	499	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	754	0	705	0	648	9526	9581	2697	1528	0	6266	1646	7342	13284	1920	0	735	840	5099	17641
	Squid	0	539	0	470	0	432	7057	6659	1966	1176	0	4370	1176	4854	8894	1280	0	490	600	3647	11844
	Pomfret	0	754	0	705	0	648	9526	9467	2697	1528	0	6266	1646	7097	13284	1920	0	735	840	5099	17641
	Armorhead	0	754	0	705	0	648	9526	9581	2697	1528	0	6266	1646	7342	13284	1920	0	735	840	5099	17641
	No. ops.	0	1	0	1	0	1	13	15	4	2	0	8	2	9	15	2	0	1	1	6	20
38	Total	0	0	0	0	0	0	0	1885	0	0	0	588	0	735	5365	1693	735	0	0	4687	5582
	Squid	0	0	0	0	0	0	0	1430	0	0	0	352	0	490	3537	1129	490	0	0	3304	3900
	Pomfret	0	0	0	0	0	0	0	1700	0	0	0	588	0	735	5365	1693	735	0	0	4687	5582
	Armorhead	0	0	0	0	0	0	0	1885	0	0	0	588	0	735	5365	1693	735	0	0	4687	5582
	No. ops.	0	0	0	0	0	0	0	8	0	0	0	1	0	1	6	2	1	0	0	5	6
37	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observed fishing effort in standardized tans (50m) and number of operations by 1 x 1 degree statistical area and 10-day period in the 1990 Japanese squid driftnet fishery.

EASTERN REGION

Fishing Period: June 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
39	Total	9988	9565	5492	0	0	6722	1270	2388	0	0	0	1058	6858	0	0	1058	1058	0	752	0	0	0	0	902	0
	Squid	6791	6638	3884	0	0	4576	1016	1592	0	0	0	756	4464	0	0	756	756	0	451	0	0	0	0	601	0
	Pomfret	9988	9413	5492	0	0	6722	1270	2388	0	0	0	1058	6584	0	0	1058	1058	0	752	0	0	0	0	902	0
	Armorhead	9988	9565	5492	0	0	6722	1270	2388	0	0	0	1058	6858	0	0	1058	1058	0	752	0	0	0	0	902	0
	No. ops.	11	11	6	0	0	8	2	8	0	0	0	1	8	0	0	1	1	0	1	0	0	0	0	1	0
38	Total	1980	913	0	924	7112	11081	7578	0	0	0	907	2930	1058	0	0	1008	844	3143	3644	3908	0	0	0	0	0
	Squid	1384	609	0	660	5198	7409	5098	0	0	0	604	2052	756	0	0	720	700	2279	2768	2706	0	0	0	0	0
	Pomfret	1980	918	0	924	7112	11081	7578	0	0	0	907	2930	1058	0	0	1008	844	8143	3644	3908	0	0	0	0	0
	Armorhead	1980	913	0	924	7112	11081	7578	0	0	0	907	2930	1058	0	0	1008	844	3148	3644	8908	0	0	0	0	0
	No. ops.	3	1	0	1	9	12	8	0	0	0	1	8	1	0	0	1	1	4	4	4	0	0	0	0	0
37	Total	0	0	0	1682	4896	8294	9736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	1123	3316	2146	6391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	1682	4621	3294	9461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	1682	4896	3294	9736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	2	6	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: June 11 - 20

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	167W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
39	Total	8660	13473	7942	4534	4631	17520	6302	1704	0	0	823	9204	4314	1839	0	1848	864	3603	803	0	0	0	0	0	0
	Squid	5907	9177	5642	3177	3134	11784	4200	1136	0	0	548	6234	3087	1227	0	1232	576	2565	485	0	0	0	0	0	0
	Pomfret	8660	13473	7942	4402	4312	17360	6302	1704	0	0	823	8901	4814	1839	0	1848	864	3603	803	0	0	0	0	0	0
	Armorhead	8660	18473	7942	4534	4681	17360	6302	1704	0	0	823	9204	4314	1839	0	1848	864	3603	803	0	0	0	0	0	0
	No. ops.	10	16	10	6	5	20	7	2	0	0	1	10	5	2	0	2	1	4	1	0	0	0	0	0	0
38	Total	6010	9260	2608	4400	0	6893	792	852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	4231	6569	1782	2933	0	4690	528	568	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	6010	9140	2608	4400	0	6893	792	852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	6010	9260	2608	4400	0	6898	792	852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	8	12	3	5	0	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: June 21 - End of June

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	20792	2509	6745	4215	1842	930	0	0	0	1452	797	3852	6573	11695	9210	17056	14535	4928	3619	0	808	2874	833	0	0
	Squid	14489	1616	4623	2810	1228	620	0	0	0	968	478	2568	4382	8112	6402	12050	9677	3237	2359	0	646	1973	666	0	0
	Pomfret	20792	2509	6745	4215	1842	930	0	0	0	1452	797	3852	6573	11695	9210	17056	14535	4378	3482	0	808	2874	833	0	0
	Armorhead	20792	2509	6745	4215	1842	930	0	0	0	1452	797	3852	6573	11695	9210	17056	14535	4928	3619	0	808	2874	833	0	0
	No. ops.	23	3	7	5	2	1	0	0	0	2	1	5	8	13	11	20	17	6	4	0	1	3	1	0	0
38	Total	904	672	4690	1849	0	792	0	0	0	0	0	0	2673	957	8495	0	0	0	0	0	0	0	0	0	0
	Squid	646	448	3228	1230	0	528	0	0	0	0	0	0	1782	638	5702	0	0	0	0	0	0	0	0	0	0
	Pomfret	904	672	4690	1849	0	792	0	0	0	0	0	0	2673	957	8495	0	0	0	0	0	0	0	0	0	0
	Armorhead	904	672	4690	1849	0	792	0	0	0	0	0	0	2673	957	8495	0	0	0	0	0	0	0	0	0	0
	No. ops.	1	1	5	2	0	1	0	0	0	0	0	0	3	1	10	0	0	0	0	0	0	0	0	0	0
37	Total	0	0	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd. (Western Region)

Fishing Period: July 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
43	Total	1450	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	910	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	1450	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	1450	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	1622	3524	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	1372	2460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	1622	3524	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	1622	3524	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	810	6116	2798	427	0	1560	2245	3754	15668	5520	1652	0	0	1470	0	960	6755	2450	7374	6939	7409
	Squid	540	4179	1964	324	0	1148	1578	2738	11726	3799	1211	0	0	980	0	640	4576	1638	4996	4700	5048
	Pomfret	810	5711	2798	427	0	1560	2245	3754	15004	5520	1652	0	0	1347	0	960	6755	2450	7374	6939	7069
	Armorhead	810	6116	2798	427	0	1560	2245	3754	15668	5520	1652	0	0	1470	0	960	6755	2450	7374	6939	7409
	No. ops.	1	9	4	1	0	3	4	6	31	9	3	0	0	2	0	1	8	3	8	8	9
40	Total	0	0	0	0	0	0	648	547	686	3342	2902	2273	0	17530	960	0	0	1790	1350	2604	300
	Squid	0	0	0	0	0	0	432	364	490	2266	1934	1554	0	11829	640	0	0	1190	1050	1826	300
	Pomfret	0	0	0	0	0	0	648	456	686	3342	2902	2273	0	16975	960	0	0	1790	1350	2314	300
	Armorhead	0	0	0	0	0	0	648	547	686	3342	2902	2273	0	17530	960	0	0	1790	1350	2604	300
	No. ops.	0	0	0	0	0	0	1	1	1	4	4	3	0	21	1	0	0	2	2	3	1
39	Total	0	0	0	0	0	0	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	686	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: July 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
43	Total	0	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	1996	475	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	1247	405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	1996	475	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	1996	475	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	11390	4136	207	2130	4123	4999	0	3377	0	0	0	0	0	0	0	0	0	490	7497	5295
	Squid	0	8104	2899	207	1472	3187	3559	0	2277	0	0	0	0	0	0	0	0	0	857	4995	3831
	Pomfret	0	10959	4135	207	2130	4002	4999	0	3164	0	0	0	0	0	0	0	0	0	490	7497	5295
	Armorhead	0	11390	4136	207	2130	4123	4999	0	3377	0	0	0	0	0	0	0	0	0	490	7497	5295
	No. ops.	0	20	8	1	3	7	8	0	5	0	0	0	0	0	0	0	0	0	1	10	6

Fishing Period: July 21 - End of July

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	8641	9511	900	710	1420	0	1809	2838	0	0	0	0	0	0	765	0	652	0	778	0
	Squid	0	6134	6976	600	473	946	0	1206	2077	0	0	0	0	0	0	495	0	517	0	540	0
	Pomfret	0	8641	9511	900	710	1420	0	1809	2838	0	0	0	0	0	0	630	0	652	0	778	0
	Armorhead	0	8641	9511	900	710	1420	0	1809	2838	0	0	0	0	0	0	765	0	652	0	778	0
	No. ops.	0	15	13	1	1	2	0	3	5	0	0	0	0	0	0	1	0	1	0	1	0

Table 2. Observer effort cont'd (Eastern Region)

Fishing Period: July 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	3130	2630	2906	1190	4650	0	1058	907	2853	6655	13567	2376	823	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	2028	1710	1699	938	3100	0	756	604	2160	4815	10031	1848	494	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	3130	2630	2906	1190	4650	0	1058	907	2853	6655	13567	2376	823	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	3130	2630	2906	1190	4495	0	1058	907	2853	6655	13567	2376	823	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	4	4	4	2	5	0	1	1	6	8	20	3	1	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	4900	7508	11087	21340	13615	5636	1704	0	0	1452	9065	11860	672	2448	0	924	1720	5203	5419	2654	0	0	0	0	0
	Squid	3198	5823	8098	17052	9543	3720	1136	0	0	968	6275	7794	448	1632	0	660	1187	3523	3771	1716	0	0	0	0	0
	Pomfret	4900	7508	11087	20865	13295	5636	1704	0	0	1452	9065	11860	672	2448	0	924	1720	5066	5419	2654	0	0	0	0	0
	Armorhead	4900	7508	11087	21340	13615	5636	1704	0	0	1452	8905	11860	672	2448	0	924	1720	5203	5419	2654	0	0	0	0	0
	No. ops.	6	10	16	34	20	8	2	0	0	2	14	16	1	3	0	1	2	6	6	3	0	0	0	0	0
40	Total	0	789	0	921	0	0	0	0	864	0	2574	3983	0	0	0	840	7096	0	0	828	0	0	0	0	0
	Squid	0	789	0	614	0	0	0	0	576	0	1716	2608	0	0	0	560	4773	0	0	499	0	0	0	0	0
	Pomfret	0	789	0	921	0	0	0	0	864	0	2574	3983	0	0	0	840	6821	0	0	828	0	0	0	0	0
	Armorhead	0	789	0	921	0	0	0	0	864	0	2574	3983	0	0	0	840	7096	0	0	828	0	0	0	0	0
	No. ops.	0	1	0	1	0	0	0	0	1	0	3	5	0	0	0	1	8	0	0	1	0	0	0	0	0
39	Total	0	0	0	2763	0	0	0	0	0	0	0	0	930	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	1842	0	0	0	0	0	0	0	0	620	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	2763	0	0	0	0	0	0	0	0	930	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	2763	0	0	0	0	0	0	0	0	930	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: July 11 - 20

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	15521	6504	8193	20425	1669	1694	6203	1278	2066	823	1469	3300	792	792	3696	3696	924	1821	0	0	0	3024	1008	864	0
	Squid	10730	4258	5518	14083	1142	1162	4278	852	1491	548	1194	2375	528	528	2640	2640	660	1214	0	0	0	2160	720	576	0
	Pomfret	14967	6504	8193	20425	1669	1694	6063	1278	2066	823	1469	3300	792	792	3696	3696	924	1821	0	0	0	3024	1008	864	0
	Armorhead	15521	6504	8193	20425	1669	1694	6203	1278	2066	823	1469	3300	792	792	3696	3696	924	1821	0	0	0	3024	1008	864	0
	No. ops.	19	8	9	23	2	2	8	2	3	1	2	4	1	1	4	4	1	2	0	0	0	3	1	1	0
41	Total	7673	12612	23312	19939	19032	23821	16978	700	6616	0	4202	957	800	0	0	924	0	2621	0	800	0	0	0	0	0
	Squid	5216	8918	16224	14565	13475	16824	12502	420	4726	0	2908	638	533	0	0	660	0	1747	0	667	0	0	0	0	0
	Pomfret	7266	12612	21949	19660	17525	22093	16978	700	6616	0	4202	957	800	0	0	924	0	2621	0	800	0	0	0	0	0
	Armorhead	7673	12612	23312	19939	19032	23821	16978	700	6504	0	4042	638	800	0	0	924	0	2621	0	800	0	0	0	0	0
	No. ops.	10	16	27	25	26	30	24	1	10	0	5	1	1	0	0	1	0	3	0	1	0	0	0	0	0

Fishing Period: July 21 - End of July

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
42	Total	5586	10936	6682	13124	22010	5331	13554	30948	20061	8208	7560	9095	2599	0	0	0	1920	7853	2626	0	0	0	1008	0	0
	Squid	3725	7477	4583	9260	14646	3594	9548	21601	13720	5710	5087	6206	1777	0	0	0	1280	5288	1750	0	0	0	720	0	0
	Pomfret	5586	10936	5721	12737	21202	4496	12574	80003	18527	8053	7560	9095	2467	0	0	0	1920	7853	2626	0	0	0	1008	0	0
	Armorhead	5586	10936	6682	13124	22010	5331	13554	30635	19641	8208	7560	9095	2599	0	0	0	1920	7853	2626	0	0	0	1008	0	0
	No. ops.	7	13	8	16	26	7	17	38	25	9	9	11	3	0	0	0	2	9	3	0	0	0	1	0	0
41	Total	0	4391	4575	13803	12437	14355	6694	1452	5412	8507	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	2971	3049	9317	8341	9879	4508	968	3552	5759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	4391	4575	12652	11161	11923	5544	1116	5412	8507	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	4391	4575	13803	12437	14355	6694	1452	5412	8507	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	5	6	16	14	15	7	2	7	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd. (Western Region)

Fishing Period: August 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
45	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Total	0	0	0	0	0	0	0	0	520	4620	710	8529	6773	3294	0	750	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	312	3655	473	6058	5524	2651	0	450	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	520	4620	710	8529	6773	3294	0	450	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	520	4620	710	8529	6773	3294	0	750	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	1	9	1	12	10	4	0	1	0	0	0	0	0
43	Total	0	0	490	600	900	0	2450	1445	852	1847	0	1386	1819	2458	0	750	0	0	520	2168	1357
	Squid	0	0	490	450	600	0	1778	963	568	857	0	1117	1819	1978	0	450	0	0	312	1512	1084
	Pomfret	0	0	490	600	900	0	2450	1445	852	1347	0	1117	1819	1575	0	450	0	0	312	2064	1084
	Armorhead	0	0	490	600	900	0	2450	1445	852	1347	0	1386	1819	2458	0	750	0	0	520	2168	1357
	No. ops.	0	0	2	1	1	0	3	2	1	2	0	2	5	5	0	1	0	0	1	5	2
42	Total	0	960	810	900	735	2504	1624	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	620	540	600	490	1712	1083	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	790	675	900	735	2504	1499	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	960	810	900	735	2504	1624	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	1	1	1	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	710	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	473	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	710	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	710	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: August 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
45	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Total	0	2555	8971	2767	0	0	0	5105	6637	3979	13774	18343	8323	600	0	0	0	0	0	0	0
	Squid	0	1955	6654	2024	0	0	0	3400	4494	3029	9996	12582	5942	450	0	0	0	0	0	0	0
	Pomfret	0	2555	8971	2767	0	0	0	5105	6637	3979	13774	18193	7199	600	0	0	0	0	0	0	0
	Armorhead	0	2555	8971	2767	0	0	0	5105	6637	3979	13774	18343	8323	600	0	0	0	0	0	0	0
	No. ops.	0	5	15	4	0	0	0	7	9	8	19	25	12	1	0	0	0	0	0	0	0
43	Total	0	1106	1225	0	0	0	0	0	0	3498	2747	0	0	0	0	0	0	0	0	0	0
	Squid	0	865	870	0	0	0	0	0	0	2415	1869	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	971	1225	0	0	0	0	0	0	3498	2747	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	1106	1225	0	0	0	0	0	0	3498	2747	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	2	2	0	0	0	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0

Fishing Period: August 21 - End of August

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
45	Total	0	0	0	0	0	0	0	0	0	0	0	0	564	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	564	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	564	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	564	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
44	Total	0	1200	4110	2130	2010	5773	4476	10080	3453	1734	8592	15061	4948	2279	0	0	0	0	0	960	0
	Squid	0	800	2830	1590	1340	3854	3519	6964	2425	1156	5770	11202	3459	1986	0	0	0	0	0	640	0
	Pomfret	0	1200	4110	2130	2010	5773	4476	9123	3453	1734	8273	13645	3034	2139	0	0	0	0	0	640	0
	Armorhead	0	1200	4110	2130	2010	5773	4476	10080	3453	1734	8592	15061	4948	2279	0	0	0	0	0	960	0
	No. ops.	0	2	6	3	3	8	7	13	4	2	10	22	6	3	0	0	0	0	0	1	0
43	Total	0	2232	0	711	3888	7360	2229	0	0	794	1634	0	0	0	0	0	0	0	0	0	0
	Squid	0	1494	0	477	2589	4928	1579	0	0	529	1089	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	2232	0	711	3888	7080	2229	0	0	794	1634	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	2232	0	711	3888	7360	2229	0	0	794	1634	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	3	0	1	5	9	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0
42	Total	0	960	0	0	2280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	640	0	0	1520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	960	0	0	2280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	960	0	0	2280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd (Eastern Region)

Fishing Period: August 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
45	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4981	9113	7744	840	5632	2150	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3471	6120	5102	560	3809	1593	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4981	9113	7744	840	5632	2150	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4981	9113	7744	840	5632	2150	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	10	10	1	7	3	0	0	0
44	Total	0	0	0	0	0	0	0	0	0	0	2761	2508	5047	2471	0	0	792	1860	6389	3170	5218	4724	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	1840	1666	3506	1593	0	0	528	1240	4441	2205	3479	3255	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	2761	2508	5047	2471	0	0	792	1860	6389	3170	5218	4724	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	2761	2508	5047	2311	0	0	792	1860	6389	3170	5218	4724	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	3	3	8	3	0	0	1	2	7	4	6	6	0	0	0
43	Total	0	1626	3862	6824	828	0	0	0	775	2354	2409	4687	6330	800	0	0	4620	2670	4298	1684	0	1748	0	0	0
	Squid	0	1084	2717	4836	552	0	0	0	465	1720	1606	3753	5250	538	0	0	3080	1730	2913	1122	0	1165	0	0	0
	Pomfret	0	1626	3862	6600	828	0	0	0	620	2354	2409	4575	6330	800	0	0	4620	2670	4298	1684	0	1748	0	0	0
	Armorhead	0	1626	3862	6824	828	0	0	0	775	2354	2249	4687	5851	800	0	0	4620	2670	4298	1684	0	1748	0	0	0
	No. ops.	0	2	5	10	1	0	0	0	1	3	3	7	10	1	0	0	5	3	5	2	0	2	0	0	0
42	Total	1540	2983	5522	0	0	0	0	0	0	900	900	1737	0	0	0	0	0	4148	4436	6378	0	0	0	0	0
	Squid	1094	2172	3876	0	0	0	0	0	0	600	750	1248	0	0	0	0	0	2764	3006	4251	0	0	0	0	0
	Pomfret	1504	2854	5393	0	0	0	0	0	0	900	900	1737	0	0	0	0	0	4148	4436	6378	0	0	0	0	0
	Armorhead	1640	2983	5522	0	0	0	0	0	0	900	900	1737	0	0	0	0	0	4148	4436	6378	0	0	0	0	0
	No. ops.	2	4	7	0	0	0	0	0	0	1	1	3	0	0	0	0	0	5	5	7	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: August 11 - 20

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
45	Total	0	0	0	0	0	0	864	0	0	2460	7868	1500	0	0	0	1220	0	4170	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	576	0	0	1640	5938	1000	0	0	0	920	0	2930	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	864	0	0	2460	7868	1500	0	0	0	1220	0	4170	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	864	0	0	2460	7868	1500	0	0	0	1220	0	4170	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	0	0	3	11	2	0	0	0	2	0	5	0	0	0	0	0	0	0
44	Total	0	800	0	0	0	0	0	0	0	0	3514	13449	10536	1968	803	792	0	0	0	0	0	0	0	0	0
	Squid	0	480	0	0	0	0	0	0	0	0	2556	8964	7278	1309	574	528	0	0	0	0	0	0	0	0	0
	Pomfret	0	480	0	0	0	0	0	0	0	0	3514	13449	10312	1968	803	792	0	0	0	0	0	0	0	0	0
	Armorhead	0	800	0	0	0	0	0	0	0	0	3514	13449	10536	1968	803	792	0	0	0	0	0	0	0	0	0
	No. ops.	0	1	0	0	0	0	0	0	0	0	4	15	13	3	1	1	0	0	0	0	0	0	0	0	0
43	Total	0	0	0	0	0	0	0	0	0	0	801	6575	14092	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	531	4703	9830	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	801	6675	14092	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	801	6196	14092	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	1	8	19	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: August 21 - End of August

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
45	Total	0	0	0	0	0	0	871	2672	0	1824	4106	6071	7943	1821	861	960	0	960	3348	801	0	0	0	0	0
	Squid	0	0	0	0	0	0	591	1792	0	1216	2737	4943	5962	1214	574	640	0	640	2101	531	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	871	2572	0	1824	4106	6071	7943	1821	861	960	0	960	3348	801	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	871	2672	0	1824	4106	6071	7943	1821	861	960	0	960	3348	801	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	3	0	2	5	10	10	2	1	1	0	1	4	1	0	0	0	0	0
44	Total	0	0	0	0	0	0	0	0	0	0	0	4982	3213	0	861	0	0	0	960	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	3383	2224	0	574	0	0	0	640	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	4982	3213	0	861	0	0	0	960	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	4982	3213	0	861	0	0	0	960	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	6	5	0	1	0	0	0	1	0	0	0	0	0	0
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd. (Western Region)

Fishing Period: September 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
45	Total	0	0	771	782	0	0	0	840	861	738	1617	0	0	600	750	630	2646	756	0	1800	3312
	Squid	0	0	502	506	0	0	0	560	615	492	1119	0	0	450	500	378	1638	504	0	1200	2208
	Pomfret	0	0	771	782	0	0	0	840	861	738	1617	0	0	600	750	630	2646	756	0	1800	3312
	Armorhead	0	0	771	782	0	0	0	840	861	738	1617	0	0	600	750	630	2646	756	0	1800	3312
	No. ops.	0	0	1	1	0	0	0	1	1	1	2	0	0	1	1	1	4	1	0	2	4
44	Total	0	0	4116	3146	0	0	0	810	2010	0	3436	7312	4471	750	0	0	0	0	0	0	900
	Squid	0	0	2862	2133	0	0	0	540	1340	0	2326	4992	3067	500	0	0	0	0	0	0	600
	Pomfret	0	0	4116	3146	0	0	0	810	2010	0	2478	7312	4471	750	0	0	0	0	0	0	900
	Armorhead	0	0	4116	3146	0	0	0	810	2010	0	3436	7312	4471	750	0	0	0	0	0	0	900
	No. ops.	0	0	5	5	0	0	0	1	3	0	4	10	6	1	0	0	0	0	0	0	1
43	Total	0	0	1996	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	1242	0	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	1996	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	1996	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	1405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	1170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	1405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	1405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: September 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
45	Total	0	0	0	0	0	0	0	0	0	0	0	0	904	0	4546	677	756	2504	0	1512	5788
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	603	0	3114	456	504	1723	0	1008	3912
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	904	0	4546	677	756	2504	0	1512	5410
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	904	0	4546	677	756	2504	0	1512	5788
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	1	1	3	0	2	7
44	Total	0	0	0	0	0	0	1695	0	0	791	0	0	0	504	1512	0	756	0	0	0	0
	Squid	0	0	0	0	0	0	1171	0	0	791	0	0	0	378	1008	0	504	0	0	0	0
	Pomfret	0	0	0	0	0	0	1695	0	0	791	0	0	0	504	1512	0	756	0	0	0	0
	Armorhead	0	0	0	0	0	0	1695	0	0	791	0	0	0	504	1512	0	756	0	0	0	0
	No. ops.	0	0	0	0	0	0	2	0	0	1	0	0	0	1	2	0	1	0	0	0	0
43	Total	0	1856	5005	2752	0	1549	0	0	0	1545	378	756	1638	2520	756	0	0	0	0	0	0
	Squid	0	1448	3382	1913	0	1155	0	0	0	1030	378	504	1092	1974	504	0	0	0	0	0	0
	Pomfret	0	1856	4780	2752	0	1549	0	0	0	1545	378	756	1638	2520	756	0	0	0	0	0	0
	Armorhead	0	1856	5005	2752	0	1549	0	0	0	1545	378	756	1638	2520	756	0	0	0	0	0	0
	No. ops.	0	3	7	5	0	2	0	0	0	2	1	1	2	3	1	0	0	0	0	0	0
42	Total	0	0	1375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	897	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	1115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	1375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	772	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	515	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	772	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	772	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

Fishing Period: September 21 - End of September

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
44	Total	0	0	0	0	1590	1665	837	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	1190	1134	576	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	1590	1665	837	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	1590	1665	837	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Total	0	0	816	3128	787	768	846	904	1808	0	0	0	960	1920	4106	0	0	0	0	0	0
	Squid	0	0	544	2472	522	512	558	603	1206	0	0	0	640	1280	2711	0	0	0	0	0	0
	Pomfret	0	0	816	3128	787	768	846	904	1808	0	0	0	960	1920	4106	0	0	0	0	0	0
	Armorhead	0	0	816	3128	787	768	846	904	1808	0	0	0	960	1920	4106	0	0	0	0	0	0
	No. ops.	0	0	1	4	1	1	1	1	2	0	0	0	1	2	5	0	0	0	0	0	0
42	Total	1393	3353	0	2400	710	1158	3734	1719	0	0	0	0	7182	1055	0	0	0	0	0	0	0
	Squid	1065	2314	0	1728	580	643	2770	1281	0	0	0	0	4830	754	0	0	0	0	0	0	0
	Pomfret	1393	3353	0	2268	710	1158	3734	1719	0	0	0	0	7182	1055	0	0	0	0	0	0	0
	Armorhead	1393	3353	0	2400	710	1158	3734	1719	0	0	0	0	7182	1055	0	0	0	0	0	0	0
	No. ops.	2	5	0	3	1	2	5	2	0	0	0	0	9	1	0	0	0	0	0	0	0
41	Total	0	522	0	0	0	860	0	828	0	0	0	0	0	1440	0	0	0	0	0	0	0
	Squid	0	391	0	0	0	730	0	558	0	0	0	0	0	1120	0	0	0	0	0	0	0
	Pomfret	0	522	0	0	0	860	0	828	0	0	0	0	0	1440	0	0	0	0	0	0	0
	Armorhead	0	522	0	0	0	860	0	828	0	0	0	0	0	1440	0	0	0	0	0	0	0
	No. ops.	0	1	0	0	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	644	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	515	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	644	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	644	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd (Eastern Region)

Fishing Period: September 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
45	Total	0	0	0	0	0	0	0	900	1656	4901	0	4456	4090	0	0	0	960	960	1920	800	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	600	1247	3179	0	2971	2774	0	0	0	640	640	1280	532	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	750	1656	3766	0	4456	3946	0	0	0	960	960	1920	800	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	900	1656	4757	0	4456	4090	0	0	0	960	960	1920	800	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	1	2	6	0	5	5	0	0	0	1	1	2	1	0	0	0	0	0
44	Total	0	0	0	0	0	0	0	0	930	2366	0	754	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	620	2086	0	754	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	930	2366	0	754	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	930	2366	0	754	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	1	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Total	0	0	0	0	0	0	0	0	0	1632	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	1352	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	1632	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	1632	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: September 11 - 20

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
45	Total	0	0	0	0	0	0	0	0	960	1554	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	640	1394	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	640	1394	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	960	1554	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Total	0	0	0	0	0	0	0	0	0	2141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	1468	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	2141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	2141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: September 21 - End of September

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
44	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd. (Western Region)

Fishing Period: October 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
43	Total	0	0	0	0	0	0	0	0	620	3419	2421	0	844	2755	3900	2853	756	915	0	0	0
	Squid	0	0	0	0	0	0	0	0	620	2301	1695	0	576	1827	2601	1953	504	732	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	620	3419	2421	0	844	2755	3900	2853	756	915	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	620	3419	2421	0	844	2755	3900	2853	756	915	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	1	4	3	0	1	3	5	4	1	1	0	0	0
42	Total	0	0	4350	1500	0	0	0	0	0	0	873	904	8382	0	1937	1428	0	0	0	0	0
	Squid	0	0	3450	1200	0	0	0	0	0	0	572	603	5589	0	1376	1158	0	0	0	0	0
	Pomfret	0	0	4200	1200	0	0	0	0	0	0	873	904	8382	0	1937	1428	0	0	0	0	0
	Armorhead	0	0	4350	1500	0	0	0	0	0	0	873	904	8382	0	1937	1428	0	0	0	0	0
	No. ops.	0	0	5	2	0	0	0	0	0	0	1	1	10	0	2	2	0	0	0	0	0
41	Total	2857	758	768	0	0	0	0	0	0	0	0	0	960	4688	603	0	0	0	0	0	0
	Squid	2029	538	540	0	0	0	0	0	0	0	0	0	640	3126	603	0	0	0	0	0	0
	Pomfret	2857	758	768	0	0	0	0	0	0	0	0	0	960	4688	603	0	0	0	0	0	0
	Armorhead	2857	758	768	0	0	0	0	0	0	0	0	0	960	4688	603	0	0	0	0	0	0
	No. ops.	4	1	1	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0

Fishing Period: October 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
43	Total	0	0	0	0	0	0	0	0	0	0	837	0	0	0	0	0	0	1512	4101	3474	0
	Squid	0	0	0	0	0	0	0	0	0	0	576	0	0	0	0	0	0	1008	2931	2343	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	837	0	0	0	0	0	0	1512	4101	3474	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	837	0	0	0	0	0	0	1512	4101	3474	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	5	4	0
42	Total	0	2297	1321	2290	0	0	0	0	846	1647	0	0	2268	756	960	0	900	0	0	0	0
	Squid	0	1646	875	1846	0	0	0	0	576	1080	0	0	1512	504	640	0	600	0	0	0	0
	Pomfret	0	2297	1321	2290	0	0	0	0	846	1647	0	0	2268	756	960	0	900	0	0	0	0
	Armorhead	0	2297	1321	2290	0	0	0	0	846	1647	0	0	2268	756	960	0	900	0	0	0	0
	No. ops.	0	3	2	3	0	0	0	0	1	2	0	0	3	1	1	0	1	0	0	0	0
41	Total	0	0	2369	0	0	0	0	0	0	0	0	1716	960	960	3568	0	0	0	0	0	0
	Squid	0	0	1641	0	0	0	0	0	0	0	0	1144	640	640	2627	0	0	0	0	0	0
	Pomfret	0	0	2369	0	0	0	0	0	0	0	0	1716	960	960	3568	0	0	0	0	0	0
	Armorhead	0	0	2369	0	0	0	0	0	0	0	0	1716	960	960	3568	0	0	0	0	0	0
	No. ops.	0	0	3	0	0	0	0	0	0	0	0	2	1	1	4	0	0	0	0	0	0
40	Total	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	588	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Total	0	0	1476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	1476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	1476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	1476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Total	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	588	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: October 21 - End of October

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
42	Total	0	0	0	0	0	0	0	0	0	846	0	0	800	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	558	0	0	480	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	846	0	0	800	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	846	0	0	800	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	2440	0	3924	3312	900	900	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	1580	0	2616	2208	600	600	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	2440	0	3924	3312	900	900	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	2440	0	3924	3312	900	900	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	3	0	5	4	1	1	0	0	0	0	0	0
40	Total	0	0	882	0	0	0	0	0	1489	1489	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	882	0	0	0	0	0	992	992	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	882	0	0	0	0	0	1489	1489	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	882	0	0	0	0	0	1489	1489	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	1	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	0	0	0	0	3528	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	2646	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	3528	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	3528	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd (Eastern Region)

Fishing Period: October 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
3	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: October 11 - 20

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
43	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: October 21 - End of October

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
42	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Observer effort cont'd. (Western Region)

Fishing Period: November 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
41	Total	0	0	0	0	0	0	733	2321	1710	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	488	1587	1222	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	733	2321	1710	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	733	2321	1710	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	840	4487	3253	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	560	2908	2168	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	840	4487	3253	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	840	4487	3253	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	1	6	4	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: November 11 - 20

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
41	Total	0	0	0	0	0	0	0	855	0	0	0	1710	2321	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	611	0	0	0	1222	1587	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	855	0	0	0	1710	2321	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	855	0	0	0	1710	2321	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	1	0	0	0	2	3	0	0	0	0	0	0	0	0

Fishing Period: November 21 - End of November

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
41	Total	0	0	0	0	0	3420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	2442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	3420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	3420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Total	0	0	0	0	611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: December 1 - 10

North Lat. Degrees		<170E	170E	171E	172E	173E	174E	175E	176E	177E	178E	179E	179W	178W	177W	176W	175W	174W	173W	172W	171W	170W
39	Total	0	3420	2199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	2444	1464	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	3420	2199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	3420	2199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Observer effort cont'd (Eastern Region)

Period: November 1 - 10

ᵗ.		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
	otal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	quid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	fret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	head	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	mfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	rhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ng Period: November 11 - 20

Lat. es		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	morhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	o. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

hing Period: November 21 - End of November

th Lat. grees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
l	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fishing Period: December 1 - 10

North Lat. Degrees		169W	168W	167W	166W	165W	164W	163W	162W	161W	160W	159W	158W	157W	156W	155W	154W	153W	152W	151W	150W	149W	148W	147W	146W	145W
39	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Squid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pomfret	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Armorhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. ops.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3a. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Japanese squid driftnet fishery- Extended retrieval sections excluded.

	June	July	August	September	October	November	December	Total
Total effort (50m tans)	635596	830755	474482	169895	105784	22267	5621	2244400
Squid effort (50m tans)	436466	579369	334410	119039	74624	15169	3910	1562987
P. Pomfret effort (50m tans)	632206	807124	463528	166034	105334	22267	5621	2202114
Armorhead effort (50m tans)	635436	829122	473205	169751	105784	22267	5621	2241186
Number of operations	755	1086	637	221	129	29	7	2864
Species / species group								
Other cephalopods	648	1947	105	86	131	0	0	2917
Flying squid	1115819	3602202	2041226	412210	222207	53486	9613	7456763
Steelhead	0	5	12	1	0	0	0	18
Chinook salmon	2	2	6	3	0	0	0	13
Chum salmon	12	442	1456	10	1	0	0	1921
Coho salmon	177	1128	50	4	0	0	0	1359
Pink salmon	5	7	8	0	0	0	0	20
Sockeye salmon	0	4	6	2	0	0	0	12
Unidentified salmon	100	6184	44	5	1	0	0	6334
Blue shark	28144	29182	12032	3917	3920	1392	2001	80588
Salmon shark	1495	2372	1541	244	125	22	6	5805
Other sharks	1122	108	43	39	11	1	0	1324
Rays	6	9	0	1	0	0	0	16
Albacore tuna	3695	35564	38758	6509	2428	105	46	87105
Skipjack tuna	6	29	10562	89657	57299	2702	1652	161907
Northern bluefin tuna	43	48	15	0	1	0	0	107
Bigeye tuna	7	9	2	0	1	0	0	19
Yellowfin tuna	2	21	1	0	1	0	0	25
Unidentified tuna	53	38	28	53	5	0	0	177
Other Scombridae	0	1	1	0	1	0	0	3
Swordfish	46	116	77	113	28	16	11	407
Striped marlin	8	17	13	4	1	0	0	43
Pacific blue marlin	0	0	2	0	0	0	0	2
Sailfish	0	2	0	0	0	0	0	2
Shortnose spearfish	3	17	7	0	3	0	0	30
Other billfishes	2	1	3	1	0	0	0	7
Yellowtail	8305	1731	722	1579	342	62	42	12783
Mahi mahi	33	45	35	0	884	0	0	997
Pacific pomfret	442680	1418652	847812	318803	66200	3979	263	3098389

Table 3a. (Continued)

	June	July	August	September	October	November	December	Total
Louvar	227	929	137	5	0	0	0	1298
Ocean sunfish	250	2306	660	167	82	52	2	3519
Other fishes	2958	3301	2266	1493	424	44	10	10496
Black-footed albatross	19	52	76	29	4	2	0	182
Laysan albatross	155	183	320	52	47	8	2	767
Other & unidentified albatross	16	5	4	0	1	0	0	26
Sooty shearwater	1902	4870	7110	1584	359	193	0	16018
Short-tailed shearwater	128	170	74	377	28	68	0	845
Unidentified dark shearwater	421	2354	3158	1025	79	6	0	7043
Pale-footed shearwater	14	16	16	6	16	2	0	70
Buller's shearwater	34	53	208	20	17	0	0	332
Other & unidentified shearwaters	121	110	136	3	13	0	0	383
Northern fulmar	0	8	2	0	57	47	7	121
Oth. & unident. fulmars & petrels	2	9	11	2	2	1	0	27
Leach's storm petrel	1	3	0	1	1	1	0	7
Fork-tailed storm petrel	3	13	160	1	0	0	0	177
Other & unident. storm petrels	1	18	250	30	1	0	0	300
Tufted puffin	14	2	0	5	2	0	0	23
Horned puffin	19	13	1	0	0	2	0	35
Other & unidentified alcids	1	1	0	0	1	0	0	3
Other & unidentified seabirds	37	70	2	0	1	0	0	110
Dead & unk. northern fur seals	15	96	107	9	3	0	0	230
Total northern fur seals	70	219	184	24	12	0	0	509
Other pinnipeds	2	8	9	1	0	0	0	20
Northern right whale dolphin	86	271	280	146	23	6	0	812
Pacific white-sided dolphin	103	124	157	52	1	0	0	437
Dall's porpoise	20	130	108	37	3	0	0	298
Common dolphin	8	2	3	10	35	4	7	69
Other dolphins	11	22	7	3	4	0	0	47
Total dolphins	228	549	555	248	66	10	7	1663
Other cetaceans	6	11	0	3	2	0	0	22
Unidentified turtle	2	1	1	1	2	0	0	7
Leatherback turtle	11	8	5	2	1	0	0	27
Loggerhead turtle	0	1	0	0	0	0	0	1

Table 3b. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Japanese squid driftnet fishery- Extended retrieval sections only.

	June	July	August	September	October	November	December	Total
Total effort (50m tans)	2179	22134	11480	1336	0	367	0	37496
Squid effort (50m tans)	1217	15556	7984	1061	0	123	0	25941
P. pomfret effort (50m tans)	2179	21870	10901	1186	0	367	0	36503
Armorhead effort (50m tans)	2179	22134	11320	1336	0	367	0	37336
Number of operations	5	79	42	7	0	1	0	134
Species / species group								
Flying squid	16403	279205	170722	14725	0	1434	0	482489
Chinook salmon	0	0	3	1	0	0	0	4
Chum salmon	0	9	3	0	0	0	0	12
Coho salmon	4	39	0	0	0	0	0	43
Pink salmon	0	1	1	0	0	0	0	2
Unidentified salmon	0	9	0	0	0	0	0	9
Blue shark	534	401	413	7	0	13	0	1368
Salmon shark	4	299	146	9	0	0	0	458
Other sharks	3	0	3	2	0	0	0	8
Rays	0	0	1	0	0	0	0	1
Albacore tuna	146	486	2230	40	0	4	0	2906
Skipjack tuna	0	0	699	25	0	0	0	724
Unidentified tuna	0	1	17	0	0	0	0	18
Swordfish	1	0	3	0	0	0	0	4
Striped marlin	3	0	0	0	0	0	0	3
Other billfishes	1	0	0	0	0	0	0	1
Yellowtail	161	30	7	1	0	1	0	200
Mahi mahi	0	4	0	0	0	0	0	4
Pacific pomfret	342	47074	74600	3644	0	6	0	125666
Other pomfrets	0	2	11	0	0	0	0	13
Pelagic armorhead	0	5971	533	42	0	0	0	6546
Louvar	0	31	7	0	0	0	0	38
Ocean sunfish	0	53	63	0	0	5	0	121
Other fishes	10	212	156	1	0	2	0	381
Black-footed albatross	0	4	0	1	0	0	0	5
Laysan albatross	0	25	48	0	0	0	0	73
Other & unidentified albatross	0	0	3	0	0	0	0	3
Sooty shearwater	14	653	1641	161	0	46	0	2515
Short-tailed shearwater	0	29	35	5	0	10	0	79
Unidentified dark shearwater	0	184	1027	0	0	0	0	1211

Table 3b. (Continued)

	June	July	August	September	October	November	December	Total
Pale-footed shearwater	0	1	0	0	0	0	0	1
Buller's shearwater	2	5	41	3	0	0	0	51
Other & unidentified shearwaters	0	9	0	0	0	0	0	9
Northern fulmar	0	0	0	0	0	10	0	10
Oth. & unident. fulmars & petrels	0	0	3	0	0	0	0	3
Fork-tailed storm petrel	1	4	14	0	0	0	0	19
Other & unident. storm petrels	0	0	2	0	0	0	0	2
Other & unidentified seabirds	0	14	0	0	0	0	0	14
Dead & unk. northern fur seals	1	6	16	0	0	0	0	23
Total northern fur seals	4	12	20	0	0	0	0	36
Northern right whale dolphin	0	17	8	3	0	0	0	28
Pacific white-sided dolphin	0	12	10	0	0	0	0	22
Dall's porpoise	0	10	8	2	0	0	0	20
Other dolphins	0	2	0	1	0	0	0	3
Total dolphins	0	41	26	6	0	0	0	73

Table 4. *Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by month in the 1990 Japanese squid driftnet fishery- All data.*

	June	July	August	September	October	November	December	Total
Total effort (50m tans)	637775	852889	485963	171231	105784	22633	5621	2281896
Squid effort (50m tans)	437683	594925	342395	120100	74624	15291	3910	1588928
P. Pomfret effort (50m tans)	634385	828995	474430	167220	105334	22633	5621	2238618
Armorhead effort (50m tans)	637615	851256	484527	171087	105784	22633	5621	2278523
Number of operations	757	1096	639	222	129	29	7	2879
Species / species group								
Other cephalopods	648	1947	105	86	131	0	0	2917
Flying squid	1132222	3881407	2211948	426935	222207	54920	9613	7939252
Steelhead trout	0	5	12	1	0	0	0	18
Chinook salmon	2	2	9	4	0	0	0	17
Chum salmon	12	451	1459	10	1	0	0	1933
Coho salmon	181	1167	50	4	0	0	0	1402
Pink salmon	5	8	9	0	0	0	0	22
Sockeye salmon	0	4	6	2	0	0	0	12
Unidentified salmon	100	6193	44	5	1	0	0	6343
Blue shark	28678	29583	12445	3924	3920	1405	2001	81956
Salmon shark	1499	2671	1687	253	125	22	6	6263
Other sharks	1125	108	46	41	11	1	0	1332
Rays	6	9	1	1	0	0	0	17
Albacore tuna	3841	36050	40988	6549	2428	109	46	90011
Skipjack tuna	6	29	11261	89682	57299	2702	1652	162631
Northern bluefin tuna	43	48	15	0	1	0	0	107
Bigeye tuna	7	9	2	0	1	0	0	19
Yellowfin tuna	2	21	1	0	1	0	0	25
Unidentified tuna	53	39	45	53	5	0	0	195
Other Scombridae	0	1	1	0	1	0	0	3
Swordfish	47	116	80	113	28	16	11	411
Striped marlin	11	17	13	4	1	0	0	46
Pacific blue marlin	0	0	2	0	0	0	0	2
Sailfish	0	2	0	0	0	0	0	2
Shortnose spearfish	3	17	7	0	3	0	0	30
Other billfishes	3	1	3	1	0	0	0	8
Yellowtail	8466	1761	729	1580	342	63	42	12983
Mahi mahi	33	49	35	0	884	0	0	1001
Pacific pomfret	443022	1465726	922412	322447	66200	3985	263	3224055
Other pomfrets	86	636	329	64	3	0	0	1118

Table 4. (Continued)

	June	July	August	September	October	November	December	Total
Pelagic armorhead	50175	243244	67723	18474	2	0	0	379618
Louvar	227	960	144	5	0	0	0	1336
Ocean sunfish	250	2359	723	167	82	57	2	3640
Other fishes	2968	3513	2422	1494	424	46	10	10877
Black-footed albatross	19	56	76	30	4	2	0	187
Laysan albatross	155	208	368	52	47	8	2	840
Other & unidentified albatross	16	5	7	0	1	0	0	29
Sooty shearwater	1916	5523	8751	1745	359	239	0	18533
Short-tailed shearwater	128	199	109	382	28	78	0	924
Unidentified dark shearwaters	421	2538	4185	1025	79	6	0	8254
Pale-footed shearwater	14	17	16	6	16	2	0	71
Buller's shearwater	36	58	249	23	17	0	0	383
Other & unidentified shearwaters	121	119	136	3	13	0	0	392
Northern fulmar	0	8	2	0	57	57	7	131
Oth. & unident. fulmars & petrels	2	9	14	2	2	1	0	30
Leach's storm petrel	1	3	0	1	1	1	0	7
Fork-tailed storm petrel	4	17	174	1	0	0	0	196
Other & unident. storm petrels	1	18	252	30	1	0	0	302
Tufted puffin	14	2	0	5	2	0	0	23
Horned puffin	19	13	1	0	0	2	0	35
Other & unidentified alcids	1	1	0	0	1	0	0	3
Other & unidentified seabirds	37	84	2	0	1	0	0	124
Dead & unk. northern fur seals	16	102	123	9	3	0	0	253
Total northern fur seals	74	231	204	24	12	0	0	545
Other pinnipeds	2	8	9	1	0	0	0	20
Northern right whale dolphin	86	288	288	149	23	6	0	840
Pacific white-sided dolphin	103	136	167	52	1	0	0	459
Dall's porpoise	20	140	116	39	3	0	0	318
Common dolphin	8	2	3	10	35	4	7	69
Other dolphins	11	24	7	4	4	0	0	50
Total dolphins	228	590	581	254	66	10	7	1736
Other cetaceans	6	11	0	3	2	0	0	22
Unidentified turtle	2	1	1	1	2	0	0	7
Leatherback turtle	11	8	5	2	1	0	0	27
Loggerhead turtle	0	1	0	0	0	0	0	1

Table 5a. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Japanese squid driftnet fishery- Extended retrieval sections excluded.

Vessel License Number	203	205	225	231	232	233	259	267	269	275	287	292	303	305	313	317	323	341	344	366	379	382	389	607	608
Number of Operations	30	28	35	36	21	16	17	15	13	12	15	16	10	12	24	24	11	22	36	16	20	7	26	46	65
Total tans (50m)	23155	20685	24913	21497	12555	10231	11535	11731	8208	7056	6992	7768	5423	8007	17086	15552	6125	15084	24133	9526	14510	5091	14400	31922	50630
Squid tans (50m)	16243	14085	16810	15428	9044	7409	8624	8611	5724	5194	4948	5785	3788	6031	12331	10584	4392	10035	16170	6704	10150	3433	9800	22125	35670
P.Pomfret tans (50m)	23155	20095	24158	21383	12555	10231	11104	11731	8208	7056	6627	7160	5423	8007	17086	15552	6125	14724	23520	9408	14510	5091	14400	31680	50630
Armorhead tans (50m)	23155	20685	24913	21497	12555	10231	11535	11731	8208	7056	6992	7768	5423	8007	17086	15552	6125	15084	24133	9526	14510	5091	14400	31922	50630
Other cephalopods	7	1	2	0	14	0	7	0	0	0	20	1	0	3	5	0	0	0	0	0	5	0	0	8	0
Flying squid	56074	58897	53655	31615	58429	57293	45037	34329	37374	47983	55961	35307	14336	20969	51963	51966	40118	52922	57698	51764	46949	23257	33358	167019	183593
Steelhead	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Chinook salmon	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0
Chum salmon	5	90	165	6	3	11	56	2	47	3	2	218	1263	0	0	8	1	0	2	1	3	0	0	0	1
Coho salmon	3	365	0	19	19	14	148	9	9	98	3	6	18	0	0	1	4	35	278	61	28	0	0	4	1
Pink salmon	1	0	0	2	0	1	1	0	0	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
Sockeye salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Unidentified salmon	0	512	0	1	56	0	4721	19	1	0	0	26	39	0	2	0	1	160	0	0	612	0	0	108	0
Blue shark	46	457	551	86	69	13	173	244	93	148	53	23	226	26	1109	37	87	86	387	53	49	67	39	871	3373
Salmon shark	130	151	30	66	126	21	61	89	106	0	60	45	18	2	38	143	92	70	93	46	98	22	28	31	117
Other sharks	0	1	1	40	1	0	9	1	0	0	0	1	2	1	0	8	0	3	0	0	1	1	19	33	14
Rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Albacore tuna	236	119	384	87	83	176	16	44	0	6	70	74	337	482	115	13	1	382	606	164	321	76	236	4017	4312
Skipjack tuna	0	0	8402	0	0	0	0	0	0	0	0	0	0	0	10089	0	0	1	0	0	0	0	158	5651	0
Northern bluefin tuna	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Bigeye tuna	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Yellowfin tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
Unidentified tuna	0	0	0	1	4	0	0	1	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	12	0
Other Scombridae	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Swordfish	0	1	4	0	0	0	0	0	1	0	0	0	0	2	10	0	0	0	4	0	1	0	0	8	5
Striped marlin	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shortnose spearfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other billfishes	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Yellowtail	101	12	3	9	0	18	2	0	0	0	0	0	0	1	15	8	0	3	50	0	16	0	0	1	587
Mahi mahi	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Pacific pomfret	28981	20596	18033	27002	19818	11598	19261	15193	5415	4121	30233	22304	5389	8446	20980	5102	16330	17401	17108	19774	45876	5066	8970	113429	64718
Other pomfrets	0	0	9	13	0	0	0	0	0	15	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0
Pelagic armorhead	0	9	0	5	0	0	4	2	0	0	0	0	0	0	0	6	0	226	112	0	0	0	0	3338	15117
Louvar	1	2	2	1	18	0	1	1	4	0	0	2	3	0	0	0	1	6	85	0	3	0	0	40	0
Ocean sunfish	12	80	19	8	23	4	4	18	47	0	18	2	10	4	30	1	5	33	101	0	21	12	7	76	105
Other fishes	105	198	233	55	117	0	67	75	70	0	55	88	67	58	242	15	14	74	126	0	79	0	69	619	187
Black-footed albatross	1	0	4	2	0	0	2	0	0	1	0	1	0	0	1	0	0	0	2	1	1	0	0	0	11
Laysan albatross	2	17	30	5	4	2	12	5	10	2	2	13	12	3	19	7	0	17	0	1	3	2	14	15	7
Other & unidentified albatross	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sooty shearwater	141	855	296	312	181	27	68	76	256	82	19	216	50	32	24	28	27	91	87	9	26	11	15	62	550
Short-tailed shearwater	66	8	1	30	1	2	0	1	0	17	7	6	0	0	0	1	0	0	0	0	0	0	0	0	1
Unidentified dark shearwater	0	0	87	30	17	0	10	87	261	0	6	111	1	14	8	0	0	293	527	7	447	0	348	58	660
Pale-footed shearwater	1	2	1	1	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	1	4
Buller's shearwater	1	1	4	5	2	0	0	4	1	0	0	2	0	0	2	0	0	8	0	0	1	0	0	2	49
Other & unidentified shearwaters	2	14	0	0	0	0	0	0	2	0	8	0	4	2	0	7	1	1	5	0	0	0	0	0	0
Northern fulmar	0	0	0	0	3	0	0	2	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0
Oth. & unident. fulmars & petrels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1
Leach's stormpetrel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Other & unident. stormpetrels	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tufted puffin	0	1	0	0	0	0	1	8	0	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
Horned puffin	3	11	0	0	1	0	1	3	0	1	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
Other & unidentified alcids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified seabirds	0	0	0	0	1	0	0	14	0	0	0	1	0	1	0	1	0	0	0	0	2	0	0	43	0
Dead & unk. northern fur seals	0	2	0	3	5	1	6	1	0	3	1	2	0	0	0	1	1	3	2	1	8	0	0	0	14
Total northern fur seals	8	7	2	9	9	3	14	3	2	17	2	6	0	0	0	7	8	12	2	9	11	0	1	0	27
Other pinnipeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Northern right whale dolphin	1	0	27	2	3	1	0	1	3	0	0	0	1	11	7	0	0	1	9	0	0	3	24	10	14
Pacific white-sided dolphin	1	2	6	8	3	0	1	1	4	0	2	5	0	0	3	0	1	0	0	0	4	0	6	9	15
Dall's porpoise	0	12	2	8	8	6	3	5	4	1	6	3	3	0	0	7	1	2	3	1	5	0	3	2	2
Common dolphin	0	3	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
Other dolphins	0	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	7	2
Total dolphins	2	19	35	18	14	7	4	7	11	1	8	9	4	11	25	7	2	5	12	1	9	3	33	28	33
Other cetaceans	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Unidentified turtle	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Leatherback turtle	0	1	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0
Loggerhead turtle	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 5a. continued

Vessel License Number	614	619	620	624	636	638	642	648	655	668	669	675	680	686	692	694	704	705	706	723	728	734	737	743	747
Number of Operations	22	64	27	62	13	16	45	69	41	71	65	67	45	45	70	46	66	24	54	40	54	13	42	55	40
Total tans (50m)	16416	52132	23375	46388	9006	9117	37187	59544	37171	56955	53240	54511	36838	34235	63840	38445	59202	17940	33828	37675	40873	10579	31725	40150	30241
Squid tans (50m)	12449	35885	16332	32650	6793	7223	25883	39546	24729	38707	35990	36647	24884	25223	42560	28178	40073	13524	23844	26846	27576	7080	21384	27300	21659
P.Pomfret tans (50m)	16006	51700	23375	45595	8880	9117	30768	58433	36864	56955	52950	52831	35918	34235	62080	38445	51705	17940	31916	37675	40729	10579	31725	40150	30241
Armorhead tans (50m)	16416	51988	23375	46388	9006	9117	37187	59896	37171	56955	53240	54356	36838	34235	63840	38445	57288	17940	33716	37675	40873	10579	31725	40150	30241
Other cephalopods	0	9	0	18	0	0	7	12	0	2	4	1	2	8	0	24	8	23	2	5	3	1	177	3	0
Flying squid	71734	223263	45377	169518	47560	82030	125998	162497	99641	195196	163762	207279	121506	172984	162720	176389	170277	65857	127293	91190	136502	31607	80261	96493	127328
Steelhead	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	0	0	0	0	2
Chinook salmon	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	0	1	0	0	0	0	0	1	0	0
Chum salmon	0	1	0	0	0	0	0	0	0	1	1	3	0	19	0	0	0	0	0	0	1	0	6	0	1
Coho salmon	0	5	0	2	0	0	10	0	2	3	11	6	0	30	0	0	0	0	0	0	2	0	0	0	0
Pink salmon	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	3	1
Sockeye salmon	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	1
Unidentified salmon	0	0	0	0	0	0	2	31	0	0	0	4	0	2	0	0	0	0	0	0	0	0	0	0	1
Blue shark	154	1199	996	1554	404	224	1240	2012	582	817	878	1337	1340	613	1253	491	2009	119	2208	2131	1799	242	1749	1976	757
Salmon shark	32	135	10	86	3	48	99	65	59	74	197	148	124	119	98	57	102	220	212	50	65	4	56	165	64
Other sharks	0	14	4	1	0	0	1	5	0	4	3	0	0	4	2	1	8	1	11	10	15	2	6	13	30
Rays	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	1	0
Albacore tuna	1339	3901	184	8121	747	175	563	3327	753	2310	1679	2734	545	474	4309	2104	1753	1016	2465	1443	3571	134	899	2827	794
Skipjack tuna	36	4720	2475	8414	0	0	21	8337	0	3749	0	5	13	0	12885	1	0	0	0	0	21875	1228	3885	6	0
Northern bluefin tuna	0	5	0	2	0	0	2	18	0	3	1	9	0	1	0	8	2	0	1	0	2	0	0	9	0
Bigeye tuna	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	5	0	0	0	1	0	0
Yellowfin tuna	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	18
Unidentified tuna	0	73	0	0	0	0	1	1	0	9	4	2	0	3	1	0	11	0	1	0	8	0	0	0	7
Other Scombridae	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Swordfish	0	29	7	7	1	2	2	16	2	3	4	15	0	2	11	3	11	5	15	3	20	4	11	14	6
Striped marlin	0	0	0	1	0	0	1	3	1	2	0	2	0	0	1	0	4	0	1	0	7	0	1	10	0
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Shortnose spearfish	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	5	0	0	9	0
Other billfishes	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellowtail	3	1260	76	125	8	1	88	522	211	118	76	405	47	89	258	211	406	4	533	453	237	1	13	276	6
Mahi mahi	0	1	0	0	0	0	0	0	0	1	0	7	0	2	0	64	0	0	2	0	0	0	0	1	0
Pacific pomfret	66912	68018	4594	126029	26408	14553	34831	80500	31043	175475	45806	78164	76983	60664	76984	46713	54207	95284	14807	27097	73776	11041	62124	69047	40733
Other pomfrets	0	4	0	0	0	0	0	0	0	7	233	165	0	0	0	247	24	3	0	78	0	0	0	0	62
Pelagic armorhead	0	6986	0	13292	63	400	7964	8353	0	3098	5340	11609	0	6705	9217	4554	11714	190	9440	1850	30975	1	0	22313	3641
Louvar	0	0	0	29	0	0	42	28	0	67	82	109	0	37	18	33	50	0	58	0	45	0	0	79	12
Ocean sunfish	0	75	6	45	0	0	82	106	27	122	77	225	48	114	82	84	61	108	88	51	106	12	28	74	32
Other fishes	0	537	49	118	0	0	190	122	0	210	236	248	89	318	55	586	341	104	151	62	322	27	253	482	179
Black-footed albatross	0	8	2	11	1	1	2	2	4	4	1	5	0	1	0	8	1	5	3	0	12	3	0	2	10
Laysan albatross	8	9	9	5	4	7	10	17	0	29	53	63	2	8	1	5	6	8	16	3	10	7	5	16	12
Other & unidentified albatross	0	0	0	0	0	0	2	0	3	0	0	0	0	4	5	0	2	0	1	0	2	0	0	0	0
Sooty shearwater	294	657	56	556	45	46	131	316	5	225	266	601	29	109	0	241	1066	676	369	32	840	96	447	352	627
Short-tailed shearwater	0	0	0	6	0	0	3	0	0	0	1	7	4	0	0	0	0	32	10	0	2	21	182	0	189
Unidentified dark shearwater	0	108	8	2	27	0	0	86	218	40	22	116	112	165	1030	0	11	0	597	0	4	22	0	0	346
Pale-footed shearwater	0	0	0	3	0	0	1	3	0	0	1	3	0	1	0	3	0	1	1	0	5	1	0	1	2
Buller's shearwater	0	15	2	12	0	0	5	8	0	4	5	5	3	2	0	2	4	2	24	3	14	2	1	3	6
Other & unidentified shearwaters	0	3	5	2	0	0	20	9	69	17	1	2	0	3	0	2	0	0	2	0	0	0	9	0	1
Northern fulmar	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	29	0	0
Oth. & unident. fulmars & petrels	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0	2
Leach's stormpetrel	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	71	0	0	0	6	0	0	0	2	0	0	0	9	3	1	1	0	2	0	0	4	1
Other & unident. stormpetrels	0	0	0	1	0	0	0	0	0	1	0	0	0	0	10	0	0	0	11	0	189	0	0	0	4
Tufted puffin	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0
Horned puffin	1	0	0	0	0	0	0	0	0	1	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified alcids	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Other & unidentified seabirds	0	1	0	0	0	0	80	0	0	0	2	0	0	1	1	0	0	0	1	0	3	0	0	1	0
Dead & unk. northern fur seals	4	7	1	1	0	0	4	3	0	2	1	4	0	2	11	3	4	9	9	0	6	1	2	3	4
Total northern fur seals	5	15	4	3	2	0	5	4	9	16	4	8	0	4	29	5	6	13	11	0	9	4	5	5	10
Other pinnipeds	0	1	0	0	0	0	0	1	0	3	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4
Northern right whale dolphin	1	20	4	9	4	2	10	27	10	13	20	41	5	5	35	7	36	1	7	6	28	3	8	26	18
Pacific white-sided dolphin	2	20	0	9	3	1	11	11	3	11	11	21	4	6	26	4	21	2	11	6	11	1	0	7	9
Dall's porpoise	1	9	0	4	0	2	0	4	3	5	13	6	0	7	5	0	3	10	10	0	4	3	13	2	10
Common dolphin	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0
Other dolphins	0	0	0	0	0	0	0	2	1	3	0	0	0	2	4	0	0	0	1	0	1	0	0	0	2
Total dolphins	4	49	4	22	7	5	22	44	17	32	44	68	9	20	70	11	60	13	29	12	48	7	23	35	39
Other cetaceans	0	0	1	2	0	0	1	3	0	0	0	2	0	0	0	0	0	0	3	0	0	1	0	1	0
Unidentified turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Leatherback turtle	0	0	0	1	0	0	0	1	1	0	1	2	0	1	1	0	0	0	0	0	1	0	0	2	0
Loggerhead turtle	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 5a. continued

																										ALL VESSEL TOTAL	NUMBER ALIVE
Vessel License Number	765	768	776	778	779	783	784	785	788	789	797	797	800	804	805	806	816	818	819	832	834	837	842	848	861		
Number of Operations	33	57	19	33	53	70	61	48	24	31	44	18	16	34	45	53	50	55	52	61	60	46	56	73	43	2864	
Total tans (50m)	25245	41071	16708	27029	41440	61583	51998	42160	20793	23707	32256	12859	12260	33345	37137	38148	41849	32760	49073	51084	52128	41429	51000	59452	33459	2244401	
Squid tans (50m)	17219	28545	12486	19109	29540	42087	38658	28560	14952	16497	21546	9174	10580	22890	27185	26105	29519	22224	34776	35772	35280	29031	34680	41880	22660	1562988	
P.Pomfret tans (50m)	28324	41071	16708	27029	36960	60973	50283	41840	20793	23707	31878	12727	12260	33345	37137	37342	41074	32120	48468	50424	52128	41429	50320	59452	32891	2202114	
Armorhead tans (50m)	25245	41071	16708	27029	41020	61583	51678	42160	20793	23707	32256	12859	12260	33345	37137	38148	41849	32760	49073	51084	52128	41429	51000	59452	33459	2241188	
Other cephalopods	0	1	0	0	0	2381	14	13	0	1	1	0	0	0	0	3	36	6	2	0	0	1	70	3	3	2917	.
Flying squid	65002	178804	31126	58108	143317	209229	172657	128679	45720	63577	89096	16718	82135	94800	105509	140615	132193	152368	154312	163387	145741	133700	158799	184780	84268	7456763	.
Steelhead	0	2	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	18	.
Chinook salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	13	.
Chum salmon	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	2	3	1921	.
Coho salmon	0	1	0	0	0	49	1	73	0	0	0	0	0	0	0	3	26	1	1	0	1	0	7	2	0	1359	.
Pink salmon	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	20	.
Sockeye salmon	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	12	.
Unidentified salmon	0	0	0	0	0	33	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	6334	.
Blue shark	1734	2158	782	4492	2024	1666	1943	481	364	2938	878	818	84	1840	1914	2660	457	1380	2339	2718	2850	307	1881	4050	1380	80588	.
Salmon shark	121	110	9	9	11	129	105	29	4	28	31	52	9	121	94	53	51	124	209	150	57	36	112	128	53	5805	.
Other sharks	0	4	0	7	0	0	8	3	0	1	1	0	0	0	0	4	1	2	1	996	0	0	2	20	3	1324	.
Rays	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	16	.
Albacore tuna	280	1596	1670	372	2225	1843	2683	1616	170	145	1882	15	944	249	784	3883	1449	1168	900	849	4283	38	1855	693	490	87105	.
Skipjack tuna	0	0	4572	0	8439	0	53090	0	2997	2893	1929	0	0	0	0	1016	0	0	0	0	0	0	18	0	2	161907	.
Northern bluefin tuna	0	2	1	1	0	0	1	2	0	0	0	0	0	0	0	3	7	7	2	2	3	0	3	0	7	107	.
Bigeye tuna	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	0	19	.
Yellowfin tuna	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	.
Unidentified tuna	2	0	0	0	1	0	4	0	0	0	1	0	0	0	0	0	2	0	0	2	0	0	0	1	19	177	.
Other Scombridae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	.
Swordfish	1	19	12	2	15	10	25	1	5	23	7	0	1	2	8	15	4	7	9	2	3	0	3	2	2	407	.
Striped marlin	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	43	.
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	.
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	.
Shortnose spearfish	0	0	0	0	3	0	0	0	3	0	0	0	0	0	3	0	0	0	1	1	0	0	0	0	0	30	.
Other billfishes	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	7	.
Yellowtail	346	278	152	835	280	237	181	157	21	94	64	179	31	383	900	266	79	130	208	211	453	248	230	231	336	12783	.
Mahi mahi	0	0	0	1	0	12	328	17	556	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	997	.
Pacific pomfret	7073	34284	3926	17588	30437	159432	88595	49422	1894	11068	15515	12276	11394	5479	10109	74444	71378	60893	72120	47787	46443	52746	81004	75508	29697	3098389	.
Other pomfrets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	106	73	0	0	0	0	0	0	1	1105	.
Pelagic armorhead	8670	13920	1	2084	4634	9736	8705	10655	0	0	0	704	4525	978	7313	3774	6026	3354	0	23250	45655	2105	2392	33331	4786	373072	.
Louvar	0	78	0	0	0	46	27	13	0	0	3	0	0	0	0	33	38	46	0	38	0	0	63	74	35	1298	.
Ocean sunfish	0	28	11	11	136	124	69	101	0	58	27	3	2	0	0	98	203	70	62	76	0	24	87	50	91	3519	.
Other fishes	0	146	7	28	84	263	296	169	88	52	83	0	0	0	2	852	176	289	18	99	0	11	173	645	228	10496	.
Black-footed albatross	1	6	0	0	1	11	11	3	2	1	4	1	1	0	4	4	5	0	0	5	1	0	8	5	0	182	22
Laysan albatross	4	12	0	0	7	11	20	18	3	8	20	3	0	5	3	26	15	15	0	12	4	0	26	29	9	767	220
Other & unidentified albatross	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	26	9
Sooty shearwater	78	510	5	29	138	636	575	69	0	205	158	26	24	263	182	186	238	268	156	244	98	57	213	541	56	16018	258
Short-tailed shearwater	54	0	2	1	0	7	0	0	0	68	5	0	0	0	1	2	0	0	31	0	52	0	21	1	2	845	11
Unidentified dark shearwater	0	0	23	50	0	111	408	10	153	7	8	0	0	0	39	3	16	19	0	75	11	0	46	285	8	7043	223
Pale-footed shearwater	0	2	1	0	0	3	11	0	0	3	3	1	0	0	0	0	0	3	0	0	0	0	1	0	0	70	2
Buller's shearwater	0	2	1	0	0	22	41	27	2	0	11	2	0	1	2	1	2	2	0	3	2	0	3	9	0	332	14
Other & unidentified shearwaters	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	184	0	0	0	1	1	383	15
Northern fulmar	0	0	0	0	0	0	2	1	0	54	18	0	0	0	0	0	0	1	0	0	0	0	0	0	0	121	33
Oth. & unident. fulmars & petrels	1	0	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	1	27	5
Leach's stormpetrel	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	2
Fork-tailed stormpetrel	0	51	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	177	100
Other & unident. stormpetrels	0	0	0	0	6	0	50	10	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	11	1	300	182
Tufted puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0
Horned puffin	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	35	0
Other & unidentified alcids	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Other & unidentified seabirds	0	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	110	7
Dead & unk. northern fur seals	5	4	0	0	0	6	5	4	0	0	1	0	0	1	3	4	1	14	1	21	3	0	8	13	1	230	0
Total northern fur seals	10	11	2	1	1	12	15	8	0	0	1	0	1	10	7	6	3	17	3	26	7	0	14	21	3	509	279
Other pinnipeds	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	9
Northern right whale dolphin	8	36	3	4	12	17	40	15	5	6	12	1	4	8	15	24	13	17	7	14	5	0	5	58	19	812	18
Pacific white-sided dolphin	8	22	4	4	9	11	13	4	1	0	0	6	4	4	11	7	5	5	1	11	5	1	2	20	2	437	19
Dall's porpoise	1	11	0	0	2	10	5	1	2	1	1	0	1	4	1	6	3	3	3	12	5	2	9	12	2	298	17
Common dolphin	0	0	0	0	0	0	11	0	1	17	9	0	0	0	2	0	2	0	0	2	0	0	1	0	1	69	1
Other dolphins	0	0	0	0	5	0	2	0	2	0	1	0	0	0	0	0	1	0	0	1	0	0	1	1	1	47	6
Total dolphins	17	69	7	8	28	88	71	20	11	24	23	7	9	16	29	37	24	25	11	40	15	3	18	91	25	1663	0
Other cetaceans	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	22	5
Unidentified turtle	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7	4
Leatherback turtle	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	1	27	28
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Table 5b. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Japanese squid driftnet fishery- Extended retrieval sections only.

Vessel License Number	203	205	225	231	232	233	275	287	292	317	323	341	344	366	379	607	608	614	619	624	636	642	668	669	675
Number of Operations	1	1	2	1	2	2	2	3	4	2	3	2	2	2	1	4	3	1	2	5	2	4	2	1	2
Total tans (50m)	230	330	267	114	426	412	392	456	1094	864	640	374	613	353	240	887	562	274	288	1210	303	560	750	290	250
Squid tans (50m)	115	205	267	0	213	177	196	456	608	648	456	239	368	353	120	374	562	137	144	539	303	420	600	290	150
P.Pomfret tans (50m)	230	330	267	114	426	412	392	456	972	864	640	374	613	353	240	887	562	274	288	1210	303	560	750	290	250
Armorhead tans (50m)	230	330	267	114	426	412	392	456	1094	864	640	374	613	353	240	887	562	274	288	1210	303	560	750	290	250
Flying squid	2906	8968	6236	0	4685	11042	5737	13003	8771	14982	15498	6376	1512	8119	2975	16892	6524	2093	1031	4799	4330	12384	7416	3511	1449
Chinook salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chum salmon	0	4	3	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coho salmon	0	28	0	0	0	3	4	0	0	0	1	0	1	0	0	0	0	0	2	0	0	3	0	0	0
Pink salmon	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified salmon	0	0	0	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blue shark	2	2	11	1	6	0	6	12	4	5	7	2	9	7	4	13	62	8	2	56	2	7	3	1	5
Salmon shark	2	15	1	0	7	2	0	9	4	10	18	6	9	8	1	1	20	1	0	92	0	9	5	0	0
Other sharks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Albacore tuna	16	0	0	6	1	1	0	4	6	0	0	2	51	3	0	37	3	75	5	69	0	27	11	0	442
Skipjack tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Swordfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other billfishes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellowtail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0	0	1	0	0	1	0	0
Mahi mahi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific pomfret	962	465	510	1188	632	1214	288	692	879	453	1544	442	796	1838	215	8066	75	134	405	2283	175	564	2419	269	839
Other pomfrets	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pelagic armorhead	0	0	0	0	0	0	0	0	0	0	0	17	1	0	0	88	137	0	22	169	0	205	493	0	38
Louvar	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	10	0	0	0
Ocean sunfish	0	1	1	0	2	0	0	2	2	0	3	0	5	0	2	6	0	0	0	1	0	5	2	0	1
Other fishes	1	3	2	0	16	0	0	46	23	4	2	0	2	0	1	3	4	0	3	29	0	33	5	2	0
Black-footed albatross	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Laysan albatross	0	0	6	0	0	0	0	0	6	0	1	0	0	0	3	1	1	0	0	0	0	0	2	0	0
Other & unidentified albatross	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sooty shearwater	0	5	39	0	18	2	17	7	151	0	7	0	3	19	13	0	115	0	5	16	7	13	4	2	0
Short-tailed shearwater	0	0	0	0	0	1	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified dark shearwater	0	0	4	0	4	0	0	5	37	0	0	21	9	5	49	1	184	0	0	0	10	0	2	0	0
Pale-footed shearwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Buller's shearwater	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	8	0	0	0	0	0	1	0	0
Other & unidentified shearwaters	0	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Northern fulmar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oth. & unident. fulmars & petrels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unident. stormpetrels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified seabirds	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5	0	0	0	0	0	2	0	0	0
Dead & unk. northern fur seals	0	0	0	0	1	0	1	0	2	0	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0
Total northern fur seals	0	0	0	0	1	0	2	1	3	2	0	2	0	0	0	0	8	0	0	0	0	0	2	0	0
Northern right whale dolphin	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	2	0	1	1	0	0
Pacific white-sided dolphin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0
Dall's porpoise	0	1	0	0	0	1	0	0	6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Other dolphins	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Total dolphins	0	1	0	0	0	1	0	0	8	0	0	1	0	0	0	2	1	0	0	9	0	1	1	2	0

Table 5b. continued

Vessel License Number	680	686	692	694	704	705	706	728	737	743	747	765	768	778	779	783	784	785	789	797	804	805	806	818	819
Number of Operations	1	3	1	4	3	4	3	1	1	3	3	3	7	5	1	2	2	1	1	1	1	3	8	3	3
Total tans (50m)	150	494	160	1034	798	1242	912	431	252	650	807	1372	2202	2592	420	610	480	400	367	126	510	1225	2046	316	1126
Squid tans (50m)	0	252	0	1034	479	966	800	431	252	520	405	686	1675	2592	280	305	320	400	123	126	510	1225	764	316	908
P.Pomfret tans (50m)	150	494	160	1034	798	1242	912	431	252	650	807	1372	2202	2592	280	460	480	400	367	126	510	1225	1777	316	1126
Armorhead tans (50m)	150	494	160	1034	638	1242	912	431	252	650	807	1372	2202	2592	420	610	480	400	367	126	510	1225	2046	316	1126
Flying squid	0	5844	0	24924	9108	15976	27060	19415	8220	11830	3856	10930	35904	24173	2993	5834	6872	12996	1434	789	8052	17518	17236	9570	9914
Chinook salmon	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Chum salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coho salmon	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pink salmon	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blue shark	3	0	0	13	6	6	14	0	2	52	10	12	528	17	8	8	75	85	13	0	4	22	208	25	10
Salmon shark	0	14	0	8	9	34	25	10	5	10	9	10	31	0	2	0	7	0	0	0	0	6	32	8	6
Other sharks	0	1	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	0	0
Rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Albacore tuna	0	0	0	28	1	85	3	52	3	201	3	22	110	181	18	39	73	0	4	0	50	2	860	82	62
Skipjack tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	699	0	0
Unidentified tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0
Swordfish	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Striped marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other billfishes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellowtail	0	0	0	0	0	0	14	0	1	1	2	6	58	0	0	0	0	1	1	0	0	0	0	0	0
Mahi mahi	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific pomfret	299	179	2	1915	242	3181	67	37	2057	8451	729	181	283	19943	4830	3102	113	409	6	12	29	252	21765	18203	1274
Other pomfrets	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0
Pelagic armorhead	0	32	3	221	423	49	58	161	0	163	0	3117	128	302	0	20	13	114	0	0	0	3	26	0	0
Louvar	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0
Ocean sunfish	0	2	0	3	1	7	1	0	0	0	2	0	2	6	1	3	3	3	5	0	0	0	25	10	1
Other fishes	0	8	0	0	8	6	1	2	0	3	3	0	37	3	0	2	1	2	2	0	0	0	75	1	0
Black-footed albatross	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Laysan albatross	0	2	0	1	3	1	1	0	0	14	0	0	2	0	12	0	0	0	0	0	0	2	7	2	0
Other & unidentified albatross	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sooty shearwater	0	24	0	41	15	288	215	420	40	65	33	14	408	0	103	101	2	1	46	8	10	17	85	2	0
Short-tailed shearwater	0	0	0	0	0	21	12	0	0	0	5	9	1	0	0	1	0	0	10	0	0	0	0	0	0
Unidentified dark shearwater	0	9	0	0	0	0	788	0	0	0	2	0	0	31	0	0	1	0	0	0	0	0	2	0	0
Pale-footed shearwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buller's shearwater	0	0	0	0	0	0	13	19	2	0	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0
Other & unidentified shearwaters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern fulmar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
Oth. & unident. fulmars & petrels	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	0	0	0	0	0	0	3	0	0	15	0	0	0	0	0	0	0	0	0	1	0	0
Other & unident. stormpetrels	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified seabirds	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
Dead & unk. northern fur seals	0	0	0	0	0	0	10	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total northern fur seals	0	0	0	0	0	0	10	3	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Northern right whale dolphin	0	5	0	0	2	0	0	0	0	0	3	0	3	0	0	0	1	0	0	0	0	3	0	.0	0
Pacific white-sided dolphin	0	0	0	0	2	0	0	1	0	1	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0
Dall's porpoise	0	0	0	0	0	1	0	0	0	0	4	1	2	0	1	0	0	0	0	0	0	0	0	0	0
Other dolphins	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total dolphins	0	5	0	0	4	1	0	1	0	1	8	1	9	0	1	0	4	0	0	0	0	3	0	0	0

Table 5b. continued

				ALL VESSEL TOTAL	NUMBER ALIVE
Vessel License Number	842	848	861		
Number of Operations	4	2	4	134	
Total tans (50m)	1530	396	2673	37500	
Squid tans (50m)	850	132	1654	25945	
P.Pomfret tans (50m)	1360	396	2531	36507	
Armorhead tans (50m)	1530	396	2673	37340	
Flying squid	11959	1555	7788	482489	.
Chinook salmon	0	0	1	4	.
Chum salmon	0	0	0	12	.
Coho salmon	0	0	0	43	.
Pink salmon	0	0	0	2	.
Unidentified salmon	0	0	0	9	.
Blue shark	26	18	16	1368	.
Salmon shark	5	0	7	458	.
Other sharks	0	0	1	8	.
Rays	0	0	0	1	.
Albacore tuna	121	0	147	2906	.
Skipjack tuna	0	0	0	724	.
Unidentified tuna	1	0	0	18	.
Swordfish	0	0	1	4	.
Striped marlin	0	0	3	8	.
Other billfishes	0	0	1	1	.
Yellowtail	0	5	102	200	.
Mahi mahi	0	0	0	4	.
Pacific pomfret	10863	126	319	125666	.
Other pomfrets	0	0	0	13	.
Pelagic armorhead	0	404	144	6546	.
Louvar	5	2	2	38	.
Ocean sunfish	11	2	0	121	.
Other fishes	28	5	15	881	.
Black-footed albatross	0	0	0	5	0
Laysan albatross	4	0	2	73	23
Other & unidentified albatross	0	0	0	3	0
Sooty shearwater	21	59	59	2515	18
Short-tailed shearwater	4	0	3	79	4
Unidentified dark shearwater	11	1	85	1211	2
Pale-footed shearwater	0	0	0	1	0
Buller's shearwater	0	0	0	51	1
Other & unidentified shearwaters	0	0	0	9	1
Northern fulmar	0	0	0	10	6
Oth. & unident. fulmars & petrels	0	0	0	3	0
Fork-tailed stormpetrel	0	0	0	19	4
Other & unident. stormpetrels	0	0	0	2	1
Other & unidentified seabirds	0	0	0	14	0
Dead & unk. northern fur seals	0	0	0	23	0
Total northern fur seals	0	0	0	36	13
Northern right whale dolphin	0	0	4	28	0
Pacific white-sided dolphin	1	0	1	22	0
Dall's porpoise	0	0	2	20	0
Other dolphins	0	0	0	3	0
Total dolphins	1	0	7	73	0

Table 6. Summary of observed fishing effort in number of fishing operations, standardized tans, catch of squid and bycatch of certain species groups of marine mammals, seabirds, turtles, and fishes by vessel in the 1990 Japanese squid driftnet fishery- All data.

