NATIONAL MARINE FISHERIES SERVICE HONOLULU LABORATORY 2570 DOLE STREET HONOLULU, HAWAII 96822-2396

AUGUST 1996

FISHERY STATISTICS OF THE WESTERN PACIFIC

VOLUME XI

Territory of American Samoa (1994)

Commonwealth of the Northern Mariana Islands (1994)

Territory of Guam (1994)

State of Hawaii (1994)

Compiled by

David C. Hamm, Nathan T. S. Chan, and Michael M. C. Quach

Honolulu Laboratory
Southwest Fisheries Science Center
National Marine Fisheries Service, NOAA
Honolulu, Hawaii 96822-2396

ADMINISTRATIVE REPORT H-96-08

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PREFACE

In recent years, the demand for data and information concerning marine fisheries has greatly increased. To help meet these increased needs in the central and western Pacific areas, the National Marine Fisheries Service's Southwest Fisheries Center initiated the Western Pacific Fishery Information Network (WPACFIN), which assists Pacific island fisheries agencies in upgrading their data collecting, processing, and reporting capabilities. Several agencies are participating in this program: the National Marine Fisheries Service's Southwest Fisheries Science Center and its Honolulu Laboratory, and the Southwest Region and its Pacific Area Office, American Samoa's Department of Marine and Wildlife Resources, the Commonwealth of the Northern Mariana Islands' Division of Fish and Wildlife, Guam's Division of Aquatic and Wildlife Resources, Hawaii's Division of Aquatic Resources, and the Western Pacific Regional Fishery Management Council.

In 1982, these agencies formed a Fisheries Data Coordinating Committee (FDCC) and a FDCC Technical Subcommittee to help guide, coordinate, and monitor all of the many activities being undertaken by each agency to improve their systems. Significant progress has been made by all participating agencies, particularly in the areas of upgrading data collecting and processing systems.

As a major step in improving and coordinating the data reporting and distributing systems of the agencies, in May 1985, the FDCC agreed to begin producing a combined document reporting each island's major fisheries statistics. Production of the document would be the responsibility of the FDCC Technical Subcommittee and would be coordinated by the WPACFIN program manager. Each agency would supply the data required to produce the tables and graphs for its respective chapter of the report, and central WPACFIN staff would produce and distribute the document as part of the Administrative Report Series of the Southwest Fisheries Science Center.

This document is the eleventh volume in the series "Fishery Statistics of the Western Pacific" and contains summaries of commercial and creel survey fishery landings data for 1994 for American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawaii. The first ten volumes contain similar reports for these areas from 1979 through 1993. However, volumes nine, ten, and eleven are different from the earlier volumes in that the Guam chapter contains only commercial landings data; no creel survey data were available from the Division of Aquatic and Wildlife Resources.

CONTENTS

LIST OF AMERICAN SAMOA SUMMARY TABLES

LIST OF AMERICAN SAMOA SUMMARY TABLES (cont.)

LIST OF AMERICAN SAMOA SUMMARY TABLES (cont.)

LIST OF CNMI SUMMARY TABLES

LIST OF GUAM SUMMARY TABLES

LIST OF GUAM SUMMARY TABLES (cont.)

LIST OF HAWAII SUMMARY TABLES

LIST OF AMERICAN SAMOA FIGURES

LIST OF AMERICAN SAMOA FIGURES (cont.)

LIST OF CNMI FIGURES

LIST OF CNMI FIGURES (cont.)

LIST OF GUAM FIGURES

LIST OF GUAM FIGURES (cont.)

LIST OF HAWAII FIGURES

LIST OF HAWAII FIGURES (cont.)

BACKGROUND

This report has been compiled by governmental fisheries agencies of several islands in the central and western Pacific area in a cooperative and continuing effort to improve the availability and dissemination of fisheries information. The data contained herein have been collected, computerized, edited, and processed by agencies participating in the Western Pacific Fishery Information Network (WPACFIN), including American Samoa's Department of Marine and Wildlife Resources (DMWR), the Commonwealth of the Northern Mariana Islands' (CNMI) Division of Fish and Wildlife (DFW), Guam's Division of Aquatic and Wildlife Resources (DAWR), Hawaii's Division of Aquatic Resources (HDAR) and the Southwest Fisheries Science Center's (SWFSC) Honolulu Laboratory, National Marine Fisheries Service (NMFS). The data summaries and graphs contained in this document were prepared by WPACFIN staff at the Honolulu Laboratory from data collected by WPACFIN or provided by these agencies. Data from DMWR and DFW were supplied on floppy diskettes in established WPACFIN data base formats, whereas data on the Guam commercial fisheries were collected on forms provided to fish wholesalers by WPACFIN through DAWR. Data for Hawaii were provided by HDAR on floppy diskettes or via a dial-in telecommunications link. Once data from all agencies were put into the proper format on the central WPACFIN computer and appropriate edit and verification procedures completed, summary reports and files were produced using software developed specifically for this purpose. Graphs were produced using commercially available software.

PROGRESS

In 1981, when WPACFIN began assisting agencies in improving their data collecting and processing systems, only the State of Hawaii had computerized processing. By mid-1982, fisheries offices in American Samoa, Guam, and the CNMI had implemented computerized processing on microcomputers supplied by WPACFIN. Since that time, these agencies have made many significant improvements to their data collecting systems and have established sound automated data processing systems. Most agencies can now provide fishery statistics to WPACFIN within 45 days of the date of collection. The HDAR also has improved its systems in recent years and has significantly reduced the lag time in data processing from about 2.5 years to less than 3 months for most data. The HDAR has improved its procedures for editing, updating, and processing Hawaii's data. The biggest problems still facing HDAR in improving their data systems are reducing delinquency of fishermen reporting and implementing a validation system to ensure that what gets reported by fishermen is accurate.

PRECAUTIONS

Data collecting and processing systems vary greatly among Pacific island fisheries agencies. Although much standardization has taken place and is continuing, there remain many unique aspects of each island's systems based on local needs and capabilities. When using summaries contained in this report, especially if making comparisons, one should keep in mind the nature of the systems used to produce the data. For instance, Hawaii's commercial landings data are based on mandatory monthly reporting by licensed commercial fishermen, CNMI's data are based on voluntary monthly reporting of fish buyers using government-provided invoices, Guam's data are from WPACFIN-sponsored voluntary reporting by major commercial dealers, and American Samoa's data are based on creel survey sampling of participation and interviews of fishermen and a data expansion program. Each system has advantages and disadvantages, and the user should be aware of them when comparing or interpreting data.

The user should also be aware that species assemblages vary among island groups, as do cultural preferences and principal fishing techniques. Population size is of particular importance when making interpretations of the relative value and importance of the fisheries. To help the user make these value judgments, more detailed explanations of the data collecting and processing systems are provided in each island's section of this report.

CONTENTS

This document is divided into sections by island group. Each section contains reports on the monthly and annual landings by species or species groups for the commercial fleet. The section for American Samoa also contains estimates of total catch and effort of all boat-based fisheries including recreational and subsistence fishing activities. These estimates and their associated confidence limits were generated by computer-based data expansion systems using sample fishery data collected by creel survey programs. Commercial landings for American Samoa were calculated based on information gathered during the creel survey sampling program. Two sets of annual summaries are included for Hawaii, one each for commercial landings that were sold and not sold.

Definitions

In addition to the description of the systems and the monthly and annual reports, each section contains graphs of some of the summary fishery statistics of particular interest or importance to participating WPACFIN agencies. For purposes of graphical presentation of the data, several categories have been defined for each island's fisheries. Because of differences in

reporting systems and capabilities among the islands, species contained within each category may vary, but all categories are documented in each island's section. Overlap exists among some of the categories used for different graphs. Categories used in the graphs include the following:

1. Fisheries Categories - These are combinations of species of similar ecological types, specifically, pelagic, bottom fish, reef fish, and "other." "Other" includes groups that generally traverse these categories, such as certain sharks and jacks, or are not typically included in these groups, such as mullet and milkfish.

2. Pelagic Management Unit Species (PMUS) - The Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to place tunas under U.S. jurisdiction for management. The Fishery Management Plan for Pacific Pelagic Species was amended to reflect this change and the acronym PPMUS was created to refer to a new group which includes the tunas. However, this report series will continue to treat the tunas as a separate category for graphical purposes and use the PMUS acronym. Therefore, the PMUS category in this document includes only the billfishes, wahoo, mahimahi, and oceanic sharks.

3. Bottom Fish Management Unit Species (BMUS) - Defined as the species of initial importance in the Fishery Management Plan for bottom fish and seamount fisheries, including the major deepwater snapper, grouper, emperor, and certain jacks.