Vessel License Number	203	205	225	231	232	233	259	267	269	275	287	292	303	305	313	317	323	341	344	366	379	382	389	607	608
Number of Operations	30	28	35	36	21	16	17	15	13	12	15	16	10	12	24	25	12	22	36	16	20	7	26	46	65
Total tans (50m)	23386	21015	25180	21611	12981	10643	11535	11731	8208	7448	7448	8861	5423	8007	17086	16416	6765	15458	24745	9878	14750	5091	14400	32809	51191
Squid tans (50m)	16359	14290	17077	15428	9257	7585	8624	8611	5724	5890	5404	6342	3788	6031	12331	11232	4849	10274	16537	7056	10270	3433	9800	22499	36231
P.Pomfret tans (50m)	23386	20425	24425	21497	12981	10643	11104	11731	8208	7448	7083	8132	5423	8007	17086	16416	6765	15098	24132	9760	14750	5091	14400	32567	51191
Armorhead tans (50m)	23386	21015	25180	21611	12981	10643	11535	11731	8208	7448	7448	8861	5423	8007	17086	16416	6765	15458	24745	9878	14750	5091	14400	32809	51191
Other cephalopods	7	1	2	0	14	0	7	0	0	0	20	1	0	3	5	0	0	0	0	0	5	0	0	8	0
Flying squid	58980	67865	59891	31615	63114	68335	45087	34329	37374	53720	68964	44078	14336	20969	51963	66948	55611	59298	59210	59883	49924	23257	33358	183411	190117
Steelhead	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Chinook salmon	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0
Chum salmon	5	94	168	6	3	11	56	2	47	3	4	215	1263	0	0	4	1	0	2	1	3	0	0	0	1
Coho salmon	3	393	0	19	19	17	148	9	9	102	3	6	18	0	0	1	5	35	279	61	28	0	0	4	1
Pink salmon	1	0	0	2	0	1	1	0	0	1	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
Sockeye salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Unidentified salmon	0	512	0	1	64	0	4721	19	1	0	0	27	39	0	2	0	1	160	0	0	612	0	0	108	0
Blue shark	48	459	562	87	75	13	173	244	93	154	65	27	226	26	1109	42	94	88	396	60	53	67	39	884	3435
Salmon shark	132	166	31	66	133	23	61	89	106	0	69	49	18	2	38	153	110	76	102	54	99	22	28	32	137
Other sharks	0	1	1	40	1	0	9	1	0	0	0	1	2	1	0	8	0	3	0	0	1	1	19	33	14
Rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Albacore tuna	252	119	384	93	84	177	16	44	0	5	74	80	337	482	115	13	1	384	657	167	321	76	236	4054	4315
Skipjack tuna	0	0	3402	0	0	0	0	0	0	0	0	0	0	0	10089	0	0	1	0	0	0	0	158	5651	0
Northern bluefin tuna	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Bigeye tuna	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Yellowfin tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
Unidentified tuna	0	0	0	1	4	0	0	1	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	12	0
Other Scombridae	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Swordfish	0	1	4	0	0	0	0	0	1	0	0	0	0	2	10	0	0	0	4	0	1	0	0	8	5
Striped marlin	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shortnose spearfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other billfishes	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Yellowtail	101	12	3	9	0	18	2	0	0	0	0	0	0	1	15	8	0	3	50	0	16	0	0	4	591
Mahi mahi	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Pacific pomfret	29943	21061	13543	28190	20450	12807	19261	15193	5415	4359	30925	28183	5389	8446	20980	5555	17874	17843	17904	21612	46091	5066	8970	121495	64793
Other pomfrets	0	0	9	13	0	0	0	0	0	15	0	2	0	0	3	0	1	0	0	0	0	0	0	0	0
Pelagic armorhead	0	9	0	5	0	0	4	2	0	0	0	0	0	0	0	6	0	243	113	0	0	0	0	3426	15254
Louvar	1	2	3	1	18	0	1	1	4	0	0	2	3	0	0	0	1	6	35	0	3	0	0	40	0
Ocean sunfish	12	31	20	8	25	4	4	18	47	0	15	4	10	4	30	1	8	33	106	0	23	12	7	82	105
Other fishes	106	196	235	55	133	0	67	75	70	0	101	111	67	58	242	19	16	74	128	0	80	0	69	622	191
Black-footed albatross	1	0	4	2	1	0	2	0	0	1	0	1	0	0	1	0	0	0	2	1	1	0	0	0	11
Laysan albatross	2	17	36	5	4	2	12	5	10	2	2	19	12	3	19	7	1	17	0	1	6	2	14	16	8
Other & unidentified albatross	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sooty shearwater	141	360	335	312	199	29	68	76	256	49	26	367	50	32	24	23	34	91	90	28	39	11	15	62	665
Short-tailed shearwater	66	8	1	30	1	3	0	1	0	17	17	8	0	0	0	1	0	0	0	0	0	0	0	0	1
Unidentified dark shearwater	0	0	41	30	21	0	10	87	261	0	11	148	1	14	8	0	0	314	536	12	496	0	348	54	844
Pale-footed shearwater	1	2	1	1	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	1	4
Buller's shearwater	1	2	4	5	2	0	0	4	1	0	0	5	0	0	2	0	0	3	0	0	1	0	0	2	57
Other & unidentified shearwaters	2	14	0	0	0	0	0	0	2	0	11	4	4	2	0	8	1	1	5	0	0	0	0	0	0
Northern fulmar	0	0	0	0	3	0	0	2	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0
Oth. & unident. fulmars & petrels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1
Leach's stormpetrel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Other & unident. stormpetrels	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tufted puffin	0	1	0	0	0	0	1	8	0	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
Horned puffin	3	11	0	0	1	0	1	3	0	1	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
Other & unidentified alcids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified seabirds	0	0	0	0	1	0	0	14	0	0	0	3	0	1	0	1	0	0	0	0	2	0	0	48	0
Dead & unk. northern fur seals	0	2	0	3	6	1	6	1	0	4	1	4	0	0	0	1	1	4	2	1	8	0	0	0	20
Total northern fur seals	8	7	2	9	10	3	14	3	2	19	3	9	0	0	0	9	3	14	2	9	11	0	1	0	35
Other pinnipeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Northern right whale dolphin	1	0	27	2	3	1	0	1	3	0	0	2	1	11	7	0	0	1	9	0	0	3	24	11	14
Pacific white-sided dolphin	1	2	6	3	3	0	1	1	4	0	2	5	0	0	3	0	1	0	0	0	4	0	6	9	15
Dall's porpoise	0	13	2	8	8	7	3	5	4	1	6	9	3	0	0	7	1	2	3	1	5	0	3	2	3
Common dolphin	0	3	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
Other dolphins	0	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3	0	0	0	0	0	8	2
Total dolphins	2	20	35	13	14	8	4	7	11	1	8	17	4	11	25	7	2	6	12	1	9	3	33	30	34
Other cetaceans	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Unidentified turtle	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Leatherback turtle	0	1	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 6. continued

Vessel License Number	614	619	620	624	636	638	642	648	655	668	669	675	680	686	692	694	704	705	706	723	728	734	737	743	747
Number of Operations	22	64	27	62	13	16	45	69	41	71	65	67	45	45	70	47	67	25	56	40	54	13	42	55	40
Total tans (50m)	16690	52420	23375	47597	9309	9117	37747	59544	37171	57705	53530	54761	36988	34729	64000	39479	60000	19182	34740	37675	41303	10579	31977	40800	31048
Squid tans (50m)	12586	36029	16332	33188	7096	7228	26303	39546	24729	39307	36280	36797	24884	25475	42560	29212	40552	14490	24544	26846	28006	7080	21636	27820	22064
P.Pomfret tans (50m)	16280	51988	23375	46804	9183	9117	31328	58433	36864	57705	53240	53081	36068	34729	62240	39479	52503	19182	32828	37675	41159	10579	31977	40800	31048
Armorhead tans (50m)	16690	52276	23375	47597	9309	9117	37747	59396	37171	57705	53530	54606	36988	34729	64000	39479	57926	19182	34628	37675	41303	10579	31977	40800	31048
Other cephalopods	0	9	0	18	0	0	7	12	0	2	4	1	2	8	0	24	8	23	2	5	3	1	177	3	0
Flying squid	73827	224294	45377	174317	51890	82030	138382	162497	99641	202612	167278	208728	121506	178828	162720	201813	179385	81833	154353	91190	155917	31607	88481	108323	131184
Steelhead	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	0	0	0	0	2
Chinook salmon	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	0	1	0	1	0	0	0	1	0	1
Chum salmon	0	1	0	0	0	0	0	0	0	1	1	3	0	19	0	0	0	0	0	0	1	0	6	0	1
Coho salmon	0	7	0	2	0	0	13	0	2	3	11	6	0	31	0	0	0	0	0	0	2	0	0	0	0
Pink salmon	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	0	1	0	0	3	1
Sockeye salmon	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	1
Unidentified salmon	0	0	0	0	0	0	2	31	0	0	0	4	0	2	0	0	0	0	0	0	0	0	0	0	1
Blue shark	162	1201	996	1610	406	224	1247	2012	582	820	879	1342	1843	613	1253	504	2015	125	2222	2131	1799	242	1751	2028	767
Salmon shark	33	135	10	178	3	48	108	65	59	79	197	143	124	133	98	65	111	254	237	50	75	4	61	175	73
Other sharks	0	14	4	1	0	0	1	5	0	4	3	0	0	5	2	1	8	1	11	10	15	2	6	13	32
Rays	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	1	0
Albacore tuna	1414	3906	184	3190	747	175	590	3327	753	2321	1679	3176	545	474	4309	2182	1754	1101	2468	1448	3623	134	902	3028	797
Skipjack tuna	86	4720	2475	8414	0	0	21	8337	0	3749	0	5	13	0	12885	1	0	0	0	0	21875	1228	3885	6	0
Northern bluefin tuna	0	5	0	2	0	0	2	18	0	3	1	9	0	1	0	8	2	0	1	0	2	0	0	9	0
Bigeye tuna	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8	0	0	5	0	0	0	1	0	0
Yellowfin tuna	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	18
Unidentified tuna	0	73	0	0	0	0	1	1	0	9	4	2	0	3	1	0	11	0	1	0	8	0	0	0	7
Other Scombridae	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Swordfish	0	29	7	7	1	2	2	16	2	3	4	15	0	2	11	3	11	5	15	3	20	4	11	15	6
Striped marlin	0	0	0	1	0	0	1	3	1	2	0	2	0	0	1	0	4	0	1	0	7	0	1	10	0
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Shortnose spearfish	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	5	0	0	9	0
Other billfishes	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellowtail	3	1260	76	126	8	1	88	522	211	119	76	405	47	89	258	211	406	4	547	453	237	1	14	277	8
Mahi mahi	0	1	0	0	0	0	0	0	0	1	0	7	0	2	0	68	0	0	2	0	0	0	0	1	0
Pacific pomfret	67046	68423	4594	128312	26583	14553	35395	80500	31043	177694	46075	79003	77282	60843	76986	48628	54449	98465	14874	27097	73813	11041	64181	77498	41462
Other pomfrets	0	4	0	0	0	0	0	0	0	7	233	165	0	0	0	247	25	3	0	78	0	0	0	0	62
Pelagic armorhead	0	6958	0	13461	63	400	8169	8353	0	3591	5340	11647	0	6787	9220	4775	12137	239	9493	1850	31136	1	0	22476	3641
Louvar	0	0	0	36	0	0	52	23	0	67	82	109	0	87	18	36	54	0	58	0	45	0	0	79	12
Ocean sunfish	0	75	6	46	0	0	87	106	27	124	77	226	48	116	82	87	62	115	39	51	106	12	28	74	34
Other fishes	0	640	49	147	0	0	223	122	0	215	288	248	89	326	55	586	349	110	152	62	324	27	253	485	182
Black-footed albatross	0	3	2	11	1	1	2	2	4	5	1	5	0	1	0	8	1	5	3	0	12	3	0	3	10
Laysan albatross	8	9	9	5	4	7	10	17	0	31	53	63	2	10	1	6	9	9	17	3	10	7	5	30	12
Other & unidentified albatross	0	0	0	0	0	0	2	0	3	0	0	0	0	5	5	0	2	2	1	0	2	0	0	0	0
Sooty shearwater	294	662	56	572	52	46	144	316	5	229	268	601	29	133	0	282	1081	964	584	32	1260	96	487	417	660
Short-tailed shearwater	0	0	0	6	0	0	3	0	0	0	1	7	4	0	0	0	0	53	22	0	2	21	182	0	194
Unidentified dark shearwater	0	103	8	2	37	0	0	36	213	42	22	116	112	174	1030	0	11	0	1385	0	4	22	0	0	348
Pale-footed shearwater	0	0	0	4	0	0	1	3	0	0	1	3	0	1	0	8	0	1	1	0	5	1	0	1	2
Buller's shearwater	0	15	2	12	0	0	5	8	0	5	5	5	3	2	0	2	4	2	37	3	33	2	3	8	6
Other & unidentified shearwaters	0	3	5	2	0	0	20	9	69	18	1	2	0	3	0	2	0	0	2	0	0	0	9	0	1
Northern fulmar	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	29	0	0
Oth. & unident. fulmars & petrels	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	8	0	0	3	0	0	0	2
Leach's stormpetrel	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fork-tailed stormpetrel	0	0	0	71	0	0	0	6	0	0	0	2	0	0	0	9	3	1	1	0	2	0	0	7	1
Other & unident. stormpetrels	0	0	0	1	0	0	0	0	0	1	0	0	0	0	10	0	0	0	12	0	190	0	0	0	4
Tufted puffin	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0
Horned puffin	1	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Other & unidentified alcids	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Other & unidentified seabirds	0	1	0	0	0	0	32	0	0	0	2	0	0	1	1	0	0	0	1	0	3	0	0	1	0
Dead & unk. northern fur seals	4	7	1	1	0	0	4	3	0	2	1	4	0	2	11	3	4	9	19	0	7	1	2	4	4
Total northern fur seals	5	15	4	3	2	0	5	4	9	18	4	8	0	4	29	5	6	13	21	0	12	4	5	6	10
Other pinnipeds	0	1	0	0	0	0	0	1	0	3	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4
Northern right whale dolphin	1	20	4	11	4	2	11	27	10	14	20	41	5	10	35	7	38	1	7	6	28	3	8	26	21
Pacific white-sided dolphin	2	20	0	16	3	1	11	11	3	11	18	21	4	6	26	4	23	2	11	6	12	1	0	8	9
Dall's porpoise	1	9	0	4	0	2	0	4	3	5	13	6	0	7	5	0	3	11	10	0	4	3	13	2	14
Common dolphin	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0
Other dolphins	0	0	0	0	0	0	0	2	1	3	0	0	0	2	4	0	0	0	1	0	1	0	0	0	3
Total dolphins	4	49	4	31	7	5	23	44	17	33	46	68	9	25	70	11	64	14	29	12	49	7	23	36	47
Other cetaceans	0	0	1	2	0	0	1	3	0	0	0	2	0	0	0	0	0	0	3	0	0	1	0	1	0
Unidentified turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Leatherback turtle	0	0	0	1	0	0	0	1	1	0	1	2	0	1	1	0	0	0	0	0	1	0	0	2	0
Loggerhead turtle	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6. continued

																										ALL VESSEL TOTAL	NUMBER ALIVE
Vessel License Number	765	768	776	778	779	783	784	785	788	789	797	797	800	804	805	806	816	818	819	832	834	837	842	848	861		
Number of Operations	33	57	19	35	53	71	62	48	24	31	44	18	16	34	45	53	50	55	52	61	60	46	56	74	46	2879	
Total tans (50m)	26617	43273	16708	29621	41860	62193	52478	42560	20793	24073	32382	12859	12260	33855	38362	40194	41849	33076	50198	51084	52128	41429	52530	59848	36133	2281895	
Squid tans (50m)	17905	30220	12486	21701	29820	42392	38978	28960	14952	16619	21672	9174	10580	23400	28410	26869	29519	22540	35683	35772	35280	29031	35530	42012	24315	1588927	
P.Pomfret tans (50m)	24696	43273	16708	29621	37240	61483	50763	42240	20793	24073	32004	12727	12260	33855	38362	39119	41074	32436	49593	50424	52128	41429	51680	59848	35422	2238615	
Armorhead tans (50m)	26617	43273	16708	29621	41440	62193	52158	42560	20793	24073	32382	12859	12260	33855	38362	40194	41849	33076	50198	51084	52128	41429	52530	59848	36133	2278522	
Other cephalopods	0	1	0	0	0	2381	14	13	0	1	1	0	0	0	0	3	36	6	2	0	0	1	70	3	3	2917	.
Flying squid	75932	214708	31126	82281	146310	215063	179529	141675	45720	65011	09885	16718	82185	102852	123027	157851	132193	161938	164226	163387	145741	133700	170758	186335	92056	7939252	.
Steelhead	0	2	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	18	.
Chinook salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	17	.
Chum salmon	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	2	3	1933	.
Coho salmon	0	1	0	0	0	49	1	73	0	0	0	0	0	0	0	3	26	1	1	0	1	0	7	2	0	1402	.
Pink salmon	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	22	.
Sockeye salmon	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	12	.
Unidentified salmon	0	0	0	0	0	33	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	6343	.
Blue shark	1746	2686	782	4509	2032	1674	2018	516	364	2951	878	818	84	1844	1936	2868	457	1405	2349	2718	2850	307	1907	4068	1396	81956	.
Salmon shark	131	141	9	9	13	129	112	29	4	28	31	52	9	121	100	85	51	132	215	150	57	36	117	128	60	6263	.
Other sharks	0	6	0	7	0	0	10	3	0	1	1	0	0	0	0	4	1	2	1	996	0	0	2	20	4	1332	.
Rays	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	17	.
Albacore tuna	302	1706	1670	553	2243	1882	2756	1616	170	149	1382	15	944	299	786	4743	1449	1250	962	849	4283	38	1976	693	637	90011	.
Skipjack tuna	0	0	4572	0	8439	0	53090	0	2997	2893	1954	0	0	0	0	1715	0	0	0	0	0	0	18	0	2	162681	.
Northern bluefin tuna	0	2	1	1	0	0	1	2	0	0	0	0	0	0	0	3	7	7	2	2	3	0	3	0	7	107	.
Bigeye tuna	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	0	19	.
Yellowfin tuna	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	.
Unidentified tuna	2	0	0	0	1	0	4	0	0	0	1	0	0	0	0	17	2	0	0	2	0	0	1	1	19	195	.
Other Scombridae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	.
Swordfish	1	19	12	2	15	10	25	1	5	23	7	0	1	2	8	16	4	8	9	2	3	0	3	2	3	411	.
Striped marlin	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3	46	.
Pacific blue marlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	.
Sailfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	.
Shortnose spearfish	0	0	0	0	3	0	0	0	3	0	0	0	0	0	3	0	0	0	1	1	0	0	0	0	0	30	.
Other billfishes	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	8	.
Yellowtail	852	836	152	835	280	237	181	158	21	95	64	179	31	383	900	266	79	130	208	211	453	248	230	236	438	12983	.
Mahi mahi	0	0	0	1	0	12	328	17	556	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1001	.
Pacific pomfret	7254	34517	8926	37526	35267	162534	88708	49831	1894	11074	15527	12276	11394	5508	10361	96209	71378	79096	73394	47787	46443	52746	91367	75634	30016	3224055	.
Other pomfrets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	106	77	0	0	0	0	0	0	1	1118	.
Pelagic armorhead	11787	14048	1	2386	4634	9756	8718	10769	0	0	0	704	4525	978	7316	3800	6026	3354	0	23250	45655	2105	2392	33735	4930	379618	.
Louvar	0	78	0	0	0	48	27	18	0	0	3	0	0	0	0	35	38	46	0	38	0	0	68	76	37	1336	.
Ocean sunfish	0	30	11	17	137	127	72	104	0	63	27	8	2	0	0	123	203	80	63	76	0	24	98	52	91	3640	.
Other fishes	0	183	7	31	84	265	297	171	88	54	83	0	0	0	2	427	176	290	18	99	0	11	201	650	243	10877	.
Black-footed albatross	1	6	0	0	1	12	11	8	2	1	4	1	1	0	5	4	5	0	0	5	1	0	8	5	0	187	22
Laysan albatross	4	14	0	0	19	11	20	18	3	8	20	3	0	5	5	33	15	17	0	12	4	0	30	29	11	840	243
Other & unidentified albatross	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	29	9
Sooty shearwater	87	918	5	29	241	787	577	70	0	251	161	26	24	273	199	271	238	270	156	244	98	57	234	600	115	18533	276
Short-tailed shearwater	68	1	2	1	0	8	0	0	0	78	5	0	0	0	1	2	0	0	31	0	52	0	25	1	5	924	15
Unidentified dark shearwater	0	0	23	81	0	111	409	10	158	7	8	0	0	0	89	5	16	19	0	75	11	0	57	286	43	8254	225
Pale-footed shearwater	0	2	1	0	0	3	11	0	0	3	8	1	0	0	0	0	0	3	0	0	0	0	1	0	0	71	2
Buller's shearwater	0	4	1	0	0	23	42	27	2	0	11	2	0	1	2	1	2	2	0	8	2	0	3	9	0	383	15
Other & unidentified shearwaters	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	184	0	0	0	1	1	392	16
Northern fulmar	0	0	0	0	0	0	2	1	0	64	18	0	0	0	0	0	0	1	0	0	0	0	0	0	0	131	89
Oth. & unident. fulmars & petrels	1	0	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	1	30	5
Leach's stormpetrel	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	2
Fork-tailed stormpetrel	0	66	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	196	104
Other & unident. stormpetrels	0	0	0	0	6	0	50	10	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	11	1	302	183
Tufted puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0
Horned puffin	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	85	0
Other & unidentified alcids	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Other & unidentified seabirds	0	0	0	5	2	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	124	7
Dead & unk. northern fur seals	5	4	0	0	0	6	5	4	0	0	1	0	0	1	3	4	1	14	1	21	3	0	8	13	1	253	0
Total northern fur seals	10	11	2	1	1	12	15	8	0	0	1	0	1	10	8	6	3	17	3	26	7	0	14	21	3	545	292
Other pinnipeds	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	9
Northern right whale dolphin	8	39	3	4	12	17	41	15	5	6	12	1	4	8	18	24	13	17	7	14	5	0	5	58	28	840	18
Pacific white-sided dolphin	8	26	4	4	9	11	16	4	1	0	0	6	4	4	11	7	5	5	1	11	5	1	3	20	3	459	19
Dall's porpoise	2	13	0	0	3	10	5	1	2	1	1	0	1	4	1	6	3	3	3	12	5	2	9	12	4	318	17
Common dolphin	0	0	0	0	0	0	11	0	1	17	9	0	0	0	2	0	2	0	0	2	0	0	1	0	1	69	1
Other dolphins	0	0	0	0	5	0	2	0	2	0	1	0	0	0	0	0	1	0	0	1	0	0	1	1	1	50	6
Total dolphins	18	78	7	8	29	38	75	20	11	24	23	7	9	16	82	37	24	25	11	40	15	3	19	91	32	1736	0
Other cetaceans	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	22	5
Unidentified turtle	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7	4
Leatherback turtle	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	1	27	23
Loggerhead turtle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

ble 7. Observed catch of flying squid and bycatch of salmonids, observed fishing effort in standardized tans, and catch rate per 1,000 tans of flying squid and salmonids by 1 x 1 degree statistical area and 10-day period in the 1990 Japanese squid driftnet fishery.

June 1-10

°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
39	170 E	17	0	420	700	40.5	0.00
39	176 E	547	1	750	750	729.3	1.33
39	177 E	973	1	1,551	2,327	627.3	0.43
39	178 E	5,856	0	3,207	4,697	1,825.9	0.00
39	179 E	18,555	0	6,212	8,663	2,986.9	0.00
39	179 W	20,842	4	4,726	6,742	4,410.3	0.59
39	177 W	8,969	0	3,365	4,933	2,665.5	0.00
39	176 W	10,883	0	1,952	2,758	5,574.2	0.00
39	170 W	18,545	0	3,395	4,720	5,462.4	0.00
39	169 W	21,521	1	6,792	9,992	3,168.6	0.10
39	168 W	26,517	2	6,640	9,567	3,993.8	0.21
39	167 W	5,828	2	3,884	5,492	1,500.5	0.36
39	164 W	11,347	0	4,577	6,724	2,479.2	0.00
39	163 W	2,573	0	1,016	1,271	2,531.5	0.00
39	162 W	553	1	1,592	2,389	347.3	0.42
39	158 W	64	0	756	1,058	84.7	0.00
39	157 W	11,086	0	4,469	6,860	2,480.8	0.00
39	154 W	1,024	0	756	1,058	1,354.5	0.00
39	153 W	166	0	756	1,058	219.6	0.00
39	151 W	481	0	451	752	1,066.0	0.00
39	146 W	604	0	602	902	1,004.0	0.00
38	171 E	6	0	616	924	9.7	0.00
38	179 E	3,155	0	2,153	3,060	1,465.5	0.00
38	179 W	160	0	1,102	1,598	145.2	0.00
38	177 W	6,575	0	5,683	8,591	1,157.0	0.00
38	176 W	937	0	540	810	1,735.2	0.00
38	171 W	2,249	0	974	1,314	2,308.3	0.00
38	170 W	329	0	609	914	540.1	0.00
38	169 W	3,890	0	1,384	1,980	2,810.7	0.00
38	168 W	2,232	0	609	914	3,664.3	0.00
38	166 W	25	0	660	924	37.9	0.00
38	165 W	18,519	0	5,199	7,114	3,561.9	0.00
38	164 W	28,091	0	7,411	11,083	3,790.2	0.00
38	163 W	10,774	0	5,100	7,579	2,112.4	0.00
38	159 W	240	0	605	907	396.8	0.00
38	158 W	7,501	0	2,052	2,930	3,655.5	0.00
38	157 W	2,091	0	756	1,058	2,765.9	0.00
38	154 W	287	0	720	1,008	398.6	0.00
38	153 W	1,217	0	701	845	1,736.6	0.00
38	152 W	3,431	0	2,280	3,144	1,504.8	0.00
38	151 W	8,376	0	2,768	3,645	3,026.0	0.00
38	150 W	5,772	0	2,707	3,910	2,132.1	0.00
37	170 W	188	0	486	725	386.5	0.00
37	166 W	270	0	1,123	1,682	240.4	0.00
37	165 W	3,767	0	3,318	4,896	1,135.3	0.00
37	164 W	3,529	0	2,147	3,294	1,643.5	0.00
37	163 W	9,332	0	6,394	9,737	1,459.5	0.00

Table 7. (Continued)

June 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
39	173 E	20	0	456	684	43.9	0.00
39	174 E	82	0	456	684	179.8	0.00
39	175 E	966	1	1,368	1,938	706.1	0.52
39	176 E	12,851	1	4,479	6,516	2,869.2	0.15
39	177 E	2,446	0	2,209	3,314	1,107.2	0.00
39	179 E	2,966	0	2,140	3,095	1,386.0	0.00
39	179 W	4,326	0	3,204	4,583	1,350.2	0.00
39	178 W	18,186	0	6,919	10,240	2,628.5	0.00
39	177 W	35,988	0	13,034	19,281	2,761.1	0.00
39	176 W	29,556	0	8,443	12,809	3,500.6	0.00
39	174 W	513	0	1,206	1,810	425.2	0.00
39	170 W	46,400	0	17,550	25,509	2,643.9	0.00
39	169 W	15,171	0	5,907	8,662	2,568.2	0.00
39	168 W	13,426	2	9,181	13,481	1,462.4	0.15
39	167 W	5,764	0	5,646	7,945	1,021.0	0.00
39	166 W	5,577	0	3,180	4,535	1,754.0	0.00
39	165 W	1,906	0	3,136	4,632	607.8	0.00
39	164 W	27,024	0	11,786	17,521	2,292.8	0.00
39	163 W	15,801	0	4,202	6,302	3,760.7	0.00
39	162 W	909	0	1,137	1,705	799.6	0.00
39	159 W	2,395	0	549	823	4,364.1	0.00
39	158 W	9,550	0	6,236	9,207	1,531.3	0.00
39	157 W	5,696	0	3,089	4,316	1,843.8	0.00
39	156 W	1,564	0	1,228	1,839	1,273.9	0.00
39	154 W	1,314	0	1,233	1,849	1,066.0	0.00
39	153 W	627	0	576	864	1,088.5	0.00
39	152 W	8,312	0	2,566	3,604	3,239.9	0.00
39	151 W	1,509	0	485	804	3,110.7	0.00
38	179 E	30	0	448	672	67.0	0.00
38	179 W	588	0	448	672	1,312.5	0.00
38	177 W	2,789	0	2,430	3,529	1,147.5	0.00
38	176 W	20	0	448	672	44.6	0.00
38	171 W	986	0	720	1,008	1,369.4	0.00
38	170 W	21,422	0	6,082	8,268	3,522.2	0.00
38	169 W	10,900	0	4,232	6,012	2,575.8	0.00
38	168 W	28,152	0	6,570	9,261	4,285.2	0.00
38	167 W	1,280	0	1,783	2,609	717.8	0.00
38	166 W	3,460	0	2,934	4,401	1,179.3	0.00
38	164 W	11,332	0	4,690	6,894	2,416.2	0.00
38	163 W	2,166	0	528	792	4,102.3	0.00
38	162 W	139	0	568	853	244.5	0.00

Table 7. (Continued)

June 21-30

1°x1° Area Lat.	Long.	Observed Catch in Number: Flying squid	Salmonids	Tans (50m): Squid	Salmon	CPUE (No. per 1000 tans): Flying squid	Salmonids
41	177 E	13,690	13	2,076	3,007	6,593.1	4.32
41	171 W	5,529	1	680	1,020	8,130.9	0.98
40	175 E	242	0	499	749	484.8	0.00
39	170 E	24	0	539	755	44.5	0.00
39	172 E	94	0	470	706	199.8	0.00
39	174 E	6,114	0	432	648	14,152.8	0.00
39	175 E	11,392	35	7,058	9,530	1,614.0	3.67
39	176 E	18,684	36	6,660	9,582	2,805.6	3.76
39	177 E	15,340	6	1,966	2,698	7,802.6	2.22
39	178 E	7,812	0	1,176	1,529	6,642.9	0.00
39	179 W	12,243	3	4,371	6,269	2,800.8	0.48
39	178 W	4,920	0	1,176	1,646	4,183.7	0.00
39	177 W	13,026	84	4,856	7,345	2,682.7	11.44
39	176 W	25,070	5	8,896	13,286	2,818.2	0.38
39	175 W	2,087	0	1,280	1,920	1,630.5	0.00
39	173 W	215	0	490	735	438.8	0.00
39	172 W	852	81	600	840	1,420.0	96.43
39	171 W	13,762	2	3,649	5,101	3,771.7	0.39
39	170 W	34,482	0	11,849	17,644	2,910.2	0.00
39	169 W	59,440	0	14,493	20,796	4,101.4	0.00
39	168 W	1,443	2	1,616	2,510	892.7	0.80
39	167 W	14,682	0	4,625	6,749	3,174.6	0.00
39	166 W	5,543	0	2,811	4,217	1,971.8	0.00
39	165 W	2,569	0	1,229	1,843	2,090.7	0.00
39	164 W	92	0	620	930	148.4	0.00
39	160 W	581	0	968	1,452	600.2	0.00
39	159 W	339	0	479	798	708.5	0.00
39	158 W	5,104	0	2,568	3,852	1,987.5	0.00
39	157 W	10,962	0	4,382	6,573	2,501.6	0.00
39	156 W	16,627	0	8,112	11,695	2,049.6	0.00
39	155 W	15,604	0	6,402	9,210	2,437.4	0.00
39	154 W	29,268	0	12,055	17,062	2,427.9	0.00
39	153 W	36,215	0	9,683	14,540	3,740.2	0.00
39	152 W	8,900	0	3,239	4,929	2,747.6	0.00
39	151 W	7,303	0	2,362	3,621	3,092.1	0.00
39	149 W	304	0	647	809	470.0	0.00
39	148 W	1,916	0	1,975	2,876	970.3	0.00
39	147 W	262	0	666	833	393.2	0.00
38	176 E	5,085	0	1,430	1,885	3,555.9	0.00
38	179 W	477	0	353	588	1,352.0	0.00
38	177 W	1,618	0	490	735	3,302.0	0.00
38	176 W	7,974	0	3,539	5,369	2,253.4	0.00
38	175 W	2,761	0	1,129	1,694	2,445.1	0.00
38	174 W	588	0	490	735	1,200.0	0.00
38	171 W	7,825	0	3,305	4,687	2,367.8	0.00
38	170 W	12,551	0	3,902	5,583	3,216.9	0.00
38	169 W	3,460	0	646	904	5,356.0	0.00
38	168 W	563	0	448	672	1,256.7	0.00
38	167 W	8,083	0	3,228	4,692	2,504.0	0.00
38	166 W	1,588	0	1,231	1,850	1,290.5	0.00
38	164 W	622	0	528	792	1,178.0	0.00
38	157 W	5,433	0	1,782	2,674	3,048.1	0.00
38	156 W	1,268	0	638	957	1,987.5	0.00
38	155 W	8,856	0	5,706	8,500	1,552.1	0.00
37	167 W	332	0	520	780	638.5	0.00

Table 7. (Continued)

July 1-10

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
43	169 E	6,220	529	910	1,450	6,835.2	364.83
43	170 E	1,443	253	270	540	5,344.4	468.52
42	169 E	6,380	3	1,373	1,622	4,647.4	1.85
42	170 E	15,376	1,868	2,461	3,526	6,247.9	529.72
42	169 W	10,693	9	2,029	3,131	5,271.4	2.87
42	168 W	19,310	3	1,710	2,630	11,292.4	1.14
42	167 W	14,506	0	1,699	2,907	8,536.0	0.00
42	166 W	18,856	1	938	1,190	20,102.3	0.84
42	165 W	19,879	6	3,100	4,650	6,412.6	1.29
42	163 W	2,457	0	756	1,058	3,250.0	0.00
42	162 W	2,031	0	605	907	3,358.1	0.00
42	161 W	32,917	1	2,161	2,854	15,230.9	0.35
42	160 W	35,547	20	4,816	6,656	7,380.6	3.00
42	159 W	103,157	1	10,036	13,572	10,278.8	0.07
42	158 W	24,824	0	1,848	2,376	13,432.9	0.00
42	157 W	2,099	0	495	823	4,241.3	0.00
41	169 E	1,023	0	540	810	1,894.4	0.00
41	170 E	22,188	954	4,180	6,118	5,308.1	155.94
41	171 E	9,105	892	1,965	2,799	4,634.5	318.64
41	172 E	6,282	0	324	428	19,388.9	0.00
41	174 E	17,571	25	1,148	1,560	15,305.7	16.03
41	175 E	14,631	20	1,579	2,246	9,264.8	8.90
41	176 E	10,276	26	2,739	3,756	3,752.0	6.92
41	177 E	85,624	10	11,734	15,677	7,297.2	0.64
41	178 E	27,176	6	3,801	5,523	7,149.3	1.09
41	179 E	854	17	1,212	1,653	704.6	10.29
41	177 W	3,107	3	980	1,470	3,170.4	2.04
41	175 W	184	14	640	960	287.5	14.58
41	174 W	27,880	0	4,577	6,755	6,091.6	0.00
41	173 W	7,349	1	1,634	2,450	4,498.7	0.41
41	172 W	38,000	40	4,996	7,374	7,606.1	5.42
41	171 W	38,392	2	4,702	6,940	8,165.0	0.29
41	170 W	37,730	2	5,051	7,412	7,469.5	0.27
41	169 W	29,264	0	3,202	4,901	9,140.4	0.00
41	168 W	43,896	11	5,825	7,509	7,536.1	1.46
41	167 W	84,329	8	8,100	11,090	10,410.8	0.72
41	166 W	238,389	6	17,056	21,345	13,977.2	0.28
41	165 W	83,917	0	9,544	13,617	8,792.3	0.00
41	164 W	38,507	0	3,721	5,638	10,348.0	0.00
41	163 W	4,683	0	1,136	1,704	4,122.4	0.00
41	160 W	3,978	0	968	1,452	4,109.5	0.00
41	159 W	70,085	1	6,276	9,065	11,166.6	0.11
41	158 W	79,408	0	7,799	11,864	10,182.4	0.00
41	157 W	1,684	0	448	672	3,758.9	0.00
41	156 W	5,162	0	1,632	2,448	3,163.0	0.00
41	154 W	1,167	0	660	924	1,768.2	0.00
41	153 W	3,751	0	1,188	1,722	3,157.7	0.00
41	152 W	9,421	0	3,525	5,206	2,672.5	0.00
41	151 W	15,943	1	3,774	5,421	4,224.8	0.18
41	150 W	6,095	0	1,718	2,655	3,547.7	0.00
40	175 E	2,880	0	432	648	6,666.7	0.00
40	176 E	3,097	0	365	547	8,489.6	0.00
40	177 E	2,171	0	490	686	4,430.6	0.00
40	178 E	21,680	3	2,268	3,343	9,559.1	0.90

Table 7. (Continued)

1°x1° Area Lat.	Long.	Observed Catch in Number Flying squid	Salmonids	Tans (50m) Squid	Salmon	CPUE (No. per 1000 tans) Flying squid	Salmonids
40	179 E	21,550	6	1,937	2,904	11,126.6	2.07
40	179 W	10,331	4	1,555	2,275	6,642.9	1.76
40	177 W	49,758	618	11,831	17,533	4,205.7	35.25
40	176 W	1,324	0	640	960	2,068.8	0.00
40	173 W	4,850	0	1,190	1,790	4,075.6	0.00
40	172 W	9,522	0	1,050	1,350	9,068.6	0.00
40	171 W	5,295	0	1,826	2,604	2,899.8	0.00
40	170 W	1,605	0	300	300	5,350.0	0.00
40	168 W	361	0	790	790	457.2	0.00
40	166 W	1,255	0	614	922	2,042.6	0.00
40	161 W	481	0	576	864	835.1	0.00
40	159 W	4,514	1	1,716	2,574	2,630.5	0.39
40	158 W	7,637	0	2,608	3,984	2,928.0	0.00
40	154 W	1,307	0	560	840	2,333.9	0.00
40	153 W	16,489	0	4,775	7,098	3,452.9	0.00
40	150 W	2,523	1	500	828	5,048.0	1.21
39	177 E	8,233	1	686	882	12,001.5	1.13
39	166 W	10,974	0	1,843	2,765	5,953.8	0.00
39	157 W	1,255	0	620	930	2,024.2	0.00

Table 7. (Continued)

July 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
43	170 E	5,716	38	405	540	14,113.6	70.37
42	168 E	5,274	11	499	749	10,564.9	14.69
42	169 E	7,260	0	749	1,248	9,695.5	0.00
42	170 E	7,860	41	405	475	19,407.4	86.32
42	169 W	54,397	12	10,733	15,525	5,068.2	0.77
42	168 W	16,949	1	4,258	6,505	3,980.1	0.15
42	167 W	20,283	2	5,519	8,194	3,675.3	0.24
42	166 W	63,712	0	14,085	20,427	4,523.5	0.00
42	165 W	5,944	0	1,143	1,669	5,201.3	0.00
42	164 W	3,604	0	1,162	1,694	3,101.3	0.00
42	163 W	26,656	11	4,279	6,205	6,229.9	1.77
42	162 W	189	0	852	1,278	221.8	0.00
42	161 W	13,948	0	1,492	2,066	9,349.8	0.00
42	160 W	555	0	549	823	1,011.3	0.00
42	159 W	1,823	0	1,196	1,470	1,524.8	0.00
42	158 W	11,229	0	2,376	3,301	4,726.8	0.00
42	157 W	4,042	0	528	792	7,655.3	0.00
42	156 W	2,530	0	528	792	4,791.7	0.00
42	155 W	13,631	0	2,640	3,696	5,163.3	0.00
42	154 W	5,947	0	2,640	3,696	2,252.7	0.00
42	153 W	4,284	0	660	924	6,490.9	0.00
42	152 W	107	0	1,214	1,821	88.1	0.00
42	148 W	8,460	1	2,160	3,024	3,916.7	0.33
42	147 W	3,827	0	720	1,008	5,315.3	0.00
42	146 W	2,565	0	576	864	4,453.1	0.00
41	170 E	92,683	1,176	8,109	11,395	11,430.1	103.21
41	171 E	26,428	341	2,901	4,139	9,110.9	82.39
41	172 E	3,938	0	207	207	19,024.2	0.00
41	173 E	2,674	473	1,473	2,131	1,815.1	221.98
41	174 E	19,051	10	3,191	4,125	5,970.6	2.42
41	175 E	25,310	45	3,563	5,003	7,104.0	9.00
41	177 E	8,661	0	2,279	3,378	3,800.0	0.00
41	172 W	656	1	368	490	1,785.0	2.04
41	171 W	21,844	0	5,000	7,499	4,369.1	0.00
41	170 W	16,180	0	3,832	5,296	4,222.3	0.00
41	169 W	20,895	0	5,221	7,676	4,002.3	0.00
41	168 W	44,043	0	8,917	12,616	4,939.4	0.00
41	167 W	82,946	0	16,226	23,317	5,111.9	0.00
41	166 W	105,944	2	14,567	19,944	7,272.7	0.10
41	165 W	103,411	0	13,478	19,036	7,672.4	0.00
41	164 W	116,208	0	16,829	23,824	6,905.3	0.00
41	163 W	99,947	0	12,508	16,985	7,990.8	0.00
41	162 W	7	0	420	700	16.7	0.00
41	161 W	23,381	0	4,726	6,616	4,947.3	0.00
41	159 W	7,200	0	2,908	4,203	2,475.9	0.00
41	158 W	168	0	638	957	263.3	0.00
41	157 W	1,108	0	534	800	2,076.5	0.00
41	154 W	385	0	660	924	583.3	0.00
41	152 W	2,015	0	1,748	2,621	1,153.0	0.00
41	150 W	668	0	667	800	1,001.5	0.00

ble 7. (Continued)

uly 21-31

°x1° Area Lat.	Long.	Observed Catch in Number Flying squid	Salmonids	Tans (50m) Squid	Salmon	CPUE (No. per 1000 tans) Flying squid	Salmonids
42	169 W	6,840	0	3,726	5,588	1,835.9	0.00
42	168 W	24,833	0	7,479	10,942	3,320.5	0.00
42	167 W	21,996	0	4,584	6,684	4,798.2	0.00
42	166 W	54,900	0	9,260	13,126	5,928.7	0.00
42	165 W	72,322	0	14,650	22,016	4,936.7	0.00
42	164 W	11,382	0	3,595	5,333	3,165.7	0.00
42	163 W	84,259	0	9,551	13,558	8,821.7	0.00
42	162 W	131,027	0	21,605	30,948	6,064.8	0.00
42	161 W	70,636	0	13,726	20,065	5,146.3	0.00
42	160 W	16,945	1	5,710	8,208	2,967.6	0.12
42	159 W	24,652	1	5,088	7,562	4,844.8	0.13
42	158 W	27,240	0	6,207	9,098	4,388.3	0.00
42	157 W	8,205	0	1,777	2,600	4,616.8	0.00
42	153 W	2,679	0	1,280	1,920	2,093.0	0.00
42	152 W	44,289	0	5,239	7,855	8,453.2	0.00
42	151 W	13,392	0	1,751	2,627	7,649.9	0.00
42	147 W	1,582	0	720	1,008	2,197.2	0.00
41	170 E	39,292	37	6,139	8,645	6,400.3	4.28
41	171 E	37,346	20	6,980	9,515	5,350.4	2.10
41	172 E	3,006	0	600	900	5,010.0	0.00
41	173 E	2,232	0	474	710	4,712.8	0.00
41	174 E	6,344	0	947	1,421	6,697.6	0.00
41	176 E	10,433	0	1,206	1,809	8,650.9	0.00
41	177 E	14,967	2	2,079	2,839	7,200.9	0.70
41	175 W	510	0	495	765	1,030.3	0.00
41	173 W	965	0	518	653	1,864.7	0.00
41	171 W	911	0	540	779	1,687.0	0.00
41	168 W	9,758	0	2,973	4,393	3,282.6	0.00
41	167 W	8,066	0	3,049	4,575	2,645.2	0.00
41	166 W	43,540	0	9,320	13,808	4,671.6	0.00
41	165 W	28,030	0	8,344	12,440	3,359.3	0.00
41	164 W	45,364	0	9,882	14,358	4,590.4	0.00
41	163 W	13,420	0	4,510	6,694	2,975.9	0.00
41	162 W	982	0	968	1,452	1,014.5	0.00
41	161 W	9,580	0	3,552	5,412	2,697.1	0.00
41	160 W	21,896	0	5,760	8,508	3,801.3	0.00

Table 7. (Continued)

August 1-10

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
45	153 W	20,396	1	3,471	4,982	5,875.8	0.20
45	152 W	29,049	1	6,120	9,113	4,746.2	0.11
45	151 W	35,677	1	5,104	7,745	6,989.3	0.13
45	150 W	507	0	560	840	905.4	0.00
45	149 W	25,025	0	3,811	5,634	6,566.8	0.00
45	148 W	5,434	0	1,593	2,150	3,410.5	0.00
44	177 E	1,294	0	312	520	4,147.4	0.00
44	178 E	34,991	8	3,657	4,623	9,567.6	1.73
44	179 E	7,612	0	474	710	16,072.6	0.00
44	179 W	75,780	45	6,060	8,530	12,505.8	5.28
44	178 W	26,820	2	5,525	6,775	4,854.1	0.30
44	177 W	18,020	0	2,653	3,295	6,792.8	0.00
44	175 W	888	0	450	750	1,973.3	0.00
44	159 W	8,715	10	1,841	2,762	4,733.3	3.62
44	158 W	16,497	1	1,667	2,509	9,896.8	0.40
44	157 W	38,637	10	3,506	5,048	11,019.6	1.98
44	156 W	9,292	0	1,593	2,471	5,831.9	0.00
44	153 W	3,499	0	528	792	6,626.9	0.00
44	152 W	5,032	0	1,240	1,860	4,058.1	0.00
44	151 W	29,145	0	4,442	6,390	6,560.9	0.00
44	150 W	20,272	0	2,206	3,171	9,191.1	0.00
44	149 W	20,475	0	3,480	5,219	5,883.2	0.00
44	148 W	11,693	0	3,256	4,724	3,591.1	0.00
43	171 E	8,569	0	490	490	17,487.8	0.00
43	172 E	1,205	0	450	600	2,677.8	0.00
43	173 E	1,420	0	600	900	2,366.7	0.00
43	175 E	10,037	0	1,779	2,450	5,643.2	0.00
43	176 E	5,896	0	964	1,445	6,118.7	0.00
43	177 E	2,075	0	568	853	3,650.6	0.00
43	178 E	6,739	0	858	1,348	7,858.9	0.00
43	179 W	7,163	1	1,118	1,386	6,409.3	0.72
43	178 W	27,299	0	1,819	1,819	15,006.0	0.00
43	177 W	36,594	0	1,979	2,459	18,493.0	0.00
43	175 W	1,938	0	450	750	4,306.7	0.00
43	172 W	5,275	0	312	520	16,907.1	0.00
43	171 W	15,061	0	1,512	2,168	9,961.0	0.00
43	170 W	12,235	0	1,085	1,358	11,278.6	0.00
43	168 W	2,121	0	1,085	1,627	1,955.2	0.00
43	167 W	20,194	2	2,718	3,863	7,430.8	0.52
43	166 W	15,436	0	4,836	6,824	3,191.9	0.00
43	165 W	245	0	552	828	443.8	0.00
43	161 W	174	0	465	775	374.2	0.00
43	160 W	4,217	0	1,720	2,354	2,451.7	0.00
43	159 W	3,184	0	1,606	2,409	1,982.6	0.00
43	158 W	32,522	0	3,754	4,688	8,663.4	0.00
43	157 W	38,131	1	5,254	6,333	7,257.4	0.16
43	156 W	2,041	0	534	800	3,825.0	0.00
43	153 W	9,057	0	3,080	4,620	2,940.6	0.00
43	152 W	6,524	0	1,730	2,670	3,771.1	0.00
43	151 W	13,001	0	2,914	4,299	4,462.2	0.00
43	150 W	5,723	0	1,123	1,685	5,095.3	0.00
43	148 W	1,363	0	1,165	1,748	1,169.6	0.00
42	170 E	3,618	0	620	960	5,835.5	0.00
42	171 E	1,654	0	540	810	3,063.0	0.00
42	172 E	1,415	0	600	900	2,358.3	0.00
42	173 E	435	0	490	735	887.8	0.00
42	174 E	10,075	0	1,712	2,505	5,884.2	0.00

Table 7. (Continued)

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
42	175 E	4,734	0	1,083	1,625	4,370.4	0.00
42	169 W	4,351	0	1,094	1,642	3,975.7	0.00
42	168 W	10,585	0	2,173	2,983	4,871.6	0.00
42	167 W	23,735	0	3,877	5,523	6,122.3	0.00
42	160 W	2,345	0	600	900	3,908.3	0.00
42	159 W	756	0	750	900	1,008.0	0.00
42	158 W	8,356	0	1,248	1,738	6,695.5	0.00
42	152 W	10,662	0	2,766	4,149	3,854.4	0.00
42	151 W	12,509	0	3,007	4,437	4,160.1	0.00
42	150 W	14,158	0	4,252	6,379	3,330.0	0.00
41	175 E	2,797	0	474	710	5,905.8	0.00

August 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
45	163 W	607	0	576	864	1,053.8	0.00
45	160 W	10,410	41	1,640	2,460	6,347.6	16.67
45	159 W	34,848	10	5,939	7,869	5,867.8	1.27
45	158 W	4,782	20	1,000	1,500	4,782.0	13.33
45	154 W	4,678	1	920	1,220	5,084.8	0.82
45	152 W	8,555	21	2,930	4,170	2,919.8	5.04
44	170 E	19,698	1	1,955	2,555	10,073.6	0.39
44	171 E	44,873	1,448	6,655	8,972	6,742.2	161.39
44	172 E	6,296	2	2,025	2,768	3,108.5	0.72
44	176 E	20,866	0	3,401	5,105	6,136.0	0.00
44	177 E	33,642	3	4,494	6,637	7,486.0	0.45
44	178 E	45,741	0	3,031	3,981	15,089.1	0.00
44	179 E	88,493	1	9,998	13,776	8,851.3	0.07
44	180	10,960	0	600	750	18,266.7	0.00
44	179 W	102,964	0	11,984	17,594	8,592.1	0.00
44	178 W	52,796	1	5,943	8,325	8,883.4	0.12
44	177 W	1,339	0	450	600	2,975.6	0.00
44	168 W	579	0	480	800	1,206.3	0.00
44	159 W	10,940	1	2,556	3,514	4,280.1	0.28
44	158 W	62,414	0	8,966	13,451	6,961.0	0.00
44	157 W	48,169	0	7,279	10,538	6,617.9	0.00
44	156 W	10,272	0	1,310	1,968	7,843.6	0.00
44	155 W	2,361	0	574	804	4,113.2	0.00
44	154 W	2,561	0	528	792	4,850.4	0.00
43	170 E	570	0	865	1,106	659.0	0.00
43	171 E	1,616	0	870	1,225	1,857.5	0.00
43	178 E	17,726	0	2,417	3,499	7,335.0	0.00
43	179 E	9,496	0	1,870	2,748	5,077.0	0.00

Table 7. (Continued)

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
43	159 W	1,988	0	531	801	3,743.9	0.00
43	158 W	28,162	0	4,706	6,678	5,984.1	0.00
43	157 W	91,790	2	9,839	14,099	9,329.5	0.14

August 21-31

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
45	178 W	4,177	1	564	564	7,406.0	1.77
45	163 W	1,916	0	591	871	3,242.0	0.00
45	162 W	7,254	0	1,792	2,672	4,048.0	0.00
45	160 W	3,181	0	1,216	1,824	2,616.0	0.00
45	159 W	21,234	0	2,738	4,106	7,756.4	0.00
45	158 W	49,575	1	4,945	6,073	10,025.2	0.16
45	157 W	31,924	10	5,964	7,945	5,352.9	1.26
45	156 W	1,982	0	1,214	1,821	1,632.5	0.00
45	155 W	551	0	574	861	959.8	0.00
45	154 W	1,039	0	640	960	1,623.4	0.00
45	152 W	2,716	0	640	960	4,243.8	0.00
45	151 W	10,069	0	2,103	3,350	4,789.1	0.00
45	150 W	1,681	0	532	802	3,160.4	0.00
44	170 E	3,291	0	800	1,200	4,113.8	0.00
44	171 E	8,329	0	2,830	4,110	2,943.1	0.00
44	172 E	8,178	0	1,590	2,130	5,143.4	0.00
44	173 E	3,344	0	1,340	2,010	2,495.5	0.00
44	174 E	8,681	2	3,855	5,774	2,252.1	0.35
44	175 E	13,663	1	3,519	4,476	3,882.6	0.22
44	176 E	22,977	2	6,965	10,080	3,299.0	0.20
44	177 E	9,016	0	2,425	3,453	3,717.9	0.00
44	178 E	4,235	0	1,156	1,734	3,663.5	0.00
44	179 E	24,694	0	5,770	8,592	4,279.7	0.00
44	179 W	63,227	4	11,204	15,064	5,643.3	0.27
44	178 W	14,821	0	3,460	4,948	4,283.7	0.00
44	177 W	11,679	0	1,987	2,280	5,879.0	0.00
44	171 W	1,208	0	640	960	1,887.5	0.00
44	158 W	17,880	0	3,384	4,983	5,283.2	0.00
44	157 W	10,908	0	2,226	3,215	4,900.7	0.00
44	155 W	535	0	574	861	931.9	0.00
44	151 W	627	0	640	960	979.7	0.00
43	170 E	4,956	0	1,494	2,232	3,317.3	0.00
43	172 E	1,513	0	477	711	3,171.9	0.00
43	173 E	6,392	0	2,590	3,889	2,468.4	0.00
43	174 E	22,611	0	4,929	7,362	4,587.1	0.00
43	175 E	4,473	0	1,579	2,229	2,832.8	0.00
43	178 E	792	0	530	795	1,494.6	0.00
43	179 E	1,471	0	1,090	1,635	1,349.6	0.00
42	170 E	0	0	640	960	0.0	0.00
42	173 E	1,860	0	1,520	2,280	1,223.7	0.00

7. (Continued)

ember 1-10

Area	Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
171 E	4,898	6	502	771	9,757.0	7.78
172 E	645	2	506	782	1,274.7	2.56
176 E	477	0	560	840	851.8	0.00
177 E	388	2	615	861	630.9	2.32
178 E	1,598	0	492	738	3,248.0	0.00
179 E	2,293	0	1,119	1,617	2,049.2	0.00
177 W	812	0	450	600	1,804.4	0.00
176 W	6,467	0	500	750	12,934.0	0.00
175 W	2,351	0	378	630	6,219.6	0.00
174 W	14,025	2	1,638	2,646	8,562.3	0.76
173 W	1,491	0	504	756	2,958.3	0.00
171 W	4,195	0	1,200	1,800	3,495.8	0.00
170 W	7,774	0	2,208	3,312	3,520.8	0.00
162 W	8,428	0	600	900	14,046.7	0.00
161 W	1,649	1	1,247	1,657	1,321.9	0.60
160 W	22,409	1	3,180	4,902	7,046.0	0.20
158 W	9,912	1	2,972	4,457	3,335.7	0.22
157 W	13,439	2	2,775	4,090	4,843.4	0.49
153 W	491	0	640	960	767.2	0.00
152 W	2,216	0	640	960	3,462.5	0.00
151 W	5,957	0	1,280	1,920	4,653.9	0.00
150 W	1,151	0	533	800	2,160.3	0.00
171 E	10,205	0	2,863	4,117	3,563.8	0.00
172 E	5,688	0	2,133	3,146	2,666.7	0.00
176 E	422	0	540	810	781.5	0.00
177 E	1,402	0	1,340	2,010	1,046.3	0.00
179 E	5,124	0	2,326	3,436	2,202.9	0.00
179 W	22,120	0	4,992	7,312	4,431.1	0.00
178 W	18,931	0	3,067	4,472	6,172.5	0.00
177 W	632	0	500	750	1,264.0	0.00
170 W	1,854	0	600	900	3,090.0	0.00
161 W	824	0	620	930	1,329.0	0.00
160 W	5,028	0	2,087	2,367	2,409.2	0.00
158 W	1,223	0	754	754	1,622.0	0.00
171 E	5,891	0	1,243	1,996	4,741.2	0.00
173 E	1,628	0	500	750	3,255.5	0.00
160 W	1,447	0	1,352	1,632	1,070.3	0.00
158 W	1,648	0	905	905	1,821.4	0.00
173 E	785	0	1,170	1,405	670.9	0.00

Table 7. (Continued)

September 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
45	178 W	570	0	603	905	945.0	0.00
45	176 W	22,457	0	3,114	4,546	7,211.6	0.00
45	175 W	3,778	0	456	677	8,285.1	0.00
45	174 W	2,653	1	504	756	5,263.9	1.32
45	173 W	2,775	0	1,723	2,505	1,610.4	0.00
45	171 W	1,616	0	1,008	1,512	1,603.2	0.00
45	170 W	8,819	0	3,912	5,788	2,254.3	0.00
45	161 W	1,904	0	640	960	2,975.0	0.00
45	160 W	2,927	0	1,394	1,554	2,099.7	0.00
45	159 W	1,353	0	800	800	1,691.3	0.00
44	175 E	3,409	0	1,171	1,695	2,911.2	0.00
44	178 E	137	0	791	791	173.2	0.00
44	177 W	516	0	378	504	1,365.1	0.00
44	176 W	3,839	0	1,008	1,512	3,808.5	0.00
44	174 W	892	0	504	756	1,769.8	0.00
44	160 W	1,857	0	1,469	2,142	1,263.9	0.00
43	170 E	4,595	0	1,448	1,856	3,173.3	0.00
43	171 E	12,237	0	3,385	5,006	3,615.5	0.00
43	172 E	6,701	0	1,914	2,753	3,500.5	0.00
43	174 E	7,352	0	1,155	1,549	6,365.4	0.00
43	178 E	2,867	0	1,031	1,545	2,782.1	0.00
43	179 E	344	0	378	378	910.1	0.00
43	179 W	2,043	0	504	756	4,053.6	0.00
43	178 W	5,567	0	1,092	1,638	5,098.0	0.00
43	177 W	5,356	0	1,974	2,520	2,713.3	0.00
43	176 W	1,556	0	504	756	3,087.3	0.00
42	171 E	4,735	0	898	1,376	5,274.0	0.00
41	177 W	323	0	515	773	626.9	0.00

Table 7. (Continued)

September 21-30

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
44	173 E	332	10	1,190	1,590	278.9	6.29
44	174 E	1,370	6	1,134	1,665	1,208.1	3.60
44	175 E	1,474	0	576	837	2,559.0	0.00
43	171 E	1,486	0	544	816	2,731.6	0.00
43	172 E	4,134	0	2,472	3,128	1,672.1	0.00
43	173 E	997	0	523	788	1,906.7	0.00
43	174 E	182	0	512	768	355.5	0.00
43	175 E	837	0	558	846	1,500.0	0.00
43	176 E	1,820	0	603	905	3,017.2	0.00
43	177 E	5,920	0	1,206	1,810	4,907.2	0.00
43	178 W	2,007	0	640	960	3,135.9	0.00
43	177 W	5,429	0	1,280	1,920	4,241.4	0.00
43	176 W	16,696	0	2,712	4,109	6,156.3	0.00
42	165 E	3,088	1	1,065	1,393	2,899.5	0.72
42	170 E	6,295	0	2,315	3,355	2,719.2	0.00
42	172 E	2,511	0	1,729	2,401	1,452.0	0.00
42	173 E	180	0	580	710	310.3	0.00
42	174 E	1,208	0	644	1,159	1,875.8	0.00
42	175 E	6,253	1	2,770	3,736	2,257.1	0.27
42	176 E	2,319	0	1,281	1,719	1,810.3	0.00
42	178 W	30,707	0	4,830	7,182	6,357.6	0.00
42	177 W	2,088	0	754	1,056	2,769.2	0.00
41	170 E	63	0	392	522	160.9	0.00
41	174 E	388	0	730	860	531.5	0.00
41	176 E	1,897	0	558	828	3,399.6	0.00
41	177 W	1,166	0	1,120	1,440	1,041.1	0.00
40	175 E	267	0	515	644	518.2	0.00

Table 7. (Continued)

October 1-10

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
43	177 E	1,082	0	620	620	1,745.2	0.00
43	178 E	9,192	0	2,301	3,419	3,994.8	0.00
43	179 E	7,611	0	1,695	2,421	4,490.3	0.00
43	178 W	1,435	0	576	845	2,491.3	0.00
43	177 W	1,054	0	1,827	2,755	576.8	0.00
43	176 W	11,979	0	2,602	3,901	4,604.5	0.00
43	175 W	7,612	1	1,953	2,853	3,897.6	0.35
43	174 W	1,003	0	504	756	1,990.1	0.00
43	173 W	1,412	0	732	915	1,929.0	0.00
42	171 E	9,488	0	3,450	4,350	2,750.1	0.00
42	172 E	2,841	0	1,200	1,500	2,367.5	0.00
42	179 E	1,027	0	572	874	1,795.5	0.00
42	179 W	1,610	0	603	905	2,669.1	0.00
42	178 W	22,752	0	5,590	8,384	4,070.4	0.00
42	176 W	7,017	0	1,376	1,937	5,099.6	0.00
42	175 W	4,845	0	1,158	1,428	4,183.9	0.00
41	162 E	5,743	0	1,076	1,489	5,337.4	0.00
41	163 E	7,735	0	953	1,368	8,116.5	0.00
41	170 E	1,225	0	538	758	2,277.0	0.00
41	171 E	2,988	0	540	768	5,533.3	0.00
41	178 W	818	0	640	960	1,278.1	0.00
41	177 W	8,788	0	3,126	4,690	2,810.9	0.00
41	176 W	792	0	603	603	1,313.0	0.00

October 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
43	179 E	508	0	576	837	881.9	0.00
43	173 W	3,163	0	1,008	1,512	3,137.9	0.00
43	172 W	8,839	0	2,931	4,101	3,015.7	0.00
43	171 W	5,036	0	2,343	3,474	2,149.4	0.00
42	170 E	4,781	1	1,646	2,297	2,904.6	0.44
42	171 E	1,326	0	875	1,321	1,515.4	0.00
42	172 E	1,639	0	1,847	2,291	887.5	0.00
42	177 E	2,508	0	576	846	4,354.2	0.00
42	178 E	4,712	0	1,080	1,647	4,363.0	0.00
42	178 W	7,887	0	1,512	2,268	5,216.3	0.00
42	177 W	1,018	0	504	756	2,019.8	0.00
42	176 W	876	0	640	960	1,368.8	0.00
42	174 W	732	0	600	900	1,220.0	0.00
41	171 E	3,225	0	1,641	2,369	1,965.0	0.00
41	179 W	4,589	0	1,144	1,716	4,011.4	0.00
41	178 W	2,503	0	640	960	3,910.9	0.00
41	177 W	419	0	640	960	654.7	0.00
41	176 W	5,519	0	2,628	3,570	2,100.1	0.00
40	171 E	287	0	750	750	382.7	0.00
39	171 E	178	0	588	882	302.7	0.00
38	171 E	36	0	1,476	1,476	24.4	0.00
37	171 E	18	0	588	882	30.6	0.00

Table 7. (Continued)

October 21-31

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
42	178 E	981	0	558	846	1,758.1	0.00
42	178 W	821	0	480	800	1,710.4	0.00
41	178 E	5,460	0	1,580	2,440	3,455.7	0.00
41	179 W	9,714	0	2,616	3,924	3,713.3	0.00
41	178 W	7,374	0	2,208	3,312	3,339.7	0.00
41	177 W	2,277	0	600	900	3,795.0	0.00
41	176 W	1,221	0	600	900	2,035.0	0.00
40	171 E	879	0	882	882	996.6	0.00
40	177 E	4,434	0	993	1,489	4,466.2	0.00
40	178 E	4,410	0	993	1,489	4,442.0	0.00
39	174 E	4,788	0	2,646	3,528	1,809.5	0.00

November 1-10

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
41	175 E	1,301	0	489	733	2,661.6	0.00
41	176 E	9,102	0	1,589	2,322	5,729.6	0.00
41	177 E	4,629	0	1,222	1,711	3,788.1	0.00
40	176 E	786	0	560	840	1,403.6	0.00
40	177 E	7,791	0	2,909	4,487	2,678.6	0.00
40	178 E	6,118	0	2,169	3,253	2,820.9	0.00

November 11-20

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
41	176 E	1,533	0	611	855	2,509.0	0.00
41	179 W	3,722	0	1,222	1,711	3,045.8	0.00
41	178 W	4,508	0	1,589	2,322	2,837.7	0.00

November 21-30

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
41	174 E	13,795	0	2,444	3,422	5,644.4	0.00
39	173 E	201	0	367	611	548.3	0.00

December 1-10

1°x1° Area		Observed Catch in Number		Tans (50m)		CPUE (No. per 1000 tans)	
Lat.	Long.	Flying squid	Salmonids	Squid	Salmon	Flying squid	Salmonids
39	170 E	6,388	0	2,444	3,422	2,613.7	0.00
39	171 E	3,225	0	1,466	2,200	2,199.3	0.00

Table 8. Observed bycatch of salmonids by species by 1 x 1 degree statistical area and 10-day period in the 1990 Japanese squid driftnet fishery.

June 1-10

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
39	176 E	0	0	1	0	0	0	0	1
39	177 E	0	0	0	1	0	0	0	1
39	179 W	0	0	0	0	4	0	0	4
39	169 W	1	0	0	0	0	0	0	1
39	168 W	0	0	1	1	0	0	0	2
39	167 W	0	0	0	2	0	0	0	2
39	162 W	0	0	0	1	0	0	0	1

June 11-20

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
39	175 E	0	0	0	1	0	0	0	1
39	176 E	0	0	0	1	0	0	0	1
39	168 W	0	0	0	2	0	0	0	2

June 21-30

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
41	177 E	2	0	4	7	0	0	0	13
41	171 W	0	0	0	1	0	0	0	1
39	175 E	8	0	1	25	1	0	0	35
39	176 E	0	0	2	34	0	0	0	36
39	177 E	0	0	1	5	0	0	0	6
39	179 W	0	0	2	1	0	0	0	3
39	177 W	0	0	0	84	0	0	0	84
39	176 W	5	0	0	0	0	0	0	5
39	172 W	77	0	0	4	0	0	0	81
39	171 W	0	1	0	0	0	0	1	2
39	168 W	0	1	0	0	0	0	1	2

Table 8. (Continued)

July 1-10

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
43	169 E	470	0	27	32	0	0	0	529
43	170 E	7	0	48	198	0	0	0	253
42	169 E	2	0	0	1	0	0	0	3
42	170 E	1,707	0	56	104	1	0	0	1,868
42	169 W	1	0	0	8	0	0	0	9
42	168 W	0	0	1	2	0	0	0	3
42	166 W	0	0	0	1	0	0	0	1
42	165 W	0	0	0	6	0	0	0	6
42	161 W	0	0	0	0	0	1	0	1
42	160 W	20	0	0	0	0	0	0	20
42	159 W	0	0	0	0	0	1	0	1
41	170 E	920	0	11	23	0	0	0	954
41	171 E	890	0	0	2	0	0	0	892
41	174 E	0	0	1	23	1	0	0	25
41	175 E	0	0	8	12	0	0	0	20
41	176 E	1	0	3	22	0	0	0	26
41	177 E	1	0	5	4	0	0	0	10
41	178 E	1	0	2	3	0	0	0	6
41	179 E	12	0	1	4	0	0	0	17
41	177 W	0	0	0	3	0	0	0	3
41	175 W	0	0	0	14	0	0	0	14
41	173 W	0	0	1	0	0	0	0	1
41	172 W	2	0	2	36	0	0	0	40
41	171 W	1	0	1	0	0	0	0	2
41	170 W	0	0	0	2	0	0	0	2
41	168 W	1	0	0	10	0	0	0	11
41	167 W	2	0	0	6	0	0	0	8
41	166 W	0	0	0	6	0	0	0	6
41	159 W	0	0	0	0	1	0	0	1
41	151 W	0	0	1	0	0	0	0	1
40	178 E	0	0	3	0	0	0	0	3
40	179 E	0	0	1	5	0	0	0	6
40	179 W	0	0	2	1	1	0	0	4
40	177 W	296	0	1	321	0	0	0	618
40	159 W	0	0	0	0	1	0	0	1
40	150 W	0	0	0	0	0	1	0	1
39	177 E	0	0	0	1	0	0	0	1

July 11-20

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
43	170 E	0	0	1	37	0	0	0	38
42	168 E	7	0	0	4	0	0	0	11
42	170 E	0	0	1	40	0	0	0	41
42	169 W	10	0	0	2	0	0	0	12
42	168 W	0	0	0	1	0	0	0	1
42	167 W	0	0	0	2	0	0	0	2
42	163 W	10	0	0	1	0	0	0	11
42	148 W	0	0	1	0	0	0	0	1
41	170 E	1,084	0	16	76	0	0	0	1,176
41	171 E	111	0	207	23	0	0	0	341
41	173 E	429	0	1	43	0	0	0	473
41	174 E	5	0	0	5	0	0	0	10
41	175 E	27	0	2	15	1	0	0	45
41	172 W	0	0	0	1	0	0	0	1
41	166 W	0	0	0	1	1	0	0	2

Table 8. (Continued)

July 21-30

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
42	160 W	1	0	0	0	0	0	0	1
42	159 W	0	0	0	0	0	1	0	1
41	170 E	4	1	29	2	0	0	1	37
41	171 E	5	1	4	9	0	0	1	20
41	177 E	1	0	0	1	0	0	0	2

August 1-10

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
45	153 W	0	0	0	0	0	1	0	1
45	152 W	0	0	0	0	0	1	0	1
45	151 W	0	0	0	1	0	0	0	1
44	178 E	2	1	3	1	0	0	1	8
44	179 W	1	1	17	25	0	0	1	45
44	178 W	0	0	0	2	0	0	0	2
44	159 W	10	0	0	0	0	0	0	10
44	158 W	0	0	0	1	0	0	0	1
44	157 W	10	0	0	0	0	0	0	10
43	179 W	0	0	0	1	0	0	0	1
43	167 W	0	0	0	0	1	1	0	2
43	157 W	0	0	1	0	0	0	0	1

August 11-20

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
45	160 W	40	0	1	0	0	0	0	41
45	159 W	10	0	0	0	0	0	0	10
45	158 W	20	0	0	0	0	0	0	20
45	154 W	0	0	0	0	1	0	0	1
45	152 W	20	0	0	0	0	1	0	21
44	170 E	0	0	1	0	0	0	0	1
44	171 E	0	2	1,427	17	0	0	2	1,448
44	172 E	0	0	1	1	0	0	0	2
44	177 E	0	0	0	0	2	1	0	3
44	179 E	0	0	0	0	1	0	0	1
44	178 W	0	0	0	0	1	0	0	1
44	159 W	0	0	1	0	0	0	0	1
43	157 W	0	0	1	0	1	0	0	2

August 21-31

1°x 1° Area		Observed Bycatch in Number							
Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
45	178 W	0	0	1	0	0	0	0	1
45	158 W	0	0	0	0	0	1	0	1
45	157 W	10	0	0	0	0	0	0	10
44	174 E	0	1	0	0	0	0	1	2
44	175 E	0	0	0	0	1	0	0	1
44	176 E	0	1	0	0	0	0	1	2
44	179 W	1	0	2	1	0	0	0	4

Table 8. (Continued)

September 1-10

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
45	171 E	3	1	1	0	0	0	1	6
45	172 E	0	0	2	0	0	0	0	2
45	177 E	0	1	0	0	0	0	1	2
45	174 W	0	1	0	0	0	0	1	2
45	161 W	0	0	0	0	0	1	0	1
45	160 W	0	0	1	0	0	0	0	1
45	158 W	0	0	0	1	0	0	0	1
45	157 W	0	0	0	2	0	0	0	2

Observed Bycatch in Number

September 11-20

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
45	174 W	0	0	0	0	0	1	0	1

Observed Bycatch in Number

September 21-30

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
44	173 E	10	0	0	0	0	0	0	10
44	174 E	0	0	6	0	0	0	0	6
42	165 E	1	0	0	0	0	0	0	1
42	175 E	0	0	0	1	0	0	0	1

Observed Bycatch in Number

October 1-10

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
43	175 W	0	0	1	0	0	0	0	1

Observed Bycatch in Number

October 11-20

1°x 1° Area Lat.	Long.	Unknown	Chinook	Chum	Coho	Pink	Sockeye	Steelhead	Total
42	170 E	1	0	0	0	0	0	0	1

Observed Bycatch in Number

Table 9. Observed bycatch of northern fur seals by four categories, and other pinnipeds, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of northern fur seals and other pinnipeds by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area		Observed Catch in Number					Tans (50m)	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-nipeds		Northern Fur Seal				Other Pin-nipeds
Lat.	Long.	Dead	Alive	Unk	Total			Dead	Alive	Unk	Total	
41	177 E	0	1	0	1	0	3,007	0.00	0.33	0.00	0.33	0.00
41	171 W	0	0	0	0	0	1,020	0.00	0.00	0.00	0.00	0.00
40	175 E	0	0	0	0	0	749	0.00	0.00	0.00	0.00	0.00
39	170 E	0	0	0	0	0	1,455	0.00	0.00	0.00	0.00	0.00
39	172 E	0	0	0	0	0	706	0.00	0.00	0.00	0.00	0.00
39	173 E	1	0	0	1	0	684	1.46	0.00	0.00	1.46	0.00
39	174 E	0	0	0	0	0	1,332	0.00	0.00	0.00	0.00	0.00
39	175 E	0	2	0	2	0	11,468	0.00	0.17	0.00	0.17	0.00
39	176 E	0	6	1	7	0	16,848	0.00	0.36	0.06	0.42	0.00
39	177 E	0	4	0	4	0	8,338	0.00	0.48	0.00	0.48	0.00
39	178 E	0	0	0	0	0	6,226	0.00	0.00	0.00	0.00	0.00
39	179 E	0	2	0	2	0	11,758	0.00	0.17	0.00	0.17	0.00
39	179 W	0	5	0	5	1	17,593	0.00	0.28	0.00	0.28	0.06
39	178 W	0	1	0	1	0	11,886	0.00	0.08	0.00	0.08	0.00
39	177 W	0	6	1	7	0	31,559	0.00	0.19	0.03	0.22	0.00
39	176 W	0	3	0	3	0	28,853	0.00	0.10	0.00	0.10	0.00
39	175 W	0	0	0	0	0	1,920	0.00	0.00	0.00	0.00	0.00
39	174 W	0	0	0	0	0	1,810	0.00	0.00	0.00	0.00	0.00
39	173 W	0	0	0	0	0	735	0.00	0.00	0.00	0.00	0.00
39	172 W	0	1	0	1	0	840	0.00	1.19	0.00	1.19	0.00
39	171 W	0	1	0	1	0	5,101	0.00	0.20	0.00	0.20	0.00
39	170 W	0	0	0	0	0	47,873	0.00	0.00	0.00	0.00	0.00
39	169 W	0	1	0	1	0	39,450	0.00	0.03	0.00	0.03	0.00
39	168 W	1	1	1	3	1	25,558	0.04	0.04	0.04	0.12	0.04
39	167 W	1	0	0	1	0	20,187	0.05	0.00	0.00	0.05	0.00
39	166 W	0	0	0	0	0	8,752	0.00	0.00	0.00	0.00	0.00
39	165 W	0	1	0	1	0	6,475	0.00	0.15	0.00	0.15	0.00
39	164 W	0	0	0	0	0	25,174	0.00	0.00	0.00	0.00	0.00
39	163 W	0	0	0	0	0	7,573	0.00	0.00	0.00	0.00	0.00
39	162 W	2	1	0	3	0	4,094	0.49	0.24	0.00	0.73	0.00
39	160 W	0	4	0	4	0	1,452	0.00	2.75	0.00	2.75	0.00
39	159 W	0	1	0	1	0	1,621	0.00	0.62	0.00	0.62	0.00
39	158 W	0	1	0	1	0	14,117	0.00	0.07	0.00	0.07	0.00
39	157 W	1	6	0	7	0	17,749	0.06	0.34	0.00	0.39	0.00
39	156 W	1	1	0	2	0	13,534	0.07	0.07	0.00	0.15	0.00
39	155 W	2	0	0	2	0	9,210	0.22	0.00	0.00	0.22	0.00
39	154 W	1	0	0	1	0	19,970	0.05	0.00	0.00	0.05	0.00
39	153 W	1	2	0	3	0	16,463	0.06	0.12	0.00	0.18	0.00
39	152 W	1	0	0	1	0	8,533	0.12	0.00	0.00	0.12	0.00
39	151 W	0	0	0	0	0	5,177	0.00	0.00	0.00	0.00	0.00
39	149 W	0	0	0	0	0	809	0.00	0.00	0.00	0.00	0.00
39	148 W	0	0	0	0	0	2,876	0.00	0.00	0.00	0.00	0.00
39	147 W	0	0	0	0	0	833	0.00	0.00	0.00	0.00	0.00
39	146 W	0	0	0	0	0	902	0.00	0.00	0.00	0.00	0.00
38	171 E	0	0	0	0	0	924	0.00	0.00	0.00	0.00	0.00
38	176 E	0	0	0	0	0	1,885	0.00	0.00	0.00	0.00	0.00
38	179 E	0	1	0	1	0	3,732	0.00	0.27	0.00	0.27	0.00
38	179 W	0	0	0	0	0	2,858	0.00	0.00	0.00	0.00	0.00
38	177 W	0	0	0	0	0	12,856	0.00	0.00	0.00	0.00	0.00
38	176 W	0	1	0	1	0	6,851	0.00	0.15	0.00	0.15	0.00
38	175 W	0	0	0	0	0	1,694	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

1°x 1° Area		Observed Catch in Number					Tans	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	(50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
38	174 W	0	0	0	0	0	735	0.00	0.00	0.00	0.00	0.00
38	171 W	0	0	0	0	0	7,009	0.00	0.00	0.00	0.00	0.00
38	170 W	0	0	0	0	0	14,765	0.00	0.00	0.00	0.00	0.00
38	169 W	0	0	0	0	0	8,896	0.00	0.00	0.00	0.00	0.00
38	168 W	0	0	0	0	0	10,847	0.00	0.00	0.00	0.00	0.00
38	167 W	0	0	0	0	0	7,300	0.00	0.00	0.00	0.00	0.00
38	166 W	0	0	0	0	0	7,175	0.00	0.00	0.00	0.00	0.00
38	165 W	0	0	0	0	0	7,114	0.00	0.00	0.00	0.00	0.00
38	164 W	0	0	0	0	0	18,769	0.00	0.00	0.00	0.00	0.00
38	163 W	0	1	0	1	0	8,371	0.00	0.12	0.00	0.12	0.00
38	162 W	0	0	0	0	0	853	0.00	0.00	0.00	0.00	0.00
38	159 W	0	0	0	0	0	907	0.00	0.00	0.00	0.00	0.00
38	158 W	0	0	0	0	0	2,930	0.00	0.00	0.00	0.00	0.00
38	157 W	0	1	0	1	0	3,732	0.00	0.27	0.00	0.27	0.00
38	156 W	0	0	0	0	0	957	0.00	0.00	0.00	0.00	0.00
38	155 W	0	0	0	0	0	8,500	0.00	0.00	0.00	0.00	0.00
38	154 W	0	0	0	0	0	1,008	0.00	0.00	0.00	0.00	0.00
38	153 W	0	0	0	0	0	845	0.00	0.00	0.00	0.00	0.00
38	152 W	0	0	0	0	0	3,144	0.00	0.00	0.00	0.00	0.00
38	151 W	0	0	0	0	0	3,645	0.00	0.00	0.00	0.00	0.00
38	150 W	0	0	0	0	0	3,910	0.00	0.00	0.00	0.00	0.00
37	170 W	0	0	0	0	0	725	0.00	0.00	0.00	0.00	0.00
37	167 W	0	0	0	0	0	780	0.00	0.00	0.00	0.00	0.00
37	166 W	0	0	0	0	0	1,682	0.00	0.00	0.00	0.00	0.00
37	165 W	0	0	0	0	0	4,896	0.00	0.00	0.00	0.00	0.00
37	164 W	0	0	0	0	0	3,294	0.00	0.00	0.00	0.00	0.00
37	163 W	0	0	0	0	0	9,737	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

July

1°x 1° Area		Observed Catch in Number						CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	Tans (50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
43	169 E	0	1	0	1	0	1,450	0.00	0.69	0.00	0.69	0.00
43	170 E	0	0	0	0	0	1,080	0.00	0.00	0.00	0.00	0.00
42	168 E	0	1	0	1	0	749	0.00	1.34	0.00	1.34	0.00
42	169 E	1	0	0	1	0	2,870	0.35	0.00	0.00	0.35	0.00
42	170 E	2	3	0	5	0	4,001	0.50	0.75	0.00	1.25	0.00
42	169 W	3	7	0	10	0	24,244	0.12	0.29	0.00	0.41	0.00
42	168 W	7	6	0	13	1	20,077	0.35	0.30	0.00	0.65	0.05
42	167 W	4	9	0	13	0	17,784	0.22	0.51	0.00	0.73	0.00
42	166 W	1	1	0	2	0	34,743	0.03	0.03	0.00	0.06	0.00
42	165 W	1	2	0	3	0	28,335	0.04	0.07	0.00	0.11	0.00
42	164 W	0	1	1	2	0	7,027	0.00	0.14	0.14	0.28	0.00
42	163 W	3	0	0	3	0	20,821	0.14	0.00	0.00	0.14	0.00
42	162 W	1	4	0	5	0	33,133	0.03	0.12	0.00	0.15	0.00
42	161 W	4	2	0	6	0	24,985	0.16	0.08	0.00	0.24	0.00
42	160 W	2	6	2	10	1	15,687	0.13	0.38	0.13	0.64	0.06
42	159 W	4	6	1	11	0	22,604	0.18	0.27	0.04	0.49	0.00
42	158 W	1	1	0	2	0	14,775	0.07	0.07	0.00	0.14	0.00
42	157 W	0	3	0	3	0	4,215	0.00	0.71	0.00	0.71	0.00
42	156 W	0	0	0	0	0	792	0.00	0.00	0.00	0.00	0.00
42	155 W	1	0	0	1	0	3,696	0.27	0.00	0.00	0.27	0.00
42	154 W	3	2	0	5	0	3,696	0.81	0.54	0.00	1.35	0.00
42	153 W	0	0	0	0	0	2,844	0.00	0.00	0.00	0.00	0.00
42	152 W	0	0	0	0	0	9,676	0.00	0.00	0.00	0.00	0.00
42	151 W	0	0	0	0	1	2,627	0.00	0.00	0.00	0.00	0.38
42	148 W	0	0	0	0	0	3,024	0.00	0.00	0.00	0.00	0.00
42	147 W	0	0	0	0	0	2,016	0.00	0.00	0.00	0.00	0.00
42	146 W	0	0	0	0	0	864	0.00	0.00	0.00	0.00	0.00
41	169 E	1	1	0	2	0	810	1.23	1.23	0.00	2.47	0.00
41	170 E	7	13	0	20	0	26,157	0.27	0.50	0.00	0.76	0.00
41	171 E	3	1	1	5	0	16,453	0.18	0.06	0.06	0.30	0.00
41	172 E	0	0	0	0	0	1,535	0.00	0.00	0.00	0.00	0.00
41	173 E	5	3	2	10	0	2,841	1.76	1.06	0.70	3.52	0.00
41	174 E	1	7	0	8	0	7,106	0.14	0.99	0.00	1.13	0.00
41	175 E	4	6	0	10	0	7,249	0.55	0.83	0.00	1.38	0.00
41	176 E	3	4	0	7	0	5,565	0.54	0.72	0.00	1.26	0.00
41	177 E	1	5	2	8	0	21,894	0.05	0.23	0.09	0.37	0.00
41	178 E	0	1	0	1	0	5,523	0.00	0.18	0.00	0.18	0.00
41	179 E	1	1	0	2	0	1,653	0.61	0.61	0.00	1.21	0.00
41	177 W	1	0	0	1	0	1,470	0.68	0.00	0.00	0.68	0.00
41	175 W	0	0	0	0	1	1,725	0.00	0.00	0.00	0.00	0.58
41	174 W	1	0	0	1	0	6,755	0.15	0.00	0.00	0.15	0.00
41	173 W	0	0	0	0	0	3,103	0.00	0.00	0.00	0.00	0.00
41	172 W	1	1	0	2	0	7,864	0.13	0.13	0.00	0.25	0.00
41	171 W	0	0	0	0	0	15,218	0.00	0.00	0.00	0.00	0.00
41	170 W	0	1	0	1	0	12,708	0.00	0.08	0.00	0.08	0.00
41	169 W	0	0	0	0	0	12,577	0.00	0.00	0.00	0.00	0.00
41	168 W	0	0	0	0	0	24,518	0.00	0.00	0.00	0.00	0.00
41	167 W	0	0	0	0	0	38,982	0.00	0.00	0.00	0.00	0.00
41	166 W	1	4	0	5	0	55,097	0.02	0.07	0.00	0.09	0.00
41	165 W	0	2	0	2	2	45,093	0.00	0.04	0.00	0.04	0.04
41	164 W	0	1	0	1	0	43,820	0.00	0.02	0.00	0.02	0.00
41	163 W	1	1	0	2	0	25,383	0.04	0.04	0.00	0.08	0.00
41	162 W	0	0	0	0	0	2,152	0.00	0.00	0.00	0.00	0.00
41	161 W	0	0	0	0	0	12,028	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

1°x 1° Area		Observed Catch in Number					Tans (50m)	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-		Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
41	160 W	2	0	0	2	0	9,960	0.20	0.00	0.00	0.20	0.00
41	159 W	0	0	0	0	1	13,268	0.00	0.00	0.00	0.00	0.08
41	158 W	2	2	0	4	0	12,821	0.16	0.16	0.00	0.31	0.00
41	157 W	0	0	0	0	0	1,472	0.00	0.00	0.00	0.00	0.00
41	156 W	3	0	0	3	0	2,448	1.23	0.00	0.00	1.23	0.00
41	154 W	1	1	0	2	0	1,848	0.54	0.54	0.00	1.08	0.00
41	153 W	1	0	0	1	0	1,722	0.58	0.00	0.00	0.58	0.00
41	152 W	3	3	2	8	0	7,827	0.38	0.38	0.26	1.02	0.00
41	151 W	0	0	0	0	0	5,421	0.00	0.00	0.00	0.00	0.00
41	150 W	1	0	0	1	0	3,456	0.29	0.00	0.00	0.29	0.00
40	175 E	0	2	0	2	0	648	0.00	3.09	0.00	3.09	0.00
40	176 E	0	0	0	0	0	547	0.00	0.00	0.00	0.00	0.00
40	177 E	0	0	0	0	0	686	0.00	0.00	0.00	0.00	0.00
40	178 E	0	2	0	2	0	3,343	0.00	0.60	0.00	0.60	0.00
40	179 E	0	6	0	6	0	2,904	0.00	2.07	0.00	2.07	0.00
40	179 W	0	0	0	0	0	2,275	0.00	0.00	0.00	0.00	0.00
40	177 W	0	0	0	0	1	17,533	0.00	0.00	0.00	0.00	0.06
40	176 W	0	0	0	0	0	960	0.00	0.00	0.00	0.00	0.00
40	173 W	0	0	0	0	0	1,790	0.00	0.00	0.00	0.00	0.00
40	172 W	0	0	0	0	0	1,350	0.00	0.00	0.00	0.00	0.00
40	171 W	0	0	0	0	0	2,604	0.00	0.00	0.00	0.00	0.00
40	170 W	0	0	0	0	0	300	0.00	0.00	0.00	0.00	0.00
40	168 W	0	0	0	0	0	790	0.00	0.00	0.00	0.00	0.00
40	166 W	0	0	0	0	0	922	0.00	0.00	0.00	0.00	0.00
40	161 W	0	0	0	0	0	864	0.00	0.00	0.00	0.00	0.00
40	159 W	0	0	0	0	0	2,574	0.00	0.00	0.00	0.00	0.00
40	158 W	0	0	0	0	0	3,984	0.00	0.00	0.00	0.00	0.00
40	154 W	0	0	0	0	0	840	0.00	0.00	0.00	0.00	0.00
40	153 W	2	0	1	3	0	7,098	0.28	0.00	0.14	0.42	0.00
40	150 W	0	0	0	0	0	828	0.00	0.00	0.00	0.00	0.00
39	177 E	0	0	0	0	0	882	0.00	0.00	0.00	0.00	0.00
39	166 W	0	0	0	0	0	2,765	0.00	0.00	0.00	0.00	0.00
39	157 W	0	0	0	0	0	930	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

August

1°x 1° Area		Observed Catch in Number					Tans	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	(50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
45	178 W	0	0	0	0	0	564	0.00	0.00	0.00	0.00	0.00
45	163 W	3	3	2	8	0	1,735	1.73	1.73	1.15	4.61	0.00
45	162 W	0	0	0	0	0	2,672	0.00	0.00	0.00	0.00	0.00
45	160 W	9	2	2	13	0	4,284	2.10	0.47	0.47	3.03	0.00
45	159 W	9	4	1	14	1	11,975	0.75	0.33	0.08	1.17	0.08
45	158 W	2	4	0	6	0	7,573	0.26	0.53	0.00	0.79	0.00
45	157 W	8	15	1	24	0	7,945	1.01	1.89	0.13	3.02	0.00
45	156 W	1	2	1	4	0	1,821	0.55	1.10	0.55	2.20	0.00
45	155 W	1	1	0	2	0	861	1.16	1.16	0.00	2.32	0.00
45	154 W	0	1	1	2	0	2,180	0.00	0.46	0.46	0.92	0.00
45	153 W	3	5	1	9	2	4,982	0.60	1.00	0.20	1.81	0.40
45	152 W	3	4	0	7	2	14,243	0.21	0.28	0.00	0.49	0.14
45	151 W	5	2	0	7	0	11,095	0.45	0.18	0.00	0.63	0.00
45	150 W	0	0	0	0	0	1,642	0.00	0.00	0.00	0.00	0.00
45	149 W	1	0	0	1	0	5,634	0.18	0.00	0.00	0.18	0.00
45	148 W	0	0	0	0	0	2,150	0.00	0.00	0.00	0.00	0.00
44	170 E	0	0	0	0	0	3,755	0.00	0.00	0.00	0.00	0.00
44	171 E	1	1	0	2	0	13,082	0.08	0.08	0.00	0.15	0.00
44	172 E	0	0	0	0	0	4,898	0.00	0.00	0.00	0.00	0.00
44	173 E	0	0	0	0	0	2,010	0.00	0.00	0.00	0.00	0.00
44	174 E	0	3	0	3	1	5,774	0.00	0.52	0.00	0.52	0.17
44	175 E	0	0	0	0	0	4,476	0.00	0.00	0.00	0.00	0.00
44	176 E	0	0	0	0	0	15,186	0.00	0.00	0.00	0.00	0.00
44	177 E	0	0	0	0	0	10,610	0.00	0.00	0.00	0.00	0.00
44	178 E	0	0	0	0	0	10,338	0.00	0.00	0.00	0.00	0.00
44	179 E	0	0	0	0	2	23,079	0.00	0.00	0.00	0.00	0.09
44	180	0	0	0	0	0	750	0.00	0.00	0.00	0.00	0.00
44	179 W	2	2	1	5	0	41,188	0.05	0.05	0.02	0.12	0.00
44	178 W	1	1	0	2	0	20,048	0.05	0.05	0.00	0.10	0.00
44	177 W	2	0	0	2	0	6,175	0.32	0.00	0.00	0.32	0.00
44	175 W	0	0	0	0	0	750	0.00	0.00	0.00	0.00	0.00
44	171 W	2	0	0	2	0	960	2.08	0.00	0.00	2.08	0.00
44	168 W	0	0	0	0	0	800	0.00	0.00	0.00	0.00	0.00
44	159 W	2	2	1	5	0	6,276	0.32	0.32	0.16	0.80	0.00
44	158 W	6	6	0	12	0	20,943	0.29	0.29	0.00	0.57	0.00
44	157 W	6	7	1	14	0	18,802	0.32	0.37	0.05	0.74	0.00
44	156 W	1	0	0	1	0	4,440	0.23	0.00	0.00	0.23	0.00
44	155 W	0	0	0	0	0	1,665	0.00	0.00	0.00	0.00	0.00
44	154 W	2	0	0	2	0	792	2.53	0.00	0.00	2.53	0.00
44	153 W	0	0	0	0	0	792	0.00	0.00	0.00	0.00	0.00
44	152 W	0	0	0	0	0	1,860	0.00	0.00	0.00	0.00	0.00
44	151 W	4	0	0	4	0	7,350	0.54	0.00	0.00	0.54	0.00
44	150 W	0	0	0	0	0	3,171	0.00	0.00	0.00	0.00	0.00
44	149 W	1	2	0	3	0	5,219	0.19	0.38	0.00	0.57	0.00
44	148 W	0	0	0	0	0	4,724	0.00	0.00	0.00	0.00	0.00
43	170 E	0	1	0	1	0	3,338	0.00	0.30	0.00	0.30	0.00
43	171 E	0	0	0	0	0	1,715	0.00	0.00	0.00	0.00	0.00
43	172 E	0	0	0	0	0	1,311	0.00	0.00	0.00	0.00	0.00
43	173 E	0	0	0	0	0	4,789	0.00	0.00	0.00	0.00	0.00
43	174 E	0	0	0	0	0	7,362	0.00	0.00	0.00	0.00	0.00
43	175 E	0	0	0	0	0	4,679	0.00	0.00	0.00	0.00	0.00
43	176 E	0	0	0	0	0	1,445	0.00	0.00	0.00	0.00	0.00
43	177 E	0	0	0	0	0	853	0.00	0.00	0.00	0.00	0.00
43	178 E	0	0	0	0	0	5,642	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

1°x 1° Area		Observed Catch in Number					Tans	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	(50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
43	179 E	0	0	0	0	0	4,383	0.00	0.00	0.00	0.00	0.00
43	179 W	0	0	0	0	0	1,386	0.00	0.00	0.00	0.00	0.00
43	178 W	0	0	0	0	0	1,819	0.00	0.00	0.00	0.00	0.00
43	177 W	0	0	0	0	0	2,459	0.00	0.00	0.00	0.00	0.00
43	175 W	0	0	0	0	0	750	0.00	0.00	0.00	0.00	0.00
43	172 W	0	0	0	0	0	520	0.00	0.00	0.00	0.00	0.00
43	171 W	10	1	1	12	0	2,168	4.61	0.46	0.46	5.54	0.00
43	170 W	0	0	0	0	0	1,358	0.00	0.00	0.00	0.00	0.00
43	168 W	0	0	0	0	0	1,627	0.00	0.00	0.00	0.00	0.00
43	167 W	0	0	0	0	1	3,863	0.00	0.00	0.00	0.00	0.26
43	166 W	0	0	0	0	0	6,824	0.00	0.00	0.00	0.00	0.00
43	165 W	1	2	0	3	0	828	1.21	2.42	0.00	3.62	0.00
43	161 W	0	0	0	0	0	775	0.00	0.00	0.00	0.00	0.00
43	160 W	1	0	0	1	0	2,354	0.42	0.00	0.00	0.42	0.00
43	159 W	0	0	0	0	0	3,210	0.00	0.00	0.00	0.00	0.00
43	158 W	3	0	0	3	0	11,365	0.26	0.00	0.00	0.26	0.00
43	157 W	1	3	0	4	0	20,432	0.05	0.15	0.00	0.20	0.00
43	156 W	0	0	0	0	0	800	0.00	0.00	0.00	0.00	0.00
43	153 W	1	1	1	3	0	4,620	0.22	0.22	0.22	0.65	0.00
43	152 W	0	0	0	0	0	2,670	0.00	0.00	0.00	0.00	0.00
43	151 W	1	1	0	2	0	4,299	0.23	0.23	0.00	0.47	0.00
43	150 W	0	1	0	1	0	1,685	0.00	0.59	0.00	0.59	0.00
43	148 W	0	0	0	0	0	1,748	0.00	0.00	0.00	0.00	0.00
42	170 E	0	0	0	0	0	1,920	0.00	0.00	0.00	0.00	0.00
42	171 E	0	0	0	0	0	810	0.00	0.00	0.00	0.00	0.00
42	172 E	0	0	0	0	0	900	0.00	0.00	0.00	0.00	0.00
42	173 E	0	0	0	0	0	3,015	0.00	0.00	0.00	0.00	0.00
42	174 E	0	0	0	0	0	2,505	0.00	0.00	0.00	0.00	0.00
42	175 E	0	0	0	0	0	1,625	0.00	0.00	0.00	0.00	0.00
42	169 W	0	0	0	0	0	1,642	0.00	0.00	0.00	0.00	0.00
42	168 W	0	0	0	0	0	2,983	0.00	0.00	0.00	0.00	0.00
42	167 W	0	0	0	0	0	5,523	0.00	0.00	0.00	0.00	0.00
42	160 W	0	0	0	0	0	900	0.00	0.00	0.00	0.00	0.00
42	159 W	0	0	0	0	0	900	0.00	0.00	0.00	0.00	0.00
42	158 W	0	0	0	0	0	1,738	0.00	0.00	0.00	0.00	0.00
42	152 W	0	0	0	0	0	4,149	0.00	0.00	0.00	0.00	0.00
42	151 W	0	0	0	0	0	4,437	0.00	0.00	0.00	0.00	0.00
42	150 W	0	0	0	0	0	6,379	0.00	0.00	0.00	0.00	0.00
41	175 E	0	0	0	0	0	710	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Catch in Number: Northern Fur Seal Dead	Alive	Unk	Total	Other Pin-nipeds	Tans (50m)	CPUE (No. per 1000 tans): Northern Fur Seal Dead	Alive	Unk	Total	Other Pin-nipeds
45	171 E	0	0	0	0	0	771	0.00	0.00	0.00	0.00	0.00
45	172 E	0	0	0	0	0	782	0.00	0.00	0.00	0.00	0.00
45	176 E	0	0	0	0	0	840	0.00	0.00	0.00	0.00	0.00
45	177 E	1	0	0	1	0	861	1.16	0.00	0.00	1.16	0.00
45	178 E	0	0	0	0	0	738	0.00	0.00	0.00	0.00	0.00
45	179 E	0	0	0	0	0	1,617	0.00	0.00	0.00	0.00	0.00
45	178 W	0	0	0	0	0	905	0.00	0.00	0.00	0.00	0.00
45	177 W	0	0	0	0	0	600	0.00	0.00	0.00	0.00	0.00
45	176 W	1	2	0	3	0	5,296	0.19	0.38	0.00	0.57	0.00
45	175 W	1	0	0	1	0	1,307	0.77	0.00	0.00	0.77	0.00
45	174 W	0	0	0	0	0	3,402	0.00	0.00	0.00	0.00	0.00
45	173 W	0	1	0	1	0	3,261	0.00	0.31	0.00	0.31	0.00
45	171 W	0	0	0	0	0	3,312	0.00	0.00	0.00	0.00	0.00
45	170 W	0	0	0	0	0	9,100	0.00	0.00	0.00	0.00	0.00
45	162 W	0	0	0	0	0	900	0.00	0.00	0.00	0.00	0.00
45	161 W	0	0	0	0	0	2,617	0.00	0.00	0.00	0.00	0.00
45	160 W	0	0	0	0	0	6,456	0.00	0.00	0.00	0.00	0.00
45	159 W	0	0	0	0	0	800	0.00	0.00	0.00	0.00	0.00
45	158 W	0	0	0	0	1	4,457	0.00	0.00	0.00	0.00	0.22
45	157 W	1	1	0	2	0	4,090	0.24	0.24	0.00	0.49	0.00
45	153 W	1	0	0	1	0	960	1.04	0.00	0.00	1.04	0.00
45	152 W	0	0	0	0	0	960	0.00	0.00	0.00	0.00	0.00
45	151 W	1	0	0	1	0	1,920	0.52	0.00	0.00	0.52	0.00
45	150 W	0	0	0	0	0	800	0.00	0.00	0.00	0.00	0.00
44	171 E	0	1	0	1	0	4,117	0.00	0.24	0.00	0.24	0.00
44	172 E	0	0	0	0	0	3,146	0.00	0.00	0.00	0.00	0.00
44	173 E	0	2	0	2	0	1,590	0.00	1.26	0.00	1.26	0.00
44	174 E	0	1	0	1	0	1,665	0.00	0.60	0.00	0.60	0.00
44	175 E	0	0	0	0	0	2,532	0.00	0.00	0.00	0.00	0.00
44	176 E	0	0	0	0	0	810	0.00	0.00	0.00	0.00	0.00
44	177 E	0	0	0	0	0	2,010	0.00	0.00	0.00	0.00	0.00
44	178 E	0	0	0	0	0	791	0.00	0.00	0.00	0.00	0.00
44	179 E	0	0	0	0	0	3,436	0.00	0.00	0.00	0.00	0.00
44	179 W	0	0	0	0	0	7,312	0.00	0.00	0.00	0.00	0.00
44	178 W	0	0	0	0	0	4,472	0.00	0.00	0.00	0.00	0.00
44	177 W	0	0	0	0	0	1,254	0.00	0.00	0.00	0.00	0.00
44	176 W	0	0	0	0	0	1,512	0.00	0.00	0.00	0.00	0.00
44	174 W	0	0	0	0	0	756	0.00	0.00	0.00	0.00	0.00
44	170 W	0	0	0	0	0	900	0.00	0.00	0.00	0.00	0.00
44	161 W	0	0	0	0	0	930	0.00	0.00	0.00	0.00	0.00
44	160 W	0	0	0	0	0	4,509	0.00	0.00	0.00	0.00	0.00
44	158 W	0	0	0	0	0	754	0.00	0.00	0.00	0.00	0.00
43	170 E	0	0	0	0	0	1,856	0.00	0.00	0.00	0.00	0.00
43	171 E	0	0	0	0	0	7,818	0.00	0.00	0.00	0.00	0.00
43	172 E	1	2	0	3	0	5,881	0.17	0.34	0.00	0.51	0.00
43	173 E	0	0	0	0	0	1,538	0.00	0.00	0.00	0.00	0.00
43	174 E	0	0	0	0	0	2,317	0.00	0.00	0.00	0.00	0.00
43	175 E	0	1	0	1	0	846	0.00	1.18	0.00	1.18	0.00
43	176 E	0	0	0	0	0	905	0.00	0.00	0.00	0.00	0.00
43	177 E	0	1	0	1	0	1,810	0.00	0.55	0.00	0.55	0.00
43	178 E	0	0	0	0	0	1,545	0.00	0.00	0.00	0.00	0.00
43	179 E	0	0	0	0	0	378	0.00	0.00	0.00	0.00	0.00
43	179 W	0	0	0	0	0	756	0.00	0.00	0.00	0.00	0.00
43	178 W	0	0	0	0	0	2,598	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

1°x 1° Area		Observed Catch in Number					Tans (50m)	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-		Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
43	177 W	0	3	0	3	0	4,440	0.00	0.68	0.00	0.68	0.00
43	176 W	2	0	0	2	0	4,865	0.41	0.00	0.00	0.41	0.00
43	160 W	0	0	0	0	0	1,632	0.00	0.00	0.00	0.00	0.00
43	158 W	0	0	0	0	0	905	0.00	0.00	0.00	0.00	0.00
42	165 E	0	0	0	0	0	1,393	0.00	0.00	0.00	0.00	0.00
42	170 E	0	0	0	0	0	3,355	0.00	0.00	0.00	0.00	0.00
42	171 E	0	0	0	0	0	1,376	0.00	0.00	0.00	0.00	0.00
42	172 E	0	0	0	0	0	2,401	0.00	0.00	0.00	0.00	0.00
42	173 E	0	0	0	0	0	2,115	0.00	0.00	0.00	0.00	0.00
42	174 E	0	0	0	0	0	1,159	0.00	0.00	0.00	0.00	0.00
42	175 E	0	0	0	0	0	3,736	0.00	0.00	0.00	0.00	0.00
42	176 E	0	0	0	0	0	1,719	0.00	0.00	0.00	0.00	0.00
42	178 W	0	0	0	0	0	7,182	0.00	0.00	0.00	0.00	0.00
42	177 W	0	0	0	0	0	1,056	0.00	0.00	0.00	0.00	0.00
41	170 E	0	0	0	0	0	522	0.00	0.00	0.00	0.00	0.00
41	174 E	0	0	0	0	0	860	0.00	0.00	0.00	0.00	0.00
41	176 E	0	0	0	0	0	828	0.00	0.00	0.00	0.00	0.00
41	177 W	0	0	0	0	0	2,213	0.00	0.00	0.00	0.00	0.00
40	175 E	0	0	0	0	0	644	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

October

1°x 1° Area		Observed Catch in Number					Tans (50m)	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-nipeds		Northern Fur Seal				Other Pin-nipeds
Lat.	Long.	Dead	Alive	Unk	Total			Dead	Alive	Unk	Total	
43	177 E	0	2	0	2	0	620	0.00	3.23	0.00	3.23	0.00
43	178 E	0	0	0	0	0	3,419	0.00	0.00	0.00	0.00	0.00
43	179 E	0	0	0	0	0	3,258	0.00	0.00	0.00	0.00	0.00
43	178 W	0	1	0	1	0	845	0.00	1.18	0.00	1.18	0.00
43	177 W	0	0	0	0	0	2,755	0.00	0.00	0.00	0.00	0.00
43	176 W	0	3	0	3	0	3,901	0.00	0.77	0.00	0.77	0.00
43	175 W	0	0	0	0	0	2,853	0.00	0.00	0.00	0.00	0.00
43	174 W	0	0	0	0	0	756	0.00	0.00	0.00	0.00	0.00
43	173 W	0	0	0	0	0	2,427	0.00	0.00	0.00	0.00	0.00
43	172 W	0	0	0	0	0	4,101	0.00	0.00	0.00	0.00	0.00
43	171 W	1	0	0	1	0	3,474	0.29	0.00	0.00	0.29	0.00
42	170 E	0	0	0	0	0	2,297	0.00	0.00	0.00	0.00	0.00
42	171 E	0	1	0	1	0	5,671	0.00	0.18	0.00	0.18	0.00
42	172 E	0	0	0	0	0	3,791	0.00	0.00	0.00	0.00	0.00
42	177 E	1	0	0	1	0	846	1.18	0.00	0.00	1.18	0.00
42	178 E	0	0	0	0	0	2,493	0.00	0.00	0.00	0.00	0.00
42	179 E	0	0	0	0	0	874	0.00	0.00	0.00	0.00	0.00
42	179 W	0	0	0	0	0	905	0.00	0.00	0.00	0.00	0.00
42	178 W	0	1	0	1	0	11,452	0.00	0.09	0.00	0.09	0.00
42	177 W	0	0	0	0	0	756	0.00	0.00	0.00	0.00	0.00
42	176 W	0	0	0	0	0	2,897	0.00	0.00	0.00	0.00	0.00
42	175 W	0	0	0	0	0	1,428	0.00	0.00	0.00	0.00	0.00
42	174 W	0	1	0	1	0	900	0.00	1.11	0.00	1.11	0.00
41	162 E	0	0	0	0	0	1,489	0.00	0.00	0.00	0.00	0.00
41	163 E	0	0	0	0	0	1,368	0.00	0.00	0.00	0.00	0.00
41	170 E	0	0	0	0	0	758	0.00	0.00	0.00	0.00	0.00
41	171 E	0	0	0	0	0	3,137	0.00	0.00	0.00	0.00	0.00
41	178 E	0	0	0	0	0	2,440	0.00	0.00	0.00	0.00	0.00
41	179 W	0	0	0	0	0	5,640	0.00	0.00	0.00	0.00	0.00
41	178 W	1	0	0	1	0	5,232	0.19	0.00	0.00	0.19	0.00
41	177 W	0	0	0	0	0	6,550	0.00	0.00	0.00	0.00	0.00
41	176 W	0	0	0	0	0	5,073	0.00	0.00	0.00	0.00	0.00
40	171 E	0	0	0	0	0	1,632	0.00	0.00	0.00	0.00	0.00
40	177 E	0	0	0	0	0	1,489	0.00	0.00	0.00	0.00	0.00
40	178 E	0	0	0	0	0	1,489	0.00	0.00	0.00	0.00	0.00
39	171 E	0	0	0	0	0	882	0.00	0.00	0.00	0.00	0.00
39	174 E	0	0	0	0	0	3,528	0.00	0.00	0.00	0.00	0.00
38	171 E	0	0	0	0	0	1,476	0.00	0.00	0.00	0.00	0.00
37	171 E	0	0	0	0	0	882	0.00	0.00	0.00	0.00	0.00

Table 9. (Continued)

November

1°x 1° Area		Observed Catch in Number					Tans	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	(50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
41	174 E	0	0	0	0	0	3,422	0.00	0.00	0.00	0.00	0.00
41	175 E	0	0	0	0	0	733	0.00	0.00	0.00	0.00	0.00
41	176 E	0	0	0	0	0	3,177	0.00	0.00	0.00	0.00	0.00
41	177 E	0	0	0	0	0	1,711	0.00	0.00	0.00	0.00	0.00
41	179 W	0	0	0	0	0	1,711	0.00	0.00	0.00	0.00	0.00
41	178 W	0	0	0	0	0	2,322	0.00	0.00	0.00	0.00	0.00
40	176 E	0	0	0	0	0	840	0.00	0.00	0.00	0.00	0.00
40	177 E	0	0	0	0	0	4,487	0.00	0.00	0.00	0.00	0.00
40	178 E	0	0	0	0	0	3,253	0.00	0.00	0.00	0.00	0.00
39	173 E	0	0	0	0	0	611	0.00	0.00	0.00	0.00	0.00

December

1°x 1° Area		Observed Catch in Number					Tans	CPUE (No. per 1000 tans)				
		Northern Fur Seal				Other Pin-	(50m)	Northern Fur Seal				Other Pin-
Lat.	Long.	Dead	Alive	Unk	Total	nipeds		Dead	Alive	Unk	Total	nipeds
39	170 E	0	0	0	0	0	3,422	0.00	0.00	0.00	0.00	0.00
39	171 E	0	0	0	0	0	2,200	0.00	0.00	0.00	0.00	0.00

Table 10. Observed bycatch of dolphins and porpoises, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of dolphins and porpoises by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1° x 1° Area		Observed Bycatch in Number					CPUE (Number per 1000 tans)			
Lat.	Long.	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
41	177 E	0	0	0	0	3,007	0.00	0.00	0.00	0.00
41	171 W	0	0	0	0	1,020	0.00	0.00	0.00	0.00
40	175 E	0	0	0	0	749	0.00	0.00	0.00	0.00
39	170 E	0	0	0	0	1,455	0.00	0.00	0.00	0.00
39	172 E	1	0	0	0	706	1.42	0.00	0.00	0.00
39	173 E	0	0	0	0	684	0.00	0.00	0.00	0.00
39	174 E	0	0	0	0	1,332	0.00	0.00	0.00	0.00
39	175 E	0	2	1	0	11,468	0.00	0.17	0.09	0.00
39	176 E	2	0	1	0	16,848	0.12	0.00	0.06	0.00
39	177 E	5	0	0	0	8,338	0.60	0.00	0.00	0.00
39	178 E	1	0	0	0	6,226	0.16	0.00	0.00	0.00
39	179 E	0	0	0	0	11,758	0.00	0.00	0.00	0.00
39	179 W	1	1	1	0	17,593	0.06	0.06	0.06	0.00
39	178 W	0	0	0	0	11,886	0.00	0.00	0.00	0.00
39	177 W	0	2	3	0	31,559	0.00	0.06	0.10	0.00
39	176 W	0	6	3	0	28,853	0.00	0.21	0.10	0.00
39	175 W	0	0	0	0	1,920	0.00	0.00	0.00	0.00
39	174 W	0	0	0	0	1,810	0.00	0.00	0.00	0.00
39	173 W	0	0	0	0	735	0.00	0.00	0.00	0.00
39	172 W	1	0	0	0	840	1.19	0.00	0.00	0.00
39	171 W	0	1	1	0	5,101	0.00	0.20	0.20	0.00
39	170 W	0	1	11	0	47,873	0.00	0.02	0.23	0.00
39	169 W	0	0	6	0	39,450	0.00	0.00	0.15	0.00
39	168 W	1	1	2	0	25,558	0.04	0.04	0.08	0.00
39	167 W	0	1	4	0	20,187	0.00	0.05	0.20	0.00
39	166 W	0	0	0	0	8,752	0.00	0.00	0.00	0.00
39	165 W	0	0	0	0	6,475	0.00	0.00	0.00	0.00
39	164 W	0	2	5	0	25,174	0.00	0.08	0.20	0.00
39	163 W	1	1	2	0	7,573	0.13	0.13	0.26	0.00
39	162 W	0	2	1	1	4,094	0.00	0.49	0.24	0.24
39	160 W	0	0	1	0	1,452	0.00	0.00	0.69	0.00
39	159 W	0	3	0	0	1,621	0.00	1.85	0.00	0.00
39	158 W	0	3	5	0	14,117	0.00	0.21	0.35	0.00
39	157 W	0	5	4	0	17,749	0.00	0.28	0.23	0.00
39	156 W	0	1	1	0	13,534	0.00	0.07	0.07	0.00
39	155 W	1	1	3	0	9,210	0.11	0.11	0.33	0.00
39	154 W	0	11	5	0	19,970	0.00	0.55	0.25	0.00
39	153 W	0	8	3	0	16,463	0.00	0.49	0.18	0.00
39	152 W	0	0	0	0	8,533	0.00	0.00	0.00	0.00
39	151 W	0	0	2	0	5,177	0.00	0.00	0.39	0.00
39	149 W	0	0	0	0	808	0.00	0.00	0.00	0.00
39	148 W	0	0	0	0	2,876	0.00	0.00	0.00	0.00
39	147 W	0	0	0	2	833	0.00	0.00	0.00	2.40
39	146 W	0	0	0	0	902	0.00	0.00	0.00	0.00
38	171 E	0	3	0	0	924	0.00	3.25	0.00	0.00
38	176 E	0	0	0	3	1,885	0.00	0.00	0.00	1.59
38	179 E	0	0	0	0	3,732	0.00	0.00	0.00	0.00
38	179 W	1	3	0	0	2,858	0.35	1.05	0.00	0.00
38	177 W	2	4	1	0	12,856	0.16	0.31	0.08	0.00
38	176 W	0	4	0	0	6,851	0.00	0.58	0.00	0.00

10. (Continued)

1° Area Lat.	Long.	Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
[illegible]	175 W	0	2	0	0	1,694	0.00	1.18	0.00	0.00
[illegible]	174 W	0	0	0	0	735	0.00	0.00	0.00	0.00
[illegible]	171 W	0	1	1	0	7,009	0.00	0.14	0.14	0.00
[illegible]	170 W	0	0	4	2	14,765	0.00	0.00	0.27	0.14
[illegible]	169 W	0	0	3	0	8,896	0.00	0.00	0.34	0.00
[illegible]	168 W	0	2	2	0	10,847	0.00	0.18	0.18	0.00
[illegible]	167 W	0	0	1	0	7,300	0.00	0.00	0.14	0.00
[illegible]	166 W	0	0	3	0	7,175	0.00	0.00	0.42	0.00
[illegible]	165 W	0	0	0	0	7,114	0.00	0.00	0.00	0.00
[illegible]	164 W	1	0	5	0	18,769	0.05	0.00	0.27	0.00
[illegible]	163 W	2	0	1	0	8,371	0.24	0.00	0.12	0.00
8	162 W	0	0	0	0	853	0.00	0.00	0.00	0.00
8	159 W	0	0	0	0	907	0.00	0.00	0.00	0.00
8	158 W	0	0	0	0	2,930	0.00	0.00	0.00	0.00
8	157 W	0	2	0	0	3,732	0.00	0.54	0.00	0.00
8	156 W	0	0	0	0	957	0.00	0.00	0.00	0.00
8	155 W	0	1	1	0	8,500	0.00	0.12	0.12	0.00
8	154 W	0	0	0	0	1,008	0.00	0.00	0.00	0.00
8	153 W	0	0	0	0	845	0.00	0.00	0.00	0.00
8	152 W	0	0	0	0	3,144	0.00	0.00	0.00	0.00
8	151 W	0	3	0	0	3,645	0.00	0.82	0.00	0.00
8	150 W	0	0	0	0	3,910	0.00	0.00	0.00	0.00
7	170 W	0	0	0	0	725	0.00	0.00	0.00	0.00
7	167 W	0	0	0	0	780	0.00	0.00	0.00	0.00
7	166 W	0	0	0	0	1,682	0.00	0.00	0.00	0.00
7	165 W	0	0	0	0	4,896	0.00	0.00	0.00	0.00
7	164 W	0	5	10	0	3,294	0.00	1.52	3.04	0.00
7	163 W	0	4	6	0	9,737	0.00	0.41	0.62	0.00

Table 10. (Continued)

July

1° x 1° Area		Observed Bycatch in Number					CPUE (Number per 1000 tans)			
Lat.	Long.	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
43	169 E	1	0	0	0	1,450	0.69	0.00	0.00	0.00
43	170 E	8	0	0	0	1,080	7.41	0.00	0.00	0.00
42	168 E	1	0	0	0	749	1.34	0.00	0.00	0.00
42	169 E	3	0	0	0	2,870	1.05	0.00	0.00	0.00
42	170 E	0	0	0	0	4,001	0.00	0.00	0.00	0.00
42	169 W	4	7	4	0	24,244	0.16	0.29	0.16	0.00
42	168 W	1	2	1	0	20,077	0.05	0.10	0.05	0.00
42	167 W	2	2	6	0	17,784	0.11	0.11	0.34	0.00
42	166 W	10	11	3	0	34,743	0.29	0.32	0.09	0.00
42	165 W	3	7	10	0	28,335	0.11	0.25	0.35	0.00
42	164 W	2	5	1	0	7,027	0.28	0.71	0.14	0.00
42	163 W	5	11	2	0	20,821	0.24	0.53	0.10	0.00
42	162 W	0	10	4	0	33,133	0.00	0.30	0.12	0.00
42	161 W	0	11	0	0	24,985	0.00	0.44	0.00	0.00
42	160 W	2	1	6	1	15,687	0.13	0.06	0.38	0.06
42	159 W	14	19	13	0	22,604	0.62	0.84	0.58	0.00
42	158 W	1	12	2	0	14,775	0.07	0.81	0.14	0.00
42	157 W	0	3	2	0	4,215	0.00	0.71	0.47	0.00
42	156 W	0	0	0	0	792	0.00	0.00	0.00	0.00
42	155 W	1	1	2	0	3,696	0.27	0.27	0.54	0.00
42	154 W	2	0	0	0	3,696	0.54	0.00	0.00	0.00
42	153 W	0	2	1	0	2,844	0.00	0.70	0.35	0.00
42	152 W	0	1	0	0	9,676	0.00	0.10	0.00	0.00
42	151 W	0	0	0	0	2,627	0.00	0.00	0.00	0.00
42	148 W	1	1	0	0	3,024	0.33	0.33	0.00	0.00
42	147 W	0	0	1	0	2,016	0.00	0.00	0.50	0.00
42	146 W	0	0	1	0	864	0.00	0.00	1.16	0.00
41	169 E	0	0	1	0	810	0.00	0.00	1.23	0.00
41	170 E	11	5	15	0	26,157	0.42	0.19	0.57	0.00
41	171 E	5	1	2	0	16,453	0.30	0.06	0.12	0.00
41	172 E	0	0	0	0	1,535	0.00	0.00	0.00	0.00
41	173 E	4	0	2	0	2,841	1.41	0.00	0.70	0.00
41	174 E	2	1	0	0	7,106	0.28	0.14	0.00	0.00
41	175 E	9	2	5	0	7,249	1.24	0.28	0.69	0.00
41	176 E	3	0	0	0	5,565	0.54	0.00	0.00	0.00
41	177 E	4	0	0	0	21,893	0.18	0.00	0.00	0.00
41	178 E	0	0	0	0	5,523	0.00	0.00	0.00	0.00
41	179 E	4	0	0	0	1,653	2.42	0.00	0.00	0.00
41	177 W	0	0	0	0	1,470	0.00	0.00	0.00	0.00
41	175 W	0	0	0	0	1,725	0.00	0.00	0.00	0.00
41	174 W	0	0	1	0	6,755	0.00	0.00	0.15	0.00
41	173 W	0	0	0	0	3,103	0.00	0.00	0.00	0.00
41	172 W	1	1	2	0	7,864	0.13	0.13	0.25	0.00
41	171 W	1	9	0	0	15,218	0.07	0.59	0.00	0.00
41	170 W	2	0	1	0	12,708	0.16	0.00	0.08	0.00
41	169 W	1	4	2	0	12,577	0.08	0.32	0.16	0.00
41	168 W	1	6	0	0	24,518	0.04	0.24	0.00	0.00
41	167 W	0	13	8	0	38,982	0.00	0.33	0.21	0.00
41	166 W	2	19	5	0	55,097	0.04	0.34	0.09	0.00
41	165 W	0	14	1	0	45,093	0.00	0.31	0.02	0.00
41	164 W	2	10	2	1	43,820	0.05	0.23	0.05	0.02
41	163 W	3	32	2	0	25,383	0.12	1.26	0.08	0.00
41	162 W	0	0	0	0	2,152	0.00	0.00	0.00	0.00

Table 10. (Continued)

1° x 1° Area Lat.	Long.	Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
41	161 W	0	15	0	0	12,028	0.00	1.25	0.00	0.00
41	160 W	0	3	1	0	9,960	0.00	0.30	0.10	0.00
41	159 W	1	11	5	0	13,268	0.08	0.83	0.38	0.00
41	158 W	0	9	0	0	12,821	0.00	0.70	0.00	0.00
41	157 W	0	2	0	0	1,472	0.00	1.36	0.00	0.00
41	156 W	0	0	1	0	2,448	0.00	0.00	0.41	0.00
41	154 W	0	0	0	0	1,848	0.00	0.00	0.00	0.00
41	153 W	0	3	3	0	1,722	0.00	1.74	1.74	0.00
41	152 W	2	1	1	0	7,827	0.26	0.13	0.13	0.00
41	151 W	0	1	3	0	5,421	0.00	0.18	0.55	0.00
41	150 W	1	0	0	0	3,456	0.29	0.00	0.00	0.00
40	175 E	2	0	0	0	648	3.09	0.00	0.00	0.00
40	176 E	1	0	0	0	547	1.83	0.00	0.00	0.00
40	177 E	0	0	0	0	686	0.00	0.00	0.00	0.00
40	178 E	2	0	0	0	3,343	0.60	0.00	0.00	0.00
40	179 E	0	0	0	0	2,904	0.00	0.00	0.00	0.00
40	179 W	0	0	0	0	2,275	0.00	0.00	0.00	0.00
40	177 W	5	1	1	0	17,533	0.29	0.06	0.06	0.00
40	176 W	0	0	0	0	960	0.00	0.00	0.00	0.00
40	173 W	0	0	1	0	1,790	0.00	0.00	0.56	0.00
40	172 W	0	0	0	0	1,350	0.00	0.00	0.00	0.00
40	171 W	0	0	0	0	2,604	0.00	0.00	0.00	0.00
40	170 W	0	0	0	0	300	0.00	0.00	0.00	0.00
40	168 W	0	0	0	0	790	0.00	0.00	0.00	0.00
40	166 W	0	0	0	0	922	0.00	0.00	0.00	0.00
40	161 W	0	0	0	0	864	0.00	0.00	0.00	0.00
40	159 W	0	0	0	0	2,574	0.00	0.00	0.00	0.00
40	158 W	0	1	0	0	3,984	0.00	0.25	0.00	0.00
40	154 W	0	0	0	0	840	0.00	0.00	0.00	0.00
40	153 W	0	1	0	0	7,098	0.00	0.14	0.00	0.00
40	150 W	0	0	0	0	828	0.00	0.00	0.00	0.00
39	177 E	0	0	0	0	882	0.00	0.00	0.00	0.00
39	166 W	0	0	0	0	2,765	0.00	0.00	0.00	0.00
39	157 W	0	0	0	0	930	0.00	0.00	0.00	0.00

Table 10. (Continued)

August

1° x 1° Area Lat.	Long.		Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
45	178	W	0	3	0	0	564	0.00	5.32	0.00	0.00
45	163	W	0	0	0	0	1,735	0.00	0.00	0.00	0.00
45	162	W	2	1	4	0	2,672	0.75	0.37	1.50	0.00
45	160	W	11	1	2	0	4,284	2.57	0.23	0.47	0.00
45	159	W	2	1	2	0	11,975	0.17	0.08	0.17	0.00
45	158	W	8	0	8	0	7,573	1.06	0.00	1.06	0.00
45	157	W	1	3	6	0	7,945	0.13	0.38	0.76	0.00
45	156	W	1	0	0	0	1,821	0.55	0.00	0.00	0.00
45	155	W	0	0	0	0	861	0.00	0.00	0.00	0.00
45	154	W	0	0	2	0	2,180	0.00	0.00	0.92	0.00
45	153	W	3	3	3	0	4,982	0.60	0.60	0.60	0.00
45	152	W	16	1	3	0	14,243	1.12	0.07	0.21	0.00
45	151	W	3	0	4	0	11,095	0.27	0.00	0.36	0.00
45	150	W	0	0	0	0	1,642	0.00	0.00	0.00	0.00
45	149	W	2	2	8	0	5,634	0.35	0.35	1.42	0.00
45	148	W	0	0	0	0	2,150	0.00	0.00	0.00	0.00
44	170	E	2	1	2	0	3,755	0.53	0.27	0.53	0.00
44	171	E	4	2	7	0	13,082	0.31	0.15	0.54	0.00
44	172	E	2	1	0	0	4,898	0.41	0.20	0.00	0.00
44	173	E	0	6	0	0	2,010	0.00	2.99	0.00	0.00
44	174	E	2	7	5	0	5,774	0.35	1.21	0.87	0.00
44	175	E	0	7	2	0	4,476	0.00	1.56	0.45	0.00
44	176	E	1	29	3	0	15,186	0.07	1.91	0.20	0.00
44	177	E	1	22	4	0	10,610	0.09	2.07	0.38	0.00
44	178	E	2	3	6	1	10,338	0.19	0.29	0.58	0.10
44	179	E	3	12	3	0	23,079	0.13	0.52	0.13	0.00
44	180		0	0	0	0	750	0.00	0.00	0.00	0.00
44	179	W	9	38	7	0	41,188	0.22	0.92	0.17	0.00
44	178	W	4	27	4	0	20,048	0.20	1.35	0.20	0.00
44	177	W	3	2	1	0	6,175	0.49	0.32	0.16	0.00
44	175	W	0	0	0	0	750	0.00	0.00	0.00	0.00
44	171	W	0	3	5	0	960	0.00	3.13	5.21	0.00
44	168	W	0	0	2	0	800	0.00	0.00	2.50	0.00
44	159	W	0	0	2	0	6,276	0.00	0.00	0.32	0.00
44	158	W	3	2	17	0	20,943	0.14	0.10	0.81	0.00
44	157	W	3	8	13	1	18,802	0.16	0.43	0.69	0.05
44	156	W	4	8	2	0	4,440	0.90	1.80	0.45	0.00
44	155	W	1	1	2	0	1,665	0.60	0.60	1.20	0.00
44	154	W	3	0	0	0	792	3.79	0.00	0.00	0.00
44	153	W	0	0	0	0	792	0.00	0.00	0.00	0.00
44	152	W	0	0	0	0	1,860	0.00	0.00	0.00	0.00
44	151	W	1	0	2	0	7,350	0.14	0.00	0.27	0.00
44	150	W	0	0	0	0	3,171	0.00	0.00	0.00	0.00
44	149	W	1	2	1	0	5,219	0.19	0.38	0.19	0.00
44	148	W	0	4	3	0	4,724	0.00	0.85	0.64	0.00
43	170	E	0	2	0	0	3,338	0.00	0.60	0.00	0.00
43	171	E	0	0	0	0	1,715	0.00	0.00	0.00	0.00
43	172	E	0	1	0	0	1,311	0.00	0.76	0.00	0.00
43	173	E	0	8	0	0	4,789	0.00	1.67	0.00	0.00
43	174	E	2	11	0	0	7,362	0.27	1.49	0.00	0.00
43	175	E	1	9	0	0	4,679	0.21	1.92	0.00	0.00
43	176	E	0	1	0	0	1,445	0.00	0.69	0.00	0.00
43	177	E	0	3	0	0	853	0.00	3.52	0.00	0.00

ble 10. (Continued)

x 1° Area Lat.	Long.	Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
43	178 E	0	6	0	0	5,642	0.00	1.06	0.00	0.00
43	179 E	0	1	0	0	4,383	0.00	0.23	0.00	0.00
43	179 W	0	0	0	0	1,386	0.00	0.00	0.00	0.00
43	178 W	0	0	0	0	1,819	0.00	0.00	0.00	0.00
43	177 W	0	1	0	0	2,459	0.00	0.41	0.00	0.00
43	175 W	0	0	0	0	750	0.00	0.00	0.00	0.00
43	172 W	0	0	0	0	520	0.00	0.00	0.00	0.00
43	171 W	2	3	0	0	2,168	0.92	1.38	0.00	0.00
43	170 W	0	0	0	0	1,358	0.00	0.00	0.00	0.00
43	168 W	0	0	1	0	1,627	0.00	0.00	0.61	0.00
43	167 W	1	1	0	0	3,863	0.26	0.26	0.00	0.00
43	166 W	0	0	0	0	6,824	0.00	0.00	0.00	0.00
43	165 W	0	1	1	0	828	0.00	1.21	1.21	0.00
43	161 W	0	0	0	0	775	0.00	0.00	0.00	0.00
43	160 W	0	0	2	0	2,354	0.00	0.00	0.85	0.00
43	159 W	0	0	1	0	3,210	0.00	0.00	0.31	0.00
43	158 W	1	3	1	0	11,365	0.09	0.26	0.09	0.00
43	157 W	2	11	9	0	20,432	0.10	0.54	0.44	0.00
43	156 W	0	4	0	0	800	0.00	5.00	0.00	0.00
43	153 W	0	0	0	0	4,620	0.00	0.00	0.00	0.00
43	152 W	0	2	1	0	2,670	0.00	0.75	0.37	0.00
43	151 W	0	0	0	0	4,299	0.00	0.00	0.00	0.00
43	150 W	0	0	0	0	1,685	0.00	0.00	0.00	0.00
43	148 W	1	2	0	0	1,748	0.57	1.14	0.00	0.00
42	170 E	0	0	0	0	1,920	0.00	0.00	0.00	0.00
42	171 E	0	0	0	0	810	0.00	0.00	0.00	0.00
42	172 E	0	0	0	0	900	0.00	0.00	0.00	0.00
42	173 E	0	0	6	0	3,015	0.00	0.00	1.99	0.00
42	174 E	0	2	0	0	2,505	0.00	0.80	0.00	0.00
42	175 E	0	0	0	0	1,625	0.00	0.00	0.00	0.00
42	169 W	0	0	0	0	1,642	0.00	0.00	0.00	0.00
42	168 W	0	0	0	0	2,983	0.00	0.00	0.00	0.00
42	167 W	0	0	0	0	5,523	0.00	0.00	0.00	0.00
42	160 W	0	0	0	0	900	0.00	0.00	0.00	0.00
42	159 W	0	0	0	0	900	0.00	0.00	0.00	0.00
42	158 W	0	2	0	0	1,738	0.00	1.15	0.00	0.00
42	152 W	0	1	0	0	4,149	0.00	0.24	0.00	0.00
42	151 W	0	0	0	1	4,437	0.00	0.00	0.00	0.23
42	150 W	0	3	0	0	6,379	0.00	0.47	0.00	0.00
41	175 E	0	2	0	0	710	0.00	2.82	0.00	0.00

Table 10. (Continued)

September

1° x 1° Area		Observed Bycatch in Number					CPUE (Number per 1000 tans)			
Lat.	Long.	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
45	171 E	0	4	4	0	771	0.00	5.19	5.19	0.00
45	172 E	0	0	0	0	782	0.00	0.00	0.00	0.00
45	176 E	0	0	0	0	840	0.00	0.00	0.00	0.00
45	177 E	0	2	2	0	861	0.00	2.32	2.32	0.00
45	178 E	1	8	2	0	738	1.36	10.84	2.71	0.00
45	179 E	1	7	0	2	1,617	0.62	4.33	0.00	1.24
45	178 W	0	0	0	0	905	0.00	0.00	0.00	0.00
45	177 W	0	0	0	0	600	0.00	0.00	0.00	0.00
45	176 W	3	4	3	0	5,296	0.57	0.76	0.57	0.00
45	175 W	0	1	0	0	1,307	0.00	0.77	0.00	0.00
45	174 W	7	2	0	0	3,402	2.06	0.59	0.00	0.00
45	173 W	0	4	0	0	3,261	0.00	1.23	0.00	0.00
45	171 W	1	1	0	0	3,312	0.30	0.30	0.00	0.00
45	170 W	0	6	3	0	9,100	0.00	0.66	0.33	0.00
45	162 W	0	0	1	0	900	0.00	0.00	1.11	0.00
45	161 W	0	2	0	0	2,617	0.00	0.76	0.00	0.00
45	160 W	1	5	7	0	6,456	0.15	0.77	1.08	0.00
45	159 W	0	0	0	0	800	0.00	0.00	0.00	0.00
45	158 W	0	6	6	0	4,457	0.00	1.35	1.35	0.00
45	157 W	0	1	7	0	4,090	0.00	0.24	1.71	0.00
45	153 W	1	0	0	0	960	1.04	0.00	0.00	0.00
45	152 W	0	0	1	0	960	0.00	0.00	1.04	0.00
45	151 W	0	0	0	0	1,920	0.00	0.00	0.00	0.00
45	150 W	0	0	0	0	800	0.00	0.00	0.00	0.00
44	171 E	1	1	3	0	4,117	0.24	0.24	0.73	0.00
44	172 E	0	4	2	0	3,146	0.00	1.27	0.64	0.00
44	173 E	5	0	0	0	1,590	3.14	0.00	0.00	0.00
44	174 E	3	0	0	0	1,665	1.80	0.00	0.00	0.00
44	175 E	2	1	0	0	2,532	0.79	0.39	0.00	0.00
44	176 E	0	1	0	0	810	0.00	1.23	0.00	0.00
44	177 E	0	2	0	0	2,010	0.00	1.00	0.00	0.00
44	178 E	0	0	0	0	791	0.00	0.00	0.00	0.00
44	179 E	0	3	0	0	3,436	0.00	0.87	0.00	0.00
44	179 W	1	11	0	0	7,312	0.14	1.50	0.00	0.00
44	178 W	0	3	1	0	4,472	0.00	0.67	0.22	0.00
44	177 W	0	0	0	0	1,254	0.00	0.00	0.00	0.00
44	176 W	0	0	0	0	1,512	0.00	0.00	0.00	0.00
44	174 W	0	2	0	0	756	0.00	2.65	0.00	0.00
44	170 W	0	0	0	0	900	0.00	0.00	0.00	0.00
44	161 W	0	2	0	0	930	0.00	2.15	0.00	0.00
44	160 W	0	2	0	0	4,509	0.00	0.44	0.00	0.00
44	158 W	0	1	0	0	754	0.00	1.33	0.00	0.00
43	170 E	0	0	0	0	1,856	0.00	0.00	0.00	0.00
43	171 E	2	23	5	0	7,818	0.26	2.94	0.64	0.00
43	172 E	1	10	0	0	5,881	0.17	1.70	0.00	0.00
43	173 E	0	5	0	0	1,538	0.00	3.25	0.00	0.00
43	174 E	1	3	0	0	2,317	0.43	1.29	0.00	0.00
43	175 E	0	0	0	0	846	0.00	0.00	0.00	0.00
43	176 E	0	0	0	0	905	0.00	0.00	0.00	0.00
43	177 E	0	0	3	0	1,810	0.00	0.00	1.66	0.00
43	178 E	0	0	0	0	1,545	0.00	0.00	0.00	0.00
43	179 E	0	0	0	0	378	0.00	0.00	0.00	0.00
43	179 W	0	0	0	0	756	0.00	0.00	0.00	0.00

Table 10. (Continued)

1° x 1° Area		Observed Bycatch in Number					CPUE (Number per 1000 tans)			
Lat.	Long.	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
43	178 W	0	0	0	0	2,598	0.00	0.00	0.00	0.00
43	177 W	4	0	0	0	4,440	0.90	0.00	0.00	0.00
43	176 W	2	1	1	0	4,865	0.41	0.21	0.21	0.00
43	160 W	0	0	0	0	1,632	0.00	0.00	0.00	0.00
43	158 W	0	0	0	0	905	0.00	0.00	0.00	0.00
42	165 E	0	0	0	0	1,393	0.00	0.00	0.00	0.00
42	170 E	0	2	0	1	3,355	0.00	0.60	0.00	0.30
42	171 E	0	0	0	0	1,376	0.00	0.00	0.00	0.00
42	172 E	0	0	0	0	2,401	0.00	0.00	0.00	0.00
42	173 E	0	3	0	2	2,115	0.00	1.42	0.00	0.95
42	174 E	0	0	0	3	1,159	0.00	0.00	0.00	2.59
42	175 E	0	7	0	2	3,736	0.00	1.87	0.00	0.54
42	176 E	0	2	0	0	1,719	0.00	1.16	0.00	0.00
42	178 W	0	2	0	0	7,182	0.00	0.28	0.00	0.00
42	177 W	0	2	0	0	1,056	0.00	1.89	0.00	0.00
41	170 E	0	0	0	0	522	0.00	0.00	0.00	0.00
41	174 E	0	0	0	0	860	0.00	0.00	0.00	0.00
41	176 E	0	0	0	0	828	0.00	0.00	0.00	0.00
41	177 W	0	0	0	0	2,213	0.00	0.00	0.00	0.00
40	175 E	0	0	1	0	644	0.00	0.00	1.55	0.00

Table 10. (Continued)

October

1° x 1° Area		Observed Bycatch in Number					CPUE (Number per 1000 tans)			
Lat.	Long.	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
43	177 E	0	0	0	0	620	0.00	0.00	0.00	0.00
43	178 E	0	1	0	0	3,419	0.00	0.29	0.00	0.00
43	179 E	0	0	0	0	3,258	0.00	0.00	0.00	0.00
43	178 W	0	0	0	0	845	0.00	0.00	0.00	0.00
43	177 W	0	0	0	0	2,755	0.00	0.00	0.00	0.00
43	176 W	1	2	0	0	3,901	0.26	0.51	0.00	0.00
43	175 W	0	1	0	0	2,853	0.00	0.35	0.00	0.00
43	174 W	0	0	0	0	756	0.00	0.00	0.00	0.00
43	173 W	0	0	0	0	2,427	0.00	0.00	0.00	0.00
43	172 W	0	0	0	0	4,101	0.00	0.00	0.00	0.00
43	171 W	0	0	0	0	3,474	0.00	0.00	0.00	0.00
42	170 E	0	0	0	0	2,297	0.00	0.00	0.00	0.00
42	171 E	0	9	0	1	5,671	0.00	1.59	0.00	0.18
42	172 E	0	0	0	7	3,791	0.00	0.00	0.00	1.85
42	177 E	0	0	0	0	846	0.00	0.00	0.00	0.00
42	178 E	0	2	0	0	2,493	0.00	0.80	0.00	0.00
42	179 E	0	0	0	0	874	0.00	0.00	0.00	0.00
42	179 W	0	0	0	0	905	0.00	0.00	0.00	0.00
42	178 W	0	1	0	0	11,452	0.00	0.09	0.00	0.00
42	177 W	0	0	0	0	756	0.00	0.00	0.00	0.00
42	176 W	2	0	0	0	2,897	0.69	0.00	0.00	0.00
42	175 W	0	0	0	0	1,428	0.00	0.00	0.00	0.00
42	174 W	0	0	0	0	900	0.00	0.00	0.00	0.00
41	162 E	0	0	0	0	1,489	0.00	0.00	0.00	0.00
41	163 E	0	0	0	0	1,368	0.00	0.00	0.00	0.00
41	170 E	0	2	0	2	758	0.00	2.64	0.00	2.64
41	171 E	0	1	0	10	3,137	0.00	0.32	0.00	3.19
41	178 E	0	0	0	0	2,440	0.00	0.00	0.00	0.00
41	179 W	0	0	0	0	5,640	0.00	0.00	0.00	0.00
41	178 W	0	0	0	0	5,232	0.00	0.00	0.00	0.00
41	177 W	0	2	0	0	6,550	0.00	0.31	0.00	0.00
41	176 W	0	2	1	0	5,073	0.00	0.39	0.20	0.00
40	171 E	0	0	0	0	1,632	0.00	0.00	0.00	0.00
40	177 E	0	0	0	8	1,489	0.00	0.00	0.00	5.37
40	178 E	0	0	0	7	1,489	0.00	0.00	0.00	4.70
39	171 E	0	0	0	0	882	0.00	0.00	0.00	0.00
39	174 E	0	0	0	0	3,528	0.00	0.00	0.00	0.00
38	171 E	0	0	0	0	1,476	0.00	0.00	0.00	0.00
37	171 E	0	0	0	0	882	0.00	0.00	0.00	0.00

Table 10. (Continued)

November

1° x 1° Area Lat.	Long.	Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
41	174 E	0	0	0	0	3,422	0.00	0.00	0.00	0.00
41	175 E	0	0	0	0	733	0.00	0.00	0.00	0.00
41	176 E	0	0	0	0	3,177	0.00	0.00	0.00	0.00
41	177 E	0	0	0	0	1,711	0.00	0.00	0.00	0.00
41	179 W	0	0	0	0	1,711	0.00	0.00	0.00	0.00
41	178 W	0	0	0	0	2,322	0.00	0.00	0.00	0.00
40	176 E	0	0	0	0	840	0.00	0.00	0.00	0.00
40	177 E	0	0	0	2	4,487	0.00	0.00	0.00	0.45
40	178 E	0	6	0	0	3,253	0.00	1.84	0.00	0.00
39	173 E	0	0	0	2	611	0.00	0.00	0.00	3.27

December

1° x 1° Area Lat.	Long.	Observed Bycatch in Number: Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin	Tans (50m)	CPUE (Number per 1000 tans): Dall's Porpoise	Northern Right Whale Dolphin	Pacific White-Sided Dolphin	Common Dolphin
39	170 E	0	0	0	3	3,422	0.00	0.00	0.00	0.88
39	171 E	0	0	0	4	2,200	0.00	0.00	0.00	1.82

Table 11. Observed bycatch of other and unidentified cetaceans by net retrieval date and net set location in the 1990 Japanese squid driftnet fishery.