4. Tunas - Predominantly skipjack and yellowfin tunas in all areas, but also including most other tuna species and excluding wahoo. In Hawaii bigeye tuna are also of major importance in recent years.

5. Other Tunas - All tunas as defined above, but excluding skipjack and yellowfin tunas.

6. Billfish - Combination of all marlin, sailfish, spearfish, and swordfish species.

Graphics

A minimum of four types of graphs are provided with each island's data. The chapter for American Samoa has an additional type of graph on catch and effort from creel survey data. Type I graphs present summary charts of the major species and species groups for 1994. Type II graphs are seasonality plots for the major species or species groups, showing the average weight landed during each month for all years combined. Type III graphs

are based on annual summary statistics and help visualize the variability among years. Type IV graphs are plots of monthly landings of some of the major commercially important species and document fluctuations in landings of these species over the entire time series. Type V graphs are based on creel survey data and include plots of catch and effort by fishing method plus a combination of several of the types I-IV graphs.

I. Monthly graphs for each year's data including:

- A. Major fisheries categories
- B. Tunas, PMUS, and BMUS
- C. Wahoo, mahimahi, and billfish
- D. Skipjack, yellowfin, and other tunas

II. Plots of average monthly landings for:

- A. Tunas, PMUS, and BMUS
- B. Wahoo and mahimahi
- C. Billfish species:
  1. Marlin and sailfish - American Samoa and CNMI
  2. Blue marlin, black marlin, and striped marlin - Hawaii
  3. Sailfish, shortbill spearfish, and swordfish - Hawaii
- D. Skipjack, yellowfin, and other tunas
- E. BMUS and the most important bottom fish species
  1. BMUS, ehu, and onaga - American Samoa
  2. BMUS, emperor, and grouper - CNMI and Guam
  3. BMUS, onaga, and opakapaka - Hawaii
  4. BMUS, ehu, and uku - Hawaii

III. Graphs of annual summary statistics for:

- A. Major fisheries categories
- B. Total commercial landings - pounds and dollars
- C. Tunas, PMUS, and BMUS
- D. Wahoo, mahimahi, and billfish
- E. Skipjack, yellowfin, and other tunas

IV. Graphs of monthly landings over the entire time series for the following major species:

- A. Wahoo - All four areas
- B. Mahimahi - All four areas
- C. Blue marlin - All four areas
- D. Black marlin - Hawaii
- E. Striped marlin - Hawaii
- F. Sailfish - American Samoa, Guam, and Hawaii
- G. Shortbill spearfish - Guam and Hawaii
- H. Swordfish - Hawaii
- I. Skipjack tuna - All four areas
- J. Yellowfin tuna - All four areas
- K. Opakapaka - Hawaii

L. Onaga - American Samoa and Hawaii
M. Uku - Hawaii
N. Ehu - American Samoa and Hawaii
O. Emperors - CNMI and Guam
P. Grouper - CNMI and Guam

V. Graphs of certain statistics generated by creel surveys for American Samoa

A. Offshore monthly catch by method
B. Offshore monthly effort by method
C. Offshore annual catch and effort for the time series

AMERICAN SAMOA

Fishery Statistics
1994

AMERICAN SAMOA 1994 FISHERY STATISTICS

Compiled by

American Samoa
Department of Marine and Wildlife Resources
and the
Western Pacific Fishery Information Network

August 1996

CONTENTS

LIST OF AMERICAN SAMOA SUMMARY TABLES

LIST OF AMERICAN SAMOA SUMMARY TABLES (cont.)

LIST OF AMERICAN SAMOA SUMMARY TABLES (cont.)

LIST OF AMERICAN SAMOA FIGURES

LIST OF AMERICAN SAMOA FIGURES (cont.)

AMERICAN SAMOA 1994 FISHERY STATISTICS

INTRODUCTION

American Samoa (approximately lat. 14° S, long. 170° W) is composed of the major island of Tutuila, where over 80% of the total population of 47,000 live; Aunu'u, a small island less than 1 mile off Tutuila's southeast shore; the Manu'a Islands of Ofu, Olesaga, and Ta'u, located about 105 km (65 miles) east of Tutuila; the uninhabited Rose Atoll, some 290 km (180 miles) east of Tutuila; and the sparsely populated Swain's Island about 350 km (220 miles) north of Tutuila. The American Samoa Department of Marine and Wildlife Resources (DMWR), formerly the Office of Marine Resources, located in Pago Pago on Tutuila, has been collecting commercial fisheries data from the local fleet on Tutuila since the early 1970's and from the Manu'a Islands since 1983. Most data collected over the years have been from the commercial fleet, but beginning in October 1985, DMWR's data collection programs were modified to include data on recreational and subsistence fisheries as well.