Retrieval Date Month	Start of Set Lat°N	Long°	Catch (No.)	Code	Species Name
6	38	176 E	2	723	Striped dolphin
6	38	168 W	1	755	Unidentified Mesoplodon
6	38	169 W	1	745	Short-finned pilot whale
6	39	154 W	2	710	Unidentified dolphin/porpoise
6	39	162 W	1	710	Unidentified dolphin/porpoise
6	39	166 W	1	750	Unidentifed beaked whale
6	39	168 W	2	710	Unidentified dolphin/porpoise
6	39	170 W	1	710	Unidentified dolphin/porpoise
6	39	170 W	1	710	Unidentified dolphin/porpoise
6	39	170 W	1	750	Unidentifed beaked whale
6	39	176 W	1	736	Pygmy sperm whale
6	39	177 W	1	753	Cuvier's beaked whale
6	39	177 W	1	723	Striped dolphin
6	39	179 W	1	710	Unidentified dolphin/porpoise
7	40	178 E	1	780	Sperm whale
7	41	170 E	2	743	False killer whale
7	41	174 E	1	710	Unidentified dolphin/porpoise
7	41	151 W	1	710	Unidentified dolphin/porpoise
7	41	153 W	1	745	Short-finned pilot whale
7	41	154 W	1	710	Unidentified dolphin/porpoise
7	41	163 W	1	768	Unidentified small whale
7	41	164 W	1	745	Short-finned pilot whale
7	41	165 W	1	750	Unidentifed beaked whale
7	41	165 W	2	710	Unidentified dolphin/porpoise
7	41	165 W	1	730	Bottlenose dolphin
7	41	166 W	1	710	Unidentified dolphin/porpoise
7	41	166 W	1	750	Unidentifed beaked whale
7	41	166 W	2	710	Unidentified dolphin/porpoise
7	41	166 W	1	750	Unidentifed beaked whale
7	41	166 W	1	710	Unidentified dolphin/porpoise
7	41	168 W	2	710	Unidentified dolphin/porpoise
7	41	174 W	1	732	Risso's dolphin
7	42	155 W	1	750	Unidentifed beaked whale
7	42	159 W	1	732	Risso's dolphin
7	42	161 W	2	710	Unidentified dolphin/porpoise
7	42	162 W	2	710	Unidentified dolphin/porpoise
7	42	163 W	1	750	Unidentifed beaked whale
7	42	165 W	1	710	Unidentified dolphin/porpoise
7	42	166 W	1	710	Unidentified dolphin/porpoise
7	42	169 W	2	710	Unidentified dolphin/porpoise
8	43	167 W	1	710	Unidentified dolphin/porpoise
8	44	175 E	1	710	Unidentified dolphin/porpoise
8	44	149 W	1	710	Unidentified dolphin/porpoise
8	44	179 W	3	710	Unidentified dolphin/porpoise
8	45	160 W	1	710	Unidentified dolphin/porpoise
9	42	173 E	1	710	Unidentified dolphin/porpoise
9	42	178 W	1	710	Unidentified dolphin/porpoise
9	43	172 E	1	750	Unidentifed beaked whale
9	44	161 W	1	710	Unidentified dolphin/porpoise
9	45	160 W	1	740	Unidentified black whale
9	45	171 W	1	755	Unidentified Mesoplodon
10	38	171 E	1	723	Striped dolphin
10	41	171 E	2	723	Striped dolphin
10	41	178 E	1	753	Cuvier's beaked whale
10	43	175 W	1	710	Unidentified dolphin/porpoise
10	43	176 W	1	750	Unidentifed beaked whale

Table 12. Observed bycatch of albatrosses, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of albatrosses by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
41	177 E	0	0	0	3,007	0.00	0.00	0.00
41	171 W	0	0	0	1,020	0.00	0.00	0.00
40	175 E	0	1	0	749	0.00	1.34	0.00
39	170 E	0	0	0	1,455	0.00	0.00	0.00
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	1	0	0	684	1.46	0.00	0.00
39	174 E	0	1	0	1,332	0.00	0.75	0.00
39	175 E	0	4	0	11,468	0.00	0.35	0.00
39	176 E	0	3	0	16,848	0.00	0.18	0.00
39	177 E	0	2	0	8,338	0.00	0.24	0.00
39	178 E	1	2	1	6,226	0.16	0.32	0.16
39	179 E	0	1	0	11,758	0.00	0.09	0.00
39	179 W	1	4	0	17,593	0.06	0.23	0.00
39	178 W	0	3	0	11,886	0.00	0.25	0.00
39	177 W	0	30	2	31,559	0.00	0.95	0.06
39	176 W	1	24	0	28,853	0.03	0.83	0.00
39	175 W	0	0	0	1,920	0.00	0.00	0.00
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	0	0	0	735	0.00	0.00	0.00
39	172 W	0	1	0	840	0.00	1.19	0.00
39	171 W	0	0	0	5,101	0.00	0.00	0.00
39	170 W	4	22	0	47,873	0.08	0.46	0.00
39	169 W	0	2	0	39,450	0.00	0.05	0.00
39	168 W	1	4	4	25,558	0.04	0.16	0.16
[illegible]	167 W	0	6	0	20,187	0.00	0.30	0.00
39	166 W	0	1	0	8,752	0.00	0.11	0.00
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	0	7	2	25,174	0.00	0.28	0.08
39	163 W	2	1	0	7,573	0.26	0.13	0.00
39	162 W	0	2	0	4,094	0.00	0.49	0.00
39	160 W	0	0	0	1,452	0.00	0.00	0.00
39	159 W	0	0	0	1,621	0.00	0.00	0.00
39	158 W	0	0	0	14,117	0.00	0.00	0.00
39	157 W	1	1	0	17,749	0.06	0.06	0.00
39	156 W	0	1	0	13,534	0.00	0.07	0.00
39	155 W	0	2	0	9,210	0.00	0.22	0.00
39	154 W	0	3	0	19,970	0.00	0.15	0.00
39	153 W	0	1	0	16,463	0.00	0.06	0.00
39	152 W	1	0	0	8,533	0.12	0.00	0.00
39	151 W	2	0	0	5,177	0.39	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	0	924	0.00	0.00	0.00
38	176 E	0	1	0	1,885	0.00	0.53	0.00
38	179 E	0	0	0	3,732	0.00	0.00	0.00
38	179 W	0	1	0	2,858	0.00	0.35	0.00
38	177 W	1	3	1	12,856	0.08	0.23	0.08
38	176 W	0	0	0	6,851	0.00	0.00	0.00
38	175 W	0	1	0	1,694	0.00	0.59	0.00
38	174 W	0	0	0	735	0.00	0.00	0.00

Table 12. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Black-footed Alba-tross	Laysan Alba-tross	Other Unidenti-fied Albatross		Black-footed Alba-tross	Laysan Alba-tross	Other Unidenti-fied Albatross
38	171 W	0	0	0	7,009	0.00	0.00	0.00
38	170 W	0	2	0	14,765	0.00	0.14	0.00
38	169 W	0	2	1	8,896	0.00	0.22	0.11
38	168 W	0	1	0	10,847	0.00	0.09	0.00
38	167 W	0	0	0	7,300	0.00	0.00	0.00
38	166 W	0	1	0	7,175	0.00	0.14	0.00
38	165 W	0	3	0	7,114	0.00	0.42	0.00
38	164 W	3	2	1	18,769	0.16	0.11	0.05
38	163 W	0	0	0	8,371	0.00	0.00	0.00
38	162 W	0	1	0	853	0.00	1.17	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	0	3,732	0.00	0.00	0.00
38	156 W	0	0	0	957	0.00	0.00	0.00
38	155 W	0	1	0	8,500	0.00	0.12	0.00
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	0	4	3,144	0.00	0.00	1.27
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	2	0	3,910	0.00	0.51	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	0	0	0	780	0.00	0.00	0.00
37	166 W	0	0	0	1,682	0.00	0.00	0.00
37	165 W	0	1	0	4,896	0.00	0.20	0.00
37	164 W	0	0	0	3,294	0.00	0.00	0.00
37	163 W	0	2	0	9,737	0.00	0.21	0.00

Table 12. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
43	169 E	0	0	0	1,450	0.00	0.00	0.00
43	170 E	0	1	0	1,080	0.00	0.93	0.00
42	168 E	0	0	0	749	0.00	0.00	0.00
42	169 E	0	3	0	2,870	0.00	1.05	0.00
42	170 E	0	1	0	4,001	0.00	0.25	0.00
42	169 W	1	9	0	24,244	0.04	0.37	0.00
42	168 W	2	7	0	20,077	0.10	0.35	0.00
42	167 W	1	5	0	17,784	0.06	0.28	0.00
42	166 W	3	9	1	34,743	0.09	0.26	0.03
42	165 W	1	7	0	28,335	0.04	0.25	0.00
42	164 W	0	1	0	7,027	0.00	0.14	0.00
42	163 W	1	5	0	20,821	0.05	0.24	0.00
42	162 W	3	5	0	33,133	0.09	0.15	0.00
42	161 W	1	2	0	24,985	0.04	0.08	0.00
42	160 W	2	4	0	15,687	0.13	0.25	0.00
42	159 W	3	4	0	22,604	0.13	0.18	0.00
42	158 W	2	3	0	14,775	0.14	0.20	0.00
42	157 W	0	1	0	4,215	0.00	0.24	0.00
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	0	3,696	0.00	0.00	0.00
42	154 W	0	2	0	3,696	0.00	0.54	0.00
42	153 W	1	0	0	2,844	0.35	0.00	0.00
42	152 W	0	0	0	9,676	0.00	0.00	0.00
42	151 W	0	0	0	2,627	0.00	0.00	0.00
42	148 W	1	0	0	3,024	0.33	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	0	0	810	0.00	0.00	0.00
41	170 E	1	36	0	26,157	0.04	1.38	0.00
41	171 E	1	7	1	16,453	0.06	0.43	0.06
41	172 E	0	0	0	1,535	0.00	0.00	0.00
41	173 E	0	1	0	2,841	0.00	0.35	0.00
41	174 E	1	8	0	7,106	0.14	1.13	0.00
41	175 E	1	4	0	7,249	0.14	0.55	0.00
41	176 E	0	2	0	5,565	0.00	0.36	0.00
41	177 E	1	13	0	21,894	0.05	0.59	0.00
41	178 E	0	0	0	5,523	0.00	0.00	0.00
41	179 E	0	0	0	1,653	0.00	0.00	0.00
41	177 W	0	0	0	1,470	0.00	0.00	0.00
41	175 W	0	0	0	1,725	0.00	0.00	0.00
41	174 W	1	0	0	6,755	0.15	0.00	0.00
41	173 W	0	0	0	3,103	0.00	0.00	0.00
41	172 W	0	0	0	7,864	0.00	0.00	0.00
41	171 W	0	0	0	15,218	0.00	0.00	0.00
41	170 W	0	0	0	12,708	0.00	0.00	0.00
41	169 W	0	1	0	12,577	0.00	0.08	0.00
41	168 W	0	1	0	24,518	0.00	0.04	0.00
41	167 W	2	6	0	38,982	0.05	0.15	0.00
41	166 W	3	2	1	55,097	0.05	0.04	0.02
41	165 W	1	4	0	45,093	0.02	0.09	0.00
41	164 W	1	1	0	43,820	0.02	0.02	0.00
41	163 W	5	2	0	25,383	0.20	0.08	0.00
41	162 W	0	1	0	2,152	0.00	0.46	0.00
41	161 W	1	2	0	12,028	0.08	0.17	0.00

Table 12. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
41	160 W	2	3	0	9,960	0.20	0.30	0.00
41	159 W	2	4	0	13,268	0.15	0.30	0.00
41	158 W	0	0	0	12,821	0.00	0.00	0.00
41	157 W	0	0	0	1,472	0.00	0.00	0.00
41	156 W	0	0	0	2,448	0.00	0.00	0.00
41	154 W	1	0	0	1,848	0.54	0.00	0.00
41	153 W	0	1	0	1,722	0.00	0.58	0.00
41	152 W	0	4	0	7,827	0.00	0.51	0.00
41	151 W	1	0	0	5,421	0.18	0.00	0.00
41	150 W	0	0	2	3,456	0.00	0.00	0.58
40	175 E	0	0	0	648	0.00	0.00	0.00
40	176 E	0	0	0	547	0.00	0.00	0.00
40	177 E	1	0	0	686	1.46	0.00	0.00
40	178 E	0	1	0	3,343	0.00	0.30	0.00
40	179 E	0	0	0	2,904	0.00	0.00	0.00
40	179 W	0	0	0	2,275	0.00	0.00	0.00
40	177 W	1	2	0	17,533	0.06	0.11	0.00
40	176 W	0	0	0	960	0.00	0.00	0.00
40	173 W	0	0	0	1,790	0.00	0.00	0.00
40	172 W	0	0	0	1,350	0.00	0.00	0.00
40	171 W	0	0	0	2,604	0.00	0.00	0.00
40	170 W	0	0	0	300	0.00	0.00	0.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	0	0	0	2,574	0.00	0.00	0.00
40	158 W	0	0	0	3,984	0.00	0.00	0.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	0	0	7,098	0.00	0.00	0.00
40	150 W	1	0	0	828	1.21	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	2	0	0	2,765	0.72	0.00	0.00
39	157 W	0	0	0	930	0.00	0.00	0.00

Table 12. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
45	178 W	1	1	0	564	1.77	1.77	0.00
45	163 W	0	0	0	1,735	0.00	0.00	0.00
45	162 W	2	0	0	2,672	0.75	0.00	0.00
45	160 W	0	0	0	4,284	0.00	0.00	0.00
45	159 W	2	1	0	11,975	0.17	0.08	0.00
45	158 W	1	2	0	7,573	0.13	0.26	0.00
45	157 W	2	0	0	7,945	0.25	0.00	0.00
45	156 W	0	0	0	1,821	0.00	0.00	0.00
45	155 W	1	1	0	861	1.16	1.16	0.00
45	154 W	1	0	0	2,180	0.46	0.00	0.00
45	153 W	0	0	0	4,982	0.00	0.00	0.00
45	152 W	6	2	0	14,243	0.42	0.14	0.00
45	151 W	0	0	0	11,095	0.00	0.00	0.00
45	150 W	0	0	0	1,642	0.00	0.00	0.00
45	149 W	0	0	0	5,634	0.00	0.00	0.00
45	148 W	2	0	0	2,150	0.93	0.00	0.00
44	170 E	0	5	0	3,755	0.00	1.33	0.00
44	171 E	0	28	0	13,082	0.00	2.14	0.00
44	172 E	0	2	0	4,898	0.00	0.41	0.00
44	173 E	0	0	0	2,010	0.00	0.00	0.00
44	174 E	0	3	0	5,774	0.00	0.52	0.00
44	175 E	0	4	0	4,476	0.00	0.89	0.00
44	176 E	0	15	0	15,186	0.00	0.99	0.00
44	177 E	1	45	0	10,610	0.09	4.24	0.00
44	178 E	0	10	0	10,338	0.00	0.97	0.00
44	179 E	1	20	0	23,079	0.04	0.87	0.00
44	180	0	0	0	750	0.00	0.00	0.00
44	179 W	6	43	0	41,188	0.15	1.04	0.00
44	178 W	1	24	0	20,048	0.05	1.20	0.00
44	177 W	1	1	0	6,175	0.16	0.16	0.00
44	175 W	0	0	0	750	0.00	0.00	0.00
44	171 W	0	0	1	960	0.00	0.00	1.04
44	168 W	0	0	0	800	0.00	0.00	0.00
44	159 W	2	1	0	6,276	0.32	0.16	0.00
44	158 W	3	8	0	20,943	0.14	0.38	0.00
44	157 W	5	5	3	18,802	0.27	0.27	0.16
44	156 W	0	0	0	4,440	0.00	0.00	0.00
44	155 W	1	1	0	1,665	0.60	0.60	0.00
44	154 W	0	1	0	792	0.00	1.26	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	2	0	0	1,860	1.08	0.00	0.00
44	151 W	0	0	0	7,350	0.00	0.00	0.00
44	150 W	0	0	0	3,171	0.00	0.00	0.00
44	149 W	0	0	0	5,219	0.00	0.00	0.00
44	148 W	0	0	0	4,724	0.00	0.00	0.00
43	170 E	1	2	0	3,338	0.30	0.60	0.00
43	171 E	0	10	0	1,715	0.00	5.83	0.00
43	172 E	0	0	0	1,311	0.00	0.00	0.00
43	173 E	1	3	0	4,789	0.21	0.63	0.00
43	174 E	1	3	0	7,362	0.14	0.41	0.00
43	175 E	0	2	0	4,679	0.00	0.43	0.00
43	176 E	0	0	0	1,445	0.00	0.00	0.00
43	177 E	0	3	0	853	0.00	3.52	0.00
43	178 E	2	7	0	5,642	0.35	1.24	0.00

Table 12. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
43	179 E	2	7	0	4,383	0.46	1.60	0.00
43	179 W	0	4	0	1,386	0.00	2.89	0.00
43	178 W	0	0	0	1,819	0.00	0.00	0.00
43	177 W	0	2	0	2,459	0.00	0.81	0.00
43	175 W	0	0	0	750	0.00	0.00	0.00
43	172 W	0	2	0	520	0.00	3.85	0.00
43	171 W	0	5	0	2,168	0.00	2.31	0.00
43	170 W	0	1	0	1,358	0.00	0.74	0.00
43	168 W	0	0	0	1,627	0.00	0.00	0.00
43	167 W	1	1	0	3,863	0.26	0.26	0.00
43	166 W	2	16	0	6,824	0.29	2.34	0.00
43	165 W	0	1	0	828	0.00	1.21	0.00
43	161 W	1	0	0	775	1.29	0.00	0.00
43	160 W	0	0	0	2,354	0.00	0.00	0.00
43	159 W	0	0	0	3,210	0.00	0.00	0.00
43	158 W	7	7	0	11,365	0.62	0.62	0.00
43	157 W	7	6	0	20,432	0.34	0.29	0.00
43	156 W	1	0	0	800	1.25	0.00	0.00
43	153 W	0	0	0	4,620	0.00	0.00	0.00
43	152 W	1	0	0	2,670	0.37	0.00	0.00
43	151 W	0	0	0	4,299	0.00	0.00	0.00
43	150 W	0	0	0	1,685	0.00	0.00	0.00
43	148 W	0	0	0	1,748	0.00	0.00	0.00
42	170 E	0	3	0	1,920	0.00	1.56	0.00
42	171 E	1	1	0	810	1.23	1.23	0.00
42	172 E	0	0	0	900	0.00	0.00	0.00
42	173 E	0	0	0	3,015	0.00	0.00	0.00
42	174 E	1	0	0	2,505	0.40	0.00	0.00
42	175 E	0	8	0	1,625	0.00	4.92	0.00
42	169 W	0	2	0	1,642	0.00	1.22	0.00
42	168 W	0	0	0	2,983	0.00	0.00	0.00
42	167 W	0	1	0	5,523	0.00	0.18	0.00
42	160 W	0	0	0	900	0.00	0.00	0.00
42	159 W	0	0	0	900	0.00	0.00	0.00
42	158 W	2	0	0	1,738	1.15	0.00	0.00
42	152 W	4	0	0	4,149	0.96	0.00	0.00
42	151 W	0	0	0	4,437	0.00	0.00	0.00
42	150 W	0	0	0	6,379	0.00	0.00	0.00
41	175 E	0	0	0	710	0.00	0.00	0.00

Table 12. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
45	171 E	0	0	0	771	0.00	0.00	0.00
45	172 E	0	1	0	782	0.00	1.28	0.00
45	176 E	0	0	0	840	0.00	0.00	0.00
45	177 E	0	0	0	861	0.00	0.00	0.00
45	178 E	0	0	0	738	0.00	0.00	0.00
45	179 E	0	0	0	1,617	0.00	0.00	0.00
45	178 W	0	0	0	905	0.00	0.00	0.00
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	1	2	0	5,296	0.19	0.38	0.00
45	175 W	0	0	0	1,307	0.00	0.00	0.00
45	174 W	0	0	0	3,402	0.00	0.00	0.00
45	173 W	0	0	0	3,261	0.00	0.00	0.00
45	171 W	2	1	0	3,312	0.60	0.30	0.00
45	170 W	0	1	0	9,100	0.00	0.11	0.00
45	162 W	1	0	0	900	1.11	0.00	0.00
45	161 W	0	0	0	2,617	0.00	0.00	0.00
45	160 W	1	0	0	6,456	0.15	0.00	0.00
45	159 W	1	0	0	800	1.25	0.00	0.00
45	158 W	3	0	0	4,457	0.67	0.00	0.00
45	157 W	2	0	0	4,090	0.49	0.00	0.00
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	1	0	0	800	1.25	0.00	0.00
44	171 E	0	1	0	4,117	0.00	0.24	0.00
44	172 E	0	1	0	3,146	0.00	0.32	0.00
44	173 E	0	0	0	1,590	0.00	0.00	0.00
44	174 E	0	0	0	1,665	0.00	0.00	0.00
44	175 E	0	0	0	2,532	0.00	0.00	0.00
44	176 E	0	0	0	810	0.00	0.00	0.00
44	177 E	0	0	0	2,010	0.00	0.00	0.00
44	178 E	0	0	0	791	0.00	0.00	0.00
44	179 E	0	0	0	3,436	0.00	0.00	0.00
44	179 W	3	1	0	7,312	0.41	0.14	0.00
44	178 W	0	0	0	4,472	0.00	0.00	0.00
44	177 W	0	0	0	1,254	0.00	0.00	0.00
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	0	756	0.00	0.00	0.00
44	170 W	1	0	0	900	1.11	0.00	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	1	0	0	4,509	0.22	0.00	0.00
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	1	0	1,856	0.00	0.54	0.00
43	171 E	0	8	0	7,818	0.00	1.02	0.00
43	172 E	0	2	0	5,881	0.00	0.34	0.00
43	173 E	0	0	0	1,538	0.00	0.00	0.00
43	174 E	0	1	0	2,317	0.00	0.43	0.00
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	1	0	1,545	0.00	0.65	0.00
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	0	756	0.00	0.00	0.00
43	178 W	0	0	0	2,598	0.00	0.00	0.00

Table 12. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross		Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
43	177 W	1	0	0	4,440	0.23	0.00	0.00
43	176 W	3	3	0	4,865	0.62	0.62	0.00
43	160 W	0	0	0	1,632	0.00	0.00	0.00
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	2	0	1,393	0.00	1.44	0.00
42	170 E	2	6	0	3,355	0.60	1.79	0.00
42	171 E	1	5	0	1,376	0.73	3.63	0.00
42	172 E	0	0	0	2,401	0.00	0.00	0.00
42	173 E	0	5	0	2,115	0.00	2.36	0.00
42	174 E	1	2	0	1,159	0.86	1.73	0.00
42	175 E	4	4	0	3,736	1.07	1.07	0.00
42	176 E	0	2	0	1,719	0.00	1.16	0.00
42	178 W	0	2	0	7,182	0.00	0.28	0.00
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	0	522	0.00	0.00	0.00
41	174 E	0	0	0	860	0.00	0.00	0.00
41	176 E	0	0	0	828	0.00	0.00	0.00
41	177 W	0	0	0	2,213	0.00	0.00	0.00
40	175 E	0	0	0	644	0.00	0.00	0.00

Table 12. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
43	177 E	0	0	0	620	0.00	0.00	0.00
43	178 E	0	1	0	3,419	0.00	0.29	0.00
43	179 E	0	1	0	3,258	0.00	0.31	0.00
43	178 W	0	0	0	845	0.00	0.00	0.00
43	177 W	0	0	0	2,755	0.00	0.00	0.00
43	176 W	0	3	0	3,901	0.00	0.77	0.00
43	175 W	0	2	0	2,853	0.00	0.70	0.00
43	174 W	0	2	0	756	0.00	2.65	0.00
43	173 W	0	1	0	2,427	0.00	0.41	0.00
43	172 W	0	6	0	4,101	0.00	1.46	0.00
43	171 W	0	2	0	3,474	0.00	0.58	0.00
42	170 E	0	0	0	2,297	0.00	0.00	0.00
42	171 E	1	11	0	5,671	0.18	1.94	0.00
42	172 E	0	2	0	3,791	0.00	0.53	0.00
42	177 E	0	0	0	846	0.00	0.00	0.00
42	178 E	0	1	0	2,493	0.00	0.40	0.00
42	179 E	0	0	0	874	0.00	0.00	0.00
42	179 W	0	0	0	905	0.00	0.00	0.00
42	178 W	1	4	0	11,452	0.09	0.35	0.00
42	177 W	0	0	0	756	0.00	0.00	0.00
42	176 W	0	0	0	2,897	0.00	0.00	0.00
42	175 W	0	0	0	1,428	0.00	0.00	0.00
[illegible]	174 W	0	0	0	900	0.00	0.00	0.00
[illegible]	162 E	0	2	0	1,489	0.00	1.34	0.00
41	163 E	0	0	0	1,368	0.00	0.00	0.00
41	170 E	0	0	0	758	0.00	0.00	0.00
41	171 E	0	0	0	3,137	0.00	0.00	0.00
41	178 E	1	0	0	2,440	0.41	0.00	0.00
41	179 W	0	7	1	5,640	0.00	1.24	0.18
41	178 W	0	1	0	5,232	0.00	0.19	0.00
41	177 W	0	0	0	6,550	0.00	0.00	0.00
41	176 W	0	0	0	5,073	0.00	0.00	0.00
40	171 E	0	0	0	1,632	0.00	0.00	0.00
40	177 E	0	1	0	1,489	0.00	0.67	0.00
40	178 E	0	0	0	1,489	0.00	0.00	0.00
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	1	0	0	3,528	0.28	0.00	0.00
38	171 E	0	0	0	1,476	0.00	0.00	0.00
37	171 E	0	0	0	882	0.00	0.00	0.00

Table 12. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
41	174 E	0	1	0	3,422	0.00	0.29	0.00
41	175 E	0	0	0	733	0.00	0.00	0.00
41	176 E	0	2	0	3,177	0.00	0.63	0.00
41	177 E	1	1	0	1,711	0.58	0.58	0.00
41	179 W	0	1	0	1,711	0.00	0.58	0.00
41	178 W	0	1	0	2,322	0.00	0.43	0.00
40	176 E	1	2	0	840	1.19	2.38	0.00
40	177 E	0	0	0	4,487	0.00	0.00	0.00
40	178 E	0	0	0	3,253	0.00	0.00	0.00
39	173 E	0	0	0	611	0.00	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross	Tans (50m)	CPUE (Number per 1000 tans): Black-footed Albatross	Laysan Albatross	Other Unidentified Albatross
39	170 E	0	1	0	3,422	0.00	0.29	0.00
39	171 E	0	1	0	2,200	0.00	0.45	0.00

Table 13. Observed bycatch of sooty, short-tailed and unidentified dark shearwaters, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of sooty, short-tailed and unidentified dark shearwaters by 1 x 1 degree statistical area and 10-day period in the 1990 Japanese squid driftnet fishery.

June 1-10

1°x 1° Area		Observed Bycatch in Number				Tans (50m)	CPUE (Number per 1000 tans)			
Lat.	Long.	Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total		Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
39	170 E	0	0	0	0	700	0.0	0.0	0.0	0.0
39	176 E	0	0	0	0	750	0.0	0.0	0.0	0.0
39	177 E	4	0	1	5	2,327	1.7	0.0	0.4	2.1
39	178 E	11	0	0	11	4,697	2.3	0.0	0.0	2.3
39	179 E	60	11	5	76	8,663	6.9	1.3	0.6	8.8
39	179 W	18	3	2	23	6,742	2.7	0.4	0.3	3.4
39	177 W	2	1	1	4	4,933	0.4	0.2	0.2	0.8
39	176 W	8	0	3	11	2,758	2.9	0.0	1.1	4.0
39	170 W	7	0	1	8	4,720	1.5	0.0	0.2	1.7
39	169 W	21	1	11	33	9,992	2.1	0.1	1.1	3.3
39	168 W	31	1	21	53	9,567	3.2	0.1	2.2	5.5
39	167 W	26	0	3	29	5,492	4.7	0.0	0.5	5.3
39	164 W	31	0	4	35	6,724	4.6	0.0	0.6	5.2
39	163 W	2	0	0	2	1,271	1.6	0.0	0.0	1.6
39	162 W	4	0	1	5	2,389	1.7	0.0	0.4	2.1
39	158 W	1	0	0	1	1,058	0.9	0.0	0.0	0.9
39	157 W	8	1	3	12	6,860	1.2	0.1	0.4	1.7
39	154 W	0	0	0	0	1,058	0.0	0.0	0.0	0.0
39	153 W	1	0	0	1	1,058	0.9	0.0	0.0	0.9
39	151 W	0	0	0	0	752	0.0	0.0	0.0	0.0
39	146 W	1	0	0	1	902	1.1	0.0	0.0	1.1
38	171 E	0	0	0	0	924	0.0	0.0	0.0	0.0
38	179 E	4	1	0	5	3,060	1.3	0.3	0.0	1.6
38	179 W	3	0	0	3	1,598	1.9	0.0	0.0	1.9
38	177 W	8	1	9	18	8,591	0.9	0.1	1.0	2.1
38	176 W	0	0	0	0	810	0.0	0.0	0.0	0.0
38	171 W	1	0	0	1	1,314	0.8	0.0	0.0	0.8
38	170 W	6	0	0	6	914	6.6	0.0	0.0	6.6
38	169 W	3	0	6	9	1,980	1.5	0.0	3.0	4.5
38	168 W	9	0	0	9	914	9.9	0.0	0.0	9.9
38	166 W	2	0	0	2	924	2.2	0.0	0.0	2.2
38	165 W	15	0	2	17	7,114	2.1	0.0	0.3	2.4
38	164 W	56	0	0	56	11,083	5.1	0.0	0.0	5.1
38	163 W	39	0	0	39	7,579	5.1	0.0	0.0	5.1
38	159 W	1	0	0	1	907	1.1	0.0	0.0	1.1
38	158 W	0	0	0	0	2,930	0.0	0.0	0.0	0.0
38	157 W	0	0	0	0	1,058	0.0	0.0	0.0	0.0
38	154 W	1	0	0	1	1,008	1.0	0.0	0.0	1.0
38	153 W	0	0	9	9	845	0.0	0.0	10.7	10.7
38	152 W	21	0	5	26	3,144	6.7	0.0	1.6	8.3
38	151 W	7	1	0	8	3,645	1.9	0.3	0.0	2.2
38	150 W	5	0	0	5	3,910	1.3	0.0	0.0	1.3
37	170 W	0	0	0	0	725	0.0	0.0	0.0	0.0
37	166 W	4	0	0	4	1,682	2.4	0.0	0.0	2.4
37	165 W	29	2	3	34	4,896	5.9	0.4	0.6	6.9
37	164 W	3	0	0	3	3,294	0.9	0.0	0.0	0.9
37	163 W	14	0	2	16	9,737	1.4	0.0	0.2	1.6

Table 13. (Continued)

June 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
39	173 E	5	0	0	5	684	7.3	0.0	0.0	7.3
39	174 E	7	0	0	7	684	10.2	0.0	0.0	10.2
39	175 E	109	2	0	111	1,938	56.2	1.0	0.0	57.3
39	176 E	58	2	0	60	6,516	8.9	0.3	0.0	9.2
39	177 E	31	0	0	31	3,314	9.4	0.0	0.0	9.4
39	179 E	7	19	0	26	3,095	2.3	6.1	0.0	8.4
39	179 W	11	3	0	14	4,583	2.4	0.7	0.0	3.1
39	178 W	8	9	62	79	10,240	0.8	0.9	6.1	7.7
39	177 W	182	6	76	264	19,281	9.4	0.3	3.9	13.7
39	176 W	64	3	27	94	12,809	5.0	0.2	2.1	7.3
39	174 W	0	0	0	0	1,810	0.0	0.0	0.0	0.0
39	170 W	54	3	16	73	25,509	2.1	0.1	0.6	2.9
39	169 W	38	0	4	42	8,662	4.4	0.0	0.5	4.8
39	168 W	36	0	3	39	13,481	2.7	0.0	0.2	2.9
39	167 W	29	0	4	33	7,945	3.6	0.0	0.5	4.2
39	166 W	6	0	0	6	4,535	1.3	0.0	0.0	1.3
39	165 W	9	0	0	9	4,632	1.9	0.0	0.0	1.9
39	164 W	69	0	9	78	17,521	3.9	0.0	0.5	4.5
39	163 W	12	0	1	13	6,302	1.9	0.0	0.2	2.1
39	162 W	1	0	0	1	1,705	0.6	0.0	0.0	0.6
39	159 W	5	12	0	17	823	6.1	14.6	0.0	20.7
39	158 W	20	0	0	20	9,207	2.2	0.0	0.0	2.2
39	157 W	1	1	0	2	4,316	0.2	0.2	0.0	0.5
39	156 W	1	0	0	1	1,839	0.5	0.0	0.0	0.5
39	154 W	0	0	3	3	1,849	0.0	0.0	1.6	1.6
39	153 W	1	0	0	1	864	1.2	0.0	0.0	1.2
39	152 W	0	0	0	0	3,604	0.0	0.0	0.0	0.0
39	151 W	1	0	3	4	804	1.2	0.0	3.7	5.0
38	179 E	1	0	0	1	672	1.5	0.0	0.0	1.5
38	179 W	4	0	0	4	672	6.0	0.0	0.0	6.0
38	177 W	16	1	0	17	3,529	4.5	0.3	0.0	4.8
38	176 W	1	0	0	1	672	1.5	0.0	0.0	1.5
38	171 W	0	0	0	0	1,008	0.0	0.0	0.0	0.0
38	170 W	5	0	3	8	8,268	0.6	0.0	0.4	1.0
38	169 W	8	0	0	8	6,012	1.3	0.0	0.0	1.3
38	168 W	14	0	2	16	9,261	1.5	0.0	0.2	1.7
38	167 W	1	0	0	1	2,609	0.4	0.0	0.0	0.4
38	166 W	2	0	0	2	4,401	0.5	0.0	0.0	0.5
38	164 W	9	0	0	9	6,894	1.3	0.0	0.0	1.3
38	163 W	0	0	0	0	792	0.0	0.0	0.0	0.0
38	162 W	1	0	0	1	853	1.2	0.0	0.0	1.2

Table 13. (Continued)

June 21-30

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
41	177 E	16	1	25	42	3,007	5.3	0.3	8.3	14.0
41	171 W	3	0	1	4	1,020	2.9	0.0	1.0	3.9
40	175 E	2	0	0	2	749	2.7	0.0	0.0	2.7
39	170 E	0	0	3	3	755	0.0	0.0	4.0	4.0
39	172 E	4	0	0	4	706	5.7	0.0	0.0	5.7
39	174 E	0	0	0	0	648	0.0	0.0	0.0	0.0
39	175 E	129	4	41	174	9,530	13.5	0.4	4.3	18.3
39	176 E	67	9	1	77	9,582	7.0	0.9	0.1	8.0
39	177 E	6	0	6	12	2,698	2.2	0.0	2.2	4.4
39	178 E	0	0	0	0	1,529	0.0	0.0	0.0	0.0
39	179 W	111	16	0	127	6,269	17.7	2.6	0.0	20.3
39	178 W	13	3	0	16	1,646	7.9	1.8	0.0	9.7
39	177 W	58	0	3	61	7,345	7.9	0.0	0.4	8.3
39	176 W	2	0	0	2	13,286	0.2	0.0	0.0	0.2
39	175 W	1	0	1	2	1,920	0.5	0.0	0.5	1.0
39	173 W	0	0	0	0	735	0.0	0.0	0.0	0.0
39	172 W	0	0	1	1	840	0.0	0.0	1.2	1.2
39	171 W	4	2	2	8	5,101	0.8	0.4	0.4	1.6
39	170 W	14	3	3	20	17,644	0.8	0.2	0.2	1.1
39	169 W	10	4	6	20	20,796	0.5	0.2	0.3	1.0
39	168 W	3	0	0	3	2,510	1.2	0.0	0.0	1.2
39	167 W	2	0	0	2	6,749	0.3	0.0	0.0	0.3
39	166 W	0	0	18	18	4,217	0.0	0.0	4.3	4.3
39	165 W	0	0	3	3	1,843	0.0	0.0	1.6	1.6
39	164 W	0	0	0	0	930	0.0	0.0	0.0	0.0
39	160 W	1	0	0	1	1,452	0.7	0.0	0.0	0.7
39	159 W	1	0	0	1	798	1.3	0.0	0.0	1.3
39	158 W	0	0	0	0	3,852	0.0	0.0	0.0	0.0
39	157 W	1	0	0	1	6,573	0.2	0.0	0.0	0.2
39	156 W	8	0	0	8	11,695	0.7	0.0	0.0	0.7
39	155 W	15	0	0	15	9,210	1.6	0.0	0.0	1.6
39	154 W	32	0	0	32	17,062	1.9	0.0	0.0	1.9
39	153 W	23	0	1	24	14,540	1.6	0.0	0.1	1.7
39	152 W	9	0	1	10	4,929	1.8	0.0	0.2	2.0
39	151 W	1	1	0	2	3,621	0.3	0.3	0.0	0.6
39	149 W	0	0	0	0	809	0.0	0.0	0.0	0.0
39	148 W	0	0	0	0	2,876	0.0	0.0	0.0	0.0
39	147 W	0	0	0	0	833	0.0	0.0	0.0	0.0
38	176 E	63	0	0	63	1,885	33.4	0.0	0.0	33.4
38	179 W	0	1	0	1	588	0.0	1.7	0.0	1.7
38	177 W	0	0	0	0	735	0.0	0.0	0.0	0.0
38	176 W	1	0	0	1	5,369	0.2	0.0	0.0	0.2
38	175 W	0	0	0	0	1,694	0.0	0.0	0.0	0.0
38	174 W	0	0	0	0	735	0.0	0.0	0.0	0.0
38	171 W	0	0	0	0	4,687	0.0	0.0	0.0	0.0
38	170 W	1	0	0	1	5,583	0.2	0.0	0.0	0.2
38	169 W	1	0	0	1	904	1.1	0.0	0.0	1.1
38	168 W	0	0	0	0	672	0.0	0.0	0.0	0.0
38	167 W	0	0	0	0	4,692	0.0	0.0	0.0	0.0
38	166 W	0	0	0	0	1,850	0.0	0.0	0.0	0.0
38	164 W	0	0	0	0	792	0.0	0.0	0.0	0.0
38	157 W	1	0	0	1	2,674	0.4	0.0	0.0	0.4

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
38	156 W	0	0	0	0	957	0.0	0.0	0.0	0.0
38	155 W	5	0	0	5	8,500	0.6	0.0	0.0	0.6
37	167 W	0	0	0	0	780	0.0	0.0	0.0	0.0

July 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	169 E	2	0	0	2	1,450	1.4	0.0	0.0	1.4
43	170 E	1	0	0	1	540	1.9	0.0	0.0	1.9
42	169 E	15	0	4	19	1,622	9.2	0.0	2.5	11.7
42	170 E	13	0	8	21	3,526	3.7	0.0	2.3	6.0
42	169 W	28	0	36	64	3,131	8.9	0.0	11.5	20.4
42	168 W	30	0	1	31	2,630	11.4	0.0	0.4	11.8
42	167 W	116	0	33	149	2,907	39.9	0.0	11.4	51.3
42	166 W	20	0	11	31	1,190	16.8	0.0	9.2	26.1
42	165 W	64	0	3	67	4,650	13.8	0.0	0.6	14.4
42	163 W	19	0	0	19	1,058	18.0	0.0	0.0	18.0
42	162 W	19	0	0	19	907	20.9	0.0	0.0	20.9
42	161 W	166	0	0	166	2,854	58.2	0.0	0.0	58.2
42	160 W	154	19	4	177	6,656	23.1	2.9	0.6	26.6
42	159 W	371	7	46	424	13,572	27.3	0.5	3.4	31.2
42	158 W	18	0	39	57	2,376	7.6	0.0	16.4	24.0
42	157 W	23	0	0	23	823	27.9	0.0	0.0	27.9
41	169 E	17	0	0	17	810	21.0	0.0	0.0	21.0
41	170 E	120	4	0	124	6,118	19.6	0.7	0.0	20.3
41	171 E	3	0	0	3	2,799	1.1	0.0	0.0	1.1
41	172 E	0	0	0	0	428	0.0	0.0	0.0	0.0
41	174 E	4	11	0	15	1,560	2.6	7.1	0.0	9.6
41	175 E	8	0	0	8	2,246	3.6	0.0	0.0	3.6
41	176 E	8	7	6	21	3,756	2.1	1.9	1.6	5.6
41	177 E	78	10	24	112	15,677	5.0	0.6	1.5	7.1
41	178 E	15	0	1	16	5,523	2.7	0.0	0.2	2.9
41	179 E	5	0	0	5	1,653	3.0	0.0	0.0	3.0
41	177 W	1	0	0	1	1,470	0.7	0.0	0.0	0.7
41	175 W	0	0	0	0	960	0.0	0.0	0.0	0.0
41	174 W	9	0	16	25	6,755	1.3	0.0	2.4	3.7
41	173 W	2	0	1	3	2,450	0.8	0.0	0.4	1.2
41	172 W	21	0	2	23	7,374	2.8	0.0	0.3	3.1
41	171 W	33	0	3	36	6,940	4.8	0.0	0.4	5.2
41	170 W	110	5	15	130	7,412	14.8	0.7	2.0	17.5
41	169 W	42	0	6	48	4,901	8.6	0.0	1.2	9.8
41	168 W	29	0	5	34	7,509	3.9	0.0	0.7	4.5
41	167 W	49	0	74	123	11,090	4.4	0.0	6.7	11.1
41	166 W	282	0	51	333	21,345	13.2	0.0	2.4	15.6
41	165 W	68	0	31	99	13,617	5.0	0.0	2.3	7.3
41	164 W	88	0	7	95	5,638	15.6	0.0	1.2	16.9
41	163 W	13	0	0	13	1,704	7.6	0.0	0.0	7.6
41	160 W	37	0	3	40	1,452	25.5	0.0	2.1	27.5
41	159 W	137	22	39	198	9,065	15.1	2.4	4.3	21.8

Table 13. (Continued)

1°x 1° Area		Observed Bycatch in Number				Tans (50m)	CPUE (Number per 1000 tans)			
Lat.	Long.	Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total		Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
41	158 W	41	28	4	73	11,864	3.5	2.4	0.3	6.2
41	157 W	3	0	0	3	672	4.5	0.0	0.0	4.5
41	156 W	14	0	12	26	2,448	5.7	0.0	4.9	10.6
41	154 W	1	0	0	1	924	1.1	0.0	0.0	1.1
41	153 W	7	0	0	7	1,722	4.1	0.0	0.0	4.1
41	152 W	15	6	0	21	5,206	2.9	1.2	0.0	4.0
41	151 W	34	0	0	34	5,421	6.3	0.0	0.0	6.3
41	150 W	31	0	0	31	2,655	11.7	0.0	0.0	11.7
40	175 E	0	0	0	0	648	0.0	0.0	0.0	0.0
40	176 E	1	2	0	3	547	1.8	3.7	0.0	5.5
40	177 E	0	0	0	0	686	0.0	0.0	0.0	0.0
40	178 E	7	1	0	8	3,343	2.1	0.3	0.0	2.4
40	179 E	5	0	0	5	2,904	1.7	0.0	0.0	1.7
40	179 W	4	1	0	5	2,275	1.8	0.4	0.0	2.2
40	177 W	73	1	5	79	17,533	4.2	0.1	0.3	4.5
40	176 W	0	0	0	0	960	0.0	0.0	0.0	0.0
40	173 W	0	0	0	0	1,790	0.0	0.0	0.0	0.0
40	172 W	0	0	0	0	1,350	0.0	0.0	0.0	0.0
40	171 W	14	0	2	16	2,604	5.4	0.0	0.8	6.1
40	170 W	0	0	0	0	300	0.0	0.0	0.0	0.0
40	168 W	9	0	0	9	790	11.4	0.0	0.0	11.4
40	166 W	0	0	2	2	922	0.0	0.0	2.2	2.2
40	161 W	0	0	0	0	864	0.0	0.0	0.0	0.0
40	159 W	2	0	0	2	2,574	0.8	0.0	0.0	0.8
40	158 W	2	0	0	2	3,984	0.5	0.0	0.0	0.5
40	154 W	0	0	0	0	840	0.0	0.0	0.0	0.0
40	153 W	13	4	0	17	7,098	1.8	0.6	0.0	2.4
40	150 W	0	0	0	0	828	0.0	0.0	0.0	0.0
39	177 E	2	0	0	2	882	2.3	0.0	0.0	2.3
39	166 W	0	0	5	5	2,765	0.0	0.0	1.8	1.8
39	157 W	2	0	0	2	930	2.2	0.0	0.0	2.2

Table 13. (Continued)

July 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	170 E	6	0	0	6	540	11.1	0.0	0.0	11.1
42	168 E	0	0	0	0	749	0.0	0.0	0.0	0.0
42	169 E	10	0	17	27	1,248	8.0	0.0	13.6	21.6
42	170 E	9	1	0	10	475	18.9	2.1	0.0	21.1
42	169 W	57	4	107	168	15,525	3.7	0.3	6.9	10.8
42	168 W	47	11	56	114	6,505	7.2	1.7	8.6	17.5
42	167 W	25	3	0	28	8,194	3.1	0.4	0.0	3.4
42	166 W	43	0	14	57	20,427	2.1	0.0	0.7	2.8
42	165 W	9	1	17	27	1,669	5.4	0.6	10.2	16.2
42	164 W	8	0	12	20	1,694	4.7	0.0	7.1	11.8
42	163 W	43	1	0	44	6,205	6.9	0.2	0.0	7.1
42	162 W	24	0	1	25	1,278	18.8	0.0	0.8	19.6
42	161 W	9	0	0	9	2,066	4.4	0.0	0.0	4.4
42	160 W	1	0	0	1	823	1.2	0.0	0.0	1.2
42	159 W	7	1	0	8	1,470	4.8	0.7	0.0	5.4
42	158 W	7	0	0	7	3,301	2.1	0.0	0.0	2.1
42	157 W	0	0	0	0	792	0.0	0.0	0.0	0.0
42	156 W	0	0	0	0	792	0.0	0.0	0.0	0.0
42	155 W	9	0	0	9	3,696	2.4	0.0	0.0	2.4
42	154 W	6	0	0	6	3,696	1.6	0.0	0.0	1.6
42	153 W	2	0	0	2	924	2.2	0.0	0.0	2.2
42	152 W	0	0	0	0	1,821	0.0	0.0	0.0	0.0
42	148 W	2	0	0	2	3,024	0.7	0.0	0.0	0.7
42	147 W	0	0	0	0	1,008	0.0	0.0	0.0	0.0
42	146 W	0	0	2	2	864	0.0	0.0	2.3	2.3
41	170 E	422	3	452	877	11,395	37.0	0.3	39.7	77.0
41	171 E	116	4	62	182	4,139	28.0	1.0	15.0	44.0
41	172 E	0	0	0	0	207	0.0	0.0	0.0	0.0
41	173 E	5	0	5	10	2,131	2.3	0.0	2.3	4.7
41	174 E	26	0	0	26	4,125	6.3	0.0	0.0	6.3
41	175 E	33	9	5	47	5,003	6.6	1.8	1.0	9.4
41	177 E	11	0	1	12	3,378	3.3	0.0	0.3	3.6
41	172 W	6	0	0	6	490	12.2	0.0	0.0	12.2
41	171 W	52	0	5	57	7,499	6.9	0.0	0.7	7.6
41	170 W	44	0	0	44	5,296	8.3	0.0	0.0	8.3
41	169 W	57	0	1	58	7,676	7.4	0.0	0.1	7.6
41	168 W	5	0	4	9	12,616	0.4	0.0	0.3	0.7
41	167 W	40	0	31	71	23,317	1.7	0.0	1.3	3.0
41	166 W	74	0	9	83	19,944	3.7	0.0	0.5	4.2
41	165 W	75	0	30	105	19,036	3.9	0.0	1.6	5.5
41	164 W	149	0	15	164	23,824	6.3	0.0	0.6	6.9
41	163 W	108	0	5	113	16,985	6.4	0.0	0.3	6.7
41	162 W	0	0	0	0	700	0.0	0.0	0.0	0.0
41	161 W	71	0	2	73	6,616	10.7	0.0	0.3	11.0
41	159 W	44	0	4	48	4,203	10.5	0.0	1.0	11.4
41	158 W	0	0	0	0	957	0.0	0.0	0.0	0.0
41	157 W	0	0	0	0	800	0.0	0.0	0.0	0.0
41	154 W	2	0	0	2	924	2.2	0.0	0.0	2.2
41	152 W	0	0	0	0	2,621	0.0	0.0	0.0	0.0
41	150 W	0	0	0	0	800	0.0	0.0	0.0	0.0

Table 13. (Continued)

July 21-31

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
42	169 W	76	0	40	116	5,588	13.6	0.0	7.2	20.8
42	168 W	128	0	0	128	10,942	11.7	0.0	0.0	11.7
42	167 W	4	0	0	4	6,684	0.6	0.0	0.0	0.6
42	166 W	51	0	19	70	13,126	3.9	0.0	1.4	5.3
42	165 W	61	1	32	94	22,016	2.8	0.0	1.5	4.3
42	164 W	15	0	4	19	5,333	2.8	0.0	0.8	3.6
42	163 W	15	0	3	18	13,558	1.1	0.0	0.2	1.3
42	162 W	83	0	22	105	30,948	2.7	0.0	0.7	3.4
42	161 W	19	0	5	24	20,065	0.9	0.0	0.2	1.2
42	160 W	4	0	1	5	8,208	0.5	0.0	0.1	0.6
42	159 W	8	0	0	8	7,562	1.1	0.0	0.0	1.1
42	158 W	12	0	8	20	9,098	1.3	0.0	0.9	2.2
42	157 W	2	0	2	4	2,600	0.8	0.0	0.8	1.5
42	153 W	0	0	0	0	1,920	0.0	0.0	0.0	0.0
42	152 W	1	0	0	1	7,855	0.1	0.0	0.0	0.1
42	151 W	2	0	1	3	2,627	0.8	0.0	0.4	1.1
42	147 W	0	0	0	0	1,008	0.0	0.0	0.0	0.0
41	170 E	79	1	271	351	8,645	9.1	0.1	31.3	40.6
41	171 E	36	0	27	63	9,515	3.8	0.0	2.8	6.6
41	172 E	0	0	0	0	900	0.0	0.0	0.0	0.0
41	173 E	0	0	0	0	710	0.0	0.0	0.0	0.0
41	174 E	11	0	0	11	1,421	7.7	0.0	0.0	7.7
41	176 E	0	0	60	60	1,809	0.0	0.0	33.2	33.2
41	177 E	0	0	443	443	2,839	0.0	0.0	156.1	156.1
41	175 W	0	0	14	14	765	0.0	0.0	18.3	18.3
41	173 W	0	0	15	15	653	0.0	0.0	23.0	23.0
41	171 W	0	0	10	10	779	0.0	0.0	12.8	12.8
41	168 W	2	0	15	17	4,393	0.5	0.0	3.4	3.9
41	167 W	1	0	0	1	4,575	0.2	0.0	0.0	0.2
41	166 W	30	0	0	30	13,808	2.2	0.0	0.0	2.2
41	165 W	18	0	2	20	12,440	1.4	0.0	0.2	1.6
41	164 W	20	1	0	21	14,358	1.4	0.1	0.0	1.5
41	163 W	4	1	1	6	6,694	0.6	0.1	0.1	0.9
41	162 W	0	0	0	0	1,452	0.0	0.0	0.0	0.0
41	161 W	1	0	1	2	5,412	0.2	0.0	0.2	0.4
41	160 W	5	0	2	7	8,508	0.6	0.0	0.2	0.8

Table 13. (Continued)

August 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	153 W	14	0	0	14	4,982	2.8	0.0	0.0	2.8
45	152 W	11	1	0	12	9,113	1.2	0.1	0.0	1.3
45	151 W	0	0	0	0	7,745	0.0	0.0	0.0	0.0
45	150 W	0	0	0	0	840	0.0	0.0	0.0	0.0
45	149 W	1	0	0	1	5,634	0.2	0.0	0.0	0.2
45	148 W	0	0	0	0	2,150	0.0	0.0	0.0	0.0
44	177 E	0	0	0	0	520	0.0	0.0	0.0	0.0
44	178 E	63	3	0	66	4,623	13.6	0.6	0.0	14.3
44	179 E	0	0	0	0	710	0.0	0.0	0.0	0.0
44	179 W	57	1	12	70	8,530	6.7	0.1	1.4	8.2
44	178 W	71	0	11	82	6,775	10.5	0.0	1.6	12.1
44	177 W	99	0	1	100	3,295	30.0	0.0	0.3	30.3
44	175 W	0	0	1	1	750	0.0	0.0	1.3	1.3
44	159 W	46	0	0	46	2,762	16.7	0.0	0.0	16.7
44	158 W	21	0	12	33	2,509	8.4	0.0	4.8	13.2
44	157 W	121	0	54	175	5,048	24.0	0.0	10.7	34.7
44	156 W	84	0	3	87	2,471	34.0	0.0	1.2	35.2
44	153 W	0	0	0	0	792	0.0	0.0	0.0	0.0
44	152 W	4	0	0	4	1,860	2.2	0.0	0.0	2.2
44	151 W	0	0	1	1	6,390	0.0	0.0	0.2	0.2
44	150 W	0	0	1	1	3,171	0.0	0.0	0.3	0.3
44	149 W	2	0	0	2	5,219	0.4	0.0	0.0	0.4
44	148 W	1	0	0	1	4,724	0.2	0.0	0.0	0.2
43	171 E	20	0	2	22	490	40.8	0.0	4.1	44.9
43	172 E	0	0	0	0	600	0.0	0.0	0.0	0.0
43	173 E	0	0	0	0	900	0.0	0.0	0.0	0.0
43	175 E	3	0	0	3	2,450	1.2	0.0	0.0	1.2
43	176 E	0	0	30	30	1,445	0.0	0.0	20.8	20.8
43	177 E	4	0	0	4	853	4.7	0.0	0.0	4.7
43	178 E	0	0	31	31	1,348	0.0	0.0	23.0	23.0
43	179 W	8	0	0	8	1,386	5.8	0.0	0.0	5.8
43	178 W	16	0	8	24	1,819	8.8	0.0	4.4	13.2
43	177 W	39	0	3	42	2,459	15.9	0.0	1.2	17.1
43	175 W	0	0	0	0	750	0.0	0.0	0.0	0.0
43	172 W	1	0	0	1	520	1.9	0.0	0.0	1.9
43	171 W	23	0	2	25	2,168	10.6	0.0	0.9	11.5
43	170 W	15	0	0	15	1,358	11.0	0.0	0.0	11.0
43	168 W	5	0	0	5	1,627	3.1	0.0	0.0	3.1
43	167 W	7	0	0	7	3,863	1.8	0.0	0.0	1.8
43	166 W	21	0	0	21	6,824	3.1	0.0	0.0	3.1
43	165 W	11	0	0	11	828	13.3	0.0	0.0	13.3
43	161 W	3	0	2	5	775	3.9	0.0	2.6	6.5
43	160 W	44	0	2	46	2,354	18.7	0.0	0.8	19.5
43	159 W	49	2	1	52	2,409	20.3	0.8	0.4	21.6
43	158 W	20	0	0	20	4,688	4.3	0.0	0.0	4.3
43	157 W	227	0	12	239	6,333	35.8	0.0	1.9	37.7
43	156 W	17	0	0	17	800	21.2	0.0	0.0	21.2
43	153 W	3	0	0	3	4,620	0.6	0.0	0.0	0.6
43	152 W	3	0	0	3	2,670	1.1	0.0	0.0	1.1
43	151 W	0	0	0	0	4,299	0.0	0.0	0.0	0.0
43	150 W	0	0	0	0	1,685	0.0	0.0	0.0	0.0

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	148 W	1	0	0	1	1,748	0.6	0.0	0.0	0.6
42	170 E	0	0	9	9	960	0.0	0.0	9.4	9.4
42	171 E	2	0	1	3	810	2.5	0.0	1.2	3.7
42	172 E	0	0	6	6	900	0.0	0.0	6.7	6.7
42	173 E	0	0	0	0	735	0.0	0.0	0.0	0.0
42	174 E	5	0	4	9	2,505	2.0	0.0	1.6	3.6
42	175 E	5	0	1	6	1,625	3.1	0.0	0.6	3.7
42	169 W	5	0	0	5	1,642	3.0	0.0	0.0	3.0
42	168 W	0	0	0	0	2,983	0.0	0.0	0.0	0.0
42	167 W	2	0	0	2	5,523	0.4	0.0	0.0	0.4
42	160 W	3	0	0	3	900	3.3	0.0	0.0	3.3
42	159 W	2	0	1	3	900	2.2	0.0	1.1	3.3
42	158 W	4	0	0	4	1,738	2.3	0.0	0.0	2.3
42	152 W	8	0	1	9	4,149	1.9	0.0	0.2	2.2
42	151 W	0	0	1	1	4,437	0.0	0.0	0.2	0.2
42	150 W	0	0	0	0	6,379	0.0	0.0	0.0	0.0
41	175 E	0	0	0	0	710	0.0	0.0	0.0	0.0

August 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	163 W	87	0	8	95	864	100.7	0.0	9.3	110.0
45	160 W	437	17	204	658	2,460	177.6	6.9	82.9	267.5
45	159 W	477	18	60	555	7,869	60.6	2.3	7.6	70.5
45	158 W	38	0	2	40	1,500	25.3	0.0	1.3	26.7
45	154 W	1	0	0	1	1,220	0.8	0.0	0.0	0.8
45	152 W	21	1	0	22	4,170	5.0	0.2	0.0	5.3
44	170 E	0	0	44	44	2,555	0.0	0.0	17.2	17.2
44	171 E	131	0	21	152	8,972	14.6	0.0	2.3	16.9
44	172 E	22	0	0	22	2,768	7.9	0.0	0.0	7.9
44	176 E	6	0	0	6	5,105	1.2	0.0	0.0	1.2
44	177 E	19	0	3	22	6,637	2.9	0.0	0.5	3.3
44	178 E	13	0	2	15	3,981	3.3	0.0	0.5	3.8
44	179 E	26	18	10	54	13,776	1.9	1.3	0.7	3.9
44	180	0	0	0	0	750	0.0	0.0	0.0	0.0
44	179 W	45	0	8	53	17,594	2.6	0.0	0.5	3.0
44	178 W	139	0	19	158	8,325	16.7	0.0	2.3	19.0
44	177 W	0	0	0	0	600	0.0	0.0	0.0	0.0
44	168 W	0	0	43	43	800	0.0	0.0	53.8	53.8
44	159 W	715	0	122	837	3,514	203.5	0.0	34.7	238.2
44	158 W	333	0	95	428	13,451	24.8	0.0	7.1	31.8
44	157 W	442	3	188	633	10,538	41.9	0.3	17.8	60.1
44	156 W	13	0	0	13	1,968	6.6	0.0	0.0	6.6
44	155 W	3	0	2	5	804	3.7	0.0	2.5	6.2
44	154 W	5	0	0	5	792	6.3	0.0	0.0	6.3
43	170 E	23	0	0	23	1,106	20.8	0.0	0.0	20.8
43	171 E	1	0	0	1	1,225	0.8	0.0	0.0	0.8
43	178 E	1	0	0	1	3,499	0.3	0.0	0.0	0.3

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	179 E	0	0	0	0	2,748	0.0	0.0	0.0	0.0
43	159 W	10	0	0	10	801	12.5	0.0	0.0	12.5
43	158 W	100	0	52	152	6,678	15.0	0.0	7.8	22.8
43	157 W	311	1	60	372	14,099	22.1	0.1	4.3	26.4

August 21-31

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	178 W	6	0	0	6	564	10.6	0.0	0.0	10.6
45	163 W	0	0	0	0	871	0.0	0.0	0.0	0.0
45	162 W	192	2	69	263	2,672	71.9	0.7	25.8	98.4
45	160 W	22	0	3	25	1,824	12.1	0.0	1.6	13.7
45	159 W	138	0	488	626	4,106	33.6	0.0	118.8	152.4
45	158 W	662	5	332	999	6,073	109.0	0.8	54.7	164.5
45	157 W	208	1	556	765	7,945	26.2	0.1	70.0	96.3
45	156 W	4	0	21	25	1,821	2.2	0.0	11.5	13.7
45	155 W	1	0	0	1	861	1.2	0.0	0.0	1.2
45	154 W	0	0	2	2	960	0.0	0.0	2.1	2.1
45	152 W	0	0	15	15	960	0.0	0.0	15.6	15.6
45	151 W	49	0	6	55	3,350	14.6	0.0	1.8	16.4
45	150 W	1	0	0	1	802	1.2	0.0	0.0	1.2
44	170 E	0	0	16	16	1,200	0.0	0.0	13.3	13.3
44	171 E	85	0	32	117	4,110	20.7	0.0	7.8	28.5
44	172 E	9	0	2	11	2,130	4.2	0.0	0.9	5.2
44	173 E	2	0	5	7	2,010	1.0	0.0	2.5	3.5
44	174 E	39	0	53	92	5,774	6.8	0.0	9.2	15.9
44	175 E	28	0	135	163	4,476	6.3	0.0	30.2	36.4
44	176 E	69	0	1	70	10,080	6.8	0.0	0.1	6.9
44	177 E	65	0	61	126	3,453	18.8	0.0	17.7	36.5
44	178 E	107	0	7	114	1,734	61.7	0.0	4.0	65.7
44	179 E	22	0	3	25	8,592	2.6	0.0	0.3	2.9
44	179 W	281	1	131	413	15,064	18.7	0.1	8.7	27.4
44	178 W	140	0	0	140	4,948	28.3	0.0	0.0	28.3
44	177 W	72	0	12	84	2,280	31.6	0.0	5.3	36.8
44	171 W	0	0	30	30	960	0.0	0.0	31.3	31.3
44	158 W	134	0	20	154	4,983	26.9	0.0	4.0	30.9
44	157 W	96	0	0	96	3,215	29.9	0.0	0.0	29.9
44	155 W	31	0	0	31	861	36.0	0.0	0.0	36.0
44	151 W	0	0	0	0	960	0.0	0.0	0.0	0.0
43	170 E	7	0	1	8	2,232	3.1	0.0	0.4	3.6
43	172 E	0	0	0	0	711	0.0	0.0	0.0	0.0
43	173 E	28	0	0	28	3,889	7.2	0.0	0.0	7.2
43	174 E	11	0	1	12	7,362	1.5	0.0	0.1	1.6
43	175 E	0	0	0	0	2,229	0.0	0.0	0.0	0.0
43	178 E	9	0	0	9	795	11.3	0.0	0.0	11.3
43	179 E	0	0	0	0	1,635	0.0	0.0	0.0	0.0
42	170 E	1	0	0	1	960	1.0	0.0	0.0	1.0
42	173 E	1	0	0	1	2,280	0.4	0.0	0.0	0.4

Table 13. (Continued)

September 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	171 E	39	0	17	56	771	50.6	0.0	22.0	72.6
45	172 E	31	0	29	60	782	39.6	0.0	37.1	76.7
45	176 E	6	0	0	6	840	7.1	0.0	0.0	7.1
45	177 E	6	0	5	11	861	7.0	0.0	5.8	12.8
45	178 E	48	0	106	154	738	65.0	0.0	143.6	208.7
45	179 E	52	10	0	62	1,617	32.2	6.2	0.0	38.3
45	177 W	0	0	0	0	600	0.0	0.0	0.0	0.0
45	176 W	110	72	140	322	750	146.7	96.0	186.7	429.3
45	175 W	46	0	0	46	630	73.0	0.0	0.0	73.0
45	174 W	185	2	0	187	2,646	69.9	0.8	0.0	70.7
45	173 W	8	0	0	8	756	10.6	0.0	0.0	10.6
45	171 W	40	1	5	46	1,800	22.2	0.6	2.8	25.6
45	170 W	35	0	6	41	3,312	10.6	0.0	1.8	12.4
45	162 W	100	0	2	102	900	111.1	0.0	2.2	113.3
45	161 W	5	0	0	5	1,657	3.0	0.0	0.0	3.0
45	160 W	41	0	30	71	4,902	8.4	0.0	6.1	14.5
45	158 W	43	0	12	55	4,457	9.6	0.0	2.7	12.3
45	157 W	84	0	10	94	4,090	20.5	0.0	2.4	23.0
45	153 W	0	0	5	5	960	0.0	0.0	5.2	5.2
45	152 W	0	0	0	0	960	0.0	0.0	0.0	0.0
45	151 W	0	0	5	5	1,920	0.0	0.0	2.6	2.6
45	150 W	2	0	0	2	800	2.5	0.0	0.0	2.5
44	171 E	62	0	31	93	4,117	15.1	0.0	7.5	22.6
44	172 E	6	0	86	92	3,146	1.9	0.0	27.3	29.2
44	176 E	1	0	0	1	810	1.2	0.0	0.0	1.2
44	177 E	3	0	0	3	2,010	1.5	0.0	0.0	1.5
44	179 E	3	0	1	4	3,436	0.9	0.0	0.3	1.2
44	179 W	86	0	4	90	7,312	11.8	0.0	0.5	12.3
44	178 W	117	3	88	208	4,472	26.2	0.7	19.7	46.5
44	177 W	16	5	37	58	750	21.3	6.7	49.3	77.3
44	170 W	2	0	6	8	900	2.2	0.0	6.7	8.9
44	161 W	0	0	3	3	930	0.0	0.0	3.2	3.2
44	160 W	0	0	0	0	2,367	0.0	0.0	0.0	0.0
44	158 W	0	0	0	0	754	0.0	0.0	0.0	0.0
43	171 E	40	0	15	55	1,996	20.0	0.0	7.5	27.6
43	173 E	3	0	0	3	750	4.0	0.0	0.0	4.0
43	160 W	0	0	0	0	1,632	0.0	0.0	0.0	0.0
43	158 W	0	0	0	0	905	0.0	0.0	0.0	0.0
42	173 E	7	0	0	7	1,405	5.0	0.0	0.0	5.0

September 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	178 W	0	1	0	1	905	0.0	1.1	0.0	1.1
45	176 W	118	96	132	346	4,546	26.0	21.1	29.0	76.1
45	175 W	5	12	6	23	677	7.4	17.7	8.9	34.0
45	174 W	2	0	0	2	756	2.6	0.0	0.0	2.6

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
45	173 W	0	1	24	25	2,505	0.0	0.4	9.6	10.0
45	171 W	21	0	0	21	1,512	13.9	0.0	0.0	13.9
45	170 W	11	0	127	138	5,788	1.9	0.0	21.9	23.8
45	161 W	0	0	0	0	960	0.0	0.0	0.0	0.0
45	160 W	6	0	0	6	1,554	3.9	0.0	0.0	3.9
45	159 W	8	0	1	9	800	10.0	0.0	1.3	11.3
44	175 E	2	0	0	2	1,695	1.2	0.0	0.0	1.2
44	178 E	0	3	0	3	791	0.0	3.8	0.0	3.8
44	177 W	3	122	0	125	504	6.0	242.1	0.0	248.0
44	176 W	8	33	0	41	1,512	5.3	21.8	0.0	27.1
44	174 W	3	0	0	3	756	4.0	0.0	0.0	4.0
44	160 W	0	0	0	0	2,142	0.0	0.0	0.0	0.0
43	170 E	3	0	0	3	1,856	1.6	0.0	0.0	1.6
43	171 E	15	1	3	19	5,006	3.0	0.2	0.6	3.8
43	172 E	3	0	7	10	2,753	1.1	0.0	2.5	3.6
43	174 E	23	0	2	25	1,549	14.8	0.0	1.3	16.1
43	178 E	1	1	0	2	1,545	0.6	0.6	0.0	1.3
43	179 E	0	0	0	0	378	0.0	0.0	0.0	0.0
43	179 W	0	0	0	0	756	0.0	0.0	0.0	0.0
43	178 W	0	0	3	3	1,638	0.0	0.0	1.8	1.8
43	177 W	1	1	6	8	2,520	0.4	0.4	2.4	3.2
43	176 W	1	0	0	1	756	1.3	0.0	0.0	1.3
42	171 E	6	0	0	6	1,376	4.4	0.0	0.0	4.4
41	177 W	0	0	0	0	773	0.0	0.0	0.0	0.0

September 21-30

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
44	173 E	1	1	0	2	1,590	0.6	0.6	0.0	1.3
44	174 E	13	0	0	13	1,665	7.8	0.0	0.0	7.8
44	175 E	1	0	0	1	837	1.2	0.0	0.0	1.2
43	171 E	0	0	1	1	816	0.0	0.0	1.2	1.2
43	172 E	2	0	0	2	3,128	0.6	0.0	0.0	0.6
43	173 E	0	0	0	0	788	0.0	0.0	0.0	0.0
43	174 E	2	0	0	2	768	2.6	0.0	0.0	2.6
43	175 E	0	0	0	0	846	0.0	0.0	0.0	0.0
43	176 E	1	0	0	1	905	1.1	0.0	0.0	1.1
43	177 E	2	0	3	5	1,810	1.1	0.0	1.7	2.8
43	178 W	0	0	5	5	960	0.0	0.0	5.2	5.2
43	177 W	0	0	27	27	1,920	0.0	0.0	14.1	14.1
43	176 W	56	12	20	88	4,109	13.6	2.9	4.9	21.4
42	165 E	4	0	2	6	1,393	2.9	0.0	1.4	4.3
42	170 E	2	0	0	2	3,355	0.6	0.0	0.0	0.6
42	172 E	2	0	1	3	2,401	0.8	0.0	0.4	1.2
42	173 E	0	0	0	0	710	0.0	0.0	0.0	0.0
42	174 E	0	0	0	0	1,159	0.0	0.0	0.0	0.0
42	175 E	9	0	1	10	3,736	2.4	0.0	0.3	2.7
42	176 E	1	0	0	1	1,719	0.6	0.0	0.0	0.6

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
42	178 W	20	0	11	31	7,182	2.8	0.0	1.5	4.3
42	177 W	0	0	0	0	1,056	0.0	0.0	0.0	0.0
41	170 E	0	0	0	0	522	0.0	0.0	0.0	0.0
41	174 E	1	0	0	1	860	1.2	0.0	0.0	1.2
41	176 E	0	0	0	0	828	0.0	0.0	0.0	0.0
41	177 W	0	0	0	0	1,440	0.0	0.0	0.0	0.0
40	175 E	0	0	0	0	644	0.0	0.0	0.0	0.0

October 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	177 E	0	0	0	0	620	0.0	0.0	0.0	0.0
43	178 E	11	0	0	11	3,419	3.2	0.0	0.0	3.2
43	179 E	6	0	0	6	2,421	2.5	0.0	0.0	2.5
43	178 W	4	3	0	7	845	4.7	3.6	0.0	8.3
43	177 W	1	0	4	5	2,755	0.4	0.0	1.5	1.8
43	176 W	35	6	3	44	3,901	9.0	1.5	0.8	11.3
43	175 W	6	3	0	9	2,853	2.1	1.1	0.0	3.2
43	174 W	4	0	1	5	756	5.3	0.0	1.3	6.6
43	173 W	1	0	0	1	915	1.1	0.0	0.0	1.1
42	171 E	74	0	19	93	4,350	17.0	0.0	4.4	21.4
42	172 E	4	0	3	7	1,500	2.7	0.0	2.0	4.7
42	179 E	0	0	0	0	874	0.0	0.0	0.0	0.0
42	179 W	0	0	0	0	905	0.0	0.0	0.0	0.0
42	178 W	12	1	1	14	8,384	1.4	0.1	0.1	1.7
42	176 W	0	2	0	2	1,937	0.0	1.0	0.0	1.0
42	175 W	0	6	0	6	1,428	0.0	4.2	0.0	4.2
41	162 E	0	0	0	0	1,489	0.0	0.0	0.0	0.0
41	163 E	1	0	0	1	1,368	0.7	0.0	0.0	0.7
41	170 E	4	0	2	6	758	5.3	0.0	2.6	7.9
41	171 E	3	0	1	4	768	3.9	0.0	1.3	5.2
41	178 W	0	0	0	0	960	0.0	0.0	0.0	0.0
41	177 W	0	0	11	11	4,690	0.0	0.0	2.3	2.3
41	176 W	0	0	0	0	603	0.0	0.0	0.0	0.0

October 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
43	179 E	0	0	0	0	837	0.0	0.0	0.0	0.0
43	173 W	20	1	2	23	1,512	13.2	0.7	1.3	15.2
43	172 W	15	0	3	18	4,101	3.7	0.0	0.7	4.4
43	171 W	88	3	4	95	3,474	25.3	0.9	1.2	27.3
42	170 E	1	0	1	2	2,297	0.4	0.0	0.4	0.9

Table 13. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
42	171 E	0	0	0	0	1,321	0.0	0.0	0.0	0.0
42	172 E	0	0	2	2	2,291	0.0	0.0	0.9	0.9
42	177 E	2	0	0	2	846	2.4	0.0	0.0	2.4
42	178 E	48	1	0	49	1,647	29.1	0.6	0.0	29.8
42	178 W	0	0	1	1	2,268	0.0	0.0	0.4	0.4
42	177 W	3	0	0	3	756	4.0	0.0	0.0	4.0
42	176 W	0	0	13	13	960	0.0	0.0	13.5	13.5
42	174 W	1	0	1	2	900	1.1	0.0	1.1	2.2
41	171 E	0	0	1	1	2,369	0.0	0.0	0.4	0.4
41	179 W	1	0	0	1	1,716	0.6	0.0	0.0	0.6
41	178 W	0	0	1	1	960	0.0	0.0	1.0	1.0
41	177 W	0	0	3	3	960	0.0	0.0	3.1	3.1
41	176 W	0	0	0	0	3,570	0.0	0.0	0.0	0.0
40	171 E	0	0	0	0	750	0.0	0.0	0.0	0.0
39	171 E	0	0	0	0	882	0.0	0.0	0.0	0.0
38	171 E	0	0	0	0	1,476	0.0	0.0	0.0	0.0
37	171 E	0	0	0	0	882	0.0	0.0	0.0	0.0

October 21-31

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
42	178 E	0	0	0	0	846	0.0	0.0	0.0	0.0
42	178 W	0	0	0	0	800	0.0	0.0	0.0	0.0
41	178 E	2	0	0	2	2,440	0.8	0.0	0.0	0.8
41	179 W	0	0	0	0	3,924	0.0	0.0	0.0	0.0
41	178 W	7	2	1	10	3,312	2.1	0.6	0.3	3.0
41	177 W	0	0	0	0	900	0.0	0.0	0.0	0.0
41	176 W	1	0	0	1	900	1.1	0.0	0.0	1.1
40	171 E	0	0	0	0	882	0.0	0.0	0.0	0.0
40	177 E	0	0	0	0	1,489	0.0	0.0	0.0	0.0
40	178 E	4	0	1	5	1,489	2.7	0.0	0.7	3.4
39	174 E	0	0	0	0	3,528	0.0	0.0	0.0	0.0

November 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
41	175 E	0	0	0	0	733	0.0	0.0	0.0	0.0
41	176 E	1	0	2	3	2,322	0.4	0.0	0.9	1.3
41	177 E	0	1	0	1	1,711	0.0	0.6	0.0	0.6
40	176 E	0	0	0	0	840	0.0	0.0	0.0	0.0
40	177 E	4	0	0	4	4,487	0.9	0.0	0.0	0.9
40	178 E	0	0	0	0	3,253	0.0	0.0	0.0	0.0

Table 13. (Continued)

November 11-20

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
41	176 E	0	0	0	0	855	0.0	0.0	0.0	0.0
41	179 W	160	62	1	223	1,711	93.5	36.2	0.6	130.3
41	178 W	21	3	1	25	2,322	9.0	1.3	0.4	10.8

November 21-30

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
41	174 E	4	2	2	8	3,422	1.2	0.6	0.6	2.3
39	173 E	3	0	0	3	611	4.9	0.0	0.0	4.9

December 1-10

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark Shear-water	Total	Tans (50m)	CPUE (Number per 1000 tans): Sooty Shear-water	Short-tailed Shear-water	Uniden. Dark-Shear-water	Total
39	170 E	0	0	0	0	3,422	0.0	0.0	0.0	0.0
39	171 E	0	0	0	0	2,200	0.0	0.0	0.0	0.0

Table 14. Observed bycatch of other shearwaters, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of other shearwaters by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
41	177 E	0	0	0	3,007	0.00	0.00	0.00
41	171 W	0	0	0	1,020	0.00	0.00	0.00
40	175 E	0	0	0	749	0.00	0.00	0.00
39	170 E	0	0	0	1,455	0.00	0.00	0.00
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	0	0	0	684	0.00	0.00	0.00
39	174 E	0	0	2	1,332	0.00	0.00	1.50
39	175 E	0	2	0	11,468	0.00	0.17	0.00
39	176 E	1	2	5	16,848	0.06	0.12	0.30
39	177 E	1	0	3	8,338	0.12	0.00	0.36
39	178 E	0	0	0	6,226	0.00	0.00	0.00
39	179 E	1	0	6	11,758	0.09	0.00	0.51
39	179 W	0	0	7	17,593	0.00	0.00	0.40
39	178 W	0	1	4	11,886	0.00	0.08	0.34
39	177 W	2	4	26	31,559	0.06	0.13	0.82
39	176 W	2	1	28	28,853	0.07	0.03	0.97
39	175 W	0	0	0	1,920	0.00	0.00	0.00
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	0	0	0	735	0.00	0.00	0.00
39	172 W	0	0	0	840	0.00	0.00	0.00
39	171 W	0	0	2	5,101	0.00	0.00	0.39
39	170 W	2	2	0	47,873	0.04	0.04	0.00
39	169 W	1	4	1	39,450	0.03	0.10	0.03
39	168 W	0	0	2	25,558	0.00	0.00	0.08
39	167 W	3	3	1	20,187	0.15	0.15	0.05
39	166 W	0	1	0	8,752	0.00	0.11	0.00
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	1	2	0	25,174	0.04	0.08	0.00
39	163 W	0	1	0	7,573	0.00	0.13	0.00
39	162 W	0	0	0	4,094	0.00	0.00	0.00
39	160 W	0	0	0	1,452	0.00	0.00	0.00
39	159 W	0	0	0	1,621	0.00	0.00	0.00
39	158 W	0	0	0	14,117	0.00	0.00	0.00
39	157 W	0	1	0	17,749	0.00	0.06	0.00
39	156 W	0	0	0	13,534	0.00	0.00	0.00
39	155 W	0	0	0	9,210	0.00	0.00	0.00
39	154 W	0	0	0	19,970	0.00	0.00	0.00
39	153 W	0	0	0	16,463	0.00	0.00	0.00
39	152 W	0	0	5	8,533	0.00	0.00	0.59
39	151 W	0	0	0	5,177	0.00	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	0	924	0.00	0.00	0.00
38	176 E	0	0	0	1,885	0.00	0.00	0.00
38	179 E	0	0	0	3,732	0.00	0.00	0.00
38	179 W	0	0	0	2,858	0.00	0.00	0.00
38	177 W	0	1	19	12,856	0.00	0.08	1.48
38	176 W	0	0	2	6,851	0.00	0.00	0.29
38	175 W	0	0	0	1,694	0.00	0.00	0.00

Table 14. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
38	174 W	0	0	1	735	0.00	0.00	1.36
38	171 W	0	0	0	7,009	0.00	0.00	0.00
38	170 W	0	2	2	14,765	0.00	0.14	0.14
38	169 W	0	2	1	8,896	0.00	0.22	0.11
38	168 W	0	0	1	10,847	0.00	0.00	0.09
38	167 W	0	1	0	7,300	0.00	0.14	0.00
38	166 W	0	0	1	7,175	0.00	0.00	0.14
38	165 W	0	0	1	7,114	0.00	0.00	0.14
38	164 W	0	3	1	18,769	0.00	0.16	0.05
38	163 W	0	1	0	8,371	0.00	0.12	0.00
38	162 W	0	0	0	853	0.00	0.00	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	0	3,732	0.00	0.00	0.00
38	156 W	0	0	0	957	0.00	0.00	0.00
38	155 W	0	0	0	8,500	0.00	0.00	0.00
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	0	0	3,144	0.00	0.00	0.00
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	0	0	3,910	0.00	0.00	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	0	0	0	780	0.00	0.00	0.00
37	166 W	0	0	0	1,682	0.00	0.00	0.00
37	165 W	0	0	0	4,896	0.00	0.00	0.00
37	164 W	0	0	0	3,294	0.00	0.00	0.00
37	163 W	0	0	0	9,737	0.00	0.00	0.00

Table 14. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
43	169 E	0	0	1	1,450	0.00	0.00	0.69
43	170 E	0	0	0	1,080	0.00	0.00	0.00
42	168 E	0	0	0	749	0.00	0.00	0.00
42	169 E	0	4	0	2,870	0.00	1.39	0.00
42	170 E	0	0	0	4,001	0.00	0.00	0.00
42	169 W	0	2	1	24,244	0.00	0.08	0.04
42	168 W	0	0	4	20,077	0.00	0.00	0.20
42	167 W	0	0	2	17,784	0.00	0.00	0.11
42	166 W	1	1	5	34,743	0.03	0.03	0.14
42	165 W	0	0	0	28,335	0.00	0.00	0.00
42	164 W	0	0	1	7,027	0.00	0.00	0.14
42	163 W	0	1	0	20,821	0.00	0.05	0.00
42	162 W	0	0	2	33,133	0.00	0.00	0.06
42	161 W	2	1	2	24,985	0.08	0.04	0.08
42	160 W	0	1	2	15,687	0.00	0.06	0.13
42	159 W	0	0	19	22,604	0.00	0.00	0.84
42	158 W	0	1	4	14,775	0.00	0.07	0.27
42	157 W	0	0	0	4,215	0.00	0.00	0.00
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	1	3,696	0.00	0.00	0.27
42	154 W	0	0	2	3,696	0.00	0.00	0.54
42	153 W	0	0	0	2,844	0.00	0.00	0.00
42	152 W	0	0	0	9,676	0.00	0.00	0.00
42	151 W	0	0	0	2,627	0.00	0.00	0.00
42	148 W	0	0	0	3,024	0.00	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	0	0	810	0.00	0.00	0.00
41	170 E	1	5	3	26,157	0.04	0.19	0.11
41	171 E	0	0	0	16,453	0.00	0.00	0.00
41	172 E	0	0	0	1,535	0.00	0.00	0.00
41	173 E	0	0	0	2,841	0.00	0.00	0.00
41	174 E	0	1	0	7,106	0.00	0.14	0.00
41	175 E	1	0	0	7,249	0.14	0.00	0.00
41	176 E	0	1	0	5,565	0.00	0.18	0.00
41	177 E	0	1	8	21,894	0.00	0.05	0.37
41	178 E	0	0	0	5,523	0.00	0.00	0.00
41	179 E	0	1	0	1,653	0.00	0.61	0.00
41	177 W	0	0	0	1,470	0.00	0.00	0.00
41	175 W	0	0	0	1,725	0.00	0.00	0.00
41	174 W	0	0	4	6,755	0.00	0.00	0.59
41	173 W	0	0	0	3,103	0.00	0.00	0.00
41	172 W	0	1	0	7,864	0.00	0.13	0.00
41	171 W	0	0	0	15,218	0.00	0.00	0.00
41	170 W	0	0	0	12,708	0.00	0.00	0.00
41	169 W	0	1	0	12,577	0.00	0.08	0.00
41	168 W	0	0	0	24,518	0.00	0.00	0.00
41	167 W	1	16	1	38,982	0.03	0.41	0.03
41	166 W	1	8	3	55,097	0.02	0.15	0.05
41	165 W	1	2	1	45,093	0.02	0.04	0.02
41	164 W	1	0	2	43,820	0.02	0.00	0.05
41	163 W	2	0	0	25,383	0.08	0.00	0.00
41	162 W	0	0	0	2,152	0.00	0.00	0.00

Table 14. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater
41	161 W	0	0	1	12,028	0.00	0.00	0.08
41	160 W	0	1	0	9,960	0.00	0.10	0.00
41	159 W	0	0	12	13,268	0.00	0.00	0.90
41	158 W	0	0	0	12,821	0.00	0.00	0.00
41	157 W	0	0	0	1,472	0.00	0.00	0.00
41	156 W	0	0	1	2,448	0.00	0.00	0.41
41	154 W	0	0	28	1,848	0.00	0.00	15.15
41	153 W	0	0	0	1,722	0.00	0.00	0.00
41	152 W	0	0	0	7,827	0.00	0.00	0.00
41	151 W	0	0	0	5,421	0.00	0.00	0.00
41	150 W	1	0	0	3,456	0.29	0.00	0.00
40	175 E	0	0	0	648	0.00	0.00	0.00
40	176 E	0	0	0	547	0.00	0.00	0.00
40	177 E	0	0	0	686	0.00	0.00	0.00
40	178 E	0	0	0	3,343	0.00	0.00	0.00
40	179 E	0	0	0	2,904	0.00	0.00	0.00
40	179 W	0	0	0	2,275	0.00	0.00	0.00
40	177 W	4	4	0	17,533	0.23	0.23	0.00
40	176 W	0	0	0	960	0.00	0.00	0.00
40	173 W	0	0	0	1,790	0.00	0.00	0.00
40	172 W	0	0	0	1,350	0.00	0.00	0.00
40	171 W	0	0	0	2,604	0.00	0.00	0.00
40	170 W	0	0	0	300	0.00	0.00	0.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	0	0	0	2,574	0.00	0.00	0.00
40	158 W	0	0	0	3,984	0.00	0.00	0.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	0	0	7,098	0.00	0.00	0.00
40	150 W	0	0	0	828	0.00	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	0	0	0	2,765	0.00	0.00	0.00
39	157 W	0	0	0	930	0.00	0.00	0.00

Table 14. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
45	178 W	0	0	0	564	0.00	0.00	0.00
45	163 W	0	2	0	1,735	0.00	1.15	0.00
45	162 W	0	18	0	2,672	0.00	6.74	0.00
45	160 W	0	5	0	4,284	0.00	1.17	0.00
45	159 W	1	29	0	11,975	0.08	2.42	0.00
45	158 W	0	28	0	7,573	0.00	3.70	0.00
45	157 W	0	24	0	7,945	0.00	3.02	0.00
45	156 W	0	0	0	1,821	0.00	0.00	0.00
45	155 W	0	0	0	861	0.00	0.00	0.00
45	154 W	0	0	0	2,180	0.00	0.00	0.00
45	153 W	0	4	1	4,982	0.00	0.80	0.20
45	152 W	0	12	1	14,243	0.00	0.84	0.07
45	151 W	0	0	0	11,095	0.00	0.00	0.00
45	150 W	0	0	0	1,642	0.00	0.00	0.00
45	149 W	0	0	0	5,634	0.00	0.00	0.00
45	148 W	0	0	0	2,150	0.00	0.00	0.00
44	170 E	0	0	0	3,755	0.00	0.00	0.00
44	171 E	0	4	1	13,082	0.00	0.31	0.08
44	172 E	0	0	1	4,898	0.00	0.00	0.20
44	173 E	0	0	0	2,010	0.00	0.00	0.00
44	174 E	0	0	0	5,774	0.00	0.00	0.00
44	175 E	0	0	1	4,476	0.00	0.00	0.22
44	176 E	0	0	0	15,186	0.00	0.00	0.00
44	177 E	0	2	0	10,610	0.00	0.19	0.00
44	178 E	0	4	10	10,338	0.00	0.39	0.97
44	179 E	0	1	0	23,079	0.00	0.04	0.00
44	180	0	0	0	750	0.00	0.00	0.00
44	179 W	0	4	3	41,188	0.00	0.10	0.07
44	178 W	0	2	1	20,048	0.00	0.10	0.05
44	177 W	0	1	3	6,175	0.00	0.16	0.49
44	175 W	0	1	0	750	0.00	1.33	0.00
44	171 W	0	0	0	960	0.00	0.00	0.00
44	168 W	0	0	0	800	0.00	0.00	0.00
44	159 W	1	2	0	6,276	0.16	0.32	0.00
44	158 W	1	28	0	20,943	0.05	1.34	0.00
44	157 W	3	18	98	18,802	0.16	0.96	5.21
44	156 W	3	1	9	4,440	0.68	0.23	2.03
44	155 W	0	0	0	1,665	0.00	0.00	0.00
44	154 W	0	0	0	792	0.00	0.00	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	0	0	0	1,860	0.00	0.00	0.00
44	151 W	0	0	0	7,350	0.00	0.00	0.00
44	150 W	0	0	1	3,171	0.00	0.00	0.32
44	149 W	0	0	0	5,219	0.00	0.00	0.00
44	148 W	0	1	0	4,724	0.00	0.21	0.00
43	170 E	2	0	1	3,338	0.60	0.00	0.30
43	171 E	0	0	0	1,715	0.00	0.00	0.00
43	172 E	0	0	0	1,311	0.00	0.00	0.00
43	173 E	0	0	0	4,789	0.00	0.00	0.00
43	174 E	0	0	0	7,362	0.00	0.00	0.00
43	175 E	0	0	0	4,679	0.00	0.00	0.00
43	176 E	0	0	0	1,445	0.00	0.00	0.00
43	177 E	0	0	0	853	0.00	0.00	0.00

Table 14. (Continued)

1° x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater		Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater
43	178 E	0	0	0	5,642	0.00	0.00	0.00
43	179 E	0	0	0	4,383	0.00	0.00	0.00
43	179 W	0	0	0	1,386	0.00	0.00	0.00
43	178 W	0	0	0	1,819	0.00	0.00	0.00
43	177 W	0	0	1	2,459	0.00	0.00	0.41
43	175 W	0	1	0	750	0.00	1.33	0.00
43	172 W	0	0	0	520	0.00	0.00	0.00
43	171 W	1	1	0	2,168	0.46	0.46	0.00
43	170 W	0	0	0	1,358	0.00	0.00	0.00
43	168 W	0	0	0	1,627	0.00	0.00	0.00
43	167 W	0	0	0	3,863	0.00	0.00	0.00
43	166 W	0	1	0	6,824	0.00	0.15	0.00
43	165 W	0	1	0	828	0.00	1.21	0.00
43	161 W	0	0	0	775	0.00	0.00	0.00
43	160 W	0	0	0	2,354	0.00	0.00	0.00
43	159 W	0	0	0	3,210	0.00	0.00	0.00
43	158 W	0	4	0	11,365	0.00	0.35	0.00
43	157 W	4	8	2	20,432	0.20	0.39	0.10
43	156 W	0	1	0	800	0.00	1.25	0.00
43	153 W	0	0	0	4,620	0.00	0.00	0.00
43	152 W	0	0	0	2,670	0.00	0.00	0.00
43	151 W	0	0	0	4,299	0.00	0.00	0.00
43	150 W	0	0	0	1,685	0.00	0.00	0.00
43	148 W	0	0	1	1,748	0.00	0.00	0.57
42	170 E	0	0	0	1,920	0.00	0.00	0.00
42	171 E	0	0	0	810	0.00	0.00	0.00
42	172 E	0	0	0	900	0.00	0.00	0.00
42	173 E	0	0	0	3,015	0.00	0.00	0.00
42	174 E	0	0	0	2,505	0.00	0.00	0.00
42	175 E	0	0	0	1,625	0.00	0.00	0.00
42	169 W	0	0	0	1,642	0.00	0.00	0.00
42	168 W	0	0	0	2,983	0.00	0.00	0.00
42	167 W	0	0	0	5,523	0.00	0.00	0.00
42	160 W	0	0	0	900	0.00	0.00	0.00
42	159 W	0	0	0	900	0.00	0.00	0.00
42	158 W	0	0	0	1,738	0.00	0.00	0.00
42	152 W	0	0	0	4,149	0.00	0.00	0.00
42	151 W	0	0	1	4,437	0.00	0.00	0.23
42	150 W	0	0	0	6,379	0.00	0.00	0.00
41	175 E	0	0	0	710	0.00	0.00	0.00

Table 14. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shear-water	Buller's Shear-water	Other & Unidenti-fied Shearwater
45	171 E	1	1	0	771	1.30	1.30	0.00
45	172 E	0	0	0	782	0.00	0.00	0.00
45	176 E	0	0	0	840	0.00	0.00	0.00
45	177 E	0	0	0	861	0.00	0.00	0.00
45	178 E	0	1	0	738	0.00	1.36	0.00
45	179 E	0	0	0	1,617	0.00	0.00	0.00
45	178 W	0	0	0	905	0.00	0.00	0.00
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	1	0	0	5,296	0.19	0.00	0.00
45	175 W	0	0	0	1,307	0.00	0.00	0.00
45	174 W	0	1	1	3,402	0.00	0.29	0.29
45	173 W	0	0	0	3,261	0.00	0.00	0.00
45	171 W	0	0	0	3,312	0.00	0.00	0.00
45	170 W	0	3	0	9,100	0.00	0.33	0.00
45	162 W	0	1	0	900	0.00	1.11	0.00
45	161 W	0	0	0	2,617	0.00	0.00	0.00
45	160 W	0	3	0	6,456	0.00	0.46	0.00
45	159 W	0	0	0	800	0.00	0.00	0.00
45	158 W	0	2	0	4,457	0.00	0.45	0.00
45	157 W	0	0	0	4,090	0.00	0.00	0.00
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	0	0	0	800	0.00	0.00	0.00
44	171 E	0	1	0	4,117	0.00	0.24	0.00
44	172 E	0	0	0	3,146	0.00	0.00	0.00
44	173 E	0	0	0	1,590	0.00	0.00	0.00
44	174 E	0	0	0	1,665	0.00	0.00	0.00
44	175 E	0	0	0	2,532	0.00	0.00	0.00
44	176 E	0	0	0	810	0.00	0.00	0.00
44	177 E	0	0	0	2,010	0.00	0.00	0.00
44	178 E	0	0	0	791	0.00	0.00	0.00
44	179 E	0	0	1	3,436	0.00	0.00	0.29
44	179 W	1	0	1	7,312	0.14	0.00	0.14
44	178 W	0	1	0	4,472	0.00	0.22	0.00
44	177 W	0	0	0	1,254	0.00	0.00	0.00
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	0	756	0.00	0.00	0.00
44	170 W	0	0	0	900	0.00	0.00	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	0	0	0	4,509	0.00	0.00	0.00
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	0	0	1,856	0.00	0.00	0.00
43	171 E	0	0	0	7,818	0.00	0.00	0.00
43	172 E	0	0	0	5,881	0.00	0.00	0.00
43	173 E	0	1	0	1,538	0.00	0.65	0.00
43	174 E	0	0	0	2,317	0.00	0.00	0.00
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	0	0	1,545	0.00	0.00	0.00
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	0	756	0.00	0.00	0.00

Table 14. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
43	178 W	0	0	0	2,598	0.00	0.00	0.00
43	177 W	0	0	0	4,440	0.00	0.00	0.00
43	176 W	0	1	0	4,865	0.00	0.21	0.00
43	160 W	0	0	0	1,632	0.00	0.00	0.00
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	0	0	1,393	0.00	0.00	0.00
42	170 E	1	0	0	3,355	0.30	0.00	0.00
42	171 E	0	0	0	1,376	0.00	0.00	0.00
42	172 E	0	0	0	2,401	0.00	0.00	0.00
42	173 E	1	0	0	2,115	0.47	0.00	0.00
42	174 E	1	0	0	1,159	0.86	0.00	0.00
42	175 E	0	1	0	3,736	0.00	0.27	0.00
42	176 E	0	0	0	1,719	0.00	0.00	0.00
42	178 W	0	3	0	7,182	0.00	0.42	0.00
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	0	522	0.00	0.00	0.00
41	174 E	0	0	0	860	0.00	0.00	0.00
41	176 E	0	0	0	828	0.00	0.00	0.00
41	177 W	0	0	0	2,213	0.00	0.00	0.00
40	175 E	0	0	0	644	0.00	0.00	0.00

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
43	177 E	0	0	1	620	0.00	0.00	1.61
43	178 E	0	1	2	3,419	0.00	0.29	0.58
43	179 E	0	0	1	3,258	0.00	0.00	0.31
43	178 W	0	0	0	845	0.00	0.00	0.00
43	177 W	0	0	0	2,755	0.00	0.00	0.00
43	176 W	1	1	0	3,901	0.26	0.26	0.00
43	175 W	0	0	0	2,853	0.00	0.00	0.00
43	174 W	0	0	0	756	0.00	0.00	0.00
43	173 W	0	1	0	2,427	0.00	0.41	0.00
43	172 W	0	0	3	4,101	0.00	0.00	0.73
43	171 W	0	0	2	3,474	0.00	0.00	0.58
42	170 E	1	0	0	2,297	0.44	0.00	0.00
42	171 E	3	4	0	5,671	0.53	0.71	0.00
42	172 E	6	1	0	3,791	1.58	0.26	0.00
42	177 E	0	0	0	846	0.00	0.00	0.00
42	178 E	0	0	1	2,493	0.00	0.00	0.40
42	179 E	0	0	0	874	0.00	0.00	0.00
42	179 W	0	0	0	905	0.00	0.00	0.00
42	178 W	1	4	0	11,452	0.09	0.35	0.00
42	177 W	0	3	0	756	0.00	3.97	0.00
42	176 W	0	1	1	2,897	0.00	0.35	0.35
42	175 W	0	0	1	1,428	0.00	0.00	0.70
42	174 W	0	0	1	900	0.00	0.00	1.11
41	162 E	0	0	0	1,489	0.00	0.00	0.00
41	163 E	0	0	0	1,368	0.00	0.00	0.00
41	170 E	0	0	0	758	0.00	0.00	0.00
41	171 E	0	0	0	3,137	0.00	0.00	0.00

Table 14. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
41	178 E	0	0	0	2,440	0.00	0.00	0.00
41	179 W	2	0	0	5,640	0.35	0.00	0.00
41	178 W	0	0	0	5,232	0.00	0.00	0.00
41	177 W	1	1	0	6,550	0.15	0.15	0.00
41	176 W	0	0	0	5,073	0.00	0.00	0.00
40	171 E	0	0	0	1,632	0.00	0.00	0.00
40	177 E	0	0	0	1,489	0.00	0.00	0.00
40	178 E	1	0	0	1,489	0.67	0.00	0.00
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	0	0	0	3,528	0.00	0.00	0.00
38	171 E	0	0	0	1,476	0.00	0.00	0.00
37	171 E	0	0	0	882	0.00	0.00	0.00

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
41	174 E	0	0	0	3,422	0.00	0.00	0.00
41	175 E	0	0	0	733	0.00	0.00	0.00
41	176 E	0	0	0	3,177	0.00	0.00	0.00
41	177 E	0	0	0	1,711	0.00	0.00	0.00
41	179 W	0	0	0	1,711	0.00	0.00	0.00
41	178 W	2	0	0	2,322	0.86	0.00	0.00
40	176 E	0	0	0	840	0.00	0.00	0.00
40	177 E	0	0	0	4,487	0.00	0.00	0.00
40	178 E	0	0	0	3,253	0.00	0.00	0.00
39	173 E	0	0	0	611	0.00	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater	Tans (50m)	CPUE (Number per 1000 tans): Flesh-footed Shearwater	Buller's Shearwater	Other & Unidentified Shearwater
39	170 E	0	0	0	3,422	0.00	0.00	0.00
39	171 E	0	0	0	2,200	0.00	0.00	0.00

Table 15. Observed bycatch of storm petrels, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of storm petrels by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
41	177 E	0	0	0	3,007	0.00	0.00	0.00
41	171 W	0	0	0	1,020	0.00	0.00	0.00
40	175 E	0	0	0	749	0.00	0.00	0.00
39	170 E	0	0	0	1,455	0.00	0.00	0.00
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	0	0	0	684	0.00	0.00	0.00
39	174 E	0	0	0	1,332	0.00	0.00	0.00
39	175 E	0	0	0	11,468	0.00	0.00	0.00
39	176 E	0	0	0	16,848	0.00	0.00	0.00
39	177 E	0	0	0	8,338	0.00	0.00	0.00
39	178 E	0	0	0	6,226	0.00	0.00	0.00
39	179 E	0	0	0	11,758	0.00	0.00	0.00
39	179 W	0	0	0	17,593	0.00	0.00	0.00
39	178 W	0	0	0	11,886	0.00	0.00	0.00
39	177 W	0	0	0	31,559	0.00	0.00	0.00
39	176 W	0	0	0	28,853	0.00	0.00	0.00
39	175 W	0	0	0	1,920	0.00	0.00	0.00
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	0	0	0	735	0.00	0.00	0.00
39	172 W	0	0	0	840	0.00	0.00	0.00
39	171 W	0	0	0	5,101	0.00	0.00	0.00
39	170 W	0	0	0	47,873	0.00	0.00	0.00
39	169 W	0	0	0	39,450	0.00	0.00	0.00
39	168 W	0	0	0	25,558	0.00	0.00	0.00
39	167 W	0	0	0	20,187	0.00	0.00	0.00
39	166 W	0	0	0	8,752	0.00	0.00	0.00
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	0	0	0	25,174	0.00	0.00	0.00
39	163 W	0	0	0	7,573	0.00	0.00	0.00
39	162 W	0	0	0	4,094	0.00	0.00	0.00
39	160 W	0	0	0	1,452	0.00	0.00	0.00
39	159 W	0	0	0	1,621	0.00	0.00	0.00
39	158 W	0	0	0	14,117	0.00	0.00	0.00
39	157 W	0	1	1	17,749	0.00	0.06	0.06
39	156 W	1	1	0	13,534	0.07	0.07	0.00
39	155 W	0	0	0	9,210	0.00	0.00	0.00
39	154 W	0	1	0	19,970	0.00	0.05	0.00
39	153 W	0	0	0	16,463	0.00	0.00	0.00
39	152 W	0	0	0	8,533	0.00	0.00	0.00
39	151 W	0	0	0	5,177	0.00	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	0	924	0.00	0.00	0.00
38	176 E	0	0	0	1,885	0.00	0.00	0.00
38	179 E	0	0	0	3,732	0.00	0.00	0.00
38	179 W	0	0	0	2,858	0.00	0.00	0.00
38	177 W	0	0	0	12,856	0.00	0.00	0.00
38	176 W	0	0	0	6,851	0.00	0.00	0.00
38	175 W	0	0	0	1,694	0.00	0.00	0.00

Table 15. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
38	174 W	0	0	0	735	0.00	0.00	0.00
38	171 W	0	0	0	7,009	0.00	0.00	0.00
38	170 W	0	0	0	14,765	0.00	0.00	0.00
38	169 W	0	0	0	8,896	0.00	0.00	0.00
38	168 W	0	0	0	10,847	0.00	0.00	0.00
38	167 W	0	0	0	7,300	0.00	0.00	0.00
38	166 W	0	0	0	7,175	0.00	0.00	0.00
38	165 W	0	0	0	7,114	0.00	0.00	0.00
38	164 W	0	0	0	18,769	0.00	0.00	0.00
38	163 W	0	0	0	8,371	0.00	0.00	0.00
38	162 W	0	0	0	853	0.00	0.00	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	0	3,732	0.00	0.00	0.00
38	156 W	0	0	0	957	0.00	0.00	0.00
38	155 W	0	0	0	8,500	0.00	0.00	0.00
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	0	0	3,144	0.00	0.00	0.00
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	0	0	3,910	0.00	0.00	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	0	0	0	780	0.00	0.00	0.00
37	166 W	0	0	0	1,682	0.00	0.00	0.00
37	165 W	0	0	0	4,896	0.00	0.00	0.00
37	164 W	0	0	0	3,294	0.00	0.00	0.00
37	163 W	0	0	0	9,737	0.00	0.00	0.00

Table 15. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
43	169 E	0	0	0	1,450	0.00	0.00	0.00
43	170 E	0	0	0	1,080	0.00	0.00	0.00
42	168 E	0	0	0	749	0.00	0.00	0.00
42	169 E	0	0	0	2,870	0.00	0.00	0.00
42	170 E	0	0	0	4,001	0.00	0.00	0.00
42	169 W	0	0	0	24,244	0.00	0.00	0.00
42	168 W	0	0	0	20,077	0.00	0.00	0.00
42	167 W	0	0	0	17,784	0.00	0.00	0.00
42	166 W	0	0	1	34,743	0.00	0.00	0.03
42	165 W	0	1	0	28,335	0.00	0.04	0.00
42	164 W	0	0	0	7,027	0.00	0.00	0.00
42	163 W	0	0	0	20,821	0.00	0.00	0.00
42	162 W	0	1	0	33,133	0.00	0.03	0.00
42	161 W	0	3	0	24,985	0.00	0.12	0.00
42	160 W	0	0	0	15,687	0.00	0.00	0.00
42	159 W	0	0	5	22,604	0.00	0.00	0.22
42	158 W	0	0	1	14,775	0.00	0.00	0.07
42	157 W	0	0	0	4,215	0.00	0.00	0.00
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	0	3,696	0.00	0.00	0.00
42	154 W	0	0	1	3,696	0.00	0.00	0.27
42	153 W	0	0	0	2,844	0.00	0.00	0.00
42	152 W	0	0	0	9,676	0.00	0.00	0.00
42	151 W	0	0	0	2,627	0.00	0.00	0.00
42	148 W	0	0	0	3,024	0.00	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	0	0	810	0.00	0.00	0.00
41	170 E	0	2	1	26,157	0.00	0.08	0.04
41	171 E	0	0	0	16,453	0.00	0.00	0.00
41	172 E	0	0	0	1,535	0.00	0.00	0.00
41	173 E	0	0	0	2,841	0.00	0.00	0.00
41	174 E	0	0	1	7,106	0.00	0.00	0.14
41	175 E	1	0	0	7,249	0.14	0.00	0.00
41	176 E	0	0	0	5,565	0.00	0.00	0.00
41	177 E	0	0	0	21,894	0.00	0.00	0.00
41	178 E	0	0	0	5,523	0.00	0.00	0.00
41	179 E	0	0	0	1,653	0.00	0.00	0.00
41	177 W	0	0	0	1,470	0.00	0.00	0.00
41	175 W	0	0	0	1,725	0.00	0.00	0.00
41	174 W	0	0	0	6,755	0.00	0.00	0.00
41	173 W	0	0	0	3,103	0.00	0.00	0.00
41	172 W	0	0	0	7,864	0.00	0.00	0.00
41	171 W	0	0	0	15,218	0.00	0.00	0.00
41	170 W	0	0	0	12,708	0.00	0.00	0.00
41	169 W	0	0	0	12,577	0.00	0.00	0.00
41	168 W	0	0	0	24,518	0.00	0.00	0.00
41	167 W	0	0	0	38,982	0.00	0.00	0.00
41	166 W	0	1	0	55,097	0.00	0.02	0.00
41	165 W	0	0	1	45,093	0.00	0.00	0.02
41	164 W	1	3	0	43,820	0.02	0.07	0.00
41	163 W	1	0	2	25,383	0.04	0.00	0.08
41	162 W	0	0	0	2,152	0.00	0.00	0.00

Table 15. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel		Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
41	161 W	0	0	0	12,028	0.00	0.00	0.00
41	160 W	0	1	4	9,960	0.00	0.10	0.40
41	159 W	0	1	0	13,268	0.00	0.08	0.00
41	158 W	0	0	0	12,821	0.00	0.00	0.00
41	157 W	0	0	0	1,472	0.00	0.00	0.00
41	156 W	0	0	0	2,448	0.00	0.00	0.00
41	154 W	0	0	0	1,848	0.00	0.00	0.00
41	153 W	0	0	0	1,722	0.00	0.00	0.00
41	152 W	0	0	0	7,827	0.00	0.00	0.00
41	151 W	0	0	0	5,421	0.00	0.00	0.00
41	150 W	0	0	0	3,456	0.00	0.00	0.00
40	175 E	0	0	0	648	0.00	0.00	0.00
40	176 E	0	0	0	547	0.00	0.00	0.00
40	177 E	0	0	0	686	0.00	0.00	0.00
40	178 E	0	0	0	3,343	0.00	0.00	0.00
40	179 E	0	0	0	2,904	0.00	0.00	0.00
40	179 W	0	0	0	2,275	0.00	0.00	0.00
40	177 W	0	0	1	17,533	0.00	0.00	0.06
40	176 W	0	0	0	960	0.00	0.00	0.00
40	173 W	0	0	0	1,790	0.00	0.00	0.00
40	172 W	0	0	0	1,350	0.00	0.00	0.00
40	171 W	0	0	0	2,604	0.00	0.00	0.00
40	170 W	0	0	0	300	0.00	0.00	0.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	0	0	0	2,574	0.00	0.00	0.00
40	158 W	0	0	0	3,984	0.00	0.00	0.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	0	0	7,098	0.00	0.00	0.00
40	150 W	0	0	0	828	0.00	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	0	0	0	2,765	0.00	0.00	0.00
39	157 W	0	0	0	930	0.00	0.00	0.00

Table 15. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
45	178 W	0	0	0	564	0.00	0.00	0.00
45	163 W	0	0	0	1,735	0.00	0.00	0.00
45	162 W	0	0	0	2,672	0.00	0.00	0.00
45	160 W	0	0	0	4,284	0.00	0.00	0.00
45	159 W	0	5	4	11,975	0.00	0.42	0.33
45	158 W	0	0	18	7,573	0.00	0.00	2.38
45	157 W	0	4	36	7,945	0.00	0.50	4.53
45	156 W	0	0	1	1,821	0.00	0.00	0.55
45	155 W	0	0	3	861	0.00	0.00	3.48
45	154 W	0	0	3	2,180	0.00	0.00	1.38
45	153 W	0	0	0	4,982	0.00	0.00	0.00
45	152 W	0	1	10	14,243	0.00	0.07	0.70
45	151 W	0	1	3	11,095	0.00	0.09	0.27
45	150 W	0	3	0	1,642	0.00	1.83	0.00
45	149 W	0	1	2	5,634	0.00	0.18	0.35
45	148 W	0	0	2	2,150	0.00	0.00	0.93
44	170 E	0	0	0	3,755	0.00	0.00	0.00
44	171 E	0	0	0	13,082	0.00	0.00	0.00
44	172 E	0	0	0	4,898	0.00	0.00	0.00
44	173 E	0	0	0	2,010	0.00	0.00	0.00
44	174 E	0	0	0	5,774	0.00	0.00	0.00
44	175 E	0	0	0	4,476	0.00	0.00	0.00
44	176 E	0	0	0	15,186	0.00	0.00	0.00
44	177 E	0	0	0	10,610	0.00	0.00	0.00
44	178 E	0	0	0	10,338	0.00	0.00	0.00
44	179 E	0	0	0	23,079	0.00	0.00	0.00
44	180	0	0	0	750	0.00	0.00	0.00
44	179 W	0	0	0	41,188	0.00	0.00	0.00
44	178 W	0	0	0	20,048	0.00	0.00	0.00
44	177 W	0	0	0	6,175	0.00	0.00	0.00
44	175 W	0	0	0	750	0.00	0.00	0.00
44	171 W	0	0	0	960	0.00	0.00	0.00
44	168 W	0	0	0	800	0.00	0.00	0.00
44	159 W	0	0	5	6,276	0.00	0.00	0.80
44	158 W	0	55	18	20,943	0.00	2.63	0.86
44	157 W	0	21	11	18,802	0.00	1.12	0.59
44	156 W	0	0	6	4,440	0.00	0.00	1.35
44	155 W	0	0	15	1,665	0.00	0.00	9.01
44	154 W	0	0	0	792	0.00	0.00	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	0	1	0	1,860	0.00	0.54	0.00
44	151 W	0	0	4	7,350	0.00	0.00	0.54
44	150 W	0	0	0	3,171	0.00	0.00	0.00
44	149 W	0	1	0	5,219	0.00	0.19	0.00
44	148 W	0	1	0	4,724	0.00	0.21	0.00
43	170 E	0	0	0	3,338	0.00	0.00	0.00
43	171 E	0	0	0	1,715	0.00	0.00	0.00
43	172 E	0	0	0	1,311	0.00	0.00	0.00
43	173 E	0	0	0	4,789	0.00	0.00	0.00
43	174 E	0	0	0	7,362	0.00	0.00	0.00
43	175 E	0	0	0	4,679	0.00	0.00	0.00
43	176 E	0	0	0	1,445	0.00	0.00	0.00
43	177 E	0	0	0	853	0.00	0.00	0.00

Table 15. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
43	178 E	0	0	0	5,642	0.00	0.00	0.00
43	179 E	0	0	0	4,383	0.00	0.00	0.00
43	179 W	0	0	0	1,386	0.00	0.00	0.00
43	178 W	0	0	0	1,819	0.00	0.00	0.00
43	177 W	0	0	0	2,459	0.00	0.00	0.00
43	175 W	0	0	0	750	0.00	0.00	0.00
43	172 W	0	0	0	520	0.00	0.00	0.00
43	171 W	0	0	0	2,168	0.00	0.00	0.00
43	170 W	0	0	0	1,358	0.00	0.00	0.00
43	168 W	0	0	0	1,627	0.00	0.00	0.00
43	167 W	0	0	0	3,863	0.00	0.00	0.00
43	166 W	0	0	0	6,824	0.00	0.00	0.00
43	165 W	0	0	0	828	0.00	0.00	0.00
43	161 W	0	0	0	775	0.00	0.00	0.00
43	160 W	0	1	0	2,354	0.00	0.42	0.00
43	159 W	0	0	2	3,210	0.00	0.00	0.62
43	158 W	0	23	1	11,365	0.00	2.02	0.09
43	157 W	0	42	106	20,432	0.00	2.06	5.19
43	156 W	0	0	0	800	0.00	0.00	0.00
43	153 W	0	0	0	4,620	0.00	0.00	0.00
43	152 W	0	0	0	2,670	0.00	0.00	0.00
43	151 W	0	0	0	4,299	0.00	0.00	0.00
43	150 W	0	0	0	1,685	0.00	0.00	0.00
43	148 W	0	0	0	1,748	0.00	0.00	0.00
42	170 E	0	0	0	1,920	0.00	0.00	0.00
42	171 E	0	0	0	810	0.00	0.00	0.00
42	172 E	0	0	0	900	0.00	0.00	0.00
42	173 E	0	0	0	3,015	0.00	0.00	0.00
42	174 E	0	0	0	2,505	0.00	0.00	0.00
42	175 E	0	0	0	1,625	0.00	0.00	0.00
42	169 W	0	0	0	1,642	0.00	0.00	0.00
42	168 W	0	0	0	2,983	0.00	0.00	0.00
42	167 W	0	0	0	5,523	0.00	0.00	0.00
42	160 W	0	0	0	900	0.00	0.00	0.00
42	159 W	0	0	0	900	0.00	0.00	0.00
42	158 W	0	0	0	1,738	0.00	0.00	0.00
42	152 W	0	0	0	4,149	0.00	0.00	0.00
42	151 W	0	0	0	4,437	0.00	0.00	0.00
42	150 W	0	0	0	6,379	0.00	0.00	0.00
41	175 E	0	0	0	710	0.00	0.00	0.00

Table 15. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
45	171 E	0	0	0	771	0.00	0.00	0.00
45	172 E	0	0	0	782	0.00	0.00	0.00
45	176 E	0	0	0	840	0.00	0.00	0.00
45	177 E	0	0	0	861	0.00	0.00	0.00
45	178 E	0	0	0	738	0.00	0.00	0.00
45	179 E	0	0	0	1,617	0.00	0.00	0.00
45	178 W	0	0	0	905	0.00	0.00	0.00
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	0	0	0	5,296	0.00	0.00	0.00
45	175 W	0	0	0	1,307	0.00	0.00	0.00
45	174 W	0	0	0	3,402	0.00	0.00	0.00
45	173 W	0	0	0	3,261	0.00	0.00	0.00
45	171 W	0	0	0	3,312	0.00	0.00	0.00
45	170 W	0	0	0	9,100	0.00	0.00	0.00
45	162 W	0	0	0	900	0.00	0.00	0.00
45	161 W	0	0	0	2,617	0.00	0.00	0.00
45	160 W	0	1	4	6,456	0.00	0.15	0.62
45	159 W	0	0	0	800	0.00	0.00	0.00
45	158 W	0	0	5	4,457	0.00	0.00	1.12
45	157 W	0	0	20	4,090	0.00	0.00	4.89
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	0	0	0	800	0.00	0.00	0.00
44	171 E	0	0	0	4,117	0.00	0.00	0.00
44	172 E	0	0	0	3,146	0.00	0.00	0.00
44	173 E	0	0	0	1,590	0.00	0.00	0.00
44	174 E	0	0	0	1,665	0.00	0.00	0.00
44	175 E	0	0	0	2,532	0.00	0.00	0.00
44	176 E	0	0	0	810	0.00	0.00	0.00
44	177 E	0	0	0	2,010	0.00	0.00	0.00
44	178 E	0	0	0	791	0.00	0.00	0.00
44	179 E	0	0	0	3,436	0.00	0.00	0.00
44	179 W	0	0	0	7,312	0.00	0.00	0.00
44	178 W	0	0	0	4,472	0.00	0.00	0.00
44	177 W	0	0	0	1,254	0.00	0.00	0.00
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	0	756	0.00	0.00	0.00
44	170 W	0	0	0	900	0.00	0.00	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	0	0	0	4,509	0.00	0.00	0.00
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	0	0	1,856	0.00	0.00	0.00
43	171 E	0	0	0	7,818	0.00	0.00	0.00
43	172 E	0	0	0	5,881	0.00	0.00	0.00
43	173 E	0	0	0	1,538	0.00	0.00	0.00
43	174 E	0	0	0	2,317	0.00	0.00	0.00
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	0	0	1,545	0.00	0.00	0.00
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	0	756	0.00	0.00	0.00

Table 15. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
43	178 W	0	0	0	2,598	0.00	0.00	0.00
43	177 W	0	0	0	4,440	0.00	0.00	0.00
43	176 W	0	0	0	4,865	0.00	0.00	0.00
43	160 W	0	0	0	1,632	0.00	0.00	0.00
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	0	0	1,393	0.00	0.00	0.00
42	170 E	0	0	0	3,355	0.00	0.00	0.00
42	171 E	0	0	0	1,376	0.00	0.00	0.00
42	172 E	0	0	0	2,401	0.00	0.00	0.00
42	173 E	0	0	0	2,115	0.00	0.00	0.00
42	174 E	0	0	0	1,159	0.00	0.00	0.00
42	175 E	0	0	0	3,736	0.00	0.00	0.00
42	176 E	0	0	1	1,719	0.00	0.00	0.58
42	178 W	1	0	0	7,182	0.14	0.00	0.00
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	0	522	0.00	0.00	0.00
41	174 E	0	0	0	860	0.00	0.00	0.00
41	176 E	0	0	0	828	0.00	0.00	0.00
41	177 W	0	0	0	2,213	0.00	0.00	0.00
40	175 E	0	0	0	644	0.00	0.00	0.00

Table 15. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
43	177 E	0	0	0	620	0.00	0.00	0.00
43	178 E	0	0	0	3,419	0.00	0.00	0.00
43	179 E	0	0	0	3,258	0.00	0.00	0.00
43	178 W	0	0	0	845	0.00	0.00	0.00
43	177 W	0	0	0	2,755	0.00	0.00	0.00
43	176 W	0	0	0	3,901	0.00	0.00	0.00
43	175 W	0	0	0	2,853	0.00	0.00	0.00
43	174 W	0	0	0	756	0.00	0.00	0.00
43	173 W	0	0	0	2,427	0.00	0.00	0.00
43	172 W	0	0	0	4,101	0.00	0.00	0.00
43	171 W	0	0	0	3,474	0.00	0.00	0.00
42	170 E	0	0	0	2,297	0.00	0.00	0.00
42	171 E	0	0	1	5,671	0.00	0.00	0.18
42	172 E	0	0	0	3,791	0.00	0.00	0.00
42	177 E	0	0	0	846	0.00	0.00	0.00
42	178 E	0	0	0	2,493	0.00	0.00	0.00
42	179 E	0	0	0	874	0.00	0.00	0.00
42	179 W	0	0	0	905	0.00	0.00	0.00
42	178 W	0	0	0	11,452	0.00	0.00	0.00
42	177 W	0	0	0	756	0.00	0.00	0.00
42	176 W	0	0	0	2,897	0.00	0.00	0.00
42	175 W	1	0	0	1,428	0.70	0.00	0.00
42	174 W	0	0	0	900	0.00	0.00	0.00
41	162 E	0	0	0	1,489	0.00	0.00	0.00
41	163 E	0	0	0	1,368	0.00	0.00	0.00
41	170 E	0	0	0	758	0.00	0.00	0.00
41	171 E	0	0	0	3,137	0.00	0.00	0.00
41	178 E	0	0	0	2,440	0.00	0.00	0.00
41	179 W	0	0	0	5,640	0.00	0.00	0.00
41	178 W	0	0	0	5,232	0.00	0.00	0.00
41	177 W	0	0	0	6,550	0.00	0.00	0.00
41	176 W	0	0	0	5,073	0.00	0.00	0.00
40	171 E	0	0	0	1,632	0.00	0.00	0.00
40	177 E	0	0	0	1,489	0.00	0.00	0.00
40	178 E	0	0	0	1,489	0.00	0.00	0.00
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	0	0	0	3,528	0.00	0.00	0.00
38	171 E	0	0	0	1,476	0.00	0.00	0.00
37	171 E	0	0	0	882	0.00	0.00	0.00

Table 15. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
41	174 E	1	0	0	3,422	0.29	0.00	0.00
41	175 E	0	0	0	733	0.00	0.00	0.00
41	176 E	0	0	0	3,177	0.00	0.00	0.00
41	177 E	0	0	0	1,711	0.00	0.00	0.00
41	179 W	0	0	0	1,711	0.00	0.00	0.00
41	178 W	0	0	0	2,322	0.00	0.00	0.00
40	176 E	0	0	0	840	0.00	0.00	0.00
40	177 E	0	0	0	4,487	0.00	0.00	0.00
40	178 E	0	0	0	3,253	0.00	0.00	0.00
39	173 E	0	0	0	611	0.00	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Leach's Storm Petrel	Fork-tailed Storm Petrel	Other & Unidentified Storm Petrel	Tans (50m)	CPUE (Number per 1000 tans): Leach's Storm Petrel	Fork-Tailed Storm Petrel	Other & Unidentified Storm Petrel
39	170 E	0	0	0	3,422	0.00	0.00	0.00
39	171 E	0	0	0	2,200	0.00	0.00	0.00

Table 16. Observed bycatch of puffins and other alcids, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of puffins and other alcids, by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area		Observed Bycatch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	(50m)	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
41	177 E	0	0	0	3,007	0.00	0.00	0.00
41	171 W	0	0	0	1,020	0.00	0.00	0.00
40	175 E	0	0	0	749	0.00	0.00	0.00
39	170 E	1	0	0	1,455	0.69	0.00	0.00
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	0	0	0	684	0.00	0.00	0.00
39	174 E	0	0	0	1,332	0.00	0.00	0.00
39	175 E	8	2	0	11,468	0.70	0.17	0.00
39	176 E	0	4	0	16,848	0.00	0.24	0.00
39	177 E	0	1	0	8,338	0.00	0.12	0.00
39	178 E	0	0	0	6,226	0.00	0.00	0.00
39	179 E	0	1	0	11,758	0.00	0.09	0.00
39	179 W	0	4	0	17,593	0.00	0.23	0.00
39	178 W	4	0	0	11,886	0.34	0.00	0.00
39	177 W	0	3	1	31,559	0.00	0.10	0.03
39	176 W	0	0	0	28,853	0.00	0.00	0.00
39	175 W	0	0	0	1,920	0.00	0.00	0.00
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	0	0	0	735	0.00	0.00	0.00
39	172 W	1	0	0	840	1.19	0.00	0.00
39	171 W	0	0	0	5,101	0.00	0.00	0.00
39	170 W	0	0	0	47,873	0.00	0.00	0.00
39	169 W	0	0	0	39,450	0.00	0.00	0.00
39	168 W	0	0	0	25,558	0.00	0.00	0.00
39	167 W	0	0	0	20,187	0.00	0.00	0.00
39	166 W	0	0	0	8,752	0.00	0.00	0.00
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	0	0	0	25,174	0.00	0.00	0.00
39	163 W	0	0	0	7,573	0.00	0.00	0.00
39	162 W	0	0	0	4,094	0.00	0.00	0.00
39	160 W	0	0	0	1,452	0.00	0.00	0.00
39	159 W	0	0	0	1,621	0.00	0.00	0.00
39	158 W	0	0	0	14,117	0.00	0.00	0.00
39	157 W	0	0	0	17,749	0.00	0.00	0.00
39	156 W	0	0	0	13,534	0.00	0.00	0.00
39	155 W	0	0	0	9,210	0.00	0.00	0.00
39	154 W	0	0	0	19,970	0.00	0.00	0.00
39	153 W	0	0	0	16,463	0.00	0.00	0.00
39	152 W	0	0	0	8,533	0.00	0.00	0.00
39	151 W	0	0	0	5,177	0.00	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	0	924	0.00	0.00	0.00
38	176 E	0	0	0	1,885	0.00	0.00	0.00
38	179 E	0	1	0	3,732	0.00	0.27	0.00
38	179 W	0	0	0	2,858	0.00	0.00	0.00
38	177 W	0	2	0	12,856	0.00	0.16	0.00
38	176 W	0	0	0	6,851	0.00	0.00	0.00
38	175 W	0	0	0	1,694	0.00	0.00	0.00
38	174 W	0	0	0	735	0.00	0.00	0.00

Table 16. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids		Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
38	171 W	0	0	0	7,009	0.00	0.00	0.00
38	170 W	0	0	0	14,765	0.00	0.00	0.00
38	169 W	0	0	0	8,896	0.00	0.00	0.00
38	168 W	0	0	0	10,847	0.00	0.00	0.00
38	167 W	0	0	0	7,300	0.00	0.00	0.00
38	166 W	0	0	0	7,175	0.00	0.00	0.00
38	165 W	0	1	0	7,114	0.00	0.14	0.00
38	164 W	0	0	0	18,769	0.00	0.00	0.00
38	163 W	0	0	0	8,371	0.00	0.00	0.00
38	162 W	0	0	0	853	0.00	0.00	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	0	3,732	0.00	0.00	0.00
38	156 W	0	0	0	957	0.00	0.00	0.00
38	155 W	0	0	0	8,500	0.00	0.00	0.00
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	0	0	3,144	0.00	0.00	0.00
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	0	0	3,910	0.00	0.00	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	0	0	0	780	0.00	0.00	0.00
37	166 W	0	0	0	1,682	0.00	0.00	0.00
37	165 W	0	0	0	4,896	0.00	0.00	0.00
37	164 W	0	0	0	3,294	0.00	0.00	0.00
37	163 W	0	0	0	9,737	0.00	0.00	0.00

Table 16. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans): Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
43	169 E	1	0	0	1,450	0.69	0.00	0.00
43	170 E	0	1	0	1,080	0.00	0.93	0.00
42	168 E	0	1	0	749	0.00	1.34	0.00
42	169 E	0	0	0	2,870	0.00	0.00	0.00
42	170 E	0	0	0	4,001	0.00	0.00	0.00
42	169 W	0	0	0	24,244	0.00	0.00	0.00
42	168 W	0	0	0	20,077	0.00	0.00	0.00
42	167 W	0	0	0	17,784	0.00	0.00	0.00
42	166 W	0	0	0	34,743	0.00	0.00	0.00
42	165 W	0	0	0	28,335	0.00	0.00	0.00
42	164 W	0	0	0	7,027	0.00	0.00	0.00
42	163 W	0	0	0	20,821	0.00	0.00	0.00
42	162 W	0	0	0	33,133	0.00	0.00	0.00
42	161 W	0	0	0	24,985	0.00	0.00	0.00
42	160 W	0	1	1	15,687	0.00	0.06	0.06
42	159 W	0	0	0	22,604	0.00	0.00	0.00
42	158 W	0	0	0	14,775	0.00	0.00	0.00
42	157 W	0	0	0	4,215	0.00	0.00	0.00
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	0	3,696	0.00	0.00	0.00
42	154 W	0	0	0	3,696	0.00	0.00	0.00
42	153 W	0	0	0	2,844	0.00	0.00	0.00
42	152 W	0	0	0	9,676	0.00	0.00	0.00
42	151 W	0	0	0	2,627	0.00	0.00	0.00
42	148 W	0	0	0	3,024	0.00	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	1	0	810	0.00	1.23	0.00
41	170 E	0	6	0	26,157	0.00	0.23	0.00
41	171 E	0	0	0	16,453	0.00	0.00	0.00
41	172 E	0	0	0	1,535	0.00	0.00	0.00
41	173 E	0	0	0	2,841	0.00	0.00	0.00
41	174 E	1	1	0	7,106	0.14	0.14	0.00
41	175 E	0	0	0	7,249	0.00	0.00	0.00
41	176 E	0	0	0	5,565	0.00	0.00	0.00
41	177 E	0	0	0	21,894	0.00	0.00	0.00
41	178 E	0	0	0	5,523	0.00	0.00	0.00
41	179 E	0	0	0	1,653	0.00	0.00	0.00
41	177 W	0	0	0	1,470	0.00	0.00	0.00
41	175 W	0	0	0	1,725	0.00	0.00	0.00
41	174 W	0	0	0	6,755	0.00	0.00	0.00
41	173 W	0	0	0	3,103	0.00	0.00	0.00
41	172 W	0	0	0	7,864	0.00	0.00	0.00
41	171 W	0	0	0	15,218	0.00	0.00	0.00
41	170 W	0	0	0	12,708	0.00	0.00	0.00
41	169 W	0	0	0	12,577	0.00	0.00	0.00
41	168 W	0	1	0	24,518	0.00	0.04	0.00
41	167 W	0	0	0	38,982	0.00	0.00	0.00
41	166 W	0	0	0	55,097	0.00	0.00	0.00
41	165 W	0	0	0	45,093	0.00	0.00	0.00
41	164 W	0	0	0	43,820	0.00	0.00	0.00
41	163 W	0	0	0	25,383	0.00	0.00	0.00
41	162 W	0	0	0	2,152	0.00	0.00	0.00
41	161 W	0	0	0	12,028	0.00	0.00	0.00

Table 16. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids		Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
41	160 W	0	0	0	9,960	0.00	0.00	0.00
41	159 W	0	0	0	13,268	0.00	0.00	0.00
41	158 W	0	0	0	12,821	0.00	0.00	0.00
41	157 W	0	0	0	1,472	0.00	0.00	0.00
41	156 W	0	0	0	2,448	0.00	0.00	0.00
41	154 W	0	0	0	1,848	0.00	0.00	0.00
41	153 W	0	0	0	1,722	0.00	0.00	0.00
41	152 W	0	0	0	7,827	0.00	0.00	0.00
41	151 W	0	0	0	5,421	0.00	0.00	0.00
41	150 W	0	0	0	3,456	0.00	0.00	0.00
40	175 E	0	1	0	648	0.00	1.54	0.00
40	176 E	0	0	0	547	0.00	0.00	0.00
40	177 E	0	0	0	686	0.00	0.00	0.00
40	178 E	0	0	0	3,343	0.00	0.00	0.00
40	179 E	0	0	0	2,904	0.00	0.00	0.00
40	179 W	0	0	0	2,275	0.00	0.00	0.00
40	177 W	0	0	0	17,533	0.00	0.00	0.00
40	176 W	0	0	0	960	0.00	0.00	0.00
40	173 W	0	0	0	1,790	0.00	0.00	0.00
40	172 W	0	0	0	1,350	0.00	0.00	0.00
40	171 W	0	0	0	2,604	0.00	0.00	0.00
40	170 W	0	0	0	300	0.00	0.00	0.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	0	0	0	2,574	0.00	0.00	0.00
40	158 W	0	0	0	3,984	0.00	0.00	0.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	0	0	7,098	0.00	0.00	0.00
40	150 W	0	0	0	828	0.00	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	0	0	0	2,765	0.00	0.00	0.00
39	157 W	0	0	0	930	0.00	0.00	0.00

Table 16. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans): Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
45	178 W	0	0	0	564	0.00	0.00	0.00
45	163 W	0	0	0	1,735	0.00	0.00	0.00
45	162 W	0	0	0	2,672	0.00	0.00	0.00
45	160 W	0	0	0	4,284	0.00	0.00	0.00
45	159 W	0	0	0	11,975	0.00	0.00	0.00
45	158 W	0	0	0	7,573	0.00	0.00	0.00
45	157 W	0	0	0	7,945	0.00	0.00	0.00
45	156 W	0	0	0	1,821	0.00	0.00	0.00
45	155 W	0	0	0	861	0.00	0.00	0.00
45	154 W	0	0	0	2,180	0.00	0.00	0.00
45	153 W	0	0	0	4,982	0.00	0.00	0.00
45	152 W	0	0	0	14,243	0.00	0.00	0.00
45	151 W	0	0	0	11,095	0.00	0.00	0.00
45	150 W	0	0	0	1,642	0.00	0.00	0.00
45	149 W	0	0	0	5,634	0.00	0.00	0.00
45	148 W	0	0	0	2,150	0.00	0.00	0.00
44	170 E	0	0	0	3,755	0.00	0.00	0.00
44	171 E	0	0	0	13,082	0.00	0.00	0.00
44	172 E	0	0	0	4,898	0.00	0.00	0.00
44	173 E	0	0	0	2,010	0.00	0.00	0.00
44	174 E	0	0	0	5,774	0.00	0.00	0.00
44	175 E	0	0	0	4,476	0.00	0.00	0.00
44	176 E	0	0	0	15,186	0.00	0.00	0.00
44	177 E	0	0	0	10,610	0.00	0.00	0.00
44	178 E	0	0	0	10,338	0.00	0.00	0.00
44	179 E	0	0	0	23,079	0.00	0.00	0.00
44	180	0	0	0	750	0.00	0.00	0.00
44	179 W	0	0	0	41,188	0.00	0.00	0.00
44	178 W	0	1	0	20,048	0.00	0.05	0.00
44	177 W	0	0	0	6,175	0.00	0.00	0.00
44	175 W	0	0	0	750	0.00	0.00	0.00
44	171 W	0	0	0	960	0.00	0.00	0.00
44	168 W	0	0	0	800	0.00	0.00	0.00
44	159 W	0	0	0	6,276	0.00	0.00	0.00
44	158 W	0	0	0	20,943	0.00	0.00	0.00
44	157 W	0	0	0	18,802	0.00	0.00	0.00
44	156 W	0	0	0	4,440	0.00	0.00	0.00
44	155 W	0	0	0	1,665	0.00	0.00	0.00
44	154 W	0	0	0	792	0.00	0.00	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	0	0	0	1,860	0.00	0.00	0.00
44	151 W	0	0	0	7,350	0.00	0.00	0.00
44	150 W	0	0	0	3,171	0.00	0.00	0.00
44	149 W	0	0	0	5,219	0.00	0.00	0.00
44	148 W	0	0	0	4,724	0.00	0.00	0.00
43	170 E	0	0	0	3,338	0.00	0.00	0.00
43	171 E	0	0	0	1,715	0.00	0.00	0.00
43	172 E	0	0	0	1,311	0.00	0.00	0.00
43	173 E	0	0	0	4,789	0.00	0.00	0.00
43	174 E	0	0	0	7,362	0.00	0.00	0.00
43	175 E	0	0	0	4,679	0.00	0.00	0.00
43	176 E	0	0	0	1,445	0.00	0.00	0.00
43	177 E	0	0	0	853	0.00	0.00	0.00
43	178 E	0	0	0	5,642	0.00	0.00	0.00

Table 16. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	(50m)	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
43	179 E	0	0	0	4,383	0.00	0.00	0.00
43	179 W	0	0	0	1,386	0.00	0.00	0.00
43	178 W	0	0	0	1,819	0.00	0.00	0.00
43	177 W	0	0	0	2,459	0.00	0.00	0.00
43	175 W	0	0	0	750	0.00	0.00	0.00
43	172 W	0	0	0	520	0.00	0.00	0.00
43	171 W	0	0	0	2,168	0.00	0.00	0.00
43	170 W	0	0	0	1,358	0.00	0.00	0.00
43	168 W	0	0	0	1,627	0.00	0.00	0.00
43	167 W	0	0	0	3,863	0.00	0.00	0.00
43	166 W	0	0	0	6,824	0.00	0.00	0.00
43	165 W	0	0	0	828	0.00	0.00	0.00
43	161 W	0	0	0	775	0.00	0.00	0.00
43	160 W	0	0	0	2,354	0.00	0.00	0.00
43	159 W	0	0	0	3,210	0.00	0.00	0.00
43	158 W	0	0	0	11,365	0.00	0.00	0.00
43	157 W	0	0	0	20,432	0.00	0.00	0.00
43	156 W	0	0	0	800	0.00	0.00	0.00
43	153 W	0	0	0	4,620	0.00	0.00	0.00
43	152 W	0	0	0	2,670	0.00	0.00	0.00
43	151 W	0	0	0	4,299	0.00	0.00	0.00
43	150 W	0	0	0	1,685	0.00	0.00	0.00
43	148 W	0	0	0	1,748	0.00	0.00	0.00
42	170 E	0	0	0	1,920	0.00	0.00	0.00
42	171 E	0	0	0	810	0.00	0.00	0.00
42	172 E	0	0	0	900	0.00	0.00	0.00
42	173 E	0	0	0	3,015	0.00	0.00	0.00
42	174 E	0	0	0	2,505	0.00	0.00	0.00
42	175 E	0	0	0	1,625	0.00	0.00	0.00
42	169 W	0	0	0	1,642	0.00	0.00	0.00
42	168 W	0	0	0	2,983	0.00	0.00	0.00
42	167 W	0	0	0	5,523	0.00	0.00	0.00
42	160 W	0	0	0	900	0.00	0.00	0.00
42	159 W	0	0	0	900	0.00	0.00	0.00
42	158 W	0	0	0	1,738	0.00	0.00	0.00
42	152 W	0	0	0	4,149	0.00	0.00	0.00
42	151 W	0	0	0	4,437	0.00	0.00	0.00
42	150 W	0	0	0	6,379	0.00	0.00	0.00
41	175 E	0	0	0	710	0.00	0.00	0.00

Table 16. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans): Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
45	171 E	0	0	0	771	0.00	0.00	0.00
45	172 E	0	0	0	782	0.00	0.00	0.00
45	176 E	0	0	0	840	0.00	0.00	0.00
45	177 E	0	0	0	861	0.00	0.00	0.00
45	178 E	0	0	0	738	0.00	0.00	0.00
45	179 E	0	0	0	1,617	0.00	0.00	0.00
45	178 W	0	0	0	905	0.00	0.00	0.00
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	0	0	0	5,296	0.00	0.00	0.00
45	175 W	0	0	0	1,307	0.00	0.00	0.00
45	174 W	0	0	0	3,402	0.00	0.00	0.00
45	173 W	0	0	0	3,261	0.00	0.00	0.00
45	171 W	0	0	0	3,312	0.00	0.00	0.00
45	170 W	0	0	0	9,100	0.00	0.00	0.00
45	162 W	0	0	0	900	0.00	0.00	0.00
45	161 W	0	0	0	2,617	0.00	0.00	0.00
45	160 W	0	0	0	6,456	0.00	0.00	0.00
45	159 W	0	0	0	800	0.00	0.00	0.00
45	158 W	0	0	0	4,457	0.00	0.00	0.00
45	157 W	0	0	0	4,090	0.00	0.00	0.00
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	0	0	0	800	0.00	0.00	0.00
44	171 E	0	0	0	4,117	0.00	0.00	0.00
44	172 E	0	0	0	3,146	0.00	0.00	0.00
44	173 E	1	0	0	1,590	0.63	0.00	0.00
44	174 E	0	0	0	1,665	0.00	0.00	0.00
44	175 E	2	0	0	2,532	0.79	0.00	0.00
44	176 E	0	0	0	810	0.00	0.00	0.00
44	177 E	0	0	0	2,010	0.00	0.00	0.00
44	178 E	0	0	0	791	0.00	0.00	0.00
44	179 E	0	0	0	3,436	0.00	0.00	0.00
44	179 W	0	0	0	7,312	0.00	0.00	0.00
44	178 W	0	0	0	4,472	0.00	0.00	0.00
44	177 W	0	0	0	1,254	0.00	0.00	0.00
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	0	756	0.00	0.00	0.00
44	170 W	0	0	0	900	0.00	0.00	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	0	0	0	4,509	0.00	0.00	0.00
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	0	0	1,856	0.00	0.00	0.00
43	171 E	0	0	0	7,818	0.00	0.00	0.00
43	172 E	1	0	0	5,881	0.17	0.00	0.00
43	173 E	0	0	0	1,538	0.00	0.00	0.00
43	174 E	1	0	0	2,317	0.43	0.00	0.00
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	0	0	1,545	0.00	0.00	0.00
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	0	756	0.00	0.00	0.00
43	178 W	0	0	0	2,598	0.00	0.00	0.00

Table 16. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans	CPUE (Number per 1000 tans)		
Lat.	Long.	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	(50m)	Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
43	177 W	0	0	0	4,440	0.00	0.00	0.00
43	176 W	0	0	0	4,865	0.00	0.00	0.00
43	160 W	0	0	0	1,632	0.00	0.00	0.00
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	0	0	1,393	0.00	0.00	0.00
42	170 E	0	0	0	3,355	0.00	0.00	0.00
42	171 E	0	0	0	1,376	0.00	0.00	0.00
42	172 E	0	0	0	2,401	0.00	0.00	0.00
42	173 E	0	0	0	2,115	0.00	0.00	0.00
42	174 E	0	0	0	1,159	0.00	0.00	0.00
42	175 E	0	0	0	3,736	0.00	0.00	0.00
42	176 E	0	0	0	1,719	0.00	0.00	0.00
42	178 W	0	0	0	7,182	0.00	0.00	0.00
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	0	522	0.00	0.00	0.00
41	174 E	0	0	0	860	0.00	0.00	0.00
41	176 E	0	0	0	828	0.00	0.00	0.00
41	177 W	0	0	0	2,213	0.00	0.00	0.00
40	175 E	0	0	0	644	0.00	0.00	0.00

Table 16. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans) Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
43	177 E	0	0	0	620	0.00	0.00	0.00
43	178 E	0	0	0	3,419	0.00	0.00	0.00
43	179 E	0	0	0	3,258	0.00	0.00	0.00
43	178 W	0	0	0	845	0.00	0.00	0.00
43	177 W	1	0	0	2,755	0.36	0.00	0.00
43	176 W	1	0	0	3,901	0.26	0.00	0.00
43	175 W	0	0	0	2,853	0.00	0.00	0.00
43	174 W	0	0	0	756	0.00	0.00	0.00
43	173 W	0	0	0	2,427	0.00	0.00	0.00
43	172 W	0	0	0	4,101	0.00	0.00	0.00
43	171 W	0	0	0	3,474	0.00	0.00	0.00
42	170 E	0	0	0	2,297	0.00	0.00	0.00
42	171 E	0	0	0	5,671	0.00	0.00	0.00
42	172 E	0	0	0	3,791	0.00	0.00	0.00
42	177 E	0	0	0	846	0.00	0.00	0.00
42	178 E	0	0	0	2,493	0.00	0.00	0.00
42	179 E	0	0	0	874	0.00	0.00	0.00
42	179 W	0	0	0	905	0.00	0.00	0.00
42	178 W	0	0	0	11,452	0.00	0.00	0.00
42	177 W	0	0	0	756	0.00	0.00	0.00
42	176 W	0	0	0	2,897	0.00	0.00	0.00
42	175 W	0	0	1	1,428	0.00	0.00	0.70
42	174 W	0	0	0	900	0.00	0.00	0.00
41	162 E	0	0	0	1,489	0.00	0.00	0.00
41	163 E	0	0	0	1,368	0.00	0.00	0.00
41	170 E	0	0	0	758	0.00	0.00	0.00
41	171 E	0	0	0	3,137	0.00	0.00	0.00
41	178 E	0	0	0	2,440	0.00	0.00	0.00
41	179 W	0	0	0	5,640	0.00	0.00	0.00
41	178 W	0	0	0	5,232	0.00	0.00	0.00
41	177 W	0	0	0	6,550	0.00	0.00	0.00
41	176 W	0	0	0	5,073	0.00	0.00	0.00
40	171 E	0	0	0	1,632	0.00	0.00	0.00
40	177 E	0	0	0	1,489	0.00	0.00	0.00
40	178 E	0	0	0	1,489	0.00	0.00	0.00
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	0	0	0	3,528	0.00	0.00	0.00
38	171 E	0	0	0	1,476	0.00	0.00	0.00
37	171 E	0	0	0	882	0.00	0.00	0.00

Table 16. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans) Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
41	174 E	0	2	0	3,422	0.00	0.58	0.00
41	175 E	0	0	0	733	0.00	0.00	0.00
41	176 E	0	0	0	3,177	0.00	0.00	0.00
41	177 E	0	0	0	1,711	0.00	0.00	0.00
41	179 W	0	0	0	1,711	0.00	0.00	0.00
41	178 W	0	0	0	2,322	0.00	0.00	0.00
40	176 E	0	0	0	840	0.00	0.00	0.00
40	177 E	0	0	0	4,487	0.00	0.00	0.00
40	178 E	0	0	0	3,253	0.00	0.00	0.00
39	173 E	0	0	0	611	0.00	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Tufted Puffin	Horned Puffin	Other & Unidentified Alcids	Tans (50m)	CPUE (Number per 1000 tans) Tufted Puffin	Horned Puffin	Other & Unidentified Alcids
39	170 E	0	0	0	3,422	0.00	0.00	0.00
39	171 E	0	0	0	2,200	0.00	0.00	0.00

Table 17. Observed bycatch of northern fulmar and other seabirds, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of northern fulmar and other seabirds by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
41	177 E	0	0	0	3,007	0.00	0.00	0.00
41	171 W	0	0	0	1,020	0.00	0.00	0.00
40	175 E	0	0	0	749	0.00	0.00	0.00
39	170 E	0	0	0	1,455	0.00	0.00	0.00
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	0	0	0	684	0.00	0.00	0.00
39	174 E	0	0	0	1,332	0.00	0.00	0.00
39	175 E	0	0	0	11,468	0.00	0.00	0.00
39	176 E	0	0	0	16,848	0.00	0.00	0.00
39	177 E	0	0	0	8,338	0.00	0.00	0.00
39	178 E	0	0	0	6,226	0.00	0.00	0.00
39	179 E	0	0	0	11,758	0.00	0.00	0.00
39	179 W	0	0	0	17,593	0.00	0.00	0.00
39	178 W	0	0	0	11,886	0.00	0.00	0.00
39	177 W	0	0	0	31,559	0.00	0.00	0.00
39	176 W	0	0	0	28,853	0.00	0.00	0.00
39	175 W	0	0	0	1,920	0.00	0.00	0.00
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	0	0	0	735	0.00	0.00	0.00
39	172 W	0	0	0	840	0.00	0.00	0.00
39	171 W	0	0	0	5,101	0.00	0.00	0.00
39	170 W	0	0	0	47,873	0.00	0.00	0.00
39	169 W	0	0	0	39,450	0.00	0.00	0.00
39	168 W	0	0	1	25,558	0.00	0.00	0.04
39	167 W	0	0	0	20,187	0.00	0.00	0.00
39	166 W	0	0	0	8,752	0.00	0.00	0.00
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	0	0	0	25,174	0.00	0.00	0.00
39	163 W	0	0	0	7,573	0.00	0.00	0.00
39	162 W	0	0	0	4,094	0.00	0.00	0.00
39	160 W	0	0	0	1,452	0.00	0.00	0.00
39	159 W	0	0	0	1,621	0.00	0.00	0.00
39	158 W	0	0	0	14,117	0.00	0.00	0.00
39	157 W	0	0	0	17,749	0.00	0.00	0.00
39	156 W	0	0	0	13,534	0.00	0.00	0.00
39	155 W	0	0	0	9,210	0.00	0.00	0.00
39	154 W	0	0	0	19,970	0.00	0.00	0.00
39	153 W	0	0	0	16,463	0.00	0.00	0.00
39	152 W	0	0	0	8,533	0.00	0.00	0.00
39	151 W	0	0	0	5,177	0.00	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	0	924	0.00	0.00	0.00
38	176 E	0	0	0	1,885	0.00	0.00	0.00
38	179 E	0	1	0	3,732	0.00	0.27	0.00
38	179 W	0	0	0	2,858	0.00	0.00	0.00
38	177 W	0	0	0	12,856	0.00	0.00	0.00
38	176 W	0	0	0	6,851	0.00	0.00	0.00

Table 17. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
38	175 W	0	0	0	1,694	0.00	0.00	0.00
38	174 W	0	0	0	735	0.00	0.00	0.00
38	171 W	0	0	0	7,009	0.00	0.00	0.00
38	170 W	0	0	0	14,765	0.00	0.00	0.00
38	169 W	0	0	0	8,896	0.00	0.00	0.00
38	168 W	0	0	0	10,847	0.00	0.00	0.00
38	167 W	0	0	0	7,300	0.00	0.00	0.00
38	166 W	0	0	0	7,175	0.00	0.00	0.00
38	165 W	0	0	0	7,114	0.00	0.00	0.00
38	164 W	0	0	0	18,769	0.00	0.00	0.00
38	163 W	0	0	0	8,371	0.00	0.00	0.00
38	162 W	0	0	0	853	0.00	0.00	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	0	3,732	0.00	0.00	0.00
38	156 W	0	0	0	957	0.00	0.00	0.00
38	155 W	0	1	0	8,500	0.00	0.12	0.00
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	0	0	3,144	0.00	0.00	0.00
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	0	0	3,910	0.00	0.00	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	0	0	0	780	0.00	0.00	0.00
37	166 W	0	0	0	1,682	0.00	0.00	0.00
37	165 W	0	0	0	4,896	0.00	0.00	0.00
37	164 W	0	0	0	3,294	0.00	0.00	0.00
37	163 W	0	0	0	9,737	0.00	0.00	0.00

Table 17. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
43	169 E	0	0	0	1,450	0.00	0.00	0.00
43	170 E	0	0	0	1,080	0.00	0.00	0.00
42	168 E	0	0	0	749	0.00	0.00	0.00
42	169 E	1	0	0	2,870	0.35	0.00	0.00
42	170 E	1	0	0	4,001	0.25	0.00	0.00
42	169 W	0	0	0	24,244	0.00	0.00	0.00
42	168 W	0	0	0	20,077	0.00	0.00	0.00
42	167 W	0	0	0	17,784	0.00	0.00	0.00
42	166 W	0	0	0	34,743	0.00	0.00	0.00
42	165 W	0	0	0	28,335	0.00	0.00	0.00
42	164 W	0	0	0	7,027	0.00	0.00	0.00
42	163 W	0	0	0	20,821	0.00	0.00	0.00
42	162 W	0	0	0	33,133	0.00	0.00	0.00
42	161 W	0	1	0	24,985	0.00	0.04	0.00
42	160 W	0	0	0	15,687	0.00	0.00	0.00
42	159 W	0	0	0	22,604	0.00	0.00	0.00
42	158 W	0	0	0	14,775	0.00	0.00	0.00
42	157 W	0	0	0	4,215	0.00	0.00	0.00
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	0	3,696	0.00	0.00	0.00
42	154 W	0	0	0	3,696	0.00	0.00	0.00
42	153 W	0	1	0	2,844	0.00	0.35	0.00
42	152 W	0	0	0	9,676	0.00	0.00	0.00
42	151 W	0	0	0	2,627	0.00	0.00	0.00
42	148 W	0	0	0	3,024	0.00	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	0	0	810	0.00	0.00	0.00
41	170 E	3	0	0	26,157	0.11	0.00	0.00
41	171 E	0	0	0	16,453	0.00	0.00	0.00
41	172 E	0	0	0	1,535	0.00	0.00	0.00
41	173 E	0	0	0	2,841	0.00	0.00	0.00
41	174 E	0	0	0	7,106	0.00	0.00	0.00
41	175 E	0	0	0	7,249	0.00	0.00	0.00
41	176 E	2	0	0	5,565	0.36	0.00	0.00
41	177 E	1	0	0	21,894	0.05	0.00	0.00
41	178 E	0	0	0	5,523	0.00	0.00	0.00
41	179 E	0	0	0	1,653	0.00	0.00	0.00
41	177 W	0	0	0	1,470	0.00	0.00	0.00
41	175 W	0	0	0	1,725	0.00	0.00	0.00
41	174 W	0	0	0	6,755	0.00	0.00	0.00
41	173 W	0	0	0	3,103	0.00	0.00	0.00
41	172 W	0	0	0	7,864	0.00	0.00	0.00
41	171 W	0	1	0	15,218	0.00	0.07	0.00
41	170 W	0	0	0	12,708	0.00	0.00	0.00
41	169 W	0	1	0	12,577	0.00	0.08	0.00
41	168 W	0	0	0	24,518	0.00	0.00	0.00
41	167 W	0	0	1	38,982	0.00	0.00	0.03
41	166 W	0	0	0	55,097	0.00	0.00	0.00
41	165 W	0	1	0	45,093	0.00	0.02	0.00
41	164 W	0	0	0	43,820	0.00	0.00	0.00
41	163 W	0	0	0	25,383	0.00	0.00	0.00
41	162 W	0	0	0	2,152	0.00	0.00	0.00

Table 17. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
41	161 W	0	0	0	12,028	0.00	0.00	0.00
41	160 W	0	0	0	9,960	0.00	0.00	0.00
41	159 W	0	0	0	13,268	0.00	0.00	0.00
41	158 W	0	0	0	12,821	0.00	0.00	0.00
41	157 W	0	0	0	1,472	0.00	0.00	0.00
41	156 W	0	1	0	2,448	0.00	0.41	0.00
41	154 W	0	0	0	1,848	0.00	0.00	0.00
41	153 W	0	0	0	1,722	0.00	0.00	0.00
41	152 W	0	0	0	7,827	0.00	0.00	0.00
41	151 W	0	0	0	5,421	0.00	0.00	0.00
41	150 W	0	3	0	3,456	0.00	0.87	0.00
40	175 E	0	0	0	648	0.00	0.00	0.00
40	176 E	0	0	0	547	0.00	0.00	0.00
40	177 E	0	0	0	686	0.00	0.00	0.00
40	178 E	0	0	0	3,343	0.00	0.00	0.00
40	179 E	0	0	0	2,904	0.00	0.00	0.00
40	179 W	0	0	0	2,275	0.00	0.00	0.00
40	177 W	0	0	0	17,533	0.00	0.00	0.00
40	176 W	0	0	0	960	0.00	0.00	0.00
40	173 W	0	0	0	1,790	0.00	0.00	0.00
40	172 W	0	0	0	1,350	0.00	0.00	0.00
40	171 W	0	0	0	2,604	0.00	0.00	0.00
40	170 W	0	0	0	300	0.00	0.00	0.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	0	0	0	2,574	0.00	0.00	0.00
40	158 W	0	0	0	3,984	0.00	0.00	0.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	0	0	7,098	0.00	0.00	0.00
40	150 W	0	0	0	828	0.00	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	0	0	0	2,765	0.00	0.00	0.00
39	157 W	0	0	0	930	0.00	0.00	0.00

Table 17. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
45	178 W	0	0	0	564	0.00	0.00	0.00
45	163 W	0	0	0	1,735	0.00	0.00	0.00
45	162 W	0	0	0	2,672	0.00	0.00	0.00
45	160 W	0	1	0	4,284	0.00	0.23	0.00
45	159 W	0	1	0	11,975	0.00	0.08	0.00
45	158 W	0	3	0	7,573	0.00	0.40	0.00
45	157 W	0	0	0	7,945	0.00	0.00	0.00
45	156 W	0	0	0	1,821	0.00	0.00	0.00
45	155 W	0	0	0	861	0.00	0.00	0.00
45	154 W	0	0	0	2,180	0.00	0.00	0.00
45	153 W	0	0	0	4,982	0.00	0.00	0.00
45	152 W	1	2	0	14,243	0.07	0.14	0.00
45	151 W	0	0	0	11,095	0.00	0.00	0.00
45	150 W	0	0	0	1,642	0.00	0.00	0.00
45	149 W	0	0	0	5,634	0.00	0.00	0.00
45	148 W	0	2	0	2,150	0.00	0.93	0.00
44	170 E	0	0	0	3,755	0.00	0.00	0.00
44	171 E	0	0	0	13,082	0.00	0.00	0.00
44	172 E	0	0	0	4,898	0.00	0.00	0.00
44	173 E	0	0	0	2,010	0.00	0.00	0.00
44	174 E	0	0	0	5,774	0.00	0.00	0.00
44	175 E	0	0	0	4,476	0.00	0.00	0.00
44	176 E	0	0	0	15,186	0.00	0.00	0.00
44	177 E	0	0	0	10,610	0.00	0.00	0.00
44	178 E	0	0	0	10,338	0.00	0.00	0.00
44	179 E	0	0	0	23,079	0.00	0.00	0.00
44	180	0	0	0	750	0.00	0.00	0.00
44	179 W	0	0	0	41,188	0.00	0.00	0.00
44	178 W	0	0	0	20,048	0.00	0.00	0.00
44	177 W	0	0	0	6,175	0.00	0.00	0.00
44	175 W	0	0	0	750	0.00	0.00	0.00
44	171 W	0	0	0	960	0.00	0.00	0.00
44	168 W	0	0	0	800	0.00	0.00	0.00
44	159 W	0	0	0	6,276	0.00	0.00	0.00
44	158 W	0	0	0	20,943	0.00	0.00	0.00
44	157 W	0	0	0	18,802	0.00	0.00	0.00
44	156 W	0	1	0	4,440	0.00	0.23	0.00
44	155 W	0	0	0	1,665	0.00	0.00	0.00
44	154 W	0	0	0	792	0.00	0.00	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	0	0	0	1,860	0.00	0.00	0.00
44	151 W	0	0	0	7,350	0.00	0.00	0.00
44	150 W	0	0	0	3,171	0.00	0.00	0.00
44	149 W	0	1	0	5,219	0.00	0.19	0.00
44	148 W	0	0	0	4,724	0.00	0.00	0.00
43	170 E	0	0	0	3,338	0.00	0.00	0.00
43	171 E	0	0	0	1,715	0.00	0.00	0.00
43	172 E	0	0	0	1,311	0.00	0.00	0.00
43	173 E	0	0	0	4,789	0.00	0.00	0.00
43	174 E	0	0	0	7,362	0.00	0.00	0.00
43	175 E	0	0	0	4,679	0.00	0.00	0.00
43	176 E	0	0	0	1,445	0.00	0.00	0.00
43	177 E	0	0	0	853	0.00	0.00	0.00

Table 17. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
43	178 E	0	0	0	5,642	0.00	0.00	0.00
43	179 E	0	0	0	4,383	0.00	0.00	0.00
43	179 W	0	0	0	1,386	0.00	0.00	0.00
43	178 W	0	0	0	1,819	0.00	0.00	0.00
43	177 W	0	0	0	2,459	0.00	0.00	0.00
43	175 W	0	0	0	750	0.00	0.00	0.00
43	172 W	0	0	0	520	0.00	0.00	0.00
43	171 W	1	0	0	2,168	0.46	0.00	0.00
43	170 W	0	0	0	1,358	0.00	0.00	0.00
43	168 W	0	0	0	1,627	0.00	0.00	0.00
43	167 W	0	0	0	3,863	0.00	0.00	0.00
43	166 W	0	0	0	6,824	0.00	0.00	0.00
43	165 W	0	0	0	828	0.00	0.00	0.00
43	161 W	0	0	0	775	0.00	0.00	0.00
43	160 W	0	0	0	2,354	0.00	0.00	0.00
43	159 W	0	0	0	3,210	0.00	0.00	0.00
43	158 W	0	0	0	11,365	0.00	0.00	0.00
43	157 W	0	0	0	20,432	0.00	0.00	0.00
43	156 W	0	0	0	800	0.00	0.00	0.00
43	153 W	0	0	0	4,620	0.00	0.00	0.00
43	152 W	0	0	0	2,670	0.00	0.00	0.00
43	151 W	0	0	0	4,299	0.00	0.00	0.00
43	150 W	0	0	0	1,685	0.00	0.00	0.00
43	148 W	0	0	0	1,748	0.00	0.00	0.00
42	170 E	0	0	0	1,920	0.00	0.00	0.00
42	171 E	0	0	0	810	0.00	0.00	0.00
42	172 E	0	0	0	900	0.00	0.00	0.00
42	173 E	0	0	0	3,015	0.00	0.00	0.00
42	174 E	0	0	0	2,505	0.00	0.00	0.00
42	175 E	0	0	0	1,625	0.00	0.00	0.00
42	169 W	0	0	0	1,642	0.00	0.00	0.00
42	168 W	0	0	0	2,983	0.00	0.00	0.00
42	167 W	0	0	0	5,523	0.00	0.00	0.00
42	160 W	0	0	0	900	0.00	0.00	0.00
42	159 W	0	0	0	900	0.00	0.00	0.00
42	158 W	0	0	0	1,738	0.00	0.00	0.00
42	152 W	0	0	0	4,149	0.00	0.00	0.00
42	151 W	0	0	0	4,437	0.00	0.00	0.00
42	150 W	0	0	0	6,379	0.00	0.00	0.00
41	175 E	0	0	0	710	0.00	0.00	0.00

Table 17. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
45	171 E	0	0	0	771	0.00	0.00	0.00
45	172 E	0	0	0	782	0.00	0.00	0.00
45	176 E	0	0	0	840	0.00	0.00	0.00
45	177 E	0	0	0	861	0.00	0.00	0.00
45	178 E	0	0	0	738	0.00	0.00	0.00
45	179 E	0	0	0	1,617	0.00	0.00	0.00
45	178 W	0	0	0	905	0.00	0.00	0.00
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	0	0	0	5,296	0.00	0.00	0.00
45	175 W	0	0	0	1,307	0.00	0.00	0.00
45	174 W	0	0	0	3,402	0.00	0.00	0.00
45	173 W	0	0	0	3,261	0.00	0.00	0.00
45	171 W	0	0	0	3,312	0.00	0.00	0.00
45	170 W	0	0	0	9,100	0.00	0.00	0.00
45	162 W	0	0	0	900	0.00	0.00	0.00
45	161 W	0	0	0	2,617	0.00	0.00	0.00
45	160 W	0	0	0	6,456	0.00	0.00	0.00
45	159 W	0	0	0	800	0.00	0.00	0.00
45	158 W	0	0	0	4,457	0.00	0.00	0.00
45	157 W	0	0	0	4,090	0.00	0.00	0.00
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	0	0	0	800	0.00	0.00	0.00
44	171 E	0	0	0	4,117	0.00	0.00	0.00
44	172 E	0	0	0	3,146	0.00	0.00	0.00
44	173 E	0	0	0	1,590	0.00	0.00	0.00
44	174 E	0	0	0	1,665	0.00	0.00	0.00
44	175 E	0	0	0	2,532	0.00	0.00	0.00
44	176 E	0	0	0	810	0.00	0.00	0.00
44	177 E	0	0	0	2,010	0.00	0.00	0.00
44	178 E	0	0	0	791	0.00	0.00	0.00
44	179 E	0	0	0	3,436	0.00	0.00	0.00
44	179 W	0	0	0	7,312	0.00	0.00	0.00
44	178 W	0	0	0	4,472	0.00	0.00	0.00
44	177 W	0	0	0	1,254	0.00	0.00	0.00
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	0	756	0.00	0.00	0.00
44	170 W	0	0	0	900	0.00	0.00	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	0	0	0	4,509	0.00	0.00	0.00
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	0	0	1,856	0.00	0.00	0.00
43	171 E	0	0	0	7,818	0.00	0.00	0.00
43	172 E	0	0	0	5,881	0.00	0.00	0.00
43	173 E	0	0	0	1,538	0.00	0.00	0.00
43	174 E	0	0	0	2,317	0.00	0.00	0.00
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	0	0	1,545	0.00	0.00	0.00
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	0	756	0.00	0.00	0.00

Table 17. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)	CPUE (Number per 1000 tans)		
Lat.	Long.	Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds		Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
43	178 W	0	0	0	2,598	0.00	0.00	0.00
43	177 W	0	0	0	4,440	0.00	0.00	0.00
43	176 W	0	0	0	4,865	0.00	0.00	0.00
43	160 W	0	0	0	1,632	0.00	0.00	0.00
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	0	0	1,393	0.00	0.00	0.00
42	170 E	0	0	0	3,355	0.00	0.00	0.00
42	171 E	0	0	0	1,376	0.00	0.00	0.00
42	172 E	0	0	0	2,401	0.00	0.00	0.00
42	173 E	0	0	0	2,115	0.00	0.00	0.00
42	174 E	0	0	0	1,159	0.00	0.00	0.00
42	175 E	0	0	0	3,736	0.00	0.00	0.00
42	176 E	0	0	0	1,719	0.00	0.00	0.00
42	178 W	0	2	0	7,182	0.00	0.28	0.00
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	0	522	0.00	0.00	0.00
41	174 E	0	0	0	860	0.00	0.00	0.00
41	176 E	0	0	0	828	0.00	0.00	0.00
41	177 W	0	0	0	2,213	0.00	0.00	0.00
40	175 E	0	0	0	644	0.00	0.00	0.00

Table 17. (Continued)

October

1° x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
43	177 E	0	0	0	620	0.00	0.00	0.00
43	178 E	0	0	0	3,419	0.00	0.00	0.00
43	179 E	0	0	0	3,258	0.00	0.00	0.00
43	178 W	0	0	0	845	0.00	0.00	0.00
43	177 W	0	0	0	2,755	0.00	0.00	0.00
43	176 W	1	0	0	3,901	0.26	0.00	0.00
43	175 W	0	1	0	2,853	0.00	0.35	0.00
43	174 W	0	0	0	756	0.00	0.00	0.00
43	173 W	3	0	0	2,427	1.24	0.00	0.00
43	172 W	3	0	0	4,101	0.73	0.00	0.00
43	171 W	16	0	0	3,474	4.61	0.00	0.00
42	170 E	1	0	0	2,297	0.44	0.00	0.00
42	171 E	2	0	0	5,671	0.35	0.00	0.00
42	172 E	0	0	0	3,791	0.00	0.00	0.00
42	177 E	1	0	0	846	1.18	0.00	0.00
42	178 E	14	0	0	2,493	5.62	0.00	0.00
42	179 E	0	0	0	874	0.00	0.00	0.00
42	179 W	0	0	0	905	0.00	0.00	0.00
42	178 W	1	0	0	11,452	0.09	0.00	0.00
42	177 W	3	0	0	756	3.97	0.00	0.00
42	176 W	0	0	0	2,897	0.00	0.00	0.00
42	175 W	0	0	0	1,428	0.00	0.00	0.00
42	174 W	1	0	0	900	1.11	0.00	0.00
41	162 E	0	0	0	1,489	0.00	0.00	0.00
41	163 E	0	0	0	1,368	0.00	0.00	0.00
41	170 E	0	0	0	758	0.00	0.00	0.00
41	171 E	0	0	0	3,137	0.00	0.00	0.00
41	178 E	0	0	0	2,440	0.00	0.00	0.00
41	179 W	10	0	0	5,640	1.77	0.00	0.00
41	178 W	1	1	0	5,232	0.19	0.19	0.00
41	177 W	0	0	0	6,550	0.00	0.00	0.00
41	176 W	0	0	0	5,073	0.00	0.00	0.00
40	171 E	0	0	0	1,632	0.00	0.00	0.00
40	177 E	0	0	0	1,489	0.00	0.00	0.00
40	178 E	0	0	0	1,489	0.00	0.00	0.00
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	0	0	0	3,528	0.00	0.00	0.00
38	171 E	0	0	0	1,476	0.00	0.00	0.00
37	171 E	0	0	0	882	0.00	0.00	0.00

Table 17. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
41	174 E	37	0	0	3,422	10.81	0.00	0.00
41	175 E	0	0	0	733	0.00	0.00	0.00
41	176 E	0	0	0	3,177	0.00	0.00	0.00
41	177 E	0	0	0	1,711	0.00	0.00	0.00
41	179 W	6	0	0	1,711	3.51	0.00	0.00
41	178 W	1	0	0	2,322	0.43	0.00	0.00
40	176 E	0	1	0	840	0.00	1.19	0.00
40	177 E	0	0	0	4,487	0.00	0.00	0.00
40	178 E	1	0	0	3,253	0.31	0.00	0.00
39	173 E	2	0	0	611	3.27	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds	Tans (50m)	CPUE (Number per 1000 tans): Northern Fulmar	Other & Unidentified Petrels	Unidentified Seabirds
39	170 E	1	0	0	3,422	0.29	0.00	0.00
39	171 E	6	0	0	2,200	2.73	0.00	0.00

Table 18. Observed bycatch of other identified seabirds by net retrieval date and net set location in the 1990 Japanese squid driftnet fishery.