The domestic fisheries of American Samoa are typically small boat, one-day fisheries. Although one domestic longliner operated for a few years, the majority of the fleet is composed of two types of 28- to 29-foot outboard engine powered catamarans called alias and manta cats. During 1994, 43 boats were sampled, 31 from Tutuila and 12 from the Manu'a Islands. Fishing is mostly done by trolling and bottom fishing methods, and the majority of the catch is sold locally. During 1994, on average, trips on boats from Tutuila had three-man crews, fished 12 hours, and caught a little over 180 pounds of fish, whereas boats from the Manu'as also fished three-man crews, but only fished for 5 hours and caught about 120 pounds of fish.

DATA COLLECTING SYSTEM

The major method used by DMWR for obtaining catch statistics has always been interviewing fishermen at the end of their trips. Before October 1985, the DMWR data collectors kept records of as much commercial fishing activity as possible and routinely obtained interviews from fishermen as often as possible. This method of data collection provided accurate data on the commercial fleet for the trips where interviews were conducted, but was very labor intensive, did not cover all trips, and intentionally excluded the recreational and subsistence fisheries. Therefore, in October 1985, a new sampling program was implemented on Tutuila to provide better coverage and statistics for all boat-based fisheries. The new sampling methods were not implemented in the Manu'a Islands because the fishing fleet is centrally located and is small enough that statistics were being collected for nearly every trip.

The boat-based fishery sampling program used for Tutuila since October 1985 is similar to the one used in Guam. This systematic, random sampling program stratifies sampling by type of day, either weekday or weekend-holiday. The DMWR staff normally sample 2 weekdays and 1 weekend-holiday per week. During survey days, counts of total participation are collected to facilitate expansion of the survey data to estimates of total catch and effort for Tutuila. Unless contrary information is available, a boat is assumed to be fishing if it is "out," as evidenced by its trailer at a boat ramp or being missing from its normal berthing area. Tutuila is divided into six areas, five of which are sampled. Presumably, fishing activity and success rate of boats in the non-sampled area are similar to those in the sampled areas. Further assumptions are that information given by the fishermen during the interview is accurate and that the fishermen interviewed are representative of the entire fishing population.

Survey data are collected in the field on interview log sheets and returned to the DMWR office for editing. The following information is collected for each interview:

* Date
* Type of day
* Time
* Boat name
  Captain or boat owner's name
* Method of fishing
* Disposition of catch
* Species caught
  Number of pieces for each species
* Weight in pounds for each species
  Price per pound for each species
  Area fished
* Home island
  Number of trips since last interview
* Total trip weight in pounds
  Total hours fished (trip length)
  Number of fishermen
  Number of gear used

It is not always possible for the interviewer to obtain information on all items listed. However, the ones marked with an asterisk (*) are considered essential for data expansion purposes. Identification and weight of each species are often not obtainable; in which case, a code for species groupings (e.g., miscellaneous bottom fish) is used.

DATA PROCESSING SYSTEM

Interview forms are returned to the office, edited, coded, and entered into computerized databases--the commercial landings database for data collected before October 1985, and the offshore

creel survey database for data collected since then. Edit and summary reports are produced to help verify that the data were entered correctly. The creel survey data are then processed using the offshore data expansion system programmed by WPACFIN specifically for DMWR. The data expansion system is menu-driven and steps the user through a series of processes that summarize creel survey data to produce catch and effort expansion and species composition files and reports. Typically 1 month of data is processed at a time, although the system allows for processing broader time increments of data. The data expansion system was modified in 1992 to improve the estimates generated by the system by pooling interview data for the time period in calculating mean catch rates for each fishing method.