Retrieval Date Month	Start of Set Lat°N	Start of Set Long°	Catch (No.)	Code	Species Name
6	38	155 W	1	440	Mottled petrel
6	39	176 W	2	401[a]	Other identified bird
6	39	178 W	1	462	Newell's shearwater
6	42	160 W	1	572	Thick-billed murre
7	40	177 W	1	401[a]	Other identified bird
7	41	170 E	1	521	Red phalarope
7	41	150 W	1	440	Mottled petrel
7	41	165 W	1	440	Mottled petrel
7	41	166 W	1	401[a]	Other identified bird
7	41	167 W	6	401[a]	Other identified bird
7	41	169 W	1	440	Mottled petrel
7	41	171 W	1	440	Mottled petrel
7	42	161 W	1	444	Stejneger's petrel
7	42	165 W	1	526	Pomarine skua/jaeger
7	42	166 W	1	452	Pink-footed shearwater
8	44	176 E	1	528	Long-tailed skua/jaeger
8	44	149 W	1	432	Solander's petrel
8	44	156 W	6	471	Wilson's storm-petrel
8	45	148 W	1	439	Juan Fernandez petrel
8	45	152 W	1	452	Pink-footed shearwater
8	45	153 W	1	452	Pink-footed shearwater
8	45	158 W	3	438	Juan Fernandez petrel
8	45	159 W	1	438	Juan Fernandez petrel
8	45	160 W	1	438	Juan Fernandez petrel
9	42	178 W	2	440	Mottled petrel
10	43	175 W	1	440	Mottled petrel

a) Species identifications of seabirds noted as "401 - Other identified bird" were reviewed and identifications made. These identifications were: (1) one of the two caught in June was a sooty shearwater, the other was an unidentified dark shearwater; (2) one of the six in July at 41°N, 167°W was a Buller's shearwater; and (3) all others were identified as unidentified dark shearwaters. These changes were not included in the other Tables in this report.

Table 19. Observed bycatch of sharks and rays, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of sharks and rays by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.		Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
41	177	E	3	11	0	0	3,007	1.0	3.7	0.0	0.0
41	171	W	1	1	0	0	1,020	1.0	1.0	0.0	0.0
40	175	E	0	5	0	0	749	0.0	6.7	0.0	0.0
39	170	E	0	2	0	0	1,455	0.0	1.4	0.0	0.0
39	172	E	0	0	0	0	706	0.0	0.0	0.0	0.0
39	173	E	0	13	0	0	684	0.0	19.0	0.0	0.0
39	174	E	0	24	8	0	1,332	0.0	18.0	6.0	0.0
39	175	E	382	8	1	0	11,468	33.3	0.7	0.1	0.0
39	176	E	88	33	1	0	16,848	5.2	2.0	0.1	0.0
39	177	E	16	23	14	0	8,338	1.9	2.8	1.7	0.0
39	178	E	25	15	20	0	6,226	4.0	2.4	3.2	0.0
39	179	E	26	80	0	0	11,758	2.2	6.8	0.0	0.0
39	179	W	31	111	0	0	17,593	1.8	6.3	0.0	0.0
39	178	W	17	48	0	0	11,886	1.4	4.0	0.0	0.0
39	177	W	129	35	6	0	31,559	4.1	1.1	0.2	0.0
39	176	W	141	30	19	0	28,853	4.9	1.0	0.7	0.0
39	175	W	38	0	0	0	1,920	19.8	0.0	0.0	0.0
39	174	W	27	10	0	0	1,810	14.9	5.5	0.0	0.0
39	173	W	1	0	0	0	735	1.4	0.0	0.0	0.0
39	172	W	0	18	0	0	840	0.0	21.4	0.0	0.0
39	171	W	9	23	0	0	5,101	1.8	4.5	0.0	0.0
39	170	W	417	88	1	0	47,873	8.7	1.8	0.0	0.0
39	169	W	309	84	1	0	39,450	7.8	2.1	0.0	0.0
39	168	W	367	113	0	0	25,558	14.4	4.4	0.0	0.0
39	167	W	353	71	13	0	20,187	17.5	3.5	0.6	0.0
39	166	W	175	33	0	0	8,752	20.0	3.8	0.0	0.0
39	165	W	57	4	0	0	6,475	8.8	0.6	0.0	0.0
39	164	W	309	82	0	0	25,174	12.3	3.3	0.0	0.0
39	163	W	95	7	0	0	7,573	12.5	0.9	0.0	0.0
39	162	W	21	21	0	0	4,094	5.1	5.1	0.0	0.0
39	160	W	335	3	0	0	1,452	230.7	2.1	0.0	0.0
39	159	W	142	11	0	0	1,621	87.6	6.8	0.0	0.0
39	158	W	782	46	4	0	14,117	55.4	3.3	0.3	0.0
39	157	W	1,314	96	6	0	17,749	74.0	5.4	0.3	0.0
39	156	W	2,361	5	5	0	13,534	174.4	0.4	0.4	0.0
39	155	W	1,133	0	0	0	9,210	123.0	0.0	0.0	0.0
39	154	W	3,051	0	0	0	19,970	152.8	0.0	0.0	0.0
39	153	W	2,677	3	1	0	16,463	162.6	0.2	0.1	0.0
39	152	W	2,115	0	0	0	8,533	247.9	0.0	0.0	0.0
39	151	W	476	1	0	0	5,177	92.0	0.2	0.0	0.0
39	149	W	2	0	0	0	808	2.5	0.0	0.0	0.0
39	148	W	46	0	0	0	2,876	16.0	0.0	0.0	0.0
39	147	W	0	0	0	0	833	0.0	0.0	0.0	0.0
39	146	W	105	0	0	0	902	116.4	0.0	0.0	0.0
38	171	E	1	0	0	0	924	1.1	0.0	0.0	0.0
38	176	E	296	1	0	0	1,885	157.0	0.5	0.0	0.0
38	179	E	9	39	0	0	3,732	2.4	10.5	0.0	0.0
38	179	W	8	11	0	0	2,858	2.8	3.8	0.0	0.0
38	177	W	87	7	1	0	12,856	6.8	0.5	0.1	0.0
38	176	W	98	0	0	0	6,851	14.3	0.0	0.0	0.0
38	175	W	33	4	0	0	1,694	19.5	2.4	0.0	0.0
38	174	W	20	0	0	0	735	27.2	0.0	0.0	0.0
38	171	W	129	2	1	0	7,009	18.4	0.3	0.1	0.0

Table 19. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
38	170 W	161	13	0	0	14,765	10.9	0.9	0.0	0.0
38	169 W	171	17	2	0	8,896	19.2	1.9	0.2	0.0
38	168 W	302	7	3	1	10,847	27.8	0.6	0.3	0.1
38	167 W	170	1	1	1	7,300	23.3	0.1	0.1	0.1
38	166 W	181	2	0	2	7,175	25.2	0.3	0.0	0.3
38	165 W	84	19	994	0	7,114	11.8	2.7	139.7	0.0
38	164 W	543	33	0	0	18,769	28.9	1.8	0.0	0.0
38	163 W	219	34	0	0	8,371	26.2	4.1	0.0	0.0
38	162 W	1	1	0	0	853	1.2	1.2	0.0	0.0
38	159 W	148	2	0	0	907	163.1	2.2	0.0	0.0
38	158 W	508	3	0	0	2,930	173.4	1.0	0.0	0.0
38	157 W	311	0	0	0	3,732	83.3	0.0	0.0	0.0
38	156 W	17	0	1	0	957	17.8	0.0	1.0	0.0
38	155 W	300	0	3	2	8,500	35.3	0.0	0.4	0.2
38	154 W	14	0	0	0	1,008	13.9	0.0	0.0	0.0
38	153 W	37	0	0	0	845	43.8	0.0	0.0	0.0
38	152 W	304	0	1	0	3,144	96.7	0.0	0.3	0.0
38	151 W	619	0	0	0	3,645	169.8	0.0	0.0	0.0
38	150 W	660	0	0	0	3,910	168.8	0.0	0.0	0.0
37	170 W	17	0	0	0	725	23.4	0.0	0.0	0.0
37	167 W	33	0	1	0	780	42.3	0.0	1.3	0.0
37	166 W	30	0	0	0	1,682	17.8	0.0	0.0	0.0
37	165 W	125	0	0	0	4,896	25.5	0.0	0.0	0.0
37	164 W	261	1	0	0	3,294	79.2	0.3	0.0	0.0
37	163 W	1,665	0	0	0	9,737	171.0	0.0	0.0	0.0

Table 19. (Continued)

July

1°x 1° Area			Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.		Blue Shark	Salmon Shark	Other Sharks	Rays	(50m)	Blue Shark	Salmon Shark	Other Sharks	Rays
43	169	E	0	11	0	0	1,450	0.0	7.6	0.0	0.0
43	170	E	1	8	1	0	1,080	0.9	7.4	0.9	0.0
42	168	E	1	8	0	0	749	1.3	10.7	0.0	0.0
42	169	E	25	33	0	0	2,870	8.7	11.5	0.0	0.0
42	170	E	10	40	1	0	4,001	2.5	10.0	0.2	0.0
42	169	W	123	129	0	0	24,244	5.1	5.3	0.0	0.0
42	168	W	87	53	1	0	20,077	4.3	2.6	0.0	0.0
42	167	W	283	37	2	0	17,784	15.9	2.1	0.1	0.0
42	166	W	478	62	3	0	34,743	13.8	1.8	0.1	0.0
42	165	W	69	74	1	1	28,335	2.4	2.6	0.0	0.0
42	164	W	28	11	2	0	7,027	4.0	1.6	0.3	0.0
42	163	W	325	62	0	0	20,821	15.6	3.0	0.0	0.0
42	162	W	1,321	16	3	0	33,133	39.9	0.5	0.1	0.0
42	161	W	1,104	42	1	0	24,985	44.2	1.7	0.0	0.0
42	160	W	1,015	149	27	0	15,687	64.7	9.5	1.7	0.0
42	159	W	1,209	81	1	0	22,604	53.5	3.6	0.0	0.0
42	158	W	1,551	33	2	0	14,775	105.0	2.2	0.1	0.0
42	157	W	366	13	0	0	4,215	86.8	3.1	0.0	0.0
42	156	W	20	0	0	0	792	25.3	0.0	0.0	0.0
42	155	W	160	7	0	0	3,696	43.3	1.9	0.0	0.0
42	154	W	140	24	0	0	3,696	37.9	6.5	0.0	0.0
42	153	W	545	21	0	0	2,844	191.6	7.4	0.0	0.0
42	152	W	459	2	0	0	9,676	47.4	0.2	0.0	0.0
42	151	W	134	0	1	0	2,627	51.0	0.0	0.4	0.0
42	148	W	185	19	0	0	3,024	61.2	6.3	0.0	0.0
42	147	W	266	0	0	0	2,016	131.9	0.0	0.0	0.0
42	146	W	60	0	0	0	864	69.4	0.0	0.0	0.0
41	169	E	23	24	0	0	810	28.4	29.6	0.0	0.0
41	170	E	222	262	9	0	26,157	8.5	10.0	0.3	0.0
41	171	E	122	106	0	0	16,453	7.4	6.4	0.0	0.0
41	172	E	193	21	0	0	1,535	125.8	13.7	0.0	0.0
41	173	E	28	21	0	0	2,841	9.9	7.4	0.0	0.0
41	174	E	75	63	0	0	7,106	10.6	8.9	0.0	0.0
41	175	E	18	55	0	0	7,249	2.5	7.6	0.0	0.0
41	176	E	39	17	0	0	5,565	7.0	3.1	0.0	0.0
41	177	E	152	61	1	0	21,893	6.9	2.8	0.0	0.0
41	178	E	7	5	0	0	5,523	1.3	0.9	0.0	0.0
41	179	E	4	33	0	0	1,653	2.4	20.0	0.0	0.0
41	177	W	6	3	0	0	1,470	4.1	2.0	0.0	0.0
41	175	W	8	4	0	0	1,725	4.6	2.3	0.0	0.0
41	174	W	10	12	0	0	6,755	1.5	1.8	0.0	0.0
41	173	W	12	4	0	0	3,103	3.9	1.3	0.0	0.0
41	172	W	6	15	0	0	7,864	0.8	1.9	0.0	0.0
41	171	W	47	38	0	0	15,218	3.1	2.5	0.0	0.0
41	170	W	107	37	1	1	12,708	8.4	2.9	0.1	0.1
41	169	W	112	10	2	0	12,577	8.9	0.8	0.2	0.0
41	168	W	245	40	8	0	24,518	10.0	1.6	0.3	0.0
41	167	W	669	71	6	0	38,982	17.2	1.8	0.2	0.0
41	166	W	464	54	2	1	55,097	8.4	1.0	0.0	0.0
41	165	W	845	14	1	0	45,093	18.7	0.3	0.0	0.0
41	164	W	2,378	10	1	0	43,820	54.3	0.2	0.0	0.0
41	163	W	738	15	2	1	25,383	29.1	0.6	0.1	0.0
41	162	W	28	0	0	0	2,152	13.0	0.0	0.0	0.0
41	161	W	597	11	3	2	12,028	49.6	0.9	0.2	0.2
41	160	W	788	6	5	2	9,960	79.1	0.6	0.5	0.2

Table 19. (Continued)

1° x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Blue Shark	Salmon Shark	Other Sharks	Rays	(50m)	Blue Shark	Salmon Shark	Other Sharks	Rays
41	159 W	567	10	4	0	13,268	42.7	0.8	0.3	0.0
41	158 W	1,346	4	1	0	12,821	105.0	0.3	0.1	0.0
41	157 W	196	2	0	0	1,472	133.1	1.4	0.0	0.0
41	156 W	114	11	1	0	2,448	46.6	4.5	0.4	0.0
41	154 W	485	8	0	0	1,848	262.4	4.3	0.0	0.0
41	153 W	276	0	0	0	1,722	160.3	0.0	0.0	0.0
41	152 W	1,115	32	1	0	7,827	142.5	4.1	0.1	0.0
41	151 W	668	3	0	0	5,421	123.2	0.6	0.0	0.0
41	150 W	221	0	0	0	3,456	64.0	0.0	0.0	0.0
40	175 E	1	21	0	0	648	1.5	32.4	0.0	0.0
40	176 E	1	3	0	0	547	1.8	5.5	0.0	0.0
40	177 E	3	0	0	0	686	4.4	0.0	0.0	0.0
40	178 E	0	5	0	0	3,343	0.0	1.5	0.0	0.0
40	179 E	13	9	0	0	2,904	4.5	3.1	0.0	0.0
40	179 W	2	6	0	0	2,275	0.9	2.6	0.0	0.0
40	177 W	186	25	1	0	17,533	10.6	1.4	0.1	0.0
40	176 W	9	0	0	0	960	9.4	0.0	0.0	0.0
40	173 W	31	2	0	0	1,790	17.3	1.1	0.0	0.0
40	172 W	14	0	0	0	1,350	10.4	0.0	0.0	0.0
40	171 W	2	5	0	0	2,604	0.8	1.9	0.0	0.0
40	170 W	17	2	0	0	300	56.7	6.7	0.0	0.0
40	168 W	30	0	0	0	790	38.0	0.0	0.0	0.0
40	166 W	1	0	0	0	922	1.1	0.0	0.0	0.0
40	161 W	20	0	0	0	864	23.1	0.0	0.0	0.0
40	159 W	422	0	0	0	2,574	163.9	0.0	0.0	0.0
40	158 W	954	1	0	0	3,984	239.5	0.3	0.0	0.0
40	154 W	92	0	0	0	840	109.5	0.0	0.0	0.0
40	153 W	1,070	0	1	0	7,098	150.8	0.0	0.1	0.0
40	150 W	112	0	0	0	828	135.2	0.0	0.0	0.0
39	177 E	5	0	0	0	882	5.7	0.0	0.0	0.0
39	166 W	192	0	0	0	2,765	69.4	0.0	0.0	0.0
39	157 W	41	0	0	0	930	44.1	0.0	0.0	0.0

Table 19. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
45	178 W	4	3	0	0	564	7.1	5.3	0.0	0.0
45	163 W	9	18	0	0	1,735	5.2	10.4	0.0	0.0
45	162 W	23	5	0	0	2,672	8.6	1.9	0.0	0.0
45	160 W	1	65	0	0	4,284	0.2	15.2	0.0	0.0
45	159 W	13	156	3	0	11,975	1.1	13.0	0.3	0.0
45	158 W	7	73	1	0	7,573	0.9	9.6	0.1	0.0
45	157 W	5	65	1	0	7,945	0.6	8.2	0.1	0.0
45	156 W	3	7	0	0	1,821	1.6	3.8	0.0	0.0
45	155 W	0	4	0	0	861	0.0	4.6	0.0	0.0
45	154 W	1	11	0	0	2,180	0.5	5.0	0.0	0.0
45	153 W	4	12	0	0	4,982	0.8	2.4	0.0	0.0
45	152 W	10	33	0	0	14,243	0.7	2.3	0.0	0.0
45	151 W	59	33	0	0	11,095	5.3	3.0	0.0	0.0
45	150 W	1	2	0	0	1,642	0.6	1.2	0.0	0.0
45	149 W	102	15	0	0	5,634	18.1	2.7	0.0	0.0
45	148 W	29	9	0	0	2,150	13.5	4.2	0.0	0.0
44	170 E	27	13	0	0	3,755	7.2	3.5	0.0	0.0
44	171 E	110	29	0	0	13,082	8.4	2.2	0.0	0.0
44	172 E	23	4	0	0	4,898	4.7	0.8	0.0	0.0
44	173 E	4	3	0	0	2,010	2.0	1.5	0.0	0.0
44	174 E	1	8	0	0	5,774	0.2	1.4	0.0	0.0
44	175 E	23	3	0	0	4,476	5.1	0.7	0.0	0.0
44	176 E	66	25	1	0	15,186	4.3	1.6	0.1	0.0
44	177 E	36	22	0	0	10,610	3.4	2.1	0.0	0.0
44	178 E	108	27	0	0	10,338	10.4	2.6	0.0	0.0
44	179 E	513	22	0	0	23,079	22.2	1.0	0.0	0.0
44	180	6	0	0	0	750	8.0	0.0	0.0	0.0
44	179 W	299	87	3	0	41,188	7.3	2.1	0.1	0.0
44	178 W	187	32	0	0	20,048	9.3	1.6	0.0	0.0
44	177 W	13	12	0	0	6,175	2.1	1.9	0.0	0.0
44	175 W	2	7	0	0	750	2.7	9.3	0.0	0.0
44	171 W	0	10	0	0	960	0.0	10.4	0.0	0.0
44	168 W	6	0	0	0	800	7.5	0.0	0.0	0.0
44	159 W	14	42	0	0	6,276	2.2	6.7	0.0	0.0
44	158 W	18	77	1	0	20,943	0.9	3.7	0.0	0.0
44	157 W	22	31	2	0	18,802	1.2	1.6	0.1	0.0
44	156 W	8	13	0	0	4,440	1.8	2.9	0.0	0.0
44	155 W	123	1	0	0	1,665	73.9	0.6	0.0	0.0
44	154 W	0	3	0	0	792	0.0	3.8	0.0	0.0
44	153 W	3	5	0	0	792	3.8	6.3	0.0	0.0
44	152 W	8	2	0	0	1,860	4.3	1.1	0.0	0.0
44	151 W	356	19	1	0	7,350	48.4	2.6	0.1	0.0
44	150 W	356	12	2	0	3,171	112.3	3.8	0.6	0.0
44	149 W	663	6	1	0	5,219	127.0	1.1	0.2	0.0
44	148 W	332	0	0	0	4,724	70.3	0.0	0.0	0.0
43	170 E	286	8	1	0	3,338	85.7	2.4	0.3	0.0
43	171 E	105	3	0	0	1,715	61.2	1.7	0.0	0.0
43	172 E	18	11	0	0	1,311	13.7	8.4	0.0	0.0
43	173 E	56	4	2	0	4,789	11.7	0.8	0.4	0.0
43	174 E	39	6	0	0	7,362	5.3	0.8	0.0	0.0
43	175 E	25	8	1	0	4,679	5.3	1.7	0.2	0.0
43	176 E	17	8	0	0	1,445	11.8	5.5	0.0	0.0
43	177 E	37	0	0	0	853	43.4	0.0	0.0	0.0
43	178 E	563	5	0	0	5,642	99.8	0.9	0.0	0.0
43	179 E	891	0	0	0	4,383	203.3	0.0	0.0	0.0

Table 19. (Continued)

1°x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Blue Shark	Salmon Shark	Other Sharks	Rays	(50m)	Blue Shark	Salmon Shark	Other Sharks	Rays
43	179 W	86	0	0	0	1,386	62.0	0.0	0.0	0.0
43	178 W	21	0	0	0	1,819	11.5	0.0	0.0	0.0
43	177 W	17	5	0	0	2,459	6.9	2.0	0.0	0.0
43	175 W	15	4	0	0	750	20.0	5.3	0.0	0.0
43	172 W	20	7	0	0	520	38.5	13.5	0.0	0.0
43	171 W	65	43	1	0	2,168	30.0	19.8	0.5	0.0
43	170 W	96	0	0	0	1,358	70.7	0.0	0.0	0.0
43	168 W	3	6	1	0	1,627	1.8	3.7	0.6	0.0
43	167 W	21	42	0	0	3,863	5.4	10.9	0.0	0.0
43	166 W	214	128	0	0	6,824	31.4	18.8	0.0	0.0
43	165 W	3	12	0	0	828	3.6	14.5	0.0	0.0
43	161 W	5	1	0	0	775	6.5	1.3	0.0	0.0
43	160 W	14	2	0	0	2,354	5.9	0.8	0.0	0.0
43	159 W	16	4	0	0	3,210	5.0	1.2	0.0	0.0
43	158 W	131	3	1	0	11,365	11.5	0.3	0.1	0.0
43	157 W	46	26	2	0	20,432	2.3	1.3	0.1	0.0
43	156 W	38	0	0	0	800	47.5	0.0	0.0	0.0
43	153 W	576	0	0	0	4,620	124.7	0.0	0.0	0.0
43	152 W	121	0	0	0	2,670	45.3	0.0	0.0	0.0
43	151 W	636	0	0	0	4,299	147.9	0.0	0.0	0.0
43	150 W	170	0	0	0	1,685	100.9	0.0	0.0	0.0
43	148 W	177	0	0	0	1,748	101.3	0.0	0.0	0.0
42	170 E	517	12	0	0	1,920	269.3	6.3	0.0	0.0
42	171 E	176	0	0	0	810	217.3	0.0	0.0	0.0
42	172 E	245	0	0	0	900	272.2	0.0	0.0	0.0
42	173 E	166	0	0	0	3,015	55.1	0.0	0.0	0.0
42	174 E	308	2	0	0	2,505	122.9	0.8	0.0	0.0
42	175 E	326	0	0	0	1,625	200.6	0.0	0.0	0.0
42	169 W	11	2	0	0	1,642	6.7	1.2	0.0	0.0
42	168 W	43	0	0	0	2,983	14.4	0.0	0.0	0.0
42	167 W	22	3	0	0	5,523	4.0	0.5	0.0	0.0
42	160 W	47	0	0	0	900	52.2	0.0	0.0	0.0
42	159 W	32	0	0	0	900	35.6	0.0	0.0	0.0
42	158 W	198	0	0	0	1,738	114.0	0.0	0.0	0.0
42	152 W	158	0	2	0	4,149	38.1	0.0	0.5	0.0
42	151 W	166	0	1	0	4,437	37.4	0.0	0.2	0.0
42	150 W	426	0	0	0	6,379	66.8	0.0	0.0	0.0
41	175 E	10	3	1	0	710	14.1	4.2	1.4	0.0

Table 19. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
45	171 E	8	6	0	0	771	10.4	7.8	0.0	0.0
45	172 E	0	2	0	0	782	0.0	2.6	0.0	0.0
45	176 E	4	0	0	0	840	4.8	0.0	0.0	0.0
45	177 E	1	0	0	0	861	1.2	0.0	0.0	0.0
45	178 E	0	0	0	0	738	0.0	0.0	0.0	0.0
45	179 E	1	2	0	0	1,617	0.6	1.2	0.0	0.0
45	178 W	0	0	0	0	905	0.0	0.0	0.0	0.0
45	177 W	2	1	0	0	600	3.3	1.7	0.0	0.0
45	176 W	12	4	0	0	5,296	2.3	0.8	0.0	0.0
45	175 W	1	2	0	0	1,307	0.8	1.5	0.0	0.0
45	174 W	23	12	0	0	3,402	6.8	3.5	0.0	0.0
45	173 W	5	0	0	0	3,261	1.5	0.0	0.0	0.0
45	171 W	87	31	0	0	3,312	26.3	9.4	0.0	0.0
45	170 W	93	37	0	0	9,100	10.2	4.1	0.0	0.0
45	162 W	81	0	0	0	900	90.0	0.0	0.0	0.0
45	161 W	66	1	0	0	2,617	25.2	0.4	0.0	0.0
45	160 W	94	0	0	0	6,456	14.6	0.0	0.0	0.0
45	159 W	67	0	0	0	800	83.8	0.0	0.0	0.0
45	158 W	9	7	0	0	4,457	2.0	1.6	0.0	0.0
45	157 W	9	1	0	0	4,090	2.2	0.2	0.0	0.0
45	153 W	0	1	0	0	960	0.0	1.0	0.0	0.0
45	152 W	1	1	0	0	960	1.0	1.0	0.0	0.0
45	151 W	2	2	0	0	1,920	1.0	1.0	0.0	0.0
45	150 W	8	1	0	0	800	10.0	1.2	0.0	0.0
44	171 E	18	5	0	0	4,117	4.4	1.2	0.0	0.0
44	172 E	4	2	1	0	3,146	1.3	0.6	0.3	0.0
44	173 E	0	2	1	0	1,590	0.0	1.3	0.6	0.0
44	174 E	0	1	0	0	1,665	0.0	0.6	0.0	0.0
44	175 E	1	4	2	0	2,532	0.4	1.6	0.8	0.0
44	176 E	1	0	0	0	810	1.2	0.0	0.0	0.0
44	177 E	0	0	0	0	2,010	0.0	0.0	0.0	0.0
44	178 E	0	1	0	0	791	0.0	1.3	0.0	0.0
44	179 E	5	1	0	0	3,436	1.5	0.3	0.0	0.0
44	179 W	14	7	0	0	7,312	1.9	1.0	0.0	0.0
44	178 W	12	8	0	0	4,472	2.7	1.8	0.0	0.0
44	177 W	54	0	0	0	1,254	43.1	0.0	0.0	0.0
44	176 W	249	0	0	0	1,512	164.7	0.0	0.0	0.0
44	174 W	6	0	0	0	756	7.9	0.0	0.0	0.0
44	170 W	30	0	0	0	900	33.3	0.0	0.0	0.0
44	161 W	38	0	0	0	930	40.9	0.0	0.0	0.0
44	160 W	197	0	0	0	4,509	43.7	0.0	0.0	0.0
44	158 W	103	0	0	0	754	136.6	0.0	0.0	0.0
43	170 E	0	0	19	0	1,856	0.0	0.0	10.2	0.0
43	171 E	35	7	0	0	7,818	4.5	0.9	0.0	0.0
43	172 E	2	25	0	0	5,881	0.3	4.3	0.0	0.0
43	173 E	2	1	0	1	1,538	1.3	0.7	0.0	0.7
43	174 E	4	2	0	0	2,317	1.7	0.9	0.0	0.0
43	175 E	0	3	2	0	846	0.0	3.5	2.4	0.0
43	176 E	0	0	0	0	905	0.0	0.0	0.0	0.0
43	177 E	0	2	0	0	1,810	0.0	1.1	0.0	0.0
43	178 E	39	1	0	0	1,545	25.2	0.6	0.0	0.0
43	179 E	45	0	0	0	378	119.0	0.0	0.0	0.0
43	179 W	306	1	0	0	756	404.8	1.3	0.0	0.0
43	178 W	37	0	0	0	2,598	14.2	0.0	0.0	0.0
43	177 W	66	3	0	0	4,440	14.9	0.7	0.0	0.0

Table 19. (Continued)

1° x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Blue Shark	Salmon Shark	Other Sharks	Rays	(50m)	Blue Shark	Salmon Shark	Other Sharks	Rays
43	176 W	38	1	0	0	4,865	7.8	0.2	0.0	0.0
43	160 W	158	0	0	0	1,632	96.8	0.0	0.0	0.0
43	158 W	165	0	0	0	905	182.4	0.0	0.0	0.0
42	165 E	6	20	0	0	1,393	4.3	14.4	0.0	0.0
42	170 E	131	3	0	0	3,355	39.1	0.9	0.0	0.0
42	171 E	15	2	0	0	1,376	10.9	1.5	0.0	0.0
42	172 E	6	1	0	0	2,401	2.5	0.4	0.0	0.0
42	173 E	57	0	0	0	2,115	27.0	0.0	0.0	0.0
42	174 E	5	1	3	0	1,159	4.3	0.9	2.6	0.0
42	175 E	46	2	1	0	3,736	12.3	0.5	0.3	0.0
42	176 E	2	2	0	0	1,719	1.2	1.2	0.0	0.0
42	178 W	204	1	0	0	7,182	28.4	0.1	0.0	0.0
42	177 W	67	0	0	0	1,056	63.5	0.0	0.0	0.0
41	170 E	23	0	0	0	522	44.1	0.0	0.0	0.0
41	174 E	79	0	0	0	860	91.9	0.0	0.0	0.0
41	176 E	535	0	0	0	828	646.1	0.0	0.0	0.0
41	177 W	240	0	0	0	2,213	108.5	0.0	0.0	0.0
40	175 E	20	0	5	0	644	31.1	0.0	7.8	0.0

Table 19. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
43	177 E	1	2	0	0	620	1.6	3.2	0.0	0.0
43	178 E	5	1	0	0	3,419	1.5	0.3	0.0	0.0
43	179 E	32	4	1	0	3,258	9.8	1.2	0.3	0.0
43	178 W	2	0	0	0	845	2.4	0.0	0.0	0.0
43	177 W	1	1	0	0	2,755	0.4	0.4	0.0	0.0
43	176 W	15	4	1	0	3,901	3.8	1.0	0.3	0.0
43	175 W	12	8	0	0	2,853	4.2	2.8	0.0	0.0
43	174 W	1	1	0	0	756	1.3	1.3	0.0	0.0
43	173 W	89	6	0	0	2,427	36.7	2.5	0.0	0.0
43	172 W	49	4	0	0	4,101	11.9	1.0	0.0	0.0
43	171 W	23	8	0	0	3,474	6.6	2.3	0.0	0.0
42	170 E	511	2	0	0	2,297	222.5	0.9	0.0	0.0
42	171 E	210	15	0	0	5,671	37.0	2.6	0.0	0.0
42	172 E	170	13	1	0	3,791	44.8	3.4	0.3	0.0
42	177 E	2	1	0	0	846	2.4	1.2	0.0	0.0
42	178 E	38	1	0	0	2,493	15.2	0.4	0.0	0.0
42	179 E	221	0	0	0	874	253.0	0.0	0.0	0.0
42	179 W	14	0	0	0	905	15.5	0.0	0.0	0.0
42	178 W	171	4	0	0	11,452	14.9	0.3	0.0	0.0
42	177 W	0	2	0	0	756	0.0	2.6	0.0	0.0
42	176 W	190	3	0	0	2,897	65.6	1.0	0.0	0.0
42	175 W	159	1	0	0	1,428	111.3	0.7	0.0	0.0
42	174 W	1	0	4	0	900	1.1	0.0	4.4	0.0
41	162 E	126	2	0	0	1,489	84.6	1.3	0.0	0.0
41	163 E	214	3	0	0	1,368	156.4	2.2	0.0	0.0
41	170 E	50	0	0	0	758	66.0	0.0	0.0	0.0
41	171 E	211	3	0	0	3,137	67.3	1.0	0.0	0.0
41	178 E	182	1	0	0	2,440	74.6	0.4	0.0	0.0
41	179 W	30	2	0	0	5,640	5.3	0.4	0.0	0.0
41	178 W	14	4	0	0	5,232	2.7	0.8	0.0	0.0
41	177 W	152	9	0	0	6,550	23.2	1.4	0.0	0.0
41	176 W	109	5	0	0	5,073	21.5	1.0	0.0	0.0
40	171 E	32	0	0	0	1,632	19.6	0.0	0.0	0.0
40	177 E	228	1	0	0	1,489	153.1	0.7	0.0	0.0
40	178 E	269	0	0	0	1,489	180.6	0.0	0.0	0.0
39	171 E	22	0	0	0	882	24.9	0.0	0.0	0.0
39	174 E	152	0	0	0	3,528	43.1	0.0	0.0	0.0
38	171 E	2	0	3	0	1,476	1.4	0.0	2.0	0.0
37	171 E	0	0	0	0	882	0.0	0.0	0.0	0.0

Table 19. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
41	174 E	20	6	1	0	3,422	5.8	1.8	0.3	0.0
41	175 E	12	1	0	0	733	16.4	1.4	0.0	0.0
41	176 E	125	8	0	0	3,177	39.3	2.5	0.0	0.0
41	177 E	53	0	0	0	1,711	31.0	0.0	0.0	0.0
41	179 W	57	1	0	0	1,711	33.3	0.6	0.0	0.0
41	178 W	93	2	0	0	2,322	40.1	0.9	0.0	0.0
40	176 E	30	0	0	0	840	35.7	0.0	0.0	0.0
40	177 E	295	1	0	0	4,487	65.7	0.2	0.0	0.0
40	178 E	604	0	0	0	3,253	185.7	0.0	0.0	0.0
39	173 E	24	0	0	0	611	39.3	0.0	0.0	0.0

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Blue Shark	Salmon Shark	Other Sharks	Rays	Tans (50m)	CPUE (Number per 1000 tans) Blue Shark	Salmon Shark	Other Sharks	Rays
39	170 E	885	2	0	0	3,422	258.7	0.6	0.0	0.0
39	171 E	982	4	0	0	2,200	446.4	1.8	0.0	0.0

Table 20. Observed bycatch of tunas and billfishes, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of tunas and billfishes by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
41	177 E	10	0	0	0	3,007	3.3	0.0	0.0	0.0
41	171 W	0	0	0	0	1,020	0.0	0.0	0.0	0.0
40	175 E	0	0	0	0	749	0.0	0.0	0.0	0.0
39	170 E	3	0	0	0	1,455	2.1	0.0	0.0	0.0
39	172 E	4	0	0	0	706	5.7	0.0	0.0	0.0
39	173 E	0	0	0	0	684	0.0	0.0	0.0	0.0
39	174 E	3	0	0	0	1,332	2.3	0.0	0.0	0.0
39	175 E	54	0	1	0	11,468	4.7	0.0	0.1	0.0
39	176 E	21	0	0	0	16,848	1.2	0.0	0.0	0.0
39	177 E	4	0	1	0	8,338	0.5	0.0	0.1	0.0
39	178 E	53	0	1	0	6,226	8.5	0.0	0.2	0.0
39	179 E	90	0	1	0	11,758	7.7	0.0	0.1	0.0
39	179 W	13	0	0	0	17,593	0.7	0.0	0.0	0.0
39	178 W	6	0	5	0	11,886	0.5	0.0	0.4	0.0
39	177 W	23	0	5	0	31,559	0.7	0.0	0.2	0.0
39	176 W	40	0	25	0	28,853	1.4	0.0	0.9	0.0
39	175 W	17	0	0	0	1,920	8.9	0.0	0.0	0.0
39	174 W	0	0	0	0	1,810	0.0	0.0	0.0	0.0
39	173 W	0	0	0	0	735	0.0	0.0	0.0	0.0
39	172 W	0	0	0	0	840	0.0	0.0	0.0	0.0
39	171 W	0	0	0	0	5,101	0.0	0.0	0.0	0.0
39	170 W	27	0	4	0	47,873	0.6	0.0	0.1	0.0
39	169 W	48	4	0	1	39,450	1.2	0.1	0.0	0.0
39	168 W	22	0	0	0	25,558	0.9	0.0	0.0	0.0
39	167 W	8	0	0	0	20,187	0.4	0.0	0.0	0.0
39	166 W	3	0	0	0	8,752	0.3	0.0	0.0	0.0
39	165 W	1	0	0	0	6,475	0.2	0.0	0.0	0.0
39	164 W	4	0	1	0	25,174	0.2	0.0	0.0	0.0
39	163 W	0	0	1	0	7,573	0.0	0.0	0.1	0.0
39	162 W	0	0	0	0	4,094	0.0	0.0	0.0	0.0
39	160 W	6	0	0	0	1,452	4.1	0.0	0.0	0.0
39	159 W	1	0	0	1	1,621	0.6	0.0	0.0	0.6
39	158 W	46	0	0	11	14,117	3.3	0.0	0.0	0.8
39	157 W	59	0	4	3	17,749	3.3	0.0	0.2	0.2
39	156 W	88	0	1	2	13,534	6.5	0.0	0.1	0.1
39	155 W	33	0	0	1	9,210	3.6	0.0	0.0	0.1
39	154 W	276	0	1	4	19,970	13.8	0.0	0.1	0.2
39	153 W	240	0	1	3	16,463	14.6	0.0	0.1	0.2
39	152 W	219	2	1	0	8,533	25.7	0.2	0.1	0.0
39	151 W	168	0	0	2	5,177	32.5	0.0	0.0	0.4
39	149 W	18	0	0	0	809	22.3	0.0	0.0	0.0
39	148 W	60	0	0	1	2,876	20.9	0.0	0.0	0.3
39	147 W	43	0	0	0	833	51.6	0.0	0.0	0.0
39	146 W	55	0	0	0	902	60.9	0.0	0.0	0.0
38	171 E	0	0	0	0	924	0.0	0.0	0.0	0.0
38	176 E	74	0	0	1	1,885	39.3	0.0	0.0	0.5
38	179 E	18	0	2	0	3,732	4.8	0.0	0.5	0.0
38	179 W	1	0	0	0	2,858	0.3	0.0	0.0	0.0
38	177 W	62	0	3	0	12,856	4.8	0.0	0.2	0.0
38	176 W	257	0	5	2	6,851	37.5	0.0	0.7	0.3
38	175 W	16	0	1	0	1,694	9.4	0.0	0.6	0.0
38	174 W	0	0	0	1	735	0.0	0.0	0.0	1.4
38	171 W	14	0	2	0	7,009	2.0	0.0	0.3	0.0

Table 20. (Continued)

1°x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Albacore	Skip-jack	Other Tunas	Bill-fishes	(50m)	Albacore	Skip-jack	Other Tunas	Bill-fishes
38	170 W	36	0	1	0	14,765	2.4	0.0	0.1	0.0
38	169 W	37	0	0	0	8,896	4.2	0.0	0.0	0.0
38	168 W	54	0	5	2	10,847	5.0	0.0	0.5	0.2
38	167 W	179	0	0	3	7,300	24.5	0.0	0.0	0.4
38	166 W	85	0	6	3	7,175	11.8	0.0	0.8	0.4
38	165 W	5	0	0	0	7,114	0.7	0.0	0.0	0.0
38	164 W	4	0	1	0	18,769	0.2	0.0	0.1	0.0
38	163 W	4	0	0	0	8,371	0.5	0.0	0.0	0.0
38	162 W	0	0	0	0	853	0.0	0.0	0.0	0.0
38	159 W	1	0	0	0	907	1.1	0.0	0.0	0.0
38	158 W	0	0	0	0	2,930	0.0	0.0	0.0	0.0
38	157 W	76	0	0	3	3,732	20.4	0.0	0.0	0.8
38	156 W	31	0	0	1	957	32.4	0.0	0.0	1.0
38	155 W	208	0	0	6	8,500	24.5	0.0	0.0	0.7
38	154 W	0	0	0	0	1,008	0.0	0.0	0.0	0.0
38	153 W	1	0	0	0	845	1.2	0.0	0.0	0.0
38	152 W	41	0	0	0	3,144	13.0	0.0	0.0	0.0
38	151 W	17	0	0	0	3,645	4.7	0.0	0.0	0.0
38	150 W	118	0	0	0	3,910	30.2	0.0	0.0	0.0
37	170 W	19	0	1	0	725	26.2	0.0	1.4	0.0
37	167 W	29	0	0	2	780	37.2	0.0	0.0	2.6
37	166 W	13	0	0	0	1,682	7.7	0.0	0.0	0.0
37	165 W	16	0	0	0	4,896	3.3	0.0	0.0	0.0
37	164 W	57	0	0	0	3,294	17.3	0.0	0.0	0.0
37	163 W	128	0	13	1	9,737	13.1	0.0	1.3	0.1

Table 20. (Continued)

July

1°x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Albacore	Skip-jack	Other Tunas	Bill-fishes	(50m)	Albacore	Skip-jack	Other Tunas	Bill-fishes
43	169 E	0	0	0	0	1,450	0.0	0.0	0.0	0.0
43	170 E	0	0	0	0	1,080	0.0	0.0	0.0	0.0
42	168 E	0	0	0	0	749	0.0	0.0	0.0	0.0
42	169 E	0	0	0	0	2,870	0.0	0.0	0.0	0.0
42	170 E	2	0	0	0	4,001	0.5	0.0	0.0	0.0
42	169 W	405	0	0	1	24,244	16.7	0.0	0.0	0.0
42	168 W	447	0	2	1	20,077	22.3	0.0	0.1	0.0
42	167 W	1,364	0	3	4	17,784	76.7	0.0	0.2	0.2
42	166 W	1,499	0	6	5	34,743	43.1	0.0	0.2	0.1
42	165 W	293	0	2	0	28,335	10.3	0.0	0.1	0.0
42	164 W	24	0	0	0	7,027	3.4	0.0	0.0	0.0
42	163 W	82	0	0	7	20,821	3.9	0.0	0.0	0.3
42	162 W	1,293	0	9	15	33,133	39.0	0.0	0.3	0.5
42	161 W	585	0	22	6	24,985	23.4	0.0	0.9	0.2
42	160 W	117	0	0	0	15,687	7.5	0.0	0.0	0.0
42	159 W	143	0	1	0	22,604	6.3	0.0	0.0	0.0
42	158 W	170	0	0	3	14,775	11.5	0.0	0.0	0.2
42	157 W	76	0	0	6	4,215	18.0	0.0	0.0	1.4
42	156 W	11	0	0	0	792	13.9	0.0	0.0	0.0
42	155 W	42	0	1	0	3,696	11.4	0.0	0.3	0.0
42	154 W	22	0	0	0	3,696	6.0	0.0	0.0	0.0
42	153 W	49	0	0	0	2,844	17.2	0.0	0.0	0.0
42	152 W	639	0	0	4	9,676	66.0	0.0	0.0	0.4
42	151 W	152	0	1	1	2,627	57.9	0.0	0.4	0.4
42	148 W	119	0	0	0	3,024	39.4	0.0	0.0	0.0
42	147 W	407	0	0	0	2,016	201.9	0.0	0.0	0.0
42	146 W	183	0	0	0	864	211.8	0.0	0.0	0.0
41	169 E	0	0	0	0	810	0.0	0.0	0.0	0.0
41	170 E	14	0	0	2	26,157	0.5	0.0	0.0	0.1
41	171 E	12	0	1	0	16,453	0.7	0.0	0.1	0.0
41	172 E	59	0	0	0	1,535	38.4	0.0	0.0	0.0
41	173 E	5	0	0	0	2,841	1.8	0.0	0.0	0.0
41	174 E	42	0	0	0	7,106	5.9	0.0	0.0	0.0
41	175 E	3	0	1	0	7,249	0.4	0.0	0.1	0.0
41	176 E	6	1	0	0	5,565	1.1	0.2	0.0	0.0
41	177 E	490	0	1	0	21,894	22.4	0.0	0.0	0.0
41	178 E	315	0	1	0	5,523	57.0	0.0	0.2	0.0
41	179 E	3	0	0	0	1,653	1.8	0.0	0.0	0.0
41	177 W	69	0	0	0	1,470	46.9	0.0	0.0	0.0
41	175 W	148	0	0	0	1,725	85.8	0.0	0.0	0.0
41	174 W	109	0	1	0	6,755	16.1	0.0	0.1	0.0
41	173 W	51	0	1	0	3,103	16.4	0.0	0.3	0.0
41	172 W	11	0	0	0	7,864	1.4	0.0	0.0	0.0
41	171 W	903	0	0	1	15,218	59.3	0.0	0.0	0.1
41	170 W	211	0	0	0	12,708	16.6	0.0	0.0	0.0
41	169 W	325	0	1	1	12,577	25.8	0.0	0.1	0.1
41	168 W	3,344	0	2	0	24,518	136.4	0.0	0.1	0.0
41	167 W	5,207	7	3	6	38,982	133.6	0.2	0.1	0.2
41	166 W	3,148	20	6	3	55,097	57.1	0.4	0.1	0.1
41	165 W	2,703	0	4	4	45,093	59.9	0.0	0.1	0.1
41	164 W	1,815	0	7	17	43,820	41.4	0.0	0.2	0.4
41	163 W	733	0	6	9	25,383	28.9	0.0	0.2	0.4
41	162 W	103	0	1	5	2,152	47.9	0.0	0.5	2.3
41	161 W	665	0	2	11	12,028	55.3	0.0	0.2	0.9
41	160 W	1,262	0	3	22	9,960	126.7	0.0	0.3	2.2

Table 20. (Continued)

1°x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Albacore	Skip-jack	Other Tunas	Bill-fishes	(50m)	Albacore	Skip-jack	Other Tunas	Bill-fishes
41	159 W	132	0	3	0	13,268	9.9	0.0	0.2	0.0
41	158 W	303	0	2	1	12,821	23.6	0.0	0.2	0.1
41	157 W	80	0	0	1	1,472	54.3	0.0	0.0	0.7
41	156 W	0	0	0	0	2,448	0.0	0.0	0.0	0.0
41	154 W	22	0	0	0	1,848	11.9	0.0	0.0	0.0
41	153 W	81	0	0	0	1,722	47.1	0.0	0.0	0.0
41	152 W	176	0	0	0	7,827	22.5	0.0	0.0	0.0
41	151 W	281	0	0	0	5,421	51.8	0.0	0.0	0.0
41	150 W	96	0	0	1	3,456	27.8	0.0	0.0	0.3
40	175 E	0	0	0	0	648	0.0	0.0	0.0	0.0
40	176 E	2	0	0	0	547	3.7	0.0	0.0	0.0
40	177 E	0	0	0	0	686	0.0	0.0	0.0	0.0
40	178 E	13	0	0	0	3,343	3.9	0.0	0.0	0.0
40	179 E	126	0	0	0	2,904	43.4	0.0	0.0	0.0
40	179 W	18	0	0	0	2,275	7.9	0.0	0.0	0.0
40	177 W	669	0	1	1	17,533	38.2	0.0	0.1	0.1
40	176 W	19	0	0	0	960	19.8	0.0	0.0	0.0
40	173 W	177	0	0	0	1,790	98.9	0.0	0.0	0.0
40	172 W	20	0	0	0	1,350	14.8	0.0	0.0	0.0
40	171 W	0	0	0	0	2,604	0.0	0.0	0.0	0.0
40	170 W	0	0	0	0	300	0.0	0.0	0.0	0.0
40	168 W	0	0	0	0	790	0.0	0.0	0.0	0.0
40	166 W	0	0	0	0	922	0.0	0.0	0.0	0.0
40	161 W	0	0	0	0	864	0.0	0.0	0.0	0.0
40	159 W	5	0	1	0	2,574	1.9	0.0	0.4	0.0
40	158 W	4	0	0	1	3,984	1.0	0.0	0.0	0.3
40	154 W	7	0	0	0	840	8.3	0.0	0.0	0.0
40	153 W	50	0	0	0	7,098	7.0	0.0	0.0	0.0
40	150 W	20	0	0	0	828	24.2	0.0	0.0	0.0
39	177 E	5	0	0	0	882	5.7	0.0	0.0	0.0
39	166 W	24	0	0	2	2,765	8.7	0.0	0.0	0.7
39	157 W	33	0	0	1	930	35.5	0.0	0.0	1.1

Table 20. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
45	178 W	0	0	0	0	564	0.0	0.0	0.0	0.0
45	163 W	0	0	0	0	1,735	0.0	0.0	0.0	0.0
45	162 W	106	0	0	0	2,672	39.7	0.0	0.0	0.0
45	160 W	110	0	0	0	4,284	25.7	0.0	0.0	0.0
45	159 W	198	0	0	0	11,975	16.5	0.0	0.0	0.0
45	158 W	176	0	0	0	7,573	23.2	0.0	0.0	0.0
45	157 W	240	0	0	0	7,945	30.2	0.0	0.0	0.0
45	156 W	196	0	0	0	1,821	107.6	0.0	0.0	0.0
45	155 W	123	0	0	0	861	142.8	0.0	0.0	0.0
45	154 W	139	0	0	0	2,180	63.8	0.0	0.0	0.0
45	153 W	189	0	0	0	4,982	37.9	0.0	0.0	0.0
45	152 W	287	0	0	0	14,243	20.2	0.0	0.0	0.0
45	151 W	400	0	0	0	11,095	36.1	0.0	0.0	0.0
45	150 W	170	0	0	0	1,642	103.5	0.0	0.0	0.0
45	149 W	193	0	0	0	5,634	34.3	0.0	0.0	0.0
45	148 W	102	0	0	0	2,150	47.4	0.0	0.0	0.0
44	170 E	10	0	0	0	3,755	2.7	0.0	0.0	0.0
44	171 E	9	0	0	0	13,082	0.7	0.0	0.0	0.0
44	172 E	49	0	1	0	4,898	10.0	0.0	0.2	0.0
44	173 E	41	0	0	0	2,010	20.4	0.0	0.0	0.0
44	174 E	14	0	0	0	5,774	2.4	0.0	0.0	0.0
44	175 E	258	0	0	0	4,476	57.6	0.0	0.0	0.0
44	176 E	859	0	1	0	15,186	56.6	0.0	0.1	0.0
44	177 E	171	0	0	2	10,610	16.1	0.0	0.0	0.2
44	178 E	1,432	0	0	1	10,338	138.5	0.0	0.0	0.1
44	179 E	4,279	54	3	9	23,079	185.4	2.3	0.1	0.4
44	180	642	0	0	0	750	856.0	0.0	0.0	0.0
44	179 W	1,629	2	3	7	41,188	39.6	0.0	0.1	0.2
44	178 W	242	0	1	5	20,048	12.1	0.0	0.0	0.2
44	177 W	40	0	0	1	6,175	6.5	0.0	0.0	0.2
44	175 W	15	0	0	0	750	20.0	0.0	0.0	0.0
44	171 W	2	0	0	0	960	2.1	0.0	0.0	0.0
44	168 W	18	0	0	0	800	22.5	0.0	0.0	0.0
44	159 W	40	0	3	0	6,276	6.4	0.0	0.5	0.0
44	158 W	373	0	2	0	20,943	17.8	0.0	0.1	0.0
44	157 W	261	0	0	0	18,802	13.9	0.0	0.0	0.0
44	156 W	46	0	0	0	4,440	10.4	0.0	0.0	0.0
44	155 W	77	0	0	2	1,665	46.3	0.0	0.0	1.2
44	154 W	16	0	0	0	792	20.2	0.0	0.0	0.0
44	153 W	21	0	0	0	792	26.5	0.0	0.0	0.0
44	152 W	11	0	0	0	1,860	5.9	0.0	0.0	0.0
44	151 W	287	0	0	0	7,350	39.0	0.0	0.0	0.0
44	150 W	268	0	0	1	3,171	84.5	0.0	0.0	0.3
44	149 W	1,264	0	0	0	5,219	242.2	0.0	0.0	0.0
44	148 W	680	0	0	0	4,724	143.9	0.0	0.0	0.0
43	170 E	81	0	0	0	3,338	24.3	0.0	0.0	0.0
43	171 E	1	0	2	1	1,715	0.6	0.0	1.2	0.6
43	172 E	92	0	0	0	1,311	70.2	0.0	0.0	0.0
43	173 E	321	0	0	1	4,789	67.0	0.0	0.0	0.2
43	174 E	602	0	1	4	7,362	81.8	0.0	0.1	0.5
43	175 E	203	0	0	0	4,679	43.4	0.0	0.0	0.0
43	176 E	21	0	0	0	1,445	14.5	0.0	0.0	0.0
43	177 E	7	0	0	0	853	8.2	0.0	0.0	0.0
43	178 E	917	772	0	2	5,642	162.5	136.8	0.0	0.4
43	179 E	1,097	217	0	8	4,383	250.3	49.5	0.0	1.8

Table 20. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
43	179 W	1,282	0	0	0	1,386	924.7	0.0	0.0	0.0
43	178 W	1,964	0	0	0	1,819	1,079.6	0.0	0.0	0.0
43	177 W	1,074	0	0	0	2,459	436.7	0.0	0.0	0.0
43	175 W	163	0	0	0	750	217.3	0.0	0.0	0.0
43	172 W	192	0	0	0	520	369.2	0.0	0.0	0.0
43	171 W	342	0	0	1	2,168	157.7	0.0	0.0	0.5
43	170 W	322	0	0	0	1,358	237.0	0.0	0.0	0.0
43	168 W	41	0	0	0	1,627	25.2	0.0	0.0	0.0
43	167 W	146	0	0	0	3,863	37.8	0.0	0.0	0.0
43	166 W	1,304	0	0	6	6,824	191.1	0.0	0.0	0.9
43	165 W	42	0	0	0	828	50.7	0.0	0.0	0.0
43	161 W	0	0	0	0	775	0.0	0.0	0.0	0.0
43	160 W	7	0	0	0	2,354	3.0	0.0	0.0	0.0
43	159 W	33	0	0	0	3,210	10.3	0.0	0.0	0.0
43	158 W	437	0	0	0	11,365	38.4	0.0	0.0	0.0
43	157 W	1,190	0	1	0	20,432	58.2	0.0	0.0	0.0
43	156 W	65	0	0	0	800	81.2	0.0	0.0	0.0
43	153 W	210	0	3	0	4,620	45.5	0.0	0.6	0.0
43	152 W	51	0	0	2	2,670	19.1	0.0	0.0	0.7
43	151 W	510	0	0	1	4,299	118.6	0.0	0.0	0.2
43	150 W	373	0	0	0	1,685	221.4	0.0	0.0	0.0
43	148 W	227	0	0	0	1,748	129.9	0.0	0.0	0.0
42	170 E	13	9	0	0	1,920	6.8	4.7	0.0	0.0
42	171 E	129	1	0	2	810	159.3	1.2	0.0	2.5
42	172 E	4	0	0	0	900	4.4	0.0	0.0	0.0
42	173 E	483	9,291	0	2	3,015	160.2	3,081.6	0.0	0.7
42	174 E	27	0	0	0	2,505	10.8	0.0	0.0	0.0
42	175 E	762	0	0	1	1,625	469.0	0.0	0.0	0.6
42	169 W	510	0	0	0	1,642	310.7	0.0	0.0	0.0
42	168 W	597	0	0	3	2,983	200.1	0.0	0.0	1.0
42	167 W	258	0	2	0	5,523	46.7	0.0	0.4	0.0
42	160 W	110	4	0	2	900	122.2	4.4	0.0	2.2
42	159 W	95	0	0	2	900	105.6	0.0	0.0	2.2
42	158 W	56	0	0	6	1,738	32.2	0.0	0.0	3.5
42	152 W	1,344	0	0	11	4,149	323.9	0.0	0.0	2.7
42	151 W	593	0	2	3	4,437	133.6	0.0	0.5	0.7
42	150 W	1,777	71	0	10	6,379	278.6	11.1	0.0	1.6
41	175 E	8	0	0	0	710	11.3	0.0	0.0	0.0

Table 20. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
45	171 E	27	0	0	0	771	35.0	0.0	0.0	0.0
45	172 E	0	0	0	0	782	0.0	0.0	0.0	0.0
45	176 E	130	0	0	0	840	154.8	0.0	0.0	0.0
45	177 E	0	0	0	0	861	0.0	0.0	0.0	0.0
45	178 E	4	0	0	0	738	5.4	0.0	0.0	0.0
45	179 E	23	0	0	0	1,617	14.2	0.0	0.0	0.0
45	178 W	0	0	0	0	905	0.0	0.0	0.0	0.0
45	177 W	0	0	0	0	600	0.0	0.0	0.0	0.0
45	176 W	6	0	0	1	5,296	1.1	0.0	0.0	0.2
45	175 W	2	0	0	0	1,307	1.5	0.0	0.0	0.0
45	174 W	447	0	0	0	3,402	131.4	0.0	0.0	0.0
45	173 W	3	0	0	0	3,261	0.9	0.0	0.0	0.0
45	171 W	171	0	0	1	3,312	51.6	0.0	0.0	0.3
45	170 W	625	4	1	4	9,100	68.7	0.4	0.1	0.4
45	162 W	10	0	0	0	900	11.1	0.0	0.0	0.0
45	161 W	87	0	0	1	2,617	33.2	0.0	0.0	0.4
45	160 W	620	107	0	3	6,456	96.0	16.6	0.0	0.5
45	159 W	89	0	0	1	800	111.3	0.0	0.0	1.3
45	158 W	313	0	0	0	4,457	70.2	0.0	0.0	0.0
45	157 W	334	0	0	0	4,090	81.7	0.0	0.0	0.0
45	153 W	21	0	0	0	960	21.9	0.0	0.0	0.0
45	152 W	44	0	0	0	960	45.8	0.0	0.0	0.0
45	151 W	106	0	0	0	1,920	55.2	0.0	0.0	0.0
45	150 W	127	0	0	0	800	158.7	0.0	0.0	0.0
44	171 E	33	0	0	0	4,117	8.0	0.0	0.0	0.0
44	172 E	40	0	0	0	3,146	12.7	0.0	0.0	0.0
44	173 E	0	0	0	0	1,590	0.0	0.0	0.0	0.0
44	174 E	0	0	0	0	1,665	0.0	0.0	0.0	0.0
44	175 E	0	0	0	0	2,532	0.0	0.0	0.0	0.0
44	176 E	6	0	0	0	810	7.4	0.0	0.0	0.0
44	177 E	22	0	0	0	2,010	10.9	0.0	0.0	0.0
44	178 E	0	0	0	0	791	0.0	0.0	0.0	0.0
44	179 E	165	0	0	2	3,436	48.0	0.0	0.0	0.6
44	179 W	283	0	1	3	7,312	38.7	0.0	0.1	0.4
44	178 W	152	0	1	2	4,472	34.0	0.0	0.2	0.4
44	177 W	14	1	0	2	1,254	11.2	0.8	0.0	1.6
44	176 W	89	0	0	1	1,512	58.9	0.0	0.0	0.7
44	174 W	4	0	0	0	756	5.3	0.0	0.0	0.0
44	170 W	20	0	0	0	900	22.2	0.0	0.0	0.0
44	161 W	20	3,669	2	5	930	21.5	3,945.2	2.2	5.4
44	160 W	301	1,931	18	24	4,509	66.8	428.3	4.0	5.3
44	158 W	267	969	0	4	754	354.1	1,285.1	0.0	5.3
43	170 E	10	159	0	0	1,856	5.4	85.7	0.0	0.0
43	171 E	89	13	0	3	7,818	11.4	1.7	0.0	0.4
43	172 E	162	0	0	2	5,881	27.5	0.0	0.0	0.3
43	173 E	11	0	0	0	1,538	7.2	0.0	0.0	0.0
43	174 E	4	0	0	0	2,317	1.7	0.0	0.0	0.0
43	175 E	0	0	0	0	846	0.0	0.0	0.0	0.0
43	176 E	0	0	0	0	905	0.0	0.0	0.0	0.0
43	177 E	0	0	0	0	1,810	0.0	0.0	0.0	0.0
43	178 E	7	14	0	1	1,545	4.5	9.1	0.0	0.6
43	179 E	2	168	0	0	378	5.3	444.4	0.0	0.0
43	179 W	0	147	0	0	756	0.0	194.4	0.0	0.0
43	178 W	4	1	0	6	2,598	1.5	0.4	0.0	2.3
43	177 W	79	44	0	1	4,440	17.8	9.9	0.0	0.2

Table 20. (Continued)

1° x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Albacore	Skip-jack	Other Tunas	Bill-fishes	(50m)	Albacore	Skip-jack	Other Tunas	Bill-fishes
43	176 W	58	0	0	1	4,865	11.9	0.0	0.0	0.2
43	160 W	58	8,538	4	14	1,632	35.5	5,231.6	2.5	8.6
43	158 W	564	2,033	0	5	905	623.3	2,246.9	0.0	5.5
42	165 E	0	1	0	0	1,393	0.0	0.7	0.0	0.0
42	170 E	3	3,613	0	0	3,355	0.9	1,077.1	0.0	0.0
42	171 E	4	3,857	0	5	1,376	2.9	2,803.3	0.0	3.6
42	172 E	1	2,804	0	0	2,401	0.4	1,167.9	0.0	0.0
42	173 E	31	19,394	0	9	2,115	14.7	9,169.7	0.0	4.3
42	174 E	26	9,423	0	1	1,159	22.4	8,128.9	0.0	0.9
42	175 E	62	16,538	0	3	3,736	16.6	4,427.1	0.0	0.8
42	176 E	28	4,195	0	1	1,719	16.3	2,440.4	0.0	0.6
42	178 W	24	2,091	0	0	7,182	3.3	291.1	0.0	0.0
42	177 W	6	357	0	0	1,056	5.7	338.2	0.0	0.0
41	170 E	0	254	0	0	522	0.0	486.6	0.0	0.0
41	174 E	3	1,721	0	3	860	3.5	2,001.2	0.0	3.5
41	176 E	3	2,053	0	3	828	3.6	2,479.5	0.0	3.6
41	177 W	39	3,311	0	2	2,213	17.6	1,496.3	0.0	0.9
40	175 E	10	444	0	2	644	15.5	689.4	0.0	3.1

Table 20. (Continued)

October

1°x 1° Area		Observed Bycatch in Number				Tans	CPUE (Number per 1000 tans)			
Lat.	Long.	Albacore	Skip-jack	Other Tunas	Bill-fishes	(50m)	Albacore	Skip-jack	Other Tunas	Bill-fishes
43	177 E	0	0	0	0	620	0.0	0.0	0.0	0.0
43	178 E	18	19	0	1	3,419	5.3	5.6	0.0	0.3
43	179 E	30	451	0	0	3,258	9.2	138.4	0.0	0.0
43	178 W	1	21	0	0	845	1.2	24.9	0.0	0.0
43	177 W	2	0	0	0	2,755	0.7	0.0	0.0	0.0
43	176 W	57	0	0	0	3,901	14.6	0.0	0.0	0.0
43	175 W	99	0	0	0	2,853	34.7	0.0	0.0	0.0
43	174 W	7	0	0	0	756	9.3	0.0	0.0	0.0
43	173 W	72	210	0	0	2,427	29.7	86.5	0.0	0.0
43	172 W	59	29	1	1	4,101	14.4	7.1	0.2	0.2
43	171 W	57	0	1	0	3,474	16.4	0.0	0.3	0.0
42	170 E	19	1,312	1	1	2,297	8.3	571.2	0.4	0.4
42	171 E	3	22,880	1	1	5,671	0.5	4,034.6	0.2	0.2
42	172 E	16	10,122	0	4	3,791	4.2	2,670.1	0.0	1.1
42	177 E	2	443	0	0	846	2.4	523.6	0.0	0.0
42	178 E	60	414	0	0	2,493	24.1	166.1	0.0	0.0
42	179 E	4	245	0	0	874	4.6	280.4	0.0	0.0
42	179 W	7	57	0	0	905	7.7	63.0	0.0	0.0
42	178 W	147	348	1	2	11,452	12.8	30.4	0.1	0.2
42	177 W	3	12	0	0	756	4.0	15.9	0.0	0.0
42	176 W	131	50	0	0	2,897	45.2	17.3	0.0	0.0
42	175 W	90	22	0	0	1,428	63.0	15.4	0.0	0.0
42	174 W	6	0	0	0	900	6.7	0.0	0.0	0.0
41	162 E	22	71	0	0	1,489	14.8	47.7	0.0	0.0
41	163 E	12	365	0	1	1,368	8.8	266.8	0.0	0.7
41	170 E	0	634	0	0	758	0.0	836.4	0.0	0.0
41	171 E	28	3,974	0	3	3,137	8.9	1,266.7	0.0	1.0
41	178 E	1	327	0	2	2,440	0.4	134.0	0.0	0.8
41	179 W	20	68	0	0	5,640	3.5	12.1	0.0	0.0
41	178 W	45	152	0	0	5,232	8.6	29.1	0.0	0.0
41	177 W	982	9,910	0	3	6,550	149.9	1,513.1	0.0	0.5
41	176 W	212	2,333	0	1	5,073	41.8	459.9	0.0	0.2
40	171 E	11	241	0	0	1,632	6.7	147.7	0.0	0.0
40	177 E	0	182	0	0	1,489	0.0	122.2	0.0	0.0
40	178 E	0	198	0	2	1,489	0.0	133.0	0.0	1.3
39	171 E	10	74	0	0	882	11.3	83.9	0.0	0.0
39	174 E	0	872	0	5	3,528	0.0	247.2	0.0	1.4
38	171 E	0	47	0	1	1,476	0.0	31.8	0.0	0.7
37	171 E	0	362	0	1	882	0.0	410.4	0.0	1.1

Table 20. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
41	174 E	23	7	0	1	3,422	6.7	2.0	0.0	0.3
41	175 E	10	34	0	2	733	13.6	46.4	0.0	2.7
41	176 E	25	438	0	4	3,177	7.9	137.9	0.0	1.3
41	177 E	8	176	0	3	1,711	4.7	102.9	0.0	1.8
41	179 W	13	9	0	0	1,711	7.6	5.3	0.0	0.0
41	178 W	11	9	0	0	2,322	4.7	3.9	0.0	0.0
40	176 E	4	99	0	1	840	4.8	117.9	0.0	1.2
40	177 E	6	691	0	1	4,487	1.3	154.0	0.0	0.2
40	178 E	4	1,053	0	4	3,253	1.2	323.7	0.0	1.2
39	173 E	1	110	0	0	611	1.6	180.0	0.0	0.0

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Albacore	Skip-jack	Other Tunas	Bill-fishes	Tans (50m)	CPUE (Number per 1000 tans) Albacore	Skip-jack	Other Tunas	Bill-fishes
39	170 E	39	565	0	2	3,422	11.4	165.1	0.0	0.6
39	171 E	6	1,068	0	8	2,200	2.7	485.5	0.0	3.6

Table 21. Observed bycatch of Pacific pomfret, pelagic armorhead and yellowtail, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of Pacific pomfret, pelagic armorhead and yellowtail by 1 x 1 degre statistical area and month in the 1990 Japanese squid driftnet fishery. For standardized tans for yellowtail, see Table 19.

June

1°x 1° Area		Observed Bycatch in Number			Tans (50m)		CPUE (No. per 1000 tans)		
Lat.	Long.	Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Pomfret	Armor-head	Pacific Pomfret	Pelagic Armor-head	Yellow-tail
41	177 E	2,720	0	0	3,007	3,007	904.6	0.0	0.0
41	171 W	3,332	0	0	1,020	1,020	3,266.7	0.0	0.0
40	175 E	170	0	0	749	749	227.0	0.0	0.0
39	170 E	107	2	0	1,455	1,455	73.6	1.4	0.0
39	172 E	123	0	0	706	706	174.3	0.0	0.0
39	173 E	95	0	0	684	684	138.9	0.0	0.0
39	174 E	410	0	0	1,332	1,332	307.8	0.0	0.0
39	175 E	2,230	3	6	11,468	11,468	194.5	0.3	0.5
39	176 E	6,078	5	7	16,734	16,848	363.2	0.3	0.4
39	177 E	4,816	10	2	8,338	8,338	577.6	1.2	0.2
39	178 E	3,810	1	3	6,226	6,226	612.0	0.2	0.5
39	179 E	8,173	2	9	11,758	11,758	695.1	0.2	0.8
39	179 W	15,000	5	78	17,593	17,593	852.6	0.3	4.4
39	178 W	6,363	18	25	11,886	11,886	535.3	1.5	2.1
39	177 W	6,276	40	359	31,162	31,559	201.4	1.3	11.4
39	176 W	4,172	12	275	28,853	28,853	144.6	0.4	9.5
39	175 W	110	0	4	1,920	1,920	57.3	0.0	2.1
39	174 W	742	0	28	1,810	1,810	410.0	0.0	15.5
39	173 W	132	0	1	735	735	179.6	0.0	1.4
39	172 W	943	0	1	840	840	1,122.6	0.0	1.2
39	171 W	3,528	2	12	5,101	5,101	691.7	0.4	2.4
39	170 W	41,873	399	203	47,873	47,873	874.7	8.3	4.2
39	169 W	28,415	243	130	39,450	39,450	720.3	6.2	3.3
39	168 W	53,789	1,243	68	25,406	25,558	2,117.2	48.6	2.7
39	167 W	30,272	1,622	132	20,187	20,187	1,499.6	80.4	6.5
39	166 W	21,634	1,025	181	8,620	8,752	2,509.7	117.1	20.7
39	165 W	24,424	777	12	6,156	6,475	3,967.4	120.0	1.9
39	164 W	40,233	7,598	223	25,015	25,015	1,608.4	303.7	8.9
39	163 W	6,703	330	82	7,573	7,573	885.1	43.6	10.8
39	162 W	2,652	1,893	1	4,094	4,094	647.8	462.4	0.2
39	160 W	154	1	105	1,452	1,452	106.1	0.7	72.3
39	159 W	285	0	12	1,621	1,621	175.8	0.0	7.4
39	158 W	14,986	4,671	222	13,815	14,117	1,084.8	330.9	15.7
39	157 W	8,401	7,771	504	17,475	17,749	480.7	437.8	28.4
39	156 W	2,686	1,246	355	13,534	13,534	198.5	92.1	26.2
39	155 W	700	18	235	9,210	9,210	76.0	2.0	25.5
39	154 W	2,767	0	485	19,970	19,970	138.6	0.0	24.3
39	153 W	1,403	11	325	16,463	16,463	85.2	0.7	19.7
39	152 W	306	0	412	7,984	8,533	38.3	0.0	48.3
39	151 W	220	0	266	5,040	5,177	43.7	0.0	51.4
39	149 W	3	0	14	809	809	3.7	0.0	17.3
39	148 W	45	0	295	2,876	2,876	15.6	0.0	102.6
39	147 W	11	0	81	833	833	13.2	0.0	97.2
39	146 W	274	0	5	902	902	303.6	0.0	5.5
38	171 E	1	0	37	924	924	1.1	0.0	40.0
38	176 E	33	0	9	1,700	1,885	19.4	0.0	4.8
38	179 E	1,460	0	6	3,732	3,732	391.2	0.0	1.6
38	179 W	953	2	0	2,858	2,858	333.4	0.7	0.0
38	177 W	2,775	13	145	12,856	12,856	215.9	1.0	11.3
38	176 W	298	2	206	6,851	6,851	43.5	0.3	30.1

Table 21. (Continued)

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m): Pomfret	Armor-head	CPUE (No. per 1000 tans): Pacific Pomfret	Pelagic Armor-head	Yellow-tail
38	175 W	110	0	0	1,694	1,694	64.9	0.0	0.0
38	174 W	121	0	1	735	735	164.6	0.0	1.4
38	171 W	1,260	0	25	7,009	7,009	179.8	0.0	3.6
38	170 W	4,137	2	50	14,765	14,765	280.2	0.1	3.4
38	169 W	2,280	63	63	8,896	8,896	256.3	7.1	7.1
38	168 W	4,780	31	257	10,727	10,847	445.6	2.9	23.7
38	167 W	1,774	0	185	7,300	7,300	243.0	0.0	25.3
38	166 W	819	924	173	7,175	7,175	114.1	128.8	24.1
38	165 W	9,850	3,081	27	7,114	7,114	1,384.5	433.1	3.8
38	164 W	10,271	479	139	18,769	18,769	547.2	25.5	7.4
38	163 W	3,009	697	89	8,371	8,371	359.5	83.3	10.6
38	162 W	125	47	4	853	853	146.6	55.1	4.7
38	159 W	12	0	10	907	907	13.2	0.0	11.0
38	158 W	429	7,199	80	2,930	2,930	146.4	2,456.7	27.3
38	157 W	152	0	171	3,732	3,732	40.7	0.0	45.8
38	156 W	5	0	56	957	957	5.2	0.0	58.5
38	155 W	261	2	496	8,500	8,500	30.7	0.2	58.4
38	154 W	0	69	5	1,008	1,008	0.0	68.5	5.0
38	153 W	15	0	10	845	845	17.8	0.0	11.8
38	152 W	6,822	5	55	3,144	3,144	2,169.8	1.6	17.5
38	151 W	258	0	48	3,645	3,645	70.8	0.0	13.2
38	150 W	302	11	42	3,910	3,910	77.2	2.8	10.7
37	170 W	33	0	20	725	725	45.5	0.0	27.6
37	167 W	16	0	29	780	780	20.5	0.0	37.2
37	166 W	43	0	4	1,682	1,682	25.6	0.0	2.4
37	165 W	211	0	98	4,622	4,896	45.7	0.0	20.0
37	164 W	55	0	112	3,294	3,294	16.7	0.0	34.0
37	163 W	572	0	326	9,463	9,737	60.4	0.0	33.5

Table 21. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m): Pomfret	Armor-head	CPUE (No. per 1000 tans): Pacific Pomfret	Pelagic Armor-head	Yellow-tail
43	169 E	2,114	0	0	1,450	1,450	1,457.9	0.0	0.0
43	170 E	1,832	0	0	1,080	1,080	1,696.3	0.0	0.0
42	168 E	752	0	0	749	749	1,004.3	0.0	0.0
42	169 E	5,470	0	0	2,870	2,870	1,905.7	0.0	0.0
42	170 E	7,669	1	0	4,001	4,001	1,916.6	0.2	0.0
42	169 W	50,364	638	21	23,691	24,244	2,125.9	26.3	0.9
42	168 W	29,921	702	5	20,077	20,077	1,490.3	35.0	0.2
42	167 W	34,897	937	1	16,823	17,784	2,074.4	52.7	0.1
42	166 W	115,143	5,851	10	34,355	34,743	3,351.5	168.4	0.3
42	165 W	35,284	10,827	2	27,527	28,180	1,281.8	384.2	0.1
42	164 W	4,159	2,813	8	6,192	7,027	671.7	400.3	1.1
42	163 W	7,396	1,161	17	19,701	20,821	375.4	55.8	0.8
42	162 W	38,249	14,127	11	32,193	32,825	1,188.1	430.4	0.3
42	161 W	64,544	35,114	6	23,450	24,565	2,752.4	1,429.4	0.2
42	160 W	14,916	11,812	4	15,532	15,687	960.3	753.0	0.3
42	159 W	4,999	13,144	86	22,604	22,604	221.2	581.5	3.8
42	158 W	25,645	31,532	147	14,775	14,775	1,735.7	2,134.2	9.9
42	157 W	1,126	7,723	0	4,083	4,215	275.8	1,832.3	0.0
42	156 W	96	107	1	792	792	121.2	135.1	1.3
42	155 W	169	102	0	3,696	3,696	45.7	27.6	0.0
42	154 W	37	58	0	3,696	3,696	10.0	15.7	0.0
42	153 W	8,938	298	48	2,844	2,844	3,142.8	104.8	16.9
42	152 W	9,466	617	53	9,676	9,676	978.3	63.8	5.5
42	151 W	3,394	0	19	2,627	2,627	1,292.1	0.0	7.2
42	148 W	515	0	57	3,024	3,024	170.3	0.0	18.8
42	147 W	499	135	50	2,016	2,016	247.5	67.0	24.8
42	146 W	98	0	135	864	864	113.4	0.0	156.3
41	169 E	1,098	0	0	810	810	1,355.6	0.0	0.0
41	170 E	27,808	0	0	25,321	26,157	1,098.2	0.0	0.0
41	171 E	23,695	0	0	16,453	16,453	1,440.1	0.0	0.0
41	172 E	2,233	0	0	1,535	1,535	1,455.2	0.0	0.0
41	173 E	3,475	0	0	2,841	2,841	1,223.1	0.0	0.0
41	174 E	7,344	0	0	6,984	7,106	1,051.5	0.0	0.0
41	175 E	6,648	0	0	7,249	7,249	917.1	0.0	0.0
41	176 E	8,634	0	0	5,565	5,565	1,551.6	0.0	0.0
41	177 E	111,310	12	0	21,016	21,894	5,296.4	0.5	0.0
41	178 E	10,574	0	1	5,523	5,523	1,914.6	0.0	0.2
41	179 E	697	0	0	1,653	1,653	421.7	0.0	0.0
41	177 W	546	0	0	1,348	1,470	405.2	0.0	0.0
41	175 W	1,688	0	0	1,590	1,725	1,061.6	0.0	0.0
41	174 W	8,125	0	4	6,755	6,755	1,202.8	0.0	0.6
41	173 W	7,578	0	0	3,103	3,103	2,442.2	0.0	0.0
41	172 W	10,135	0	4	7,864	7,864	1,288.7	0.0	0.5
41	171 W	19,238	0	44	15,218	15,218	1,264.2	0.0	2.9
41	170 W	15,775	0	12	12,368	12,708	1,275.5	0.0	0.9
41	169 W	11,441	0	6	12,170	12,577	940.1	0.0	0.5
41	168 W	47,530	167	10	24,518	24,518	1,938.6	6.8	0.4
41	167 W	93,517	995	33	37,619	38,982	2,485.9	25.5	0.8
41	166 W	133,793	5,737	17	53,192	55,097	2,515.3	104.1	0.3
41	165 W	104,560	5,768	34	41,990	45,093	2,490.1	127.9	0.8
41	164 W	121,908	6,688	8	39,660	43,820	3,073.8	152.6	0.2
41	163 W	12,833	1,585	4	24,233	25,383	529.6	62.4	0.2
41	162 W	546	2,556	5	1,816	2,152	300.7	1,187.7	2.3
41	161 W	4,082	17,968	57	12,028	11,916	339.4	1,507.9	4.7

Table 21. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)		CPUE (No. per 1000 tans)		
Lat.	Long.	Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Pomfret	Armor-head	Pacific Pomfret	Pelagic Armor-head	Yellow-tail
41	160 W	975	2,896	17	9,960	9,960	97.9	290.8	1.7
41	159 W	4,899	16,921	63	13,268	12,949	369.2	1,306.8	4.7
41	158 W	3,389	6,183	165	12,821	12,502	264.3	494.6	12.9
41	157 W	365	3,102	37	1,472	1,472	247.9	2,106.8	25.1
41	156 W	167	2,737	0	2,448	2,448	68.2	1,118.1	0.0
41	154 W	96	91	2	1,848	1,848	51.9	49.2	1.1
41	153 W	307	36	12	1,722	1,722	178.3	20.9	7.0
41	152 W	325	219	20	7,690	7,827	42.3	28.0	2.6
41	151 W	105	27	26	5,421	5,421	19.4	5.0	4.8
41	150 W	30	107	13	3,456	3,456	8.7	31.0	3.8
40	175 E	153	0	0	648	648	236.1	0.0	0.0
40	176 E	2,615	0	0	456	547	5,734.6	0.0	0.0
40	177 E	215	0	0	686	686	313.4	0.0	0.0
40	178 E	4,369	0	0	3,343	3,343	1,306.8	0.0	0.0
40	179 E	3,715	0	1	2,904	2,904	1,279.3	0.0	0.3
40	179 W	2,122	0	6	2,275	2,275	932.7	0.0	2.6
40	177 W	47,181	0	124	16,979	17,533	2,778.7	0.0	7.1
40	176 W	1,013	0	15	960	960	1,055.2	0.0	15.6
40	173 W	8,438	0	0	1,790	1,790	4,714.0	0.0	0.0
40	172 W	1,834	0	0	1,350	1,350	1,358.5	0.0	0.0
40	171 W	4,569	0	10	2,314	2,604	1,974.2	0.0	3.8
40	170 W	895	0	0	300	300	2,983.3	0.0	0.0
40	168 W	147	0	0	790	790	186.2	0.0	0.0
40	166 W	238	0	0	922	922	258.2	0.0	0.0
40	161 W	1,221	0	0	864	864	1,413.2	0.0	0.0
40	159 W	276	1	8	2,574	2,574	107.2	0.4	3.1
40	158 W	776	627	69	3,984	3,984	194.8	157.4	17.3
40	154 W	28	0	16	840	840	33.3	0.0	19.0
40	153 W	785	157	37	6,823	7,098	115.0	22.1	5.2
40	150 W	21	0	16	828	828	25.4	0.0	19.3
39	177 E	238	0	0	882	882	269.8	0.0	0.0
39	166 W	874	0	32	2,765	2,765	316.1	0.0	11.6
39	157 W	13	0	88	930	930	14.0	0.0	94.6

Table 21. (Continued)

August

1°x 1° Area		Observed Bycatch in Number			Tans (50m)		CPUE (No. per 1000 tans)		
Lat.	Long.	Pacific Pomfret	Pelagic Armorhead	Yellowtail	Pomfret	Armorhead	Pacific Pomfret	Pelagic Armorhead	Yellowtail
45	178 W	409	0	0	564	564	725.2	0.0	0.0
45	163 W	1,450	114	0	1,735	1,735	835.7	65.7	0.0
45	162 W	4,688	664	0	2,672	2,672	1,754.5	248.5	0.0
45	160 W	987	615	0	4,284	4,284	230.4	143.6	0.0
45	159 W	1,039	935	0	11,975	11,975	86.8	78.1	0.0
45	158 W	515	1,821	0	7,573	7,573	68.0	240.5	0.0
45	157 W	371	3,470	0	7,945	7,945	46.7	436.8	0.0
45	156 W	73	1,414	0	1,821	1,821	40.1	776.4	0.0
45	155 W	58	1,348	0	861	861	67.4	1,565.4	0.0
45	154 W	273	289	0	2,180	2,180	125.2	132.6	0.0
45	153 W	1,263	134	27	4,982	4,982	253.5	26.9	5.4
45	152 W	2,167	75	0	14,243	14,243	152.1	5.3	0.0
45	151 W	2,836	2,514	4	11,095	11,095	255.6	226.6	0.4
45	150 W	198	111	0	1,642	1,642	120.6	67.6	0.0
45	149 W	698	1,009	0	5,634	5,634	123.9	179.1	0.0
45	148 W	87	141	2	2,150	2,150	40.5	65.6	0.9
44	170 E	2,839	0	0	3,755	3,755	756.0	0.0	0.0
44	171 E	8,475	0	0	13,082	13,082	647.8	0.0	0.0
44	172 E	2,837	0	0	4,898	4,898	579.2	0.0	0.0
44	173 E	876	0	0	2,010	2,010	435.8	0.0	0.0
44	174 E	1,428	0	0	5,774	5,774	247.3	0.0	0.0
44	175 E	3,870	0	0	4,476	4,476	864.6	0.0	0.0
44	176 E	14,800	0	0	14,229	15,186	1,040.2	0.0	0.0
44	177 E	11,869	0	0	10,610	10,610	1,118.7	0.0	0.0
44	178 E	7,607	0	0	10,338	10,338	735.8	0.0	0.0
44	179 E	42,247	0	8	22,760	23,079	1,856.2	0.0	0.3
44	180	3,141	0	0	750	750	4,188.0	0.0	0.0
44	179 W	64,982	56	7	39,622	41,188	1,640.0	1.4	0.2
44	178 W	77,713	0	2	17,010	20,048	4,568.7	0.0	0.1
44	177 W	12,792	1	1	6,035	6,175	2,119.6	0.2	0.2
44	175 W	4,469	0	0	450	750	9,931.1	0.0	0.0
44	171 W	6,380	0	0	640	960	9,968.8	0.0	0.0
44	168 W	38,680	0	0	480	800	80,583.3	0.0	0.0
44	159 W	1,036	299	0	6,276	6,276	165.1	47.6	0.0
44	158 W	3,753	1,628	5	20,943	20,943	179.2	77.7	0.2
44	157 W	1,097	5,724	2	18,578	18,802	59.0	304.4	0.1
44	156 W	1,443	1,438	1	4,440	4,280	325.0	336.0	0.2
44	155 W	1,624	27	0	1,665	1,665	975.5	16.2	0.0
44	154 W	141	26	0	792	792	178.0	32.8	0.0
44	153 W	196	1,657	1	792	792	247.5	2,092.2	1.3
44	152 W	113	36	0	1,860	1,860	60.8	19.4	0.0
44	151 W	3,270	4,073	4	7,350	7,350	444.9	554.1	0.5
44	150 W	1,671	383	1	3,171	3,171	527.0	120.8	0.3
44	149 W	834	110	20	5,219	5,219	159.8	21.1	3.8
44	148 W	389	284	2	4,724	4,724	82.3	60.1	0.4
43	170 E	833	0	0	3,203	3,338	260.1	0.0	0.0
43	171 E	2,102	0	0	1,715	1,715	1,225.7	0.0	0.0
43	172 E	768	0	0	1,311	1,311	585.8	0.0	0.0
43	173 E	1,386	0	0	4,789	4,789	289.4	0.0	0.0
43	174 E	2,652	0	7	7,082	7,362	374.5	0.0	1.0
43	175 E	2,828	0	0	4,679	4,679	604.4	0.0	0.0
43	176 E	1,118	10	0	1,445	1,445	773.5	6.9	0.0
43	177 E	1,248	0	0	853	853	1,463.8	0.0	0.0
43	178 E	3,607	9	0	5,642	5,642	639.4	1.6	0.0

Table 21. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)		CPUE (No. per 1000 tans)		
Lat.	Long.	Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Pomfret	Armor-head	Pacific Pomfret	Pelagic Armor-head	Yellow-tail
43	179 E	3,283	0	0	4,383	4,383	749.1	0.0	0.0
43	179 W	35,491	0	0	1,118	1,386	31,756.4	0.0	0.0
43	178 W	50,466	0	5	1,819	1,819	27,740.8	0.0	2.7
43	177 W	69,200	0	2	1,576	2,459	43,919.8	0.0	0.8
43	175 W	14,139	0	0	450	750	31,420.0	0.0	0.0
43	172 W	16,054	0	0	312	520	51,455.1	0.0	0.0
43	171 W	17,457	1	0	2,064	2,168	8,457.8	0.5	0.0
43	170 W	74,050	0	0	1,085	1,358	68,261.4	0.0	0.0
43	168 W	348	303	0	1,627	1,627	213.9	186.2	0.0
43	167 W	8,162	81	0	3,863	3,863	2,113.0	21.0	0.0
43	166 W	94,775	1	0	6,600	6,824	14,359.8	0.1	0.0
43	165 W	50	54	0	828	828	60.4	65.2	0.0
43	161 W	99	178	0	620	775	159.7	229.7	0.0
43	160 W	465	390	0	2,354	2,354	197.5	165.6	0.0
43	159 W	1,316	558	0	3,210	3,051	410.0	182.9	0.0
43	158 W	1,934	7,229	8	11,253	10,887	171.9	664.0	0.7
43	157 W	10,492	16,203	10	20,432	19,954	513.5	812.0	0.5
43	156 W	167	817	0	800	800	208.6	1,020.7	0.0
43	153 W	2,435	66	2	4,620	4,620	527.1	14.3	0.4
43	152 W	345	986	0	2,670	2,670	129.2	369.3	0.0
43	151 W	9,584	0	49	4,299	4,299	2,229.4	0.0	11.4
43	150 W	694	0	19	1,685	1,685	411.9	0.0	11.3
43	148 W	1,234	15	0	1,748	1,748	705.9	8.6	0.0
42	170 E	6,533	0	0	1,750	1,920	3,733.1	0.0	0.0
42	171 E	219	0	1	675	810	324.4	0.0	1.2
42	172 E	527	0	0	900	900	585.6	0.0	0.0
42	173 E	106	0	0	3,015	3,015	35.2	0.0	0.0
42	174 E	156	0	1	2,505	2,505	62.3	0.0	0.4
42	175 E	17,289	0	1	1,499	1,625	11,533.7	0.0	0.6
42	169 W	524	0	0	1,505	1,642	348.2	0.0	0.0
42	168 W	8,879	1	0	2,854	2,983	3,111.1	0.3	0.0
42	167 W	16,952	0	0	5,394	5,523	3,143.0	0.0	0.0
42	160 W	1,639	152	0	900	900	1,821.1	168.9	0.0
42	159 W	430	2	0	900	900	477.8	2.2	0.0
42	158 W	1,887	3,961	17	1,738	1,738	1,086.0	2,279.7	9.8
42	152 W	1,171	0	147	4,149	4,149	282.2	0.0	35.4
42	151 W	993	0	55	4,437	4,437	223.8	0.0	12.4
42	150 W	367	27	289	6,379	6,379	57.5	4.2	45.3
41	175 E	645	0	0	710	710	907.9	0.0	0.0

Table 21. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Bycatch in Number Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m) Pomfret	Armor-head	CPUE (No. per 1000 tans) Pacific Pomfret	Pelagic Armor-head	Yellow-tail
45	171 E	377	0	0	771	771	489.0	0.0	0.0
45	172 E	126	0	0	782	782	161.1	0.0	0.0
45	176 E	930	0	0	840	840	1,107.1	0.0	0.0
45	177 E	57	0	0	861	861	66.2	0.0	0.0
45	178 E	271	0	0	738	738	367.2	0.0	0.0
45	179 E	1,166	0	0	1,617	1,617	721.1	0.0	0.0
45	178 W	278	0	0	905	905	307.3	0.0	0.0
45	177 W	348	0	0	600	600	580.0	0.0	0.0
45	176 W	2,699	0	2	5,296	5,296	509.6	0.0	0.4
45	175 W	5,517	0	0	1,307	1,307	4,221.1	0.0	0.0
45	174 W	29,170	0	0	3,402	3,402	8,574.4	0.0	0.0
45	173 W	12,828	0	0	3,261	3,261	3,934.0	0.0	0.0
45	171 W	9,027	0	1	3,312	3,312	2,725.5	0.0	0.3
45	170 W	17,870	0	7	8,722	9,100	2,048.8	0.0	0.8
45	162 W	2,306	28	0	750	900	3,074.7	31.1	0.0
45	161 W	22,110	19	22	2,297	2,617	9,626.0	7.3	8.4
45	160 W	24,726	3,578	0	5,161	6,312	4,790.6	566.9	0.0
45	159 W	3,069	0	0	800	800	3,836.3	0.0	0.0
45	158 W	2,152	2,944	5	4,457	4,457	482.9	660.6	1.1
45	157 W	36,459	7,323	0	3,947	4,090	9,237.6	1,790.3	0.0
45	153 W	435	263	0	960	960	453.1	274.0	0.0
45	152 W	2,877	45	0	960	960	2,996.9	46.9	0.0
45	151 W	2,380	436	0	1,920	1,920	1,239.6	227.1	0.0
45	150 W	462	796	0	800	800	577.4	994.9	0.0
44	171 E	1,182	0	0	4,117	4,117	287.1	0.0	0.0
44	172 E	1,522	0	0	3,146	3,146	483.8	0.0	0.0
44	173 E	610	0	0	1,590	1,590	383.6	0.0	0.0
44	174 E	763	0	0	1,665	1,665	458.3	0.0	0.0
44	175 E	5,224	0	0	2,532	2,532	2,062.9	0.0	0.0
44	176 E	560	0	0	810	810	691.4	0.0	0.0
44	177 E	2,298	0	0	2,010	2,010	1,143.3	0.0	0.0
44	178 E	28	0	0	791	791	35.4	0.0	0.0
44	179 E	2,049	0	1	2,479	3,436	826.5	0.0	0.3
44	179 W	11,393	0	1	7,312	7,312	1,558.1	0.0	0.1
44	178 W	7,851	0	1	4,472	4,472	1,755.7	0.0	0.2
44	177 W	962	0	0	1,254	1,254	767.1	0.0	0.0
44	176 W	526	0	0	1,512	1,512	347.9	0.0	0.0
44	174 W	472	0	0	756	756	624.3	0.0	0.0
44	170 W	2,762	0	0	900	900	3,068.9	0.0	0.0
44	161 W	455	0	10	930	930	489.2	0.0	10.8
44	160 W	648	1	1,090	4,509	4,509	143.7	0.2	241.7
44	158 W	24	0	0	754	754	31.8	0.0	0.0
43	170 E	3,990	0	0	1,856	1,856	2,149.8	0.0	0.0
43	171 E	9,123	0	0	7,593	7,818	1,201.4	0.0	0.0
43	172 E	1,825	0	0	5,881	5,881	310.3	0.0	0.0
43	173 E	1,819	0	0	1,538	1,538	1,183.0	0.0	0.0
43	174 E	3,539	0	0	2,317	2,317	1,527.3	0.0	0.0
43	175 E	235	0	0	846	846	277.8	0.0	0.0
43	176 E	51	0	0	905	905	56.4	0.0	0.0
43	177 E	560	0	0	1,810	1,810	309.5	0.0	0.0
43	178 E	450	0	0	1,545	1,545	291.2	0.0	0.0
43	179 E	30	0	0	378	378	79.4	0.0	0.0
43	179 W	114	0	0	756	756	150.8	0.0	0.0
43	178 W	1,234	0	0	2,598	2,598	475.0	0.0	0.0

Table 21. (Continued)

1°x 1° Area		Observed Bycatch in Number			Tans (50m)		CPUE (No. per 1000 tans)		
Lat.	Long.	Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Pomfret	Armor-head	Pacific Pomfret	Pelagic Armor-head	Yellow-tail
43	177 W	918	0	1	4,440	4,440	206.8	0.0	0.2
43	176 W	4,027	0	1	4,865	4,865	827.8	0.0	0.2
43	160 W	78	0	227	1,632	1,632	47.8	0.0	139.1
43	158 W	0	0	77	905	905	0.0	0.0	85.1
42	165 E	525	0	0	1,393	1,393	376.9	0.0	0.0
42	170 E	1,024	0	2	3,355	3,355	305.3	0.0	0.6
42	171 E	1,421	0	3	1,116	1,376	1,273.5	0.0	2.2
42	172 E	59,105	0	0	2,269	2,401	26,053.5	0.0	0.0
42	173 E	76	0	37	2,115	2,115	35.9	0.0	17.5
42	174 E	82	0	0	1,159	1,159	70.7	0.0	0.0
42	175 E	2,554	0	0	3,736	3,736	683.7	0.0	0.0
42	176 E	426	0	0	1,719	1,719	247.8	0.0	0.0
42	178 W	448	0	23	7,182	7,182	62.4	0.0	3.2
42	177 W	339	0	6	1,056	1,056	321.1	0.0	5.7
41	170 E	39	0	0	522	522	74.7	0.0	0.0
41	174 E	18	0	17	860	860	20.9	0.0	19.8
41	176 E	19	0	7	828	828	22.9	0.0	8.5
41	177 W	29	0	28	2,213	2,213	13.1	0.0	12.7
40	175 E	2	0	0	644	644	3.1	0.0	0.0

Table 21. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m): Pomfret	Armor-head	CPUE (No. per 1000 tans): Pacific Pomfret	Pelagic Armor-head	Yellow-tail
43	177 E	1	0	0	620	620	1.6	0.0	0.0
43	178 E	825	0	0	3,419	3,419	241.3	0.0	0.0
43	179 E	708	0	2	3,258	3,258	217.3	0.0	0.6
43	178 W	54	0	0	845	845	63.9	0.0	0.0
43	177 W	182	1	0	2,755	2,755	66.1	0.4	0.0
43	176 W	6,421	0	1	3,901	3,901	1,646.1	0.0	0.3
43	175 W	785	0	1	2,853	2,853	275.1	0.0	0.4
43	174 W	267	0	0	756	756	353.2	0.0	0.0
43	173 W	439	0	24	2,427	2,427	180.9	0.0	9.9
43	172 W	1,706	0	0	4,101	4,101	416.0	0.0	0.0
43	171 W	1,873	0	7	3,474	3,474	539.1	0.0	2.0
42	170 E	1,910	0	3	2,297	2,297	831.5	0.0	1.3
42	171 E	10,070	0	11	5,521	5,671	1,823.9	0.0	1.9
42	172 E	19,393	0	10	3,491	3,791	5,555.4	0.0	2.6
42	177 E	211	0	0	846	846	249.4	0.0	0.0
42	178 E	4,230	0	0	2,493	2,493	1,696.8	0.0	0.0
42	179 E	99	0	9	874	874	113.3	0.0	10.3
42	179 W	0	1	0	905	905	0.0	1.1	0.0
42	178 W	1,098	0	2	11,452	11,452	95.9	0.0	0.2
42	177 W	197	0	0	756	756	260.6	0.0	0.0
42	176 W	2,968	0	7	2,897	2,897	1,024.5	0.0	2.4
42	175 W	1,642	0	0	1,428	1,428	1,149.9	0.0	0.0
42	174 W	109	0	0	900	900	121.1	0.0	0.0
41	162 E	428	0	0	1,489	1,489	287.4	0.0	0.0
41	163 E	486	0	0	1,368	1,368	355.3	0.0	0.0
41	170 E	1,178	0	0	758	758	1,554.1	0.0	0.0
41	171 E	1,857	0	7	3,137	3,137	591.9	0.0	2.2
41	178 E	10	0	28	2,440	2,440	4.1	0.0	11.5
41	179 W	1,447	0	19	5,640	5,640	256.6	0.0	3.4
41	178 W	518	0	2	5,232	5,232	99.0	0.0	0.4
41	177 W	1,389	0	91	6,550	6,550	212.1	0.0	13.9
41	176 W	1,462	0	96	5,073	5,073	288.2	0.0	18.9
40	171 E	138	0	0	1,632	1,632	84.6	0.0	0.0
40	177 E	22	0	1	1,489	1,489	14.8	0.0	0.7
40	178 E	18	0	11	1,489	1,489	12.1	0.0	7.4
39	171 E	4	0	0	882	882	4.5	0.0	0.0
39	174 E	55	0	8	3,528	3,528	15.6	0.0	2.3
38	171 E	4	0	0	1,476	1,476	2.7	0.0	0.0
37	171 E	0	0	0	882	882	0.0	0.0	0.0

Table 21. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m): Pomfret	Armor-head	CPUE (No. per 1000 tans): Pacific Pomfret	Pelagic Armor-head	Yellow-tail
41	174 E	127	0	14	3,422	3,422	37.1	0.0	4.1
41	175 E	40	0	0	733	733	54.6	0.0	0.0
41	176 E	146	0	6	3,177	3,177	46.0	0.0	1.9
41	177 E	375	0	7	1,711	1,711	219.2	0.0	4.1
41	179 W	1,283	0	3	1,711	1,711	749.9	0.0	1.8
41	178 W	1,629	0	1	2,322	2,322	701.6	0.0	0.4
40	176 E	2	0	3	840	840	2.4	0.0	3.6
40	177 E	96	0	10	4,487	4,487	21.4	0.0	2.2
40	178 E	21	0	7	3,253	3,253	6.5	0.0	2.2
39	173 E	0	0	11	611	611	0.0	0.0	18.0

December

1°x 1° Area Lat.	Long.	Observed Bycatch in Number: Pacific Pomfret	Pelagic Armor-head	Yellow-tail	Tans (50m): Pomfret	Armor-head	CPUE (No. per 1000 tans): Pacific Pomfret	Pelagic Armor-head	Yellow-tail
39	170 E	118	0	30	3,422	3,422	34.5	0.0	8.8
39	171 E	134	0	12	2,200	2,200	60.9	0.0	5.5

Table 22. Observed bycatch of louvar, ocean sunfish and other fishes, observed fishing effort in standardized tans, and bycatch rate per 1,000 tans of louvar, ocean sunfish and other fishes by 1 x 1 degree statistical area and month in the 1990 Japanese squid driftnet fishery.

June

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
41	177 E	0	1	8	3,007	0.00	0.33	2.66
41	171 W	0	0	1	1,020	0.00	0.00	0.98
40	175 E	0	1	1	749	0.00	1.34	1.34
39	170 E	0	0	1	1,455	0.00	0.00	0.69
39	172 E	0	0	0	706	0.00	0.00	0.00
39	173 E	0	0	4	684	0.00	0.00	5.85
39	174 E	0	0	0	1,332	0.00	0.00	0.00
39	175 E	0	1	53	11,468	0.00	0.09	4.62
39	176 E	0	4	49	16,848	0.00	0.24	2.91
39	177 E	0	0	25	8,338	0.00	0.00	3.00
39	178 E	0	2	6	6,226	0.00	0.32	0.96
39	179 E	0	2	17	11,758	0.00	0.17	1.45
39	179 W	1	8	32	17,593	0.06	0.45	1.82
39	178 W	0	4	30	11,886	0.00	0.34	2.52
39	177 W	3	15	251	31,559	0.10	0.48	7.95
39	176 W	2	15	180	28,853	0.07	0.52	6.24
39	175 W	0	1	24	1,920	0.00	0.52	12.50
39	174 W	0	0	0	1,810	0.00	0.00	0.00
39	173 W	3	0	5	735	4.08	0.00	6.80
39	172 W	0	0	3	840	0.00	0.00	3.57
39	171 W	2	0	15	5,101	0.39	0.00	2.94
39	170 W	19	16	121	47,873	0.40	0.33	2.53
39	169 W	15	10	126	39,450	0.38	0.25	3.19
39	168 W	5	4	107	25,558	0.20	0.16	4.19
39	167 W	4	11	134	20,187	0.20	0.54	6.64
39	166 W	10	4	12	8,752	1.14	0.46	1.37
39	165 W	0	0	0	6,475	0.00	0.00	0.00
39	164 W	9	3	92	25,174	0.36	0.12	3.65
39	163 W	0	3	12	7,573	0.00	0.40	1.58
39	162 W	0	0	19	4,094	0.00	0.00	4.64
39	160 W	26	1	4	1,452	17.91	0.69	2.75
39	159 W	4	0	2	1,621	2.47	0.00	1.23
39	158 W	4	2	7	14,117	0.28	0.14	0.50
39	157 W	10	4	26	17,749	0.56	0.23	1.46
39	156 W	26	4	33	13,534	1.92	0.30	2.44
39	155 W	12	4	9	9,210	1.30	0.43	0.98
39	154 W	0	0	12	19,970	0.00	0.00	0.60
39	153 W	1	1	8	16,463	0.06	0.06	0.49
39	152 W	0	0	12	8,533	0.00	0.00	1.41
39	151 W	0	0	0	5,177	0.00	0.00	0.00
39	149 W	0	0	0	809	0.00	0.00	0.00
39	148 W	0	0	0	2,876	0.00	0.00	0.00
39	147 W	0	0	0	833	0.00	0.00	0.00
39	146 W	0	0	0	902	0.00	0.00	0.00
38	171 E	0	0	1	924	0.00	0.00	1.08
38	176 E	0	2	96	1,885	0.00	1.06	50.93
38	179 E	1	0	5	3,732	0.27	0.00	1.34
38	179 W	0	2	6	2,858	0.00	0.70	2.10
38	177 W	2	4	167	12,856	0.16	0.31	12.99
38	176 W	1	6	410	6,851	0.15	0.88	59.84
38	175 W	5	0	33	1,694	2.95	0.00	19.48

Table 22. (Continued)

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
38	174 W	1	0	11	735	1.36	0.00	14.97
38	171 W	0	0	16	7,009	0.00	0.00	2.28
38	170 W	3	7	51	14,765	0.20	0.47	3.45
38	169 W	1	2	95	8,896	0.11	0.22	10.68
38	168 W	6	4	127	10,847	0.55	0.37	11.71
38	167 W	3	1	58	7,300	0.41	0.14	7.94
38	166 W	3	2	63	7,175	0.42	0.28	8.78
38	165 W	1	2	25	7,114	0.14	0.28	3.51
38	164 W	3	5	8	18,769	0.16	0.27	0.43
38	163 W	0	2	2	8,371	0.00	0.24	0.24
38	162 W	0	1	0	853	0.00	1.17	0.00
38	159 W	0	0	0	907	0.00	0.00	0.00
38	158 W	0	0	0	2,930	0.00	0.00	0.00
38	157 W	0	0	19	3,732	0.00	0.00	5.09
38	156 W	0	1	5	957	0.00	1.04	5.22
38	155 W	0	2	11	8,500	0.00	0.24	1.29
38	154 W	0	0	0	1,008	0.00	0.00	0.00
38	153 W	0	0	0	845	0.00	0.00	0.00
38	152 W	0	1	0	3,144	0.00	0.32	0.00
38	151 W	0	0	0	3,645	0.00	0.00	0.00
38	150 W	0	0	0	3,910	0.00	0.00	0.00
37	170 W	0	0	0	725	0.00	0.00	0.00
37	167 W	1	1	10	780	1.28	1.28	12.82
37	166 W	0	0	4	1,682	0.00	0.00	2.38
37	165 W	0	0	30	4,896	0.00	0.00	6.13
37	164 W	0	0	7	3,294	0.00	0.00	2.12
37	163 W	0	1	80	9,737	0.00	0.10	8.22

Table 22. (Continued)

July

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
43	169 E	0	0	3	1,450	0.00	0.00	2.07
43	170 E	0	0	2	1,080	0.00	0.00	1.85
42	168 E	0	0	2	749	0.00	0.00	2.67
42	169 E	1	6	15	2,870	0.35	2.09	5.23
42	170 E	0	4	9	4,001	0.00	1.00	2.25
42	169 W	6	50	53	24,244	0.25	2.06	2.19
42	168 W	2	48	79	20,077	0.10	2.39	3.93
42	167 W	15	63	126	17,784	0.84	3.54	7.08
42	166 W	59	148	214	34,743	1.70	4.26	6.16
42	165 W	47	96	235	28,335	1.66	3.39	8.29
42	164 W	10	22	39	7,027	1.42	3.13	5.55
42	163 W	25	22	39	20,821	1.20	1.06	1.87
42	162 W	65	192	79	33,133	1.96	5.79	2.38
42	161 W	35	117	76	24,985	1.40	4.68	3.04
42	160 W	28	42	63	15,687	1.78	2.68	4.02
42	159 W	19	5	57	22,604	0.84	0.22	2.52
42	158 W	48	16	70	14,775	3.25	1.08	4.74
42	157 W	8	1	4	4,215	1.90	0.24	0.95
42	156 W	0	0	0	792	0.00	0.00	0.00
42	155 W	0	0	1	3,696	0.00	0.00	0.27
42	154 W	0	0	3	3,696	0.00	0.00	0.81
42	153 W	4	5	9	2,844	1.41	1.76	3.16
42	152 W	7	39	27	9,676	0.72	4.03	2.79
42	151 W	3	8	14	2,627	1.14	3.05	5.33
42	148 W	0	0	0	3,024	0.00	0.00	0.00
42	147 W	0	0	0	2,016	0.00	0.00	0.00
42	146 W	0	0	0	864	0.00	0.00	0.00
41	169 E	0	3	14	810	0.00	3.70	17.28
41	170 E	2	55	122	26,157	0.08	2.10	4.66
41	171 E	19	44	46	16,453	1.15	2.67	2.80
41	172 E	0	2	3	1,535	0.00	1.30	1.96
41	173 E	0	0	9	2,841	0.00	0.00	3.17
41	174 E	3	2	71	7,106	0.42	0.28	9.99
41	175 E	0	1	43	7,249	0.00	0.14	5.93
41	176 E	1	3	35	5,565	0.18	0.54	6.29
41	177 E	7	17	55	21,893	0.32	0.78	2.51
41	178 E	0	1	8	5,523	0.00	0.18	1.45
41	179 E	0	0	16	1,653	0.00	0.00	9.68
41	177 W	0	0	3	1,470	0.00	0.00	2.04
41	175 W	0	3	5	1,725	0.00	1.74	2.90
41	174 W	10	11	56	6,755	1.48	1.63	8.29
41	173 W	0	3	12	3,103	0.00	0.97	3.87
41	172 W	4	8	28	7,864	0.51	1.02	3.56
41	171 W	1	54	19	15,218	0.07	3.55	1.25
41	170 W	0	27	13	12,708	0.00	2.12	1.02
41	169 W	2	56	22	12,577	0.16	4.45	1.75
41	168 W	11	47	92	24,518	0.45	1.92	3.75
41	167 W	10	88	112	38,982	0.26	2.26	2.87
41	166 W	39	104	533	55,097	0.71	1.89	9.67
41	165 W	52	124	340	45,093	1.15	2.75	7.54
41	164 W	36	188	94	43,820	0.82	4.29	2.15
41	163 W	44	29	88	25,383	1.73	1.14	3.47
41	162 W	4	1	10	2,152	1.86	0.46	4.65
41	161 W	3	13	242	12,028	0.25	1.08	20.12

Table 22. (Continued)

1°x 1° Area		Observed Catch in Number				CPUE (Number per 1000 tans)		
Lat.	Long.	Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	Louvar	Ocean Sunfish	Other Unidentified
41	160 W	29	8	22	9,960	2.91	0.80	2.21
41	159 W	23	5	28	13,268	1.73	0.38	2.11
41	158 W	1	8	16	12,821	0.08	0.62	1.25
41	157 W	1	1	10	1,472	0.68	0.68	6.79
41	156 W	1	1	6	2,448	0.41	0.41	2.45
41	154 W	0	0	3	1,848	0.00	0.00	1.62
41	153 W	0	0	0	1,722	0.00	0.00	0.00
41	152 W	0	0	3	7,827	0.00	0.00	0.38
41	151 W	0	0	2	5,421	0.00	0.00	0.37
41	150 W	0	0	1	3,456	0.00	0.00	0.29
40	175 E	0	0	1	648	0.00	0.00	1.54
40	176 E	0	0	10	547	0.00	0.00	18.27
40	177 E	0	0	11	686	0.00	0.00	16.03
40	178 E	0	0	0	3,343	0.00	0.00	0.00
40	179 E	0	1	9	2,904	0.00	0.34	3.10
40	179 W	0	3	12	2,275	0.00	1.32	5.27
40	177 W	3	3	80	17,533	0.17	0.17	4.56
40	176 W	0	1	1	960	0.00	1.04	1.04
40	173 W	0	2	4	1,790	0.00	1.12	2.23
40	172 W	0	2	4	1,350	0.00	1.48	2.96
40	171 W	2	1	1	2,604	0.77	0.38	0.38
40	170 W	0	0	3	300	0.00	0.00	10.00
40	168 W	0	0	0	790	0.00	0.00	0.00
40	166 W	0	0	0	922	0.00	0.00	0.00
40	161 W	0	0	0	864	0.00	0.00	0.00
40	159 W	11	0	3	2,574	4.27	0.00	1.17
40	158 W	9	0	4	3,984	2.26	0.00	1.00
40	154 W	0	0	0	840	0.00	0.00	0.00
40	153 W	0	1	1	7,098	0.00	0.14	0.14
40	150 W	0	0	0	828	0.00	0.00	0.00
39	177 E	0	0	0	882	0.00	0.00	0.00
39	166 W	0	6	0	2,765	0.00	2.17	0.00
39	157 W	3	0	0	930	3.23	0.00	0.00

Table 22. (Continued)

August

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
45	178 W	0	2	0	564	0.00	3.55	0.00
45	163 W	0	0	10	1,735	0.00	0.00	5.76
45	162 W	0	0	0	2,672	0.00	0.00	0.00
45	160 W	0	2	11	4,284	0.00	0.47	2.57
45	159 W	0	0	11	11,975	0.00	0.00	0.92
45	158 W	0	0	67	7,573	0.00	0.00	8.85
45	157 W	1	1	35	7,945	0.13	0.13	4.41
45	156 W	1	1	17	1,821	0.55	0.55	9.33
45	155 W	1	1	7	861	1.16	1.16	8.13
45	154 W	0	0	0	2,180	0.00	0.00	0.00
45	153 W	0	0	2	4,982	0.00	0.00	0.40
45	152 W	0	0	22	14,243	0.00	0.00	1.54
45	151 W	0	0	7	11,095	0.00	0.00	0.63
45	150 W	0	0	1	1,642	0.00	0.00	0.61
45	149 W	0	0	4	5,634	0.00	0.00	0.71
45	148 W	0	0	2	2,150	0.00	0.00	0.93
44	170 E	0	1	2	3,755	0.00	0.27	0.53
44	171 E	0	2	65	13,082	0.00	0.15	4.97
44	172 E	2	0	40	4,898	0.41	0.00	8.17
44	173 E	0	0	2	2,010	0.00	0.00	1.00
44	174 E	0	3	8	5,774	0.00	0.52	1.39
44	175 E	0	3	5	4,476	0.00	0.67	1.12
44	176 E	1	8	57	15,186	0.07	0.53	3.75
44	177 E	0	9	54	10,610	0.00	0.85	5.09
44	178 E	5	17	81	10,338	0.48	1.64	7.84
44	179 E	2	21	281	23,079	0.09	0.91	12.18
44	180	0	5	5	750	0.00	6.67	6.67
44	179 W	6	44	509	41,188	0.15	1.07	12.36
44	178 W	0	25	132	20,048	0.00	1.25	6.58
44	177 W	0	4	2	6,175	0.00	0.65	0.32
44	175 W	0	0	1	750	0.00	0.00	1.33
44	171 W	0	1	0	960	0.00	1.04	0.00
44	168 W	0	2	0	800	0.00	2.50	0.00
44	159 W	0	1	13	6,276	0.00	0.16	2.07
44	158 W	1	1	37	20,943	0.05	0.05	1.77
44	157 W	4	1	27	18,802	0.21	0.05	1.44
44	156 W	0	0	5	4,440	0.00	0.00	1.13
44	155 W	1	0	2	1,665	0.60	0.00	1.20
44	154 W	0	0	0	792	0.00	0.00	0.00
44	153 W	0	0	0	792	0.00	0.00	0.00
44	152 W	0	0	0	1,860	0.00	0.00	0.00
44	151 W	1	0	9	7,350	0.14	0.00	1.22
44	150 W	0	1	5	3,171	0.00	0.32	1.58
44	149 W	1	0	0	5,219	0.19	0.00	0.00
44	148 W	0	0	0	4,724	0.00	0.00	0.00
43	170 E	0	6	14	3,338	0.00	1.80	4.19
43	171 E	1	1	3	1,715	0.58	0.58	1.75
43	172 E	0	0	7	1,311	0.00	0.00	5.34
43	173 E	0	0	27	4,789	0.00	0.00	5.64
43	174 E	0	1	19	7,362	0.00	0.14	2.58
43	175 E	3	3	56	4,679	0.64	0.64	11.97
43	176 E	8	2	1	1,445	5.53	1.38	0.69
43	177 E	3	39	21	853	3.52	45.74	24.63
43	178 E	2	13	72	5,642	0.35	2.30	12.76

Table 22. (Continued)

1°x 1° Area		Observed Catch in Number				CPUE (Number per 1000 tans)		
Lat.	Long.	Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	Louvar	Ocean Sunfish	Other Unidentified
43	179 E	2	11	54	4,383	0.46	2.51	12.32
43	179 W	0	20	20	1,386	0.00	14.43	14.43
43	178 W	0	7	0	1,819	0.00	3.85	0.00
43	177 W	2	16	54	2,459	0.81	6.51	21.96
43	175 W	0	2	0	750	0.00	2.67	0.00
43	172 W	1	4	11	520	1.92	7.69	21.15
43	171 W	0	8	97	2,168	0.00	3.69	44.74
43	170 W	0	4	5	1,358	0.00	2.94	3.68
43	168 W	0	0	19	1,627	0.00	0.00	11.68
43	167 W	1	11	11	3,863	0.26	2.85	2.85
43	166 W	0	17	12	6,824	0.00	2.49	1.76
43	165 W	0	0	0	828	0.00	0.00	0.00
43	161 W	1	0	2	775	1.29	0.00	2.58
43	160 W	0	1	8	2,354	0.00	0.42	3.40
43	159 W	0	1	9	3,210	0.00	0.31	2.80
43	158 W	8	11	20	11,365	0.70	0.97	1.76
43	157 W	1	11	53	20,432	0.05	0.54	2.59
43	156 W	0	0	0	800	0.00	0.00	0.00
43	153 W	7	1	2	4,620	1.52	0.22	0.43
43	152 W	0	3	2	2,670	0.00	1.12	0.75
43	151 W	0	8	4	4,299	0.00	1.86	0.93
43	150 W	0	0	6	1,685	0.00	0.00	3.56
43	148 W	0	0	0	1,748	0.00	0.00	0.00
42	170 E	0	6	0	1,920	0.00	3.13	0.00
42	171 E	2	2	7	810	2.47	2.47	8.64
42	172 E	0	0	2	900	0.00	0.00	2.22
42	173 E	1	1	24	3,015	0.33	0.33	7.96
42	174 E	1	3	5	2,505	0.40	1.20	2.00
42	175 E	2	3	5	1,625	1.23	1.85	3.08
42	169 W	0	0	0	1,642	0.00	0.00	0.00
42	168 W	0	35	25	2,983	0.00	11.73	8.38
42	167 W	3	27	30	5,523	0.54	4.89	5.43
42	160 W	1	0	3	900	1.11	0.00	3.33
42	159 W	0	1	2	900	0.00	1.11	2.22
42	158 W	15	0	6	1,738	8.63	0.00	3.45
42	152 W	1	10	9	4,149	0.24	2.41	2.17
42	151 W	5	15	12	4,437	1.13	3.38	2.70
42	150 W	2	16	3	6,379	0.31	2.51	0.47
41	175 E	0	1	0	710	0.00	1.41	0.00

Table 22. (Continued)

September

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
45	171 E	0	0	2	771	0.00	0.00	2.59
45	172 E	0	0	2	782	0.00	0.00	2.56
45	176 E	0	1	1	840	0.00	1.19	1.19
45	177 E	0	0	154	861	0.00	0.00	178.86
45	178 E	0	0	159	738	0.00	0.00	215.45
45	179 E	0	0	7	1,617	0.00	0.00	4.33
45	178 W	0	0	1	905	0.00	0.00	1.11
45	177 W	0	0	0	600	0.00	0.00	0.00
45	176 W	0	0	8	5,296	0.00	0.00	1.51
45	175 W	0	0	47	1,307	0.00	0.00	35.96
45	174 W	0	1	84	3,402	0.00	0.29	24.69
45	173 W	0	2	2	3,261	0.00	0.61	0.61
45	171 W	0	6	1	3,312	0.00	1.81	0.30
45	170 W	0	3	10	9,100	0.00	0.33	1.10
45	162 W	0	3	2	900	0.00	3.33	2.22
45	161 W	1	0	0	2,617	0.38	0.00	0.00
45	160 W	0	1	4	6,456	0.00	0.15	0.62
45	159 W	0	0	0	800	0.00	0.00	0.00
45	158 W	0	0	2	4,457	0.00	0.00	0.45
45	157 W	1	3	21	4,090	0.24	0.73	5.13
45	153 W	0	0	0	960	0.00	0.00	0.00
45	152 W	0	0	0	960	0.00	0.00	0.00
45	151 W	0	0	0	1,920	0.00	0.00	0.00
45	150 W	0	0	0	800	0.00	0.00	0.00
44	171 E	0	6	9	4,117	0.00	1.46	2.19
44	172 E	0	0	17	3,146	0.00	0.00	5.40
44	173 E	0	0	6	1,590	0.00	0.00	3.77
44	174 E	0	0	4	1,665	0.00	0.00	2.40
44	175 E	0	1	5	2,532	0.00	0.39	1.97
44	176 E	0	1	9	810	0.00	1.23	11.11
44	177 E	0	1	28	2,010	0.00	0.50	13.93
44	178 E	0	0	2	791	0.00	0.00	2.53
44	179 E	0	4	13	3,436	0.00	1.16	3.78
44	179 W	1	2	67	7,312	0.14	0.27	9.16
44	178 W	0	2	97	4,472	0.00	0.45	21.69
44	177 W	0	2	7	1,254	0.00	1.59	5.58
44	176 W	0	0	0	1,512	0.00	0.00	0.00
44	174 W	0	0	2	756	0.00	0.00	2.65
44	170 W	0	3	0	900	0.00	3.33	0.00
44	161 W	0	0	0	930	0.00	0.00	0.00
44	160 W	0	2	1	4,509	0.00	0.44	0.22
44	158 W	0	0	0	754	0.00	0.00	0.00
43	170 E	0	0	16	1,856	0.00	0.00	8.62
43	171 E	0	2	41	7,818	0.00	0.26	5.24
43	172 E	0	1	39	5,881	0.00	0.17	6.63
43	173 E	0	0	2	1,538	0.00	0.00	1.30
43	174 E	0	0	14	2,317	0.00	0.00	6.04
43	175 E	0	0	0	846	0.00	0.00	0.00
43	176 E	0	0	0	905	0.00	0.00	0.00
43	177 E	0	0	0	1,810	0.00	0.00	0.00
43	178 E	0	3	2	1,545	0.00	1.94	1.29
43	179 E	0	0	0	378	0.00	0.00	0.00
43	179 W	0	0	5	756	0.00	0.00	6.61
43	178 W	0	1	6	2,598	0.00	0.38	2.31

Table 22. (Continued)

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
43	177 W	0	1	21	4,440	0.00	0.23	4.73
43	176 W	0	6	9	4,865	0.00	1.23	1.85
43	160 W	0	0	1	1,632	0.00	0.00	0.61
43	158 W	0	0	0	905	0.00	0.00	0.00
42	165 E	0	1	3	1,393	0.00	0.72	2.15
42	170 E	0	5	135	3,355	0.00	1.49	40.24
42	171 E	0	5	8	1,376	0.00	3.63	5.81
42	172 E	0	1	40	2,401	0.00	0.42	16.66
42	173 E	0	7	12	2,115	0.00	3.31	5.67
42	174 E	0	4	29	1,159	0.00	3.45	25.02
42	175 E	0	16	60	3,736	0.00	4.28	16.06
42	176 E	0	2	14	1,719	0.00	1.16	8.14
42	178 W	0	4	43	7,182	0.00	0.56	5.99
42	177 W	0	0	0	1,056	0.00	0.00	0.00
41	170 E	0	0	32	522	0.00	0.00	61.30
41	174 E	0	1	22	860	0.00	1.16	25.58
41	176 E	0	1	60	828	0.00	1.21	72.46
41	177 W	0	1	16	2,213	0.00	0.45	7.23
40	175 E	0	0	38	644	0.00	0.00	59.01

Table 22. (Continued)

October

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
43	177 E	0	0	0	620	0.00	0.00	0.00
43	178 E	0	1	8	3,419	0.00	0.29	2.34
43	179 E	0	0	1	3,258	0.00	0.00	0.31
43	178 W	0	0	2	845	0.00	0.00	2.37
43	177 W	0	3	0	2,755	0.00	1.09	0.00
43	176 W	0	2	4	3,901	0.00	0.51	1.03
43	175 W	0	1	1	2,853	0.00	0.35	0.35
43	174 W	0	0	0	756	0.00	0.00	0.00
43	173 W	0	4	2	2,427	0.00	1.65	0.82
43	172 W	0	2	1	4,101	0.00	0.49	0.24
43	171 W	0	2	2	3,474	0.00	0.58	0.58
42	170 E	0	4	21	2,297	0.00	1.74	9.14
42	171 E	0	0	38	5,671	0.00	0.00	6.70
42	172 E	0	1	100	3,791	0.00	0.26	26.38
42	177 E	0	1	0	846	0.00	1.18	0.00
42	178 E	0	0	3	2,493	0.00	0.00	1.20
42	179 E	0	0	6	874	0.00	0.00	6.87
42	179 W	0	2	0	905	0.00	2.21	0.00
42	178 W	0	3	0	11,452	0.00	0.26	0.00
42	177 W	0	0	1	756	0.00	0.00	1.32
42	176 W	0	3	1	2,897	0.00	1.04	0.35
42	175 W	0	2	1	1,428	0.00	1.40	0.70
42	174 W	0	0	31	900	0.00	0.00	34.44
41	162 E	0	6	20	1,489	0.00	4.03	13.43
41	163 E	0	2	32	1,368	0.00	1.46	23.39
41	170 E	0	0	15	758	0.00	0.00	19.79
41	171 E	0	1	26	3,137	0.00	0.32	8.29
41	178 E	0	1	0	2,440	0.00	0.41	0.00
41	179 W	0	1	1	5,640	0.00	0.18	0.18
41	178 W	0	0	1	5,232	0.00	0.00	0.19
41	177 W	0	1	3	6,550	0.00	0.15	0.46
41	176 W	0	1	0	5,073	0.00	0.20	0.00
40	171 E	0	0	4	1,632	0.00	0.00	2.45
40	177 E	0	1	3	1,489	0.00	0.67	2.01
40	178 E	0	5	4	1,489	0.00	3.36	2.69
39	171 E	0	0	0	882	0.00	0.00	0.00
39	174 E	0	0	48	3,528	0.00	0.00	13.61
38	171 E	0	0	344	1,476	0.00	0.00	233.06
37	171 E	0	0	542	882	0.00	0.00	614.51

Table 22. (Continued)

November

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
41	174 E	0	7	9	3,422	0.00	2.05	2.63
41	175 E	0	2	0	733	0.00	2.73	0.00
41	176 E	0	14	4	3,177	0.00	4.41	1.26
41	177 E	0	3	15	1,711	0.00	1.75	8.77
41	179 W	0	2	0	1,711	0.00	1.17	0.00
41	178 W	0	3	3	2,322	0.00	1.29	1.29
40	176 E	0	0	0	840	0.00	0.00	0.00
40	177 E	0	0	12	4,487	0.00	0.00	2.67
40	178 E	0	1	0	3,253	0.00	0.31	0.00
39	173 E	0	0	0	611	0.00	0.00	0.00

December

1°x 1° Area Lat.	Long.	Observed Catch in Number: Louvar	Ocean Sunfish	Other Unidentified	Tans (50m)	CPUE (Number per 1000 tans): Louvar	Ocean Sunfish	Other Unidentified
39	170 E	0	1	5	3,422	0.00	0.29	1.46
39	171 E	0	0	5	2,200	0.00	0.00	2.27

Table 23. Observed bycatch of turtles by net retrieval date and net set location in the 1990 Japanese squid driftnet fishery.

Retrieval Date Month	Start of Set Lat°N	Start of Set Long°	Catch (No.)	Species Code	Name
6	37	165 W	1	901	Leatherback
6	37	167 W	1	901	Leatherback
6	38	157 W	1	901	Leatherback
6	38	157 W	1	900	Unidentified turtle
6	38	170 W	1	901	Leatherback
6	39	175 E	1	901	Leatherback
6	39	175 E	1	900	Unidentified turtle
6	39	156 W	1	901	Leatherback
6	39	168 W	1	901	Leatherback
6	39	171 W	1	901	Leatherback
6	39	176 W	1	901	Leatherback
6	39	177 W	2	901	Leatherback
7	39	166 W	1	902	Loggerhead
7	41	170 E	1	901	Leatherback
7	41	166 W	1	901	Leatherback
7	41	168 W	1	901	Leatherback
7	41	173 W	1	901	Leatherback
7	41	174 W	1	901	Leatherback
7	42	169 E	1	901	Leatherback
7	42	160 W	1	901	Leatherback
7	42	162 W	1	901	Leatherback
7	42	169 W	1	900	Unidentified turtle
8	42	150 W	1	901	Leatherback
8	43	171 E	1	901	Leatherback
8	43	158 W	1	901	Leatherback
8	43	172 W	1	900	Unidentified turtle
8	44	176 E	2	901	Leatherback
9	41	176 E	1	900	Unidentified turtle
9	42	173 E	1	901	Leatherback
9	42	174 E	1	901	Leatherback
10	38	171 E	1	900	Unidentified turtle
10	38	171 E	1	900	Unidentified turtle
10	42	172 E	1	901	Leatherback

Table 24. Total numbers observed by species, total number of observed operations in which a species was taken and total number of vessels on which observers recorded the species in the 1990 Japanese squid driftnet fishery.

Species/Taxon	Total Numbers	Number of Observed Operations	Vessels
CEPHALOPODS			
Unidentified squid	2269	57	11
Other identified squid	5	3	3
Neon flying squid	7939252	2879	75
Eight-armed squid	270	25	9
Boreal clubhook squid	306	51	21
Purpleback flying squid	11	5	1
Schoolmaster gonate squid	3	2	2
Pelagic octopus	53	41	20
SALMONIDS			
Unidentified salmonid	6343	69	22
Chinook salmon	17	15	14
Chum salmon	1933	77	34
Coho salmon	1402	139	40
Pink salmon	22	20	16
Sockeye salmon	12	12	11
Steelhead trout	18	13	11
ELASMOBRANCHS			
Unidentified shark	1191	78	36
Blue shark	81956	2416	75
Salmon shark	6263	1279	74
Common thresher shark	48	25	19
Short-finned Mako shark	71	60	21
Cookie-cutter shark	5	3	3
Pygmy shark	1	1	1
Spiny dogfish	8	5	4
White shark	7	2	2
Basking shark	1	1	1
Unidentified ray	8	6	4
Pelagic stingray	8	7	7
Diamond stingray	1	1	1
TUNAS AND BILLFISHES			
Unidentified tuna	195	74	27
Albacore tuna	90011	1931	74
Skipjack tuna	162631	225	29
Northern bluefin tuna	107	65	28
Bigeye tuna	19	13	10
Yellowfin tuna	25	9	6
Black skipjack	1	1	1
Kawakawa	1	1	1
Pacific mackerel	1	1	1
Unidentified billfish	7	6	6
Swordfish	411	270	55
Unidentified marlin	1	1	1
Striped marlin	46	35	21
Pacific blue marlin	2	1	1
Sailfish	2	2	1
Shortnose spearfish	30	19	9

Table 24. (Continued)

Species/Taxon	Total Numbers	Number of Observed Operations	Vessels
OTHER MARINE FISHES			
Unidentified fish	3539	627	54
Other identified fish	1709	173	27
Unid. lancetfish/daggertooth	59	39	10
Longnose lancetfish	2277	991	53
Daggertooth	8	7	4
Unidentified flying fish	3	3	3
California flying fish	6	4	4
Pacific saury	825	256	40
Opah	294	123	34
Unidentified "ribbonfish"	20	12	7
Whiptail ribbonfish	221	9	7
King-of-the-salmon	12	7	6
Oarfish	1	1	1
Skilfish	96	15	7
Pilotfish	93	54	22
Unidentified jack fish	15	9	2
Yellowtail	12983	830	64
Mahi mahi	1001	59	17
Unidentified pomfret	1029	129	17
Pacific pomfret	3224055	2863	75
Pelagic armorhead	379618	1023	50
Snake mackerel	3	1	1
Escolar	18	1	1
Oilfish	101	10	5
Smalleye squaretail	48	11	5
Louvar	1336	462	41
Unid. ragfish/medusafish	907	79	13
Ragfish	379	91	25
Medusafish	13	10	4
Redtail triggerfish	1	1	1
Oceanic puffer	2	2	2
Ocean sunfish	3640	1130	65
Blackrag	97	31	7
Rough pomfret	1	1	1
Japanese butterflyfish	122	18	3
Sickle pomfret	88	14	2
Barricudina	8	2	2
SEABIRDS			
Unidentified bird	121	47	20
Other identified bird	10	7	1
Unidentified albatross	29	21	12
Laysan albatross	830	463	68
Black-footed albatross	187	156	50
Unidentified fulmar/petrel	11	9	8
Northern fulmar	131	42	12
Solander's petrel	1	1	1
Juan Fernandez petrel	9	5	2
Mottled petrel	8	7	7
Stejneger's petrel	1	1	1
Unidentified shearwater	388	113	27
Pink-footed shearwater	3	3	3
Pale-footed shearwater	71	57	31
Buller's shearwater	383	187	50

Table 24. (Continued)

Species/Taxon	Total Numbers	Number of Observed Operations	Number of Observed Vessels
Sooty shearwater	18533	1570	73
Short-tailed shearwater	924	173	37
Unidentified dark shearwater	8254	664	52
Newell's shearwater	1	1	1
Unidentified storm petrel	296	66	13
Wilson's storm petrel	6	1	1
Leach's storm petrel	7	7	7
Fork-tailed storm petrel	196	57	17
Red phalarope	1	1	1
Pomarine skua/jaeger	1	1	1
Long-tailed skua/jaeger	1	1	1
Unidentified murre	1	1	1
Thick-billed murre	1	1	1
Unidentified puffin	1	1	1
Horned puffin	35	27	16
Tufted puffin	23	12	9
MARINE MAMALS			
Unidentified pinniped	19	16	10
Northern fur seal	545	328	63
Elephant seal	1	1	1
Unidentified dolphin/porpoise	41	35	17
Dall's porpoise, type unknown	56	37	20
Dall's porpoise, dalli type	261	195	58
Dall's porpoise, black type	1	1	1
Northern right whale dolphin	840	408	66
Pacific white-sided dolphin	459	290	62
Common dolphin	69	33	14
Striped dolphin	6	4	4
Bottlenose dolphin	1	1	1
Risso's dolphin	2	2	2
Pygmy sperm whale	1	1	1
Unidentified black whale	1	1	1
False killer whale	2	1	1
Short-finned pilot whale	3	3	3
Unidentified beaked whale	9	8	8
Cuvier's beaked whale	2	2	2
Unidentified Mesoplodon	2	2	2
Unidentified small whale	1	1	1
Unidentified whale	1	1	1
TURTLES			
Unidentified turtle	7	7	7
Leatherback turtle	27	26	21
Loggerhead turtle	1	1	1

Table 25. Common and scientific names of species observed in the 1990 Japanese Squid Driftnet Fishery.

Common Name	Scientific Name
CEPHALOPODS	
Neon flying squid	Ommastrephes bartrami
Eight-armed squid	Gonatopsis borealis
Boreal clubhook squid	Onychoteuthis borealijaponica
Purpleback flying squid	Sthenoteuthis oualaniensis
Schoolmaster gonate squid	Berryteuthis magister
Unidentified pelagic octopus	
(Considered likely to be one of the following)	
Pelagic octopus	Tremoctopus violacea
Pelagic octopus	Ocythoe tuberculata
SALMONIDS	
Chinook salmon	Oncorhynchus tshawytscha
Chum salmon	O. keta
Coho salmon	O. kisutch
Pink salmon	O. gorbuscha
Sockeye salmon	O. nerka
Steelhead trout	O. mykiss
ELASMOBRANCHS	
Blue shark	Prionace glauca
Salmon shark	Lamna ditropis
Common thresher shark	Alopias vulpinus
Short-finned mako shark	Isurus oxyrinchus
Cookie-cutter shark	Isistius brasiliensis
Pygmy shark	Euprotomicrus bispinatis
Spiny dogfish	Squalus acanthias
White shark	Carcharodon carcharias
Basking shark	Cetorhinus maximus
Pelagic stingray	Dasyatis violacea
Diamond stingray	Dasyatis brevis
TUNAS AND BILLFISHES	
Albacore	Thunnus alalunga
Skipjack	Katsuwonus pelamis
Northern bluefin tuna	Thunnus thynnus
Bigeye tuna	Thunnus obesus
Yellowfin tuna	Thunnus albacares
Black Skipjack	Euthynnus lineatus
Kawakawa	Euthynnus affinis
Pacific mackerel	Scomber japonicus
Swordfish	Xiphias gladius
Striped marlin	Tetrapturus audax
Pacific blue marlin	Makaira mazara
Sailfish	Istiophorus platypterus
Shortnose spearfish	Tetrapturus angustirostris

Table 25. Continued.

Common Name	Scientific Name
OTHER MARINE FISHES	
Longnose lancetfish	Alepisaurus ferox
Daggertooth	Anotopterus pharao
Flyingfish	Exocoetidae
California flyingfish	Cypselurus californicus
Pacific saury	Cololabis saira
Opah	Lampris guttatus
Whiptail ribbonfish	Desmodema lorum
King-of-the-salmon	Trachipterus altivelis
Oarfish	Regalecus glesne
Skilfish	Erilepis zonifer
Pilotfish	Naucrates ductor
Yellowtail	Seriola lalandi
Mahi mahi	Coryphaena hippurus
Pacific pomfret	Brama japonica
Sickle pomfret	Taractichthys steindachneri
Rough pomfret	Taractes asper
Pelagic armorhead	Pseudopentaceros wheeleri
Snake mackeral	Gempylus serpens
Escolar	Lepidocybium flavobrunneum
Oilfish	Ruvettus pretiosus
Smalleye squaretail	Tetragonurus cuvieri
Louvar	Luvarus imperialis
Ragfish	Icosteus aenigmaticus
Medusafish	Icychthys lockingtoni
Redtail triggerfish	Xanthichthys mento
Oceanic puffer	Lagocephalus lagocephalus
Ocean sunfish	Mola mola
Blackrag	Psenes pellucidus
Japanese butterfish	Hyperoglyphe japonica
Barracudina	Paralepis atlantica
SEABIRDS	
Laysan albatross	Diomedea immutabilis
Black-footed albatross	Diomedea nigripes
Northern fulmar	Fulmarus glacialis
Solander's petrel	Pterodroma solandri
Juan Fernandez petrel	Pterodroma externa
Mottled petrel	Pterodroma inexpectata
Stejneger's petrel	Pterodroma longirostris
Pink-footed shearwater	Puffinus creatopus
Pale-footed shearwater	Puffinus carneipes
Buller's shearwater	Puffinus bulleri
Sooty shearwater	Puffinus griseus
Short-tailed shearwater	Puffinus tenuirostris
Unidentified dark shearwater	P. griseus/tenuirostris
Newell's shearwater	Puffinus auricularis newelli
Wilson's storm petrel	Oceanites oceanicus
Leach's storm petrel	Oceanodroma leucorhoa
Fork-tailed storm petrel	Oceanodroma furcata
Red phalarope	Phalaropus fulicaria

Table 25. Continued.

Common Name	Scientific Name
Pomarine skua/jaeger	Stercorarius pomarinus
Long-tailed skua/jaeger	Stercorarius longicaudus
Thick-billed murre	Uria lomvia
Horned puffin	Fratercula corniculata
Tufted puffin	Fratercula cirrhata
MARINE MAMMALS	
Northern fur seal	Callorhinus ursinus
Elephant seal	Mirounga angustirostris
Dall's porpoise, type unknown	Phocoenoides dalli
Dall's porpoise, dalli type	" "
Dall's porpoise, truei type	" "
Dall's porpoise, black type	" "
Northern right whale dolphin	Lissodelphis borealis
Pacific white-sided dolphin	Lagenorhynchus obliquidens
Common dolphin	Delphinus delphis
Striped dolphin	Stenella coeruleoalba
Bottlenose dolphin	Tursiops truncatus
Risso's dolphin	Grampus griseus
Pygmy sperm whale	Kogia breviceps
Unidentified black whale	
False killer whale	Psuedorca crassidens
Short-finned pilot whale	Globicephala macrorhynchus
Cuvier's beaked whale	Ziphius cavirostris
Unidentified Mesoplodon	Mesoplodon, spp.
Unidentified whale	
TURTLES	
Leatherback turtle	Dermochelys coriacea
Loggerhead turtle	Caretta caretta

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MEMORANDUM F.R.E.D. State of Alaska

MAY 6 1931

MARICULTURE

Office of the Governor
Office of Management and Budget
Office of the Director

TO: Clem Tillion
Special Assistant for Fisheries

DATE: May 2, 1991

FROM: Brad Pierce BP
Senior Policy Analyst

PHONE: 465-3568

SUBJECT: Shellfish Hatchery Proposal

FAX: 465-2090

Assuming that some form of the *Exxon Valdez* settlement emerges in the near future with a federal-state trust to administer restoration funds for spill-affected areas, the Governor's Office will likely want to endorse project proposals to the trustees that can leverage economic development while restoring damaged resources. After consulting with FRED Division staff, the following suggestion for a shellfish/aquatic plant hatchery is offered for your consideration. A properly designed and sited facility, patterned institutionally after the OTEC program in Hawaii (see attached description), could address a great number of needs relative to restoration of spill-damaged plants and shellfish as well as provide commercial opportunities for the state's nascent mariculture industry.

As you know, aside from a couple of very small-scale research projects at Sheldon Jackson College in Sitka and UAS in Juneau, Alaska presently has no hatchery to provide seed for shellfish growers or potential aquatic plant farmers. This is of particular concern to the state's oyster farmers. Since cold water temperatures prevent oysters from spawning naturally in Alaska, growers must import spat from out of state. This is expensive and prevents them from selectively breeding oysters adapted to Alaska growing conditions. Shellfish growers view the lack of an in-state hatchery as a major constraint on the growth of their industry. Additionally, several species of shellfish and aquatic plants, which form a large part of the local subsistence diet, were severely damaged by the oil spill and could take many years to recover. Enhancement techniques employed in other states and countries could be used to restore life to beaches sterilized during oil spill cleanup operations.

The basic needs are very similar for all invertebrates and aquatic plants--FRED Division staff have prepared a list of shellfish and aquatic plant species that might be amenable to hatchery production for restoration or commercial purposes (attached). A large-scale hatchery facility in the oil spill-affected region would require a suitable location with access to clean saltwater and preferably a cheap heat source. Two potential sites spring immediately to mind--the Chugach sawmill in Seward and the Alyeska terminal at Valdez. Siting is critical. According to Hal Beatty, Director of the state-run Pt. Whitney shellfish hatchery located near Brinnon, Washington, the water source should be as pristine as possible. Highly productive bays are good for shellfish growout operations but are not suitable for hatchery sites because the naturally occurring algal blooms wreak havoc with cultured algae grown to feed shellfish larvae.

Ideally, the FRED Division would be responsible for design, construction and operation of the core facility. Core operations could focus on research into restoration techniques and production of spill-damaged indigenous species for enhancement of natural recovery processes. Leased space, heated water and possibly algal feed could be sold to commercial operators, who would produce juvenile plants and shellfish for growers statewide. Payments from commercial operators could offset some operating costs. The facility might serve as the centerpiece for public/private sector/university research collaboration and technology transfer to commercial growers. Several Native corporations in southeast and southwest Alaska currently have demonstration shellfish growout projects underway. Their experience has been that aquaculture projects are viewed quite favorably by federal granting agencies (e.g. BIA, EDA) as a means to promote economic development and diversification. Thus it is likely that readily available seed at reasonable cost from a local hatchery could attract additional federal funds for growout operations into the state, particularly to villages directly affected by the spill.