In fisheries applications, calculation of catch per unit of effort (CPUE) may be done in several ways. In the pre-1992 version of the data expansion system average monthly CPUE was calculated by using daily CPUEs as observations and finding the simple mean of those observations. Daily CPUE measurements were calculated by dividing the sum of the catch by the sum of the hours fished from the interviews for each day sampled. The variance of the mean monthly CPUE was calculated using standard variance formulas with each daily CPUE as input to the equation, keeping day types and methods separate. This method requires a high interview rate be obtained for each day sampled if the daily estimates of effort, catch, and CPUE for each fishing method are to be representative of the whole offshore fishery. Since this is not always the case, it is believed that more representative estimates could be obtained by pooling interview data over the entire time period for which an expansion was being made and using daily participation counts to estimate effort. Therefore, the new expansion algorithms implemented in 1992 calculate the monthly mean CPUE for each fishing method the same as the daily measurements were previously calculated (the sum of the catch divided by the sum of the effort), but use all interviews for the time period. The variance of the CPUE is estimated by using the standard, but more complex, formula for a ratio estimator. Sample day participation counts and percent coverage estimates are still used to estimate total effort, but the split of the effort between fishing methods and the mean CPUE for each method are now calculated using interviews collected during the entire time period, thus reducing the potential biases caused by the small number of interviews on any given sample day.

The new expansion system generates estimates of time-period catch, effort, and participation for each fishing method and day type. Percent species composition by weight is calculated from the sampled catch and used to create estimates of total landings by species by multiplying the sampled percent by the expanded estimated catch. All steps in the expansion process are stratified by fishing method. The expansion system produces reports and files of the final totals for all important catch and effort statistics. These files are later used to produce the reports contained in this document. On a quarterly basis, copies

of the DMWR data bases are sent to the Honolulu Laboratory for updating the central WPACFIN files.

At the Honolulu Laboratory, the creel survey data are transferred to the central computer for further verification and processing before generating the summary reports contained in this report series. Because DMWR changed their data collecting systems during 1985, new processing procedures were established by WPACFIN to standardize reports as much as possible to facilitate comparisons between years. Data collected before October 1985 were adjusted upward by the percent coverage to account for missed trips. The offshore creel survey data collected since October 1985 were expanded to estimates of total Tutuila landings and then separated into commercial versus noncommercial landings (e.g., sold versus not sold). The expansion and separation algorithms stratify the data by fishing method to improve the final estimates of landings by species. After the file of estimated commercial landings for Tutuila was created from the expansion files, the adjusted commercial landings for Manu'a were added to it, thereby creating the commercial landings data base for American Samoa. Additionally, because price information was not obtained for all landings that were sold, the commercial data were edited to create price information when none was available. To accomplish this, a three-tiered editing system was designed to "create" price estimates based on the best information available. The edit system puts average price information in each record where it is missing, based on the following three levels of available information:

1. If price information is available for the same species in the same month, the weighted average price per pound is written into all records missing that information for that species and month.

2. If no price information is available for the same species and same month, the annual weighted average price for that species is written into records for that species and month.

3. If no price information is available for a species for the entire year, the program prompts the user for input and updates the file based on the response.

As data base records are updated, each is flagged to indicate which level of estimation was used for the price information. This makes it possible to easily exclude the "created" data, if desired, when doing economic analysis.

DATA REPORTING SYSTEM

After all editing, quality control, and other processing activities are completed on the central WPACFIN computer, monthly and annual commercial landings reports by species are generated. Each of the commercial landings reports contains the common name, weight in pounds, value in dollars, and the average price per pound of each species or species group. Each monthly report contains a subtotal for the sum of all species for that month, and the December report contains the December subtotal and the annual total. Annual reports contain the total estimated commercial landings for each species and for all species combined for the calendar year.

Estimated total landings reports are provided separately for Tutuila and Manu'a. Monthly and annual estimated total landings reports are provided for the Manu'a Islands. Two types of total landings reports are included from the creel survey data expansion system for Tutuila: catch and effort expansion reports and species composition reports. These reports were produced by using the expansion and species composition files as input to report generating programs developed by WPACFIN. The programs reorganize, format, and summarize data from the expansion files to improve the presentation of data and reduce the amount of space required to report the important statistics. Monthly and annual estimated total landings reports for 1994 include the expansion summary of catch and effort statistics by fishing method and the summary species composition reports for all methods combined.

Monthly expansion and species composition reports have matching totals for catch by fishing method since the monthly species composition reports are based on the expansion files. Annual expansion and species composition reports also have identical totals because the species reports were generated from the annual expansion files. However, the totals on the annual report will not equal the total obtained by adding all of the monthly files together because the annual expansion reports were generated by re-expanding the entire year's data together, thereby increasing the sample size significantly, and it is hoped, improving the annual estimates of percent species composition and of catch and effort and their associated coefficients of variation (CV's). The annual species composition report was created by calculating annual percentages of species composition by combining all sampling for the year and then multiplying these percentages by the annual expansion totals. This allows calculation of annual