Considerable research will be needed to come up with reasonable construction and operation costs, which are largely a function of site characteristics, size of the facility and staffing. Similar facilities in Canada and Washington state provide some idea of the ballpark magnitude of the investment. For example, a large-scale commercial scallop hatchery on the east coast of Vacouver Island was completed in 1990 at a cost of about $3 million (see attached articles). Operating costs (4 staff) run about $15,000 per month at the Pt. Whitney shellfish facility in Washington State, which produces geoduck, littleneck and manila clam larvae and Pacific oyster spat for enhancement projects.

Of course, a full-blown proposal for a hatchery facility would require a considerable planning and preparation effort. While FRED Division would clearly be in the driver's seat on this project, other state and federal agencies would also become involved. Hence the Governor's Office has a coordinating role to play. This memorandum is meant to guage the administration's interest in pursuing the concept. The absence of a Director of the FRED Division and the lack of a firm settlement with Exxon and the federal government at this time makes further development problematic. However, staff within the division and OMB could at least conduct some background research, should the administration be interested in this project. Please let me know what you think about the idea and whether it should be pursued.

cc: Shelby Stastny, Director, OMB
Johnny Holland, Acting Director, ADF&G/FRED
Jeff Hartman, Economist, FRED
Jim Cochran, Mariculture Coordinator, FRED

attachments

MEMORANDUM

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

TO: Brad Pierce
Policy Analyst
Office of Management and Budget - Juneau

DATE: April 29, 1991

FILE NO:

TELEPHONE NO: 465-4160

FROM: James O. Cochran
Mariculture Coordinator
FRED Division-Juneau

SUBJECT: Shellfish/Aquatic Plant Research and Hatchery Facility -- Species List

Following up on our meeting this morning, here is a list of "macro" species that I believe can logically be included in a restoration proposal. I'm assuming that restoration may also include alternatives if technology limits restoration of the desired species. Also included are several articles on the new scallop hatchery in British Columbia. Keep in mind that they are private with a definite profit motive, so they are somewhat less free with information. If you wish to contact them, I suggest:

Rob Saunders, President
Island Scallops Ltd.
5552 West Island Hwy
R.R. #3, Site 327, C-1
Qualicum Beach, B.C. VOR 2TO
(604) 757-9811

To re-iterate my opinion on the most desirable options available, a facility/program modeled after the Hawaii OTEC program would address a great number of needs relative to shellfish and aquatic plants in Alaska. It has the benefits of being available to private industry, to restoration efforts, etc. and of being able to generate operating revenue in a non-competitive (with private industry) manner.

The attached list does not address every shellfish or aquatic plant species impacted by the 1989 oil spill. I believe it does cover most of the economically important ones. It does include all species currently important to the Alaskan aquatic farm industry. Other species could be handled at such a facility as the basic needs are very similar for all invertebrates and aquatic plants.

Thanks for the opportunity to discuss this with you. The aquatic farm industry, and, I believe, the oil-spill restoration effort would definitely benefit from a shellfish and aquatic plant research facility and hatchery.

cc Jeff Hartman
Johnny Holland

<u>attachments</u>

SHELLFISH/AQUATIC PLANT LIST
POTENTIAL FOR RESTORATION AND/OR AQUATIC FARMING

SPECIES	RESTORATION POTENTIAL	AQUATIC FARMING POTENTIAL	TECHNOLOGY AVAILABILITY
Pacific oyster	alternative	high	Off the shelf-hatchery
Blue mussel	primary	high	Off the shelf-farm or hatchery
Littleneck clam	primary	high	Off the shelf-similar species, research needed on Alaskan species
Butter clam	primary	low	Research needed on culture technology
Weathervane scallop	primary	high	Research needed on culture technology (ongoing ASTF project)
Purple-hinged rock scallop	unknown	high	Off the shelf-research needed on Alaskan stocks
Pink scallop	unknown	low	Research needed
Spiny Scallop	unknown	possible value	Research needed
Japanese scallop (sterile)	alternative	high	Research needed - FRED Div. proposal submitted to ASTF
Pinto abalone	alternative	high	Research needed on Alaskan species. Considerable information available world-wide
King crab	unknown	possible value	Research needed. Potential for farming a problem due to cannibalistic nature
Dungeness crab	primary	low	Research needed. Potential for restoration
Pandalid shrimp (pinks, spots, etc.)	unknown	possible value	Research needed. High value if culture techniques can be developed
Sea urchin (red,green, purple)	primary	high	Research needed on Alaskan species. High potential value
Bull kelp	unknown	low	Off the shelf
Macrocystis (kelp)	alternative	high	Additional research needed, considerable information available (UofA and Wash. State)

Laminaria(sp) (kelp)	primary	high	Research needed on grow-out techniques. Considerable hatchery information available
Alaria (kelp)	unknown	unknown	Unknown
Fucus (kelp)	primary	unknown	Research needed on hatchery technology

SHELLFISH/AQUATIC PLANT LIST
POTENTIAL FOR RESTORATION AND/OR AQUATIC FARMING

SPECIES	RESTORATION POTENTIAL	AQUATIC FARMING POTENTIAL	TECHNOLOGY AVAILABILITY
Pacific oyster	alternative	high	Off the shelf-hatchery
Blue mussel	primary	high	Off the shelf-farm or hatchery
Littleneck clam	primary	high	Off the shelf-similar species, research needed on Alaskan species
Butter clam	primary	low	Research needed on culture technology
Weathervane scallop	primary	high	Research needed on culture technology (ongoing ASTF project)
Purple-hinged rock scallop	unknown	high	Off the shelf-research needed on Alaskan stocks
Pink scallop	unknown	low	Research needed
Spiny Scallop	unknown	possible value	Research needed
Pinto abalone	alternative	high	Research needed on Alaskan species. Considerable information available world-wide
King crab	unknown	possible value	Research needed. Potential for farming a problem due to cannabalistic nature
Dungeness crab	primary	low	Research needed. Potential for restoration
Pandalid shrimp (pinks, spots, etc.)	unknown	possible value	Research needed. High value if culture techniques can be developed
Sea urchin (red,green, purple)	primary	high	Research needed on Alaskan species. High potential value
Bull kelp	unknown	low	Off the shelf
Macrocystis (kelp)	alternative	high	Additional research needed, considerable information available (UofA and Wash. State)

Laminaria(sp) (kelp)	primary	high	Research needed on grow-out techniques. Considerable hatchery information available
Alaria (kelp)	unknown	unknown	Unknown
Fucus (kelp)	primary	unknown	Research needed on hatchery technology

MEMORANDUM F.R.E.D. State of Alaska

MAY 6 1931

MARICULTURE

Office of the Governor
Office of Management and Budget
Office of the Director

TO: Clem Tillion
Special Assistant for Fisheries

DATE: May 2, 1991

FROM: Brad Pierce BP
Senior Policy Analyst

PHONE: 465-3568

SUBJECT: Shellfish Hatchery Proposal

FAX: 465-2090

Assuming that some form of the *Exxon Valdez* settlement emerges in the near future with a federal-state trust to administer restoration funds for spill-affected areas, the Governor's Office will likely want to endorse project proposals to the trustees that can leverage economic development while restoring damaged resources. After consulting with FRED Division staff, the following suggestion for a shellfish/aquatic plant hatchery is offered for your consideration. A properly designed and sited facility, patterned institutionally after the OTEC program in Hawaii (see attached description), could address a great number of needs relative to restoration of spill-damaged plants and shellfish as well as provide commercial opportunities for the state's nascent mariculture industry.

As you know, aside from a couple of very small-scale research projects at Sheldon Jackson College in Sitka and UAS in Juneau, Alaska presently has no hatchery to provide seed for shellfish growers or potential aquatic plant farmers. This is of particular concern to the state's oyster farmers. Since cold water temperatures prevent oysters from spawning naturally in Alaska, growers must import spat from out of state. This is expensive and prevents them from selectively breeding oysters adapted to Alaska growing conditions. Shellfish growers view the lack of an in-state hatchery as a major constraint on the growth of their industry. Additionally, several species of shellfish and aquatic plants, which form a large part of the local subsistence diet, were severely damaged by the oil spill and could take many years to recover. Enhancement techniques employed in other states and countries could be used to restore life to beaches sterilized during oil spill cleanup operations.

The basic needs are very similar for all invertebrates and aquatic plants--FRED Division staff have prepared a list of shellfish and aquatic plant species that might be amenable to hatchery production for restoration or commercial purposes (attached). A large-scale hatchery facility in the oil spill-affected region would require a suitable location with access to clean saltwater and preferably a cheap heat source. Two potential sites spring immediately to mind--the Chugach sawmill in Seward and the Alyeska terminal at Valdez. Siting is critical. According to Hal Beatty, Director of the state-run Pt. Whitney shellfish hatchery located near Brinnon, Washington, the water source should be as pristine as possible. Highly productive bays are good for shellfish growout operations but are not suitable for hatchery sites because the naturally occurring algal blooms wreak havoc with cultured algae grown to feed shellfish larvae.

Ideally, the FRED Division would be responsible for design, construction and operation of the core facility. Core operations could focus on research into restoration techniques and production of spill-damaged indigenous species for enhancement of natural recovery processes. Leased space, heated water and possibly algal feed could be sold to commercial operators, who would produce juvenile plants and shellfish for growers statewide. Payments from commercial operators could offset some operating costs. The facility might serve as the centerpiece for public/private sector/university research collaboration and technology transfer to commercial growers. Several Native corporations in southeast and southwest Alaska currently have demonstration shellfish growout projects underway. Their experience has been that aquaculture projects are viewed quite favorably by federal granting agencies (e.g. BIA, EDA) as a means to promote economic development and diversification. Thus it is likely that readily available seed at reasonable cost from a local hatchery could attract additional federal funds for growout operations into the state, particularly to villages directly affected by the spill.

Considerable research will be needed to come up with reasonable construction and operation costs, which are largely a function of site characteristics, size of the facility and staffing. Similar facilities in Canada and Washington state provide some idea of the ballpark magnitude of the investment. For example, a large-scale commercial scallop hatchery on the east coast of Vacouver Island was completed in 1990 at a cost of about $3 million (see attached articles). Operating costs (4 staff) run about $15,000 per month at the Pt. Whitney shellfish facility in Washington State, which produces geoduck, littleneck and manila clam larvae and Pacific oyster spat for enhancement projects.

Of course, a full-blown proposal for a hatchery facility would require a considerable planning and preparation effort. While FRED Division would clearly be in the driver's seat on this project, other state and federal agencies would also become involved. Hence the Governor's Office has a coordinating role to play. This memorandum is meant to guage the administration's interest in pursuing the concept. The absence of a Director of the FRED Division and the lack of a firm settlement with Exxon and the federal government at this time makes further development problematic. However, staff within the division and OMB could at least conduct some background research, should the administration be interested in this project. Please let me know what you think about the idea and whether it should be pursued.

cc: Shelby Stastny, Director, OMB
Johnny Holland, Acting Director, ADF&G/FRED
Jeff Hartman, Economist, FRED
Jim Cochran, Mariculture Coordinator, FRED

<u>attachments</u>

MEMORANDUM

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

TO: Brad Pierce
Policy Analyst
Office of Management and
Budget - Juneau

DATE: April 29, 1991

FILE NO:

TELEPHONE NO: 465-4160

FROM: James O. Cochran
Mariculture Coordinator
FRED Division-Juneau

SUBJECT: Shellfish/Aquatic Plant
Research and Hatchery Facility
-- Species List

Following up on our meeting this morning, here is a list of "macro" species that I believe can logically be included in a restoration proposal. I'm assuming that restoration may also include alternatives if technology limits restoration of the desired species. Also included are several articles on the new scallop hatchery in British Columbia. Keep in mind that they are private with a definite profit motive, so they are somewhat less free with information. If you wish to contact them, I suggest:

Rob Saunders, President
Island Scallops Ltd.
5552 West Island Hwy
R.R. #3, Site 327, C-1
Qualicum Beach, B.C. VOR 2TO
(604) 757-9811

To re-iterate my opinion on the most desirable options available, a facility/program modeled after the Hawaii OTEC program would address a great number of needs relative to shellfish and aquatic plants in Alaska. It has the benefits of being available to private industry, to restoration efforts, etc. and of being able to generate operating revenue in a non-competitive (with private industry) manner.

The attached list does not address every shellfish or aquatic plant species impacted by the 1989 oil spill. I believe it does cover most of the economically important ones. It does include all species currently important to the Alaskan aquatic farm industry. Other species could be handled at such a facility as the basic needs are very similar for all invertebrates and aquatic plants.

Thanks for the opportunity to discuss this with you. The aquatic farm industry, and, I believe, the oil-spill restoration effort would definitely benefit from a shellfish and aquatic plant research facility and hatchery.

cc Jeff Hartman
Johnny Holland

<u>attachments</u>

OIL SPILL RESTORATION PLANNING OFFICE

437 E Street, Suite 301 Anchorage, Alaska 99501
(907) 271-2461 FAX: (907) 271-2467

06/03/91 DATE

TO: Mark Brodersen
Oil Spill - DEC

PHONE 465-2610 FAX 465-2378

FROM: STAN SENNER
ALASKA, DEPT. OF FISH AND GAME

PAGES (INCLUDING COVERSHEET) 4

MEMO:

The attached just filtered through to me. Would you respond? If so, how? Your counsel will be appreciated.

Stan

Round-up at the Keahole Corral

Aquafarming: Pumping up profits.

THE BIG NEWS these days along the hot and arid Keahole Point coastline comes from the most unlikely of Big Island ranches. It's round-up time on the abalone farm. Likewise, there's a bumper crop of micro-algae waiting to be harvested. That is good news indeed around these parts, especially for the Natural Energy Laboratory of Hawaii (NELH). This year, two private companies have taken small-scale aquaculture projects and turned them into moderately profitable ventures, largely through the help of the laboratory staff at NELH. It's an important step for the Big Island's fledgling aquaculture industry.

The companies, Hawaiian Abalone Farm and Cyanotech Inc. (a $2.1-million in net worth micro-algae firm) have this year harvested and marketed these yields for the first time: 60 tons of micro-algae on an annual rate and more than 500 abalone a month. The abalone farm has an inventory of slightly more than a million of these shellfish in various stages of development. Both the companies' crops have potential markets in Japan, Hawaii and the Mainland—places that will need some heavy marketing plans to entrench. Currently the local market pays a whopping $30 and up for two abalone steaks. For a pound of dried, protein-rich micro-algae, spirulina, the price averages around $9 a pound in health food stores. Moreover, Cyanotech's newest micro-algae product, the carrot-colored beta carotene—a good source of vitamin A used as a diet supplement—markets for $40 a pound.

Without the NELH's incubator assistance program in the research and development stages, many aquaculture entrepreneurial ventures would never get off the ground. What's more, the Big Island's 322-acre facility is a natural site to grow sea animals and plants because of a mile-long pipeline that dives 2,000 feet below the ocean's surface. It pumps a continual supply of germ-free, nutrient-rich, 45-degree water that aquacultural companies can use for their fish and plant husbandry. The facility also boasts year-round sunshine, and less than 20 inches of rain a year. This makes for increased plant growth, and theoretically, more profits.

A marriage of convenience. All of this has happened because of a marriage of high-tech industries—ocean thermal energy conversion and aquaculture. The OTEC industry is a form of solar energy where the ocean acts as a solar heat collector. The process uses the energy created by the temperature difference between the warm surface water (about 80 degrees Fahrenheit) and the cold deep water (about 45 degrees Fahrenheit) to power turbines. The application to acquaculture is unusual. Today, the combined efforts of the aquaculture ventures at NELH on the Big Island are less than $1 million in annual sales. Statewide, the figure is $2.7 million. But there's hope in the wings. Aquaculture has the potential of a $50-million-a-year business by 1990, according to John Corbin, manager of the Department of Planning and Economic Development's aquaculture program. Almost as important to the Big Island is the number of jobs that the facility and its tenants expect to provide. NELH executives say there could be as many as 300 jobs within the next 10 years.

NELH Executive Director Jack Huizingh says the facility's mission is support for as much research and development as possible for new technologies and businesses. To this end, NELH permits small-scale ventures—less than 20-acre projects—to lease office space, land, cold and hot water utilities and laboratory services. These guidelines, says Huizingh, are to ensure that a maximum amount of research projects turn into viable businesses. For the facility to obtain more revenues it needs more commercial projects bringing in the user fees. Last year NELH received $39,000 from user fees and expects to see those fees increase to $90,000 by 1987. It's a figure Huizingh is very proud of since the state-supported facility only recently began allowing profit-producing ventures. In 1983 the state Legislature broadened the facility's 1974 charter, allowing it to include small-scale commercial ventures—a first for the group that is now reaping the benefits from the state's decision. Today Keahole Point's on-site investments total $13 million and its yearly operating expenses total $700,000.

All these changes at NELH brought abalone entrepreneur George Lockwood and his partnership of eight investors into business at Keahole Point. Lockwood's abalone farm markets "Farm-Grown Kona Abalone" at local hotels like the Westin Mauna Kea and the Mauna Lani Bay Hotel. According to a Big Island chef, Lockwood charges about $6 for a three- to four-inch abalone. The hotels average about 150 abalone dinners a week—a limited abalone market. There aren't enough upscale visitors to the Big Island to consume the supply. But Lockwood does have freshness on his side and for people who love abalone, freshness counts. Lockwood can ship his fish from Kona via Keahole Airport and still have them arrive fresh in Honolulu an hour later. Lockwood says he started marketing his abalone last September, and has hopes of hooking the state's Japanese abalone sushi market sometime next year. As for the Asian market, Lockwood is in the process of opening negotiations

Entrepreneur Lockwood and abalone husbandry project: Hopes his clients will shell out up to $10 million a year.

Despite the absence of a strong marketing plan, the abalone farm is a pioneer in high-tech aquaculture. With nearly 10 years experience in abalone growing techniques and 21-acres of Big Island land leased, Lockwood has high hopes—$10 million a year in sales from Mainland and Hawaii markets. Those expectations also reach the Asian abalone markets. There, Lockwood predicts he can double his revenues. But first, he'll have to entrench himself strongly in Japan, where protectionist import measures can be tighter than a clam. What Lockwood has on his side is a worldwide decline in wild abalone. Without abalone farming there is not enough supply to meet the demand. Lockwood recognized this market niche created by the decline and wondered if abalone husbandry might work something like a chicken farm. Since wild abalone eat kelp, Lockwood devised a way to grow it. He has two tanks (15-feet high; 100-feet in diameter) filled with cold, deep sea water to grow kelp. He routinely harvests the kelp; scuba divers trim kelp leaves much the same way gardeners trim hedges.

Lockwood admits that without support of the state and NELH, he would not be at his present level of production. "NELH has a modern lab with a good staff and support people eager and willing to enhance business ventures," Lockwood says. This is quite a compliment coming from a man who left Monterey, California because of too many government restrictions for off-shore ocean management.

As for Cyanotech, the other profit-producing venture, which is in its first full-year of production, success or failure depends upon growing as much protein-rich algae as possible. And they can grow a lot—70,000 liters every day. When the Federal Food and Drug Administration banned imported spirulina from Mexico, Cyanotech was waiting to fill the niche. It had just completed testing a plan to grow the algae in sea water. After a positive pilot-scale period, the Woodinville, Washington-based Cyanotech was able to harness $750,000 in venture capital to set up operations. The company is currently seeking a $3-million issue of special revenue bonds to be privately guaranteed. A portion of the money will go for expansion of its facilities at Keahole Point. Currently the company occupies eight acres of land with expansion plans for seven more.

The company is also working on a diversification program in the Ka'u district for an algae-based, regenerative fertilizer. In all, Cyanotech is planning a total of 12 algae ponds covering a 15-acre spread, with six more by the end of this year to add to their present four. The ponds are comprised of 1.2-acre raceways that are eight inches deep to keep its microscopic plants a toasty 90 degrees. Once the algae has gone through its first cycle, the company can harvest a quarter of each of the four raceways every day. To prevent the company's revenues from becoming overly dependent upon spirulina there has been diversification. Other products the company is testing include a pharmaceutical algae which produces eicosapentanoic acid, which is found to reduce heart disease. Another algae Cyanotech is researching is phycobiliprotein, a florescent protein used in medical diagnosis. It costs $15,000 a gram.

According to Kelly Moorhead, Cyanotech's production manager, the NELH

Cyanotech's Gerry Cysewski and green stuff: The venture's thriving ponds grow up to 70,000 liters of algae per day.

NELH Director Huizingh: "We'll be creative if the entrepreneur is really serious."

facility is a great place for algae farming because the more sunshine, the faster the algae grows. Add the sun to the nutrient-rich cold water and the facility has contributed to some of the company's heady growth.

Diversified high tech. As Huizingh explains, the NELH facility has a file filled with several hundred potential NELH clients. He says that NELH negotiated contracts with West Coast Lobster Company, scheduled to come on board next year and take over two acres of land. Another company currently considering

NELH wants to make waves in aquaculture.

NELH is Nori Farms of Hawaii. Nori is a variety of seaweed grown extensively in Japan and is used to wrap Japanese sushi rolls. These two companies and others like them could be the wave of the future for the facility because it would fulfill the purpose of promoting alternate sources of economic development for the Big Island. A new $1-million pipeline has been approved in anticipation of new businesses.

But aquaculture is still an industry struggling to stay afloat, and as much as 20 percent of all new ventures will probably sink into bankruptcy, Huizingh says. NELH will do what it can to keep that failure record low. "We'll be creative if the entrepreneur is really serious, has a business plan in hand and is willing to work hard," says Huizingh. So with strong marketing tools, NELH could soon be attracting the type of ventures that will make waves in the aquaculture world. ▪ —Suzanne Roig

Western Canada's new scallop industry

by Barb Bunting
(QUALICUM, B.C.)

ISLAND SCALLOPS

Western Canada's first commercial scallop hatchery is nearing the end of its first year of production. Island Scallops Ltd., located in Qualicum Bay on the east coast of Vancouver Island, British Columbia, officially opened in October of 1989. Full production capacity is not anticipated to be reached for another two years, but the hatchery has the potential to raise three billion setting larvae, yielding 300 million spat and 37.5 million marketable scallops annually. This will supply as many as 60 scallop farms along the coast of B.C.

Island Scallops is a subsidiary of General Sea Harvest Corp., a Vancouver-based company with interests primarily in the salmon farming industry. General Sea Harvest is in turn a subsidiary of Helsinki-based Cultor, an international company with substantial interests in the aquaculture feed business. The $2.5 million hatchery is also funded by a $750,000 loan from Western Economic Diversification and equivalent funds from the National Research Council Industrial Research Assistance Program.

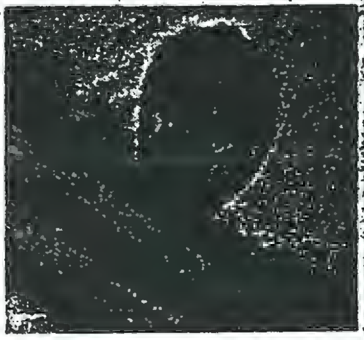
Microscopic view of swimming "D-Stage" Japanese scallop larvae. Barb Bunting photo

Island Scallops is concentrating on the Japanese scallop *(Patinopecten yessoensis)*, which is one of the most attractive aquaculture species in B.C. due to its amenability to culture, rapid growth rate, and market potential.

The technology employed at Island Scallops is the culmination of eight years of research led by Dr. Neil Bourne at the Pacific Biological Station in Nanaimo, B.C. Funded jointly by the Federal Department of Fisheries and Oceans and the British Columbia Ministry of Agriculture and Fisheries, this research has focused on developing hatchery and nursery technology for scallop species with commercial potential.

400 litre bags containing algae cultures used as food for the scallop larvae. Barb Bunting photo

Although there are several species of scallops in British Columbia, none occur in sufficient quantities to support a sustainable fishery or supply a reliable source of large quantities of seed for culture. Consequently, hatchery technology was required to develop a viable scallop industry in B.C.



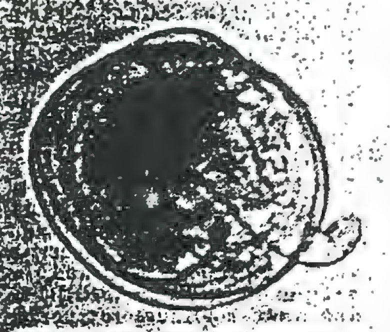
Microscopic view of Japanese scallop larva attached to nylon filament. Barb Bunting photo

The Japanese scallop was imported when the local species proved difficult to culture under hatchery conditions; this species is very similar to our weathervane scallop *(Patinopecten caurinus)* and in Japan, it is the basis of a very profitable industry yielding 278,000 tonnes, or nearly half of world's scallop landings, annually. The Japanese scallop took well to B.C. waters, and although juvenile survival needs to be improved as well as optimum grow-out sites and methodology determined, the Japanese scallop remains one of the most likely candidates for a large-scale scallop industry in B.C.

Work is ongoing on the local weathervane and rock *(Crassadoma gigantea)* scallops, which may yet show promise for commercialization.

THE JAPANESE INDUSTRY

In Japan, natural sources of scallop seed are abundant, eliminating the need for hatcheries. Scallops are collected on filamentous material in mesh bags suspended from longlines. When the seed reaches 3-5mm in size, it is transferred to pearl nets for an intermediate grow-out phase. For the final grow-out period, the scallops are raised either in various nets (ie. pearl, lantern, and pocket), or "ear-hung" (ie. attached directly by the scallop "ears" to vertical lines). Scallops are marketed fresh, frozen, canned, and dried; the scallop shell is used as cultch for oyster seed.



Microscopic view of a mature Japanese scallop larva with foot extended prior to settlement. Barb Bunting photo

HATCHERY NITTY GRITTY

During its first season, Island Scallops produced 3 billion fertilized eggs, yielding 100 million setting larvae and 5 million 2mm seed. Overall survival has been low, but has increased with improvements to the design and construction of the larval rearing system, the feeding regime, and general husbandry.

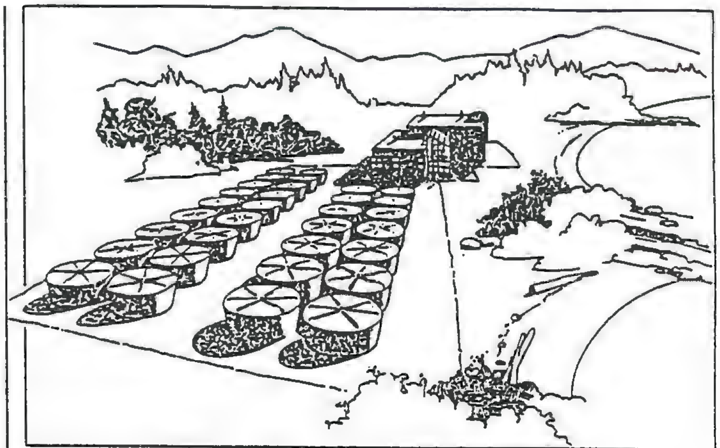
Larvae are reared in 40,000 litre indoor tanks for approximately three weeks, then "set" on net substrates in mesh bags in 40,000 litre outdoor nursery tanks. Once attached to the netting, the scallops are grown in

continued on page 18

Farm operations manager Bruce Evans shows juvenile scallops raised in a lantern net. Barb Bunting photo

Animal health institute hears about aquaculture industry

The Canadian Animal Health Institute (CAHI) held its annual meeting in Quebec early last month. CAHI is a national trade association representing companies that develop and manufacture various chemical materials for the maintenance of the health of farm and companion animals. One of the guest speakers was Professor R.D. Moccia from the University of Guelph. He presented a paper on the current and future roles that biologicals, pharmaceuticals, feed additives and other chemical compounds are expected to play in Canada's developing aquaculture industry. Prof. Moccia's seminar discussed the present state of the industry with respect to chemical use, for everything from antibiotics to sex control hormones, and highlighted some of the current needs for product development, drug registration and industry-government liaison. This was apparently the first time that anyone has formally addressed this topic at a CAHI meeting, and it will hopefully stimulate the large companies to take a closer look at where they might better serve the growing aquaculture community.



Architect's vision of new B.C. scallop hatchery.

B.C. salmon farm diversifies operations with new scallop hatchery

British Columbia's first scallop hatchery is in the final phases of construction at Qualicum Bay, 65 kms north of Nanaimo on Vancouver Island. Rob Saunders, president of Island Scallop Ltd., says hatchery installations are proceeding on schedule and first production of their Japanese scallop *(Patinopecten yessoensis)* larvae is planned for January 1990.

Island Scallop Ltd. is a

Scallop culture

continued from page 16

the nursery tanks until they reach a size of 2mm; approximately six weeks.

Food for the larval and nursery phase is supplied by an algal culture facility with a total capacity of over 60,000 litres. Seven species of algae are grown at Island Scallops; these provide a mixed diet of varied size and nutrition for each phase of larval and juvenile growth.

From the nursery tanks the seed is transferred to submerged ocean farms for grow-out. The scallops are marketable as a shucked product when the shells reach a size of 8-10cm; after about 18 to 24 months.

The first season's production is supplying two farms, one on either coast of Vancouver Island. These are run through joint-venture arrangements with owner-operators, a system that has proved successful in the salmon farming industry. Growth at these sites will help identify environmental parameters important in locating a scallop farm, as well as test different grow-out materials and techniques.

The B.C. Ministry of Agriculture and Fisheries is also carrying out grow-out studies at several other locations to examine siting and methodology. In June, Ministry staff and Island Scallops hosted a group of six scallop farmers from Japan in order to gain first-hand knowledge of grow-out strategies and materials.

BROODSTOCK

Broodstock for the first season's production was provided by the Pacific Biological Station in Nanaimo, from various experimental grow-out sites, and from adults imported directly from Japan. Adults from different stocks are bred to increase the genetic diversity in the larvae. Studies are currently underway at Simon Fraser University to determine the genetic variability in the broodstock and investigate the feasibility of using new DNA technology to apply artifical selection to this population. Selective breeding for desirable traits such as growth rate, body size, and disease resistance has barely been explored in bivalve hatcheries.

GROWING MARKETS

The target market for the cultured Japanese scallop is primarily western North America. Currently, with the exception of small seasonal wild landings of the pink *(Chlamys rubida)* and spiny *(Chlamys hastata)* scallops, most scallops consumed in B.C. originate in East Coast fisheries. Wild supplies of scallop meat are diminishing, yet the demand for this highly valued product is increasing steadily, opening the door for the Japanese scallop. In the U.S. alone, the market is currently worth over $325 million per annum. Yearly consumption is more than 32 million kg of scallop meat, of which U.S. landings account for only a third.

ONGOING RESEARCH NEEDED

Both hatchery and nursery technology for the Japanese scallop have been developed through government research, and methods of grow-out have been developed in Japan. What remains to be done is to improve the survival of the scallop from larvae to market. Currently less than two percent are expected to make it to harvest. Minimizing the currently heavy mortalities at settlement and during the early nursery phase will dramatically decrease the cost of seed production. Determining the optimum characteristics of a scallop farm will also increase the economic viability of scallop culture. The research is not complete, but the materials are in place for a viable scallop industry in B.C.

For further information on farming the Japanese scallop, contact either Rob Saunders or Bruce Evans at Island Scallops Ltd., (604) 757-9811.

(Barb Bunting is a representative of Island Scallops Ltd.).

wholly-owned subsidiary of Gener
Sea Harvest, a Vancouver-basc
mariculture company trading on th
Vancouver Stock Exchange. Th
parent company of General Sea
Cultor of Helsinki, Finland, a foo
products company. Island Scallo
has received National Researc
Council funding for four years
hatchery and grow-out research.
final discussion are loans from th
Western Economic Diversificatio
Fund for capital costs of the researc
facility.

General Sea has seven salmon farn
on Vancouver Island and the scallo
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According to Rob Saunders, one ar
a half years of research by Islar
Scallop, plus the ongoing hatche
and grow-out research conducted b
the Pacific Biological Station, ind
cated that the scallop would be
viable candidate for culture in B.
waters. *P. yessoensis* can be raise
from larval stage to an 8-10 cm ma
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ern Japan, 200,000 metric tons of th
scallop are cultured annually in sim
lar oceanographic conditions to B.

General Sea has adopted a joir
venture approach with their salmo
farms and Island Scallop plans to u
this approach for scallop grow-out
well. The company will make finan
ing available to growers who wish
diversify into scallop culture, as we
as provide the necessary research ar
marketing expertise.

"Until the industry is established
hatchery can't stand on its own se
ing larvae, and the cost for growers
set up a two hectare longline syste
is too high, thus the integrated a
proach," says Saunders. There h
been interest shown in this approa
by both shellfish and salmon farme
on the coast. Meanwhile the scallo
markets continue to grow in t
United States where scallop co
sumption has doubled over the la
ten years.

The 10,000 sq. ft., ten-tank facili
will have the capacity to produ
three billion larvae per year. Fo
species of algal diet are also bei
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the B.C. coast during the Pacific B
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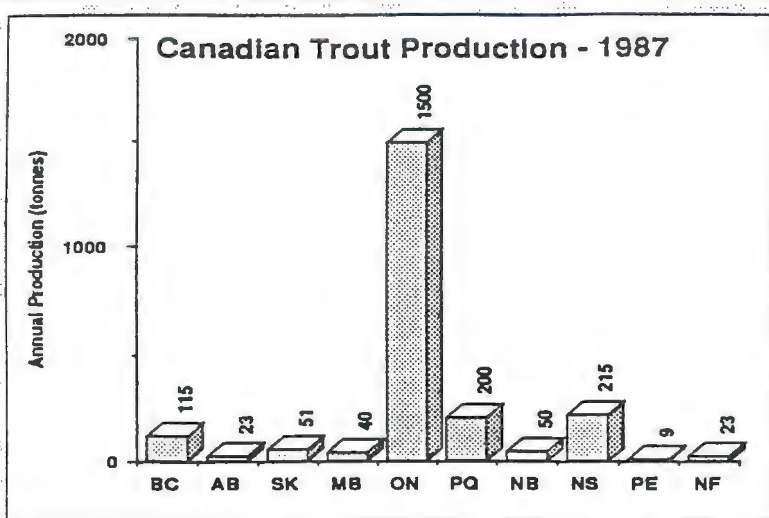
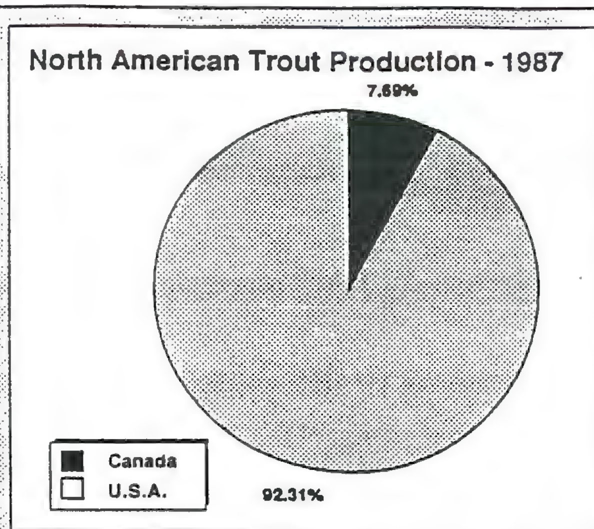
The larvae settle on fibrous poly ro



Ontario is the largest producer of domestic trout in Canada, accounting for over 65% of the country's production in 1987. (Source: Commercial Aquaculture in Canada. DFO Ottawa)



Canada accounted for a little over 7.5% of total North American trout production in 1987 - 88. (Source: NY Agricultural Statistics Service)

DATA COURTESY OF ONTARIO MAF AQUASTATS

called Kinran. They will be raised to a 1-2 mm size in outdoor tanks then will be transferred to ocean nurseries adjacent to grow-out sites. At the one centimetre size they are placed in pearl nets suspended from subsurface longlines for grow-out. From larvae to market an overall survival rate of 1-2% is expected.

The hatchery will not be producing other shellfish larvae, although research on the rock scallop (*Hinnites multirugosus*) will continue. Until production begins in 1990, staff will concentrate on test spawnings and any required debugging of the systems.

— *Rob Morris*

For your info.

Chet

ALASKA and the Fisheries of the North Pacific and Bering Sea

by David Benton

The North Pacific Ocean and the Bering Sea. To those of us who are familiar with this part of the world, it conjures up images of fierce storms, mountainous waves, ice, fog and blowing snow. It is also a world of great, and sometimes haunting beauty. It is a world at once vast and empty, yet teeming and full of life, harboring some of the Earth's largest populations of marine mammals, seabirds, and other marine wildlife. These waters also contain some of the world's most productive fisheries, and fleets from all over the world fish here for salmon, herring, crab, bottomfish, and squid.

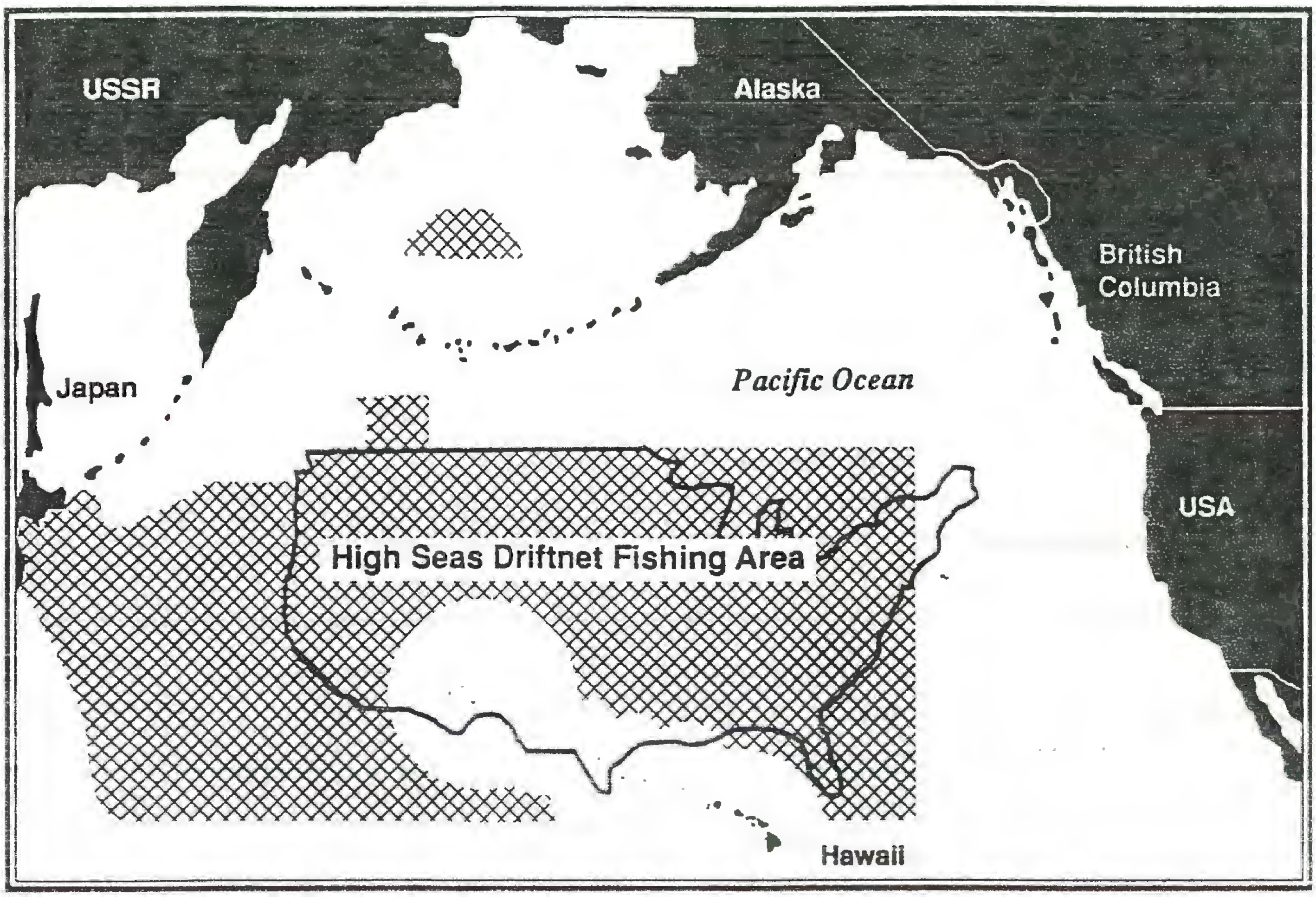
Within recent years, these fisheries have changed dramatically. As distant water fleets have been pushed out of the 200-mile zones of the coastal nations, fisheries in the international waters of the North Pacific have grown in size, area of operation, number of nations participating, and species harvested. This in turn has led to increased pressures on a broad range of fisheries and other living marine resources, and it has become apparent that traditional management agreements are not adequate to protect our fish stocks and our domestic fisheries.

This problem has been forcefully brought home to Alaska with regard to two of the North Pacific's most prominent international fisheries issues: high seas interception of North American salmon and steelhead by the driftnet fleets of Japan, Taiwan, and Korea; and overfishing of pollock by the unregulated trawl fisheries of Japan, Korea, Poland, and China which are conducted in the so-called "donut hole" area of the central Bering Sea. In both instances, large fleets operating beyond our 200-mile zone are having a dramatic impact on marine resources inside our zone and are posing major economic problems for our domestic fisheries. In both instances, existing international agreements are not adequate to manage these distant water fisheries, nor are they sufficient to protect the fish and wildlife resources of the North Pacific or the livelihood of our fishermen. The State of Alaska, through the Alaska Department of Fish and Game (ADF&G), has taken aggressive action to take advantage of new opportunities on the international front to address these problems.

THE JAPANESE HIGH SEAS SALMON FISHERIES

The interception of Alaska salmon on the high seas is not a new problem. Historically it has caused perhaps the most intense interaction by Alaskans in the international arena. The issue goes back to the 1920s and 1930s when the Japanese sent fleets of gillnetters into the entrance of Bristol Bay and were developing an offshore mothership fishery with gillnet catcherboats to fish off the coast of Kamchatka (U.S.S.R.). This offshore fishery was terminated by the start of World War II, but the Japanese fleets again put to sea in the early 1950s.

In 1952 the United States, Canada, and Japan signed the International North Pacific Fisheries Convention (INPFC) to regulate the Japanese mothership and landbased high seas salmon fisheries. This treaty established the so-called "abstention line" which prohibited the Japanese from fishing to the east of 175 degrees west longitude (the longitude of Atka Island in the Aleutians). At the time it was thought that this would protect salmon of North American origin while allowing the Japanese to continue their historical harvest of Asian salmon. The treaty did prevent the Japanese fleets from fishing on the bulk of Alaska and British Columbia salmon stocks but did not adequately protect some of our central and western Alaska stocks or coastwide steelhead stocks. In these early years



Fishing in an area larger than the continental U.S., the North Pacific high seas driftnet fleets of Japan, Taiwan and Korea will set 2,000,000 miles of nets this year taking sea birds, mammals and North American salmon and trout along with permitted species.

the Japanese fleets gradually worked their way farther and farther to the east, catching more and more high value coho and sockeye salmon, increasing their catches of chinook salmon, and dramatically increasing their overall interceptions of North American salmon.

Research conducted under the INPFC proved conclusively that significant numbers of maturing and immature salmon of primarily western Alaska origin migrated great distances to the west of the abstention line and were exposed to Japanese harvest. The impact on certain stocks, such as Bristol Bay sockeye and western Alaska chinook and coho, was severe. The estimate of the Japanese catch of Bristol Bay sockeye alone was approximately 2.5 million fish a year. In the case of western Alaska coho salmon, the high seas interception may have actually exceeded the inshore catch in many years. Taking into account drop-out, the overall impact to Alaska fisheries could have approached a loss of roughly 10 million fish per year. Unfortunately, any change in the treaty required the agreement of all three nations. A stalemate continued from 1952 through 1978.

No significant reductions were achieved in the level of interceptions until the 1978 renegotiation of the INPFC, which followed the adoption of the Magnuson Fishery Conservation and Management Act in 1976. The 200-mile limit extension gave the United States control over significant areas that had been fished by the Japanese high seas salmon fleets. In the renegotiation of the INPFC in 1978, the U.S. negotiated concessions in all of the Japanese high seas salmon fisheries while allowing them to keep a limited area in our 200-mile Exclusive Economic Zone (EEZ). This renegotiation resulted in a westward pullback of their landbased and mothership fleets by about 500 miles, and substantially reduced interceptions.

U.S. concerns over continuing interceptions of North American salmon led to a second round of negotiations in 1985-1986. These negotiations resulted in a phaseout of the Japanese mothership fishery in the central Bering Sea. Restrictions were also achieved on allowable effort in their mothership fishery, as well as some pullback in their landbased fishery. However, western Alaska fishermen were still greatly concerned because the mothership fleet was still allowed to fish in the U.S. EEZ.

In order to fish in our waters, the Japanese had to acquire a marine mammal permit since they incidentally take porpoise, fur seals, and sea lions. Their acquisition of such a permit was challenged in U.S. federal court in 1987 by western Alaska fishing organizations and environmental groups. The Alaskans prevailed, with the result that the Japanese mothership fleet was excluded from the U.S. EEZ.

This set the stage for another series of negotiations in the INPFC forum, starting in 1988 and continuing into March of this year. The Japanese felt strongly that the U.S. had not fulfilled its obligations under the 1986 INPFC agreement. They requested alternative fishing areas, and proposed converting the mothership fishery to a landbased-style operation to make up for lost economic efficiency due to lost fishing area. There was no resolution of these issues until March 1990, when an agreement was reached among the parties to allow the mothership fleet to operate for one year as a landbased-style fishery in areas outside the U.S. EEZ. Because of the increased efficiency of the converted fleet, the agreement establishes a set of very specific measures which significantly strengthen monitoring and enforcement of the fleet. It also sets limits, for the first time, on fishing effort in the fleet in the area south of the U.S. EEZ. There are no provisions allowing the Japanese to fish inside U.S. waters.

Overall, the INPFC-regulated fisheries have been dramatically reduced since those early years, and the 1990 provisions have marked another milestone in Alaska's effort to reduce the interception of Alaska salmon by the mothership fleet. Concerns still remain, however, about continuing interceptions by both the Japanese traditional landbased high seas salmon fleet as well as the converted mothership fleet. Ending these interceptions will be a subject of continuing negotiation among the U.S., Japan, and Canada for a number of years to come, although recent talks between the U.S. and the U.S.S.R. may be setting the stage for phasing these fisheries out altogether.

THE HIGH SEAS DRIFTNET FISHERIES

The rise of the high seas squid and large mesh driftnet fleets of Japan, Taiwan, and Korea in the North Pacific have brought forth even greater concerns than those presented by the directed high seas salmon fisheries. These concerns involve not only the interception of Alaska salmon stocks, but the long-term health of major components of the North Pacific marine ecosystem itself. Starting from virtually zero in 1977, by 1983 these fleets numbered approximately 700 vessels fishing nearly 1 million miles of net a year. Five years later, fishing effort had again doubled to roughly 2 million miles of net a year. Over a thousand vessels, with some deploying 40 miles of net a night, now fish the North Pacific.

High seas driftnets are large-scale plastic gillnets that are used in the open ocean. A standard driftnet is a panel of strong monofilament plastic webbing, not biodegradable, suspended vertically in the water by floats attached to the top of the panels and weights attached to the bottom. These nets are placed in the water each night and allowed to drift freely with the winds and currents. They trap and kill just about everything that crosses their path that isn't small enough to pass through the mesh

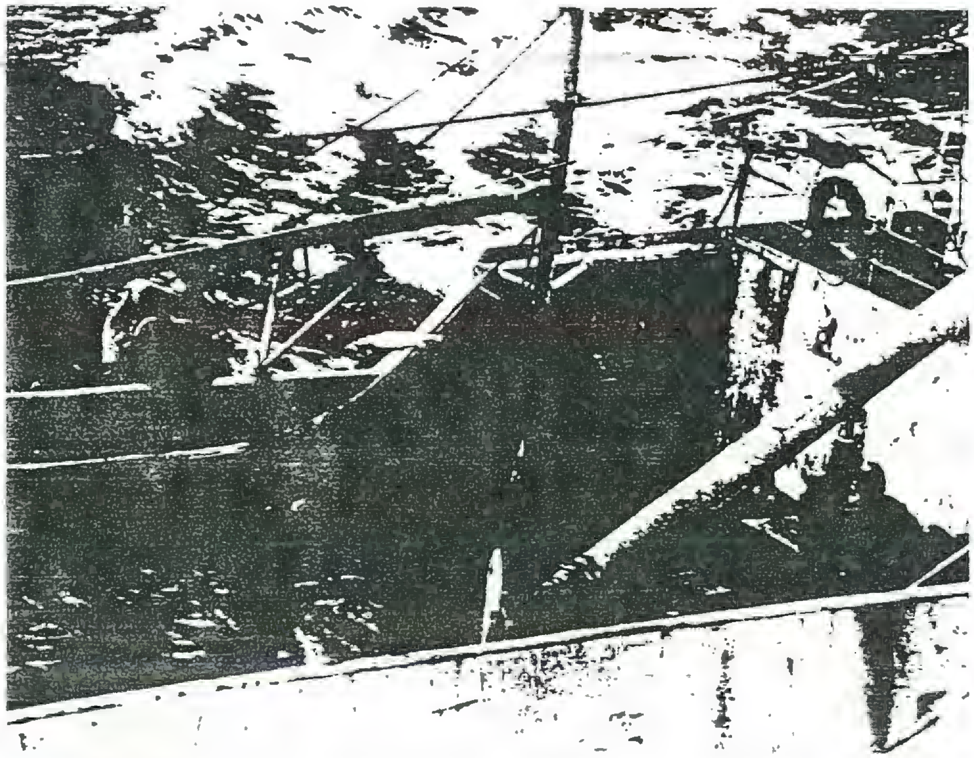
....it is strongly suspected that, each year, hundreds of thousands of seabirds, tens of thousands of marine mammals, unknown numbers of sea turtles, and millions of pounds of fish are taken incidentally to the fishery and discarded.

(mesh size refers to the size hole between the strands of line in the net).

High seas driftnet fishing differs sharply from our smalle[r] coastal net fisheries. Inshore gillnet fisheries in Alaska are ver[y] closely monitored and regulated and generally fish in termina[l] harvest areas where it is possible for fishery managers to prevent overharvesting. The nets range from 300 feet to 1800 fee[t] in length and are fished attached to the vessel where they ar[e] closely watched. The vessels range from approximately 16 fee[t] to 30 feet in length. This compares to high seas driftnets whic[h] are 20-40 miles in length and are allowed to drift freel[y] overnight.

North Pacific high seas driftnet fisheries can be divided int[o] two groupings: the squid fishery which uses small mesh gea[r] and the large-mesh tuna fishery. Although there is little infor[-]mation on the actual catches in these fisheries, it is strongl[y] suspected that, each year, hundreds of thousands of seabird[s,] tens of thousands of marine mammals, unknown numbers o[f] sea turtles, and millions of pounds of fish are taken inciden[-]tally to the fishery and discarded. The potential for massiv[e] loss of marine fish and wildlife is a cause of growing interna[-]tional concern.

The squid fleet is the largest of the north Pacific driftnet fis[h]eries. In the mid-1970s very large numbers of "flying squid[s"] were discovered by the Japanese to the south of the mothe[r-]



Crewmen on a Taiwanese driftnet vessel in the North Pacific throw allegedly illegal salmon overboard after being discovered by a Coast Guard helicopter.

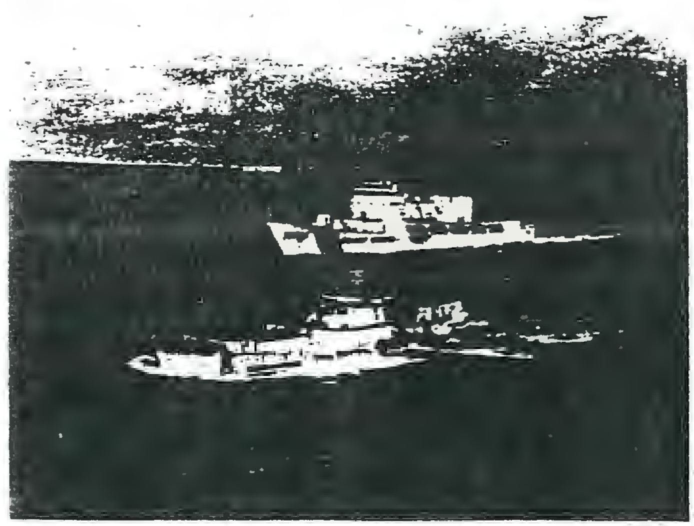
Below: The Coast Guard escorts a squid driftnet vessel to Taiwanese authorities after it was discovered fishing for salmon in the North Pacific, outside of legal driftnet boundaries.

ship and landbased salmon fishing areas. These "flying squid" are fairly large animals and the Japanese found that they could be captured with nets using the same mesh size as the nets used by the mothership and landbased fleets for salmon. As the salmon vessels were pushed out of the directed salmon fishery, they took up fishing for squid. It was a lucrative fishery, and Japan was soon joined by fleets from Taiwan and South Korea.

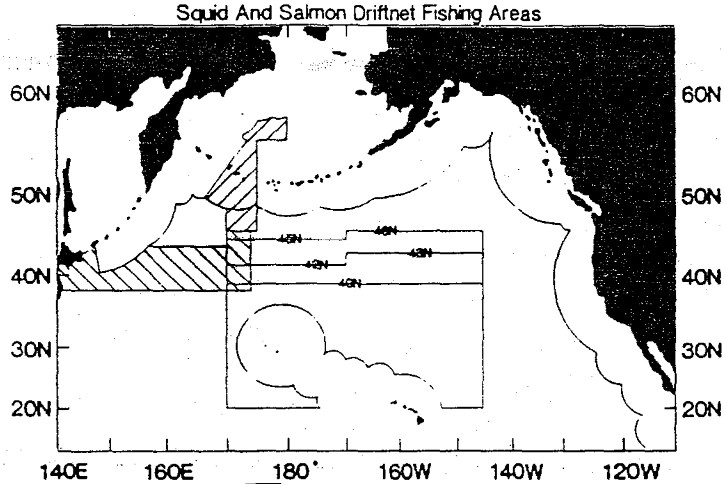
The sudden growth of the squid fleet presented a new challenge to Alaska in our efforts to protect our salmon and steelhead from interceptions on the high seas. The squid vessels use generally the same gear as that used for salmon. There is substantial overlap in the northern part of the squid grounds between areas fished for squid and waters where salmon are present, and there was a growing suspicion that some of the salmon showing up in world markets were being harvested illegally. Bringing these new driftnet fleets under control became a top priority for Alaska.

In 1987, Congress passed the Driftnet Monitoring and Control Act. The act, sponsored by Alaska Senator Ted Stevens and strongly supported by Alaska's Governor Steve Cowper, required that the Secretary of Commerce, through the Secretary of State, negotiate monitoring and enforcement agreements with nations which have high seas driftnet fleets in the North Pacific. If successful agreements are not reached, then the Secretary of Commerce is required to certify the nation (or nations) under the so-called Pelly Amendment. Certification then opens the door for trade sanctions against fishery products imported into the United States from the certified country. Bilateral negotiations began in 1988 between the U.S. and each of the three North Pacific driftnet fishing nations.

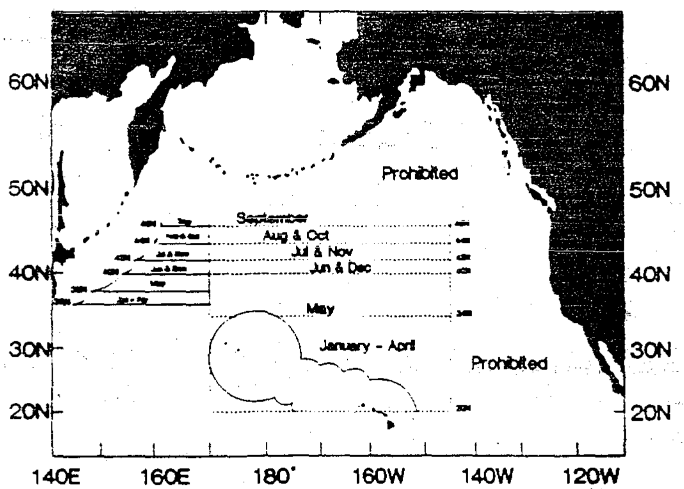
At the same time, concern over the impacts of high seas driftnets was growing in other parts of the world, most notably the South Pacific where driftnet vessels from Japan and Taiwan



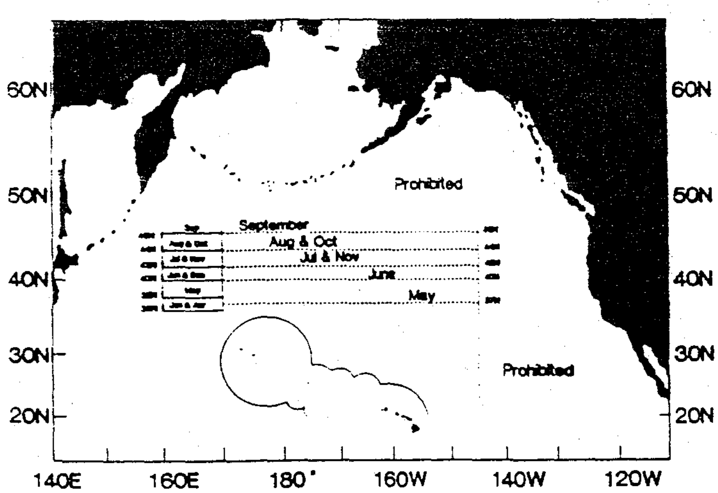
Squid And Salmon Driftnet Fishing Areas



Salmon Fisheries and
Monthly Northern Boundary Of Japanese Squid Fishery



Squid Driftnet Area - Taiwan



Squid Driftnet Area - ROK

were taking large numbers of juvenile albacore tuna using large-meshed driftnet gear. Early in 1989, 16 South Pacific nations got together under the auspices of the South Pacific Forum to review the situation. Much to their alarm, their scientists were coming to the conclusion that something had to be done soon, or else the albacore stocks could be gone in as short a time as three years.

In June 1989, the Forum Fisheries Agency (FFA), a branch of the South Pacific Forum, called a meeting in Suva, Fiji, with the driftnet fishing nations of Taiwan, Korea, and Japan to discuss the matter. The problems the islanders were facing were very similar to those we were looking at in the north—the same nations, similar fishing practices, and in many instances the same vessels. Recognizing these similarities, Alaska provided the FFA with information regarding the operation of the driftnet fleets in the North Pacific, our concerns about their impacts on our fisheries, and our attempts to bring them under control. Following the Suva talks, the South Pacific Forum called for a moratorium on driftnet fishing until there was better information to manage the fishery and protect the stocks. This request was turned down by Japan and Taiwan. Korea, which had only one or two vessels fishing in the area, had already voluntarily ceased its operations.

Meanwhile, similar concerns regarding large-meshed driftnet gear were being voiced by U.S. tuna trollers on the west coast of the United States. The 300 or so U.S. tuna fishermen were seeing their catch drop from roughly 17,000 short tons to 2,000 short tons in a span of a very few years. Some estimates put recovery of the tuna stocks at 15 years. Ironically for the U.S. fishermen, virtually all of the driftnet-caught tuna were being sold in the United States.

By late 1989, international concern had grown to the point that the United States and New Zealand decided to join forces and introduce a resolution in the United Nations calling for a moratorium on all driftnet fishing. Japan introduced a counter resolution calling for more study of the possible impacts of driftnets on the marine environment. After a sharp political struggle, a compromise resolution passed the UN unanimously. The successful resolution called for an in-depth scientific review of the problem by June 1991; and moratoria on driftnet fishing starting in 1991 for the South Pacific, and 1992 for the North Pacific, unless "effective conservation and management measures" can be put into place to ensure protection of the world's living marine resources.

In 1989-90, bilateral driftnet monitoring and enforcement agreements were reached by the United States with all three driftnet fishing nations. (See summary table of agreements. During the 1990 fishing season there will be over 150 observers (76 U.S.) on driftnet vessels in the North Pacific. This observer program, and the accompanying scientific investigations

STATE OF ALASKA — DEPARTMENT OF FISH AND GAME

FACT SHEET

NORTH PACIFIC HIGH SEAS DRIFTNET AGREEMENTS FOR 1989 AND 1990 REQUIRED BY THE U.S. DRIFTNET ACT OF 1987

COUNTRIES	JAPAN	TAIWAN	KOREA
MOST RECENT AGREEMENT	31 MARCH 1990	25 AUGUST 1989	8 SEPTEMBER 1989
PARTIES TO AGREEMENT	U.S.–CANADA–JAPAN	AMERICAN INST. OF TAIWAN (U.S.)–TAIWAN COORD. COUNCIL	U.S.–REPUBLIC OF KOREA (ROK) (SOUTH KOREA)
FISHERIES INCLUDED FOR 1989	SQUID (NOT TUNA)	SQUID & TUNA	SQUID
FISHERIES INCLUDED FOR 1990	SQUID & TUNA		
VESSELS AND NETS			
VESSELS MUST BE LICENSED, CLEARLY MARKED, AND A LIST MUST BE PROVIDED TO U.S.	YES	YES	YES
LIMIT ON NUMBER OF VESSELS	SQUID LIMITED SINCE 1981 WILL INITIATE LIMIT FOR TUNA 1990	WILL TRY TO LIMIT FLEET	LIMIT SET AT 160 VESSELS
VESSELS MUST REPORT LOCATION	YES	YES	YES
VESSELS FROM ALL COUNTRIES MUST REPORT MONTHLY CATCH & EFFORT			
NETS MUST BE MARKED–MAY NOT BE DISCARDED	YES	YES	YES
MESH SIZE OF NETS	PROHIBITION ON CARRYING BOTH LARGE AND SMALL MESH NETS	WILL INTRODUCE LEGISLATION TO PROHIBIT VESSELS FROM CARRYING BOTH LARGE MESH GEAR (FOR TUNA) AND SMALL MESH (FOR SQUID)	WILL REGULATE
AT-SEA TRANSFER TO TRANSPORT VESSELS	PROHIBITED	ONLY TO TAIWAN VESSELS WITH TRANSMITTERS	ONLY UNDER ROK MANAGERS ON VESSELS WITH TRANSMITTERS
OFF–LOADING AT HOME PORTS	UNDER SURVEILLANCE	FOR ALL PERMITTED RESOURCES EXCEPT TUNA	FOR ALL PERMITTED RESOURCES
MONITORING AND ENFORCEMENT			
ENFORCEMENT AT SEA–1989	JAPAN WILL DOUBLE 1988 EFFORT TO 5 PATROL VESSELS FOR TOTAL OF 600 VESSEL/DAYS WILL PROVIDE REPORT AFTER SEASON	TAIWAN WILL INITIATE EFFORT WITH 2 PATROL VESSELS FOR TOTAL OF 200 VESSEL/DAYS WILL PROVIDE REPORT AFTER SEASON	KOREA WILL INITIATE EFFORT NO PROVISION FOR PATROL VESSELS WILL PROVIDE REPORT AFTER SEASON
ENFORCEMENT AT SEA–1990	SAME AS 1989	3 VESSELS FOR TOTAL OF 310 DAYS	1 VESSEL YEAR-ROUND 2 IN PEAK MONTHS
ENFORCEMENT OBSERVER EXCHANGE	1 U.S. ON 1 JAPAN PATROL 1 JAPAN ON 1 U.S. FLIGHT	1 AIT (U.S.) ON 1 TAIWAN PATROL 1 TAIWAN ON 1 U.S. FLIGHT	1 U.S. ON 1 ROK PATROL 1 ROK ON 1 U.S. FLIGHT
U.S. BOARDING AND INSPECTION	UNDER TERMS OF INPFC	TAIWAN WILL PERMIT FOR VESSELS OUTSIDE APPROVED AREAS AND UNDER CERTAIN CIRCUMSTANCES FOR VESSELS IN APPROVED AREAS	ROK WILL PERMIT FOR ALL DRIFTNET AND TRANSPORT VESSELS
COOPERATIVE ENFORCEMENT	WILL MONITOR ROK AND TAIWAN FLEETS	NO PROVISION	NO PROVISION
TRANSMITTERS ON VESSELS WITH SATELLITE SURVEILLANCE—1989	WILL CONSIDER AFTER TESTING	WILL PLACE TRANSMITTERS ON VESSELS AT NO COST TO U.S. 10% OF FISHING VESSELS 100% OF TRANSPORT VESSELS	WILL PLACE TRANSMITTERS ON VESSELS AT NO COST TO U.S. 10% OF FISHING VESSELS 100% OF TRANSPORT VESSELS
TRANSMITTERS ON VESSELS WITH SATELLITE SURVEILLANCE—1990	ALL SQUID & TUNA VESSELS	ALL VESSELS	ALL VESSELS

DRIFTNET AGREEMENTS FOR 1989 AND 1990 — *CONTINUED*

COUNTRIES	JAPAN	TAIWAN	KOREA
RETENTION OF SALMON	PROHIBITED	PROHIBITED	PROHIBITED
SCIENTIFIC OBSERVER & RESEARCH PROGRAM			
NUMBER OF U.S. OBSERVERS ON FISHING VESSELS—1989	9 U.S., 5 CANADIAN, AND 32 JAPANESE ON 32 VESSELS	1 U.S. FOR 30 NET RETRIEVALS	1 U.S. FOR 45 NET RETRIEVALS
NUMBER OF U.S. OBSERVERS ON FISHING VESSELS—1990	SQUID: 35 U.S.; 10 CANADIAN; 29 JAPANESE. TUNA: 12 U.S.; 12 JAPANESE	14 U.S. OBSERVERS (45 DAYS) 10 TAIWANESE OBSERVERS (60 DAYS) ROVING PLATFORM (2 U.S., 2 TAIWANESE OBSERVERS)	13 U.S. AND 13 ROK ON 26 VESSELS FOR 45 RETRIEVALS
SCIENTIFIC OBSERVER REPORTS – 1989 PROGRAM	DATA EXCHANGED IN 30 DAYS JUL-AUG SUMMARY REPORT – 1 FEB 90 JUN-DEC SUMMARY – 1 APR 90	WILL DETERMINE BY 28 FEBRUARY 1990	DATA EXCHANGED IN 30 DAYS SUMMARY – 1 APR 91
1989 FINAL REPORTS	30 JUNE 1990		
SCIENTIFIC OBSERVER REPORTS – 1990 PROGRAM	DATA EXCHANGE APRIL 1991		
1990 FINAL REPORTS	31 MAY 1991	31 MAY 1991	30 JUNE 1991

TIME/AREA RESTRICTIONS	JAPAN			TAIWAN		KOREA	
		170E — 145W				WEST OF 170E	
DATES	WEST OF 170 E	170E–170W	170W–145W	WEST OF 170E	170E–145W	160E–170E	170E–145W
JAN–APR	CLOSED	CLOSED	CLOSED	36N	20N	36N	CLOSED
MAY	CLOSED	CLOSED	CLOSED	38N	34N[A]	38N	37N
JUN	CLOSED	40N	40N	40N[D]	40N	40N	40N
JUL	CLOSED	42N	43N[B]	42N[D]	42N	42N	42N
AUG	CLOSED	45N[C]	46N[C]	44N[D]	44N	44N	44N
SEP	CLOSED	46N	46N	46N[D]	46N	46N	46N
OCT	CLOSED	44N	44N	44N[D]	44N	44N	44N
NOV	CLOSED	42N	42N	42N[D]	42N	42N	42N
DEC	CLOSED	40N	40N	40N[D]	40N	40N	CLOSED

A — ONLY LARGE MESH (TUNA) NETS

B — WAS MOVED BY JAPANESE FROM 42N TO 43N IN 1988

C — WERE BOTH MOVED NORTH BY JAPANESE FROM 44N IN 1988

D — TAIWANESE REGULATIONS RESTRICTED THESE FISHERIES TO 39N IN 1985

JAPANESE AND TAIWANESE RESTRICTIONS REPRESENT NO REDUCTION IN TIME OR AREA FISHED FROM INTERNAL REGULATIONS IN PLACE PRIOR TO 1989 AGREEMENTS WITH U.S. THIS IS THE FIRST TIME KOREA HAS AGREED TO TIME AND AREA RESTRICTIONS.

U.S. Coast Guard 17th District

Sockeye salmon discovered by the U.S. Coast Guard on a North Pacific Taiwanese squid driftnet vessel that was fishing outside of legal boundaries.

represent a major effort to understand the impacts of these fisheries on a broad range of fish and wildlife. Given the schedule established under the UN resolution, this year's scientific work is of paramount importance.

However, recent actions by Japanese fishermen serve to underscore our concerns regarding the ability to control these driftnet fisheries with any measures short of a total international ban. In May of this year several driftnet vessels were observed by the U.S. Coast Guard fishing in unauthorized waters southwest of the Aleutian Islands. These vessels were flying the flag of North Korea, a nation which up to now was not involved in driftnet fishing. Acting on a tip from U.S. authorities, Soviet enforcement personnel boarded and seized the vessels, which had large amounts of illegally caught salmon on board. It turns out that these vessels—and the majority of the crew—were Japanese, operating under a secret arrangement with North Korea. This was an obvious attempt to circumvent the U.S.-Japan bilateral driftnet agreement, the INPFC, and the UN Resolution. This event has also raised the level of concern in the international community regarding the ability of flag states to control these fisheries.

THE DONUT HOLE

When the Magnuson Fishery Conservation and Management Act was passed in 1976, a process was established to move the foreign fleets out of the newly established U.S. 200-mile EEZ. In this regard, the act was a success and the foreign fleets were mostly gone in less than 10 years. However, as the foreign fleets fishing for bottomfish (mostly pollock) off Alaska were forced out of the EEZ, many of the vessels took up fishing in wate of the Bering Sea beyond the 200-mile zones of the U.S. ar the Soviet Union. This is the so-called donut hole area.

Although there were strong suspicions that large amoun of pollock were being harvested in the donut hole for a nun ber of years, the first significant documented catches of pc lock were reported to be approximately 336,000 metric tons fı 1985, with the majority being caught by Japan and Polan The Republic of Korea (South Korea) and the Peoples Repul lic of China (mainland China) are the other major participan in this fishery. The donut hole catch has grown dramatical since then, from slightly over 1 million metric tons for 198 to roughly 1.5 million metric tons at present.

This rapid expansion in the take of pollock raised concerr in both the United States and the Soviet Union regarding th overall health of the Bering Sea pollock resource. Both coun tries were coming to the conclusion that they had to wor together to bring these fisheries under some kind of contro Mounting evidence of illegal fishing by vessels staging foray out of the donut hole into U.S. waters provided further incen tive to move on the issue.

In May of 1988, the United States and the Soviet Unio signed a comprehensive fisheries agreement which opened th way for further cooperation. After consultations with th Soviets, the United States hosted a major scientific symposi um on the status of Bering Sea pollock in July 1988 in Sitka Alaska. Representatives from the U.S., Japan, Korea, Poland Canada, China, and the U.S.S.R. met for three days to reviev the scientific information available regarding stock abundance stock identification, oceanography and migration, and reproduction. There was considerable disagreement among th various national sections on many of these topics, but numer ous information needs were identified which set the stage fo further research to address the issues posed by the new fishery

The Soviets and the United States met again formally ir February 1989 in Washington, D.C., and in September 1989 ir Leningrad to discuss a number of fisheries topics. At each o these meetings the donut hole issue was a major topic of dis cussion. A work group was established to review and coordinat matters between the two countries. This group, called the Ber ing Sea Fisheries Advisory Body (BSFAB), met in Novembe 1989 in Seattle. They were charged with identifying and assess ing the pollock resources of the Bering Sea, establishing a com mon databank, and determining appropriate overall harves levels.

The BSFAB findings were startling. Scientists from both countries agreed that the pollock resource of the Bering Sea is declining by about 10 percent per year. More importantly when the harvest levels from the U.S. zone, the U.S.S.R. zone and the donut hole are added up, the scientists found that the overall harvest of pollock may be exceeding the biologically appropriate level by as much as 700,000 metric tons per year. The BSFAB found the large, unregulated pollock fishery in the donut hole to be "biologically irrational," noting that if this trend continues, then all fisheries will eventually suffer.

Unfortunately, no international mechanism now exists for addressing this problem or to bring the donut hole fisheries under control. Continuing discussions with the U.S.S.R. show promising signs, however. At talks held this March, the U.S. and the U.S.S.R. informally discussed the possibility of a new international regime to manage the fisheries in this area. Principles and concepts were explored, and both sides agreed that there needs to be a serious attempt to "harmonize" fisheries management in the Bering Sea. Further work on developing a possible management regime for this area is slated to occur later this summer.

US/USSR FISHERIES RELATIONS

New international alignments are taking shape on the world stage which present new challenges and opportunities for Alaska. One of the more promising areas in international fisheries is our emerging fisheries relationship with the U.S.S.R.

As noted earlier, in May of 1988 the United States and the Soviet Union signed a comprehensive fisheries agreement which includes provisions for cooperation on scientific research, fisheries management and conservation, and trade. The agreement includes provisions for cooperation to manage and conserve anadromous stocks of the North Pacific and pollock fisheries in the Bering Sea. The agreement also establishes an Intergovernmental Coordinating Committee (ICC) as the organizational structure to implement the agreement.

The U.S./U.S.S.R. fisheries agreement was adopted by Congress in the fall of 1988 as a Governing International Fisheries Agreement (GIFA). The implementing legislation, with strong support from Senator Stevens and the State of Alaska, also established the North Pacific and Bering Sea Advisory Body consisting of ten representatives from the fishing industry, five each from Alaska and Washington, as well as the heads of the two states' fisheries agencies.

The first official meeting of the ICC was held in Washington, D.C., in February 1989. At this meeting, the new direction North Pacific fisheries matters might be taking became apparent. The U.S.S.R. floated two draft proposals—one to manage Bering Sea pollock fisheries, and a second proposal for a North Pacific/Bering Sea multilateral salmon agreement.

The Soviet salmon proposal would prohibit salmon fisheries outside the 200-mile zones of coastal states and establish a framework to address fisheries within the zones of the parties. If such an approach were agreed to by the major salmon producing nations of Japan, Canada, the U.S.S.R., and the United States, it would virtually eliminate interceptions of U.S.-origin salmon. The U.S. advisors took the Soviet proposal, revised it, and submitted it to the U.S. federal government for consideration. The revised text was further modified and adopted as a U.S. negotiating position for the next round of talks with the Soviets which occurred in Leningrad in September 1989. After several days of hard work, the U.S. and U.S.S.R. negotiators had an agreed-upon text for a new proposed salmon treaty. Some minor technical problems remained to be resolved, and the proposal was completed and agreed upon in March of this year at the third ICC meeting which occurred in Washington, D.C. The document was subsequently forwarded to Japan and Canada for their consideration. Negotiations among the four nations on this proposal should begin sometime this year.

The U.S. advisors also played a major role in shaping the course of events involving the donut hole talks with the Soviets. As with the salmon proposal, the donut hole proposal put forth by the Soviets in February was used by the U.S. advisors to develop a donut hole proposal for consideration by the U.S. federal agencies. This eventually evolved into the BSFAB, which was established at the Leningrad meeting.

Subsequently, the results of the BSFAB formed the basis for another paper prepared by the advisors which laid out principles for a proposed management regime for the donut hole. This paper became the basis for informal discussions with the Soviets at the March 1990 meeting regarding concepts for managing these unregulated fisheries. After several rounds of informal talks, substantial progress was made concerning the possibility of establishing some type of management regime for the donut hole fisheries. Formal talks may occur sometime this summer to more fully develop a proposal.

CONCLUSION

Competition for the world's finite ocean resources is mounting, and international concern over their conservation and use is growing dramatically. Throughout the 90s the fisheries of the North Pacific and the Bering Sea will continue to be the focus of intense international transactions. As world politics and economics shift, the complex fisheries relationships among the United States, Japan, Canada, and the Soviet Union will provide challenging opportunities. New fisheries management regimes could emerge from this period which will have profound, long lasting effects on Alaska and the nation. As these events unfold, Alaska can play a strategic role in the negotiations that will determine the future of the marine resources of the North Pacific and Bering Sea. Unlike many parts of the world, we still have the opportunity to do things right here—if we pay attention.

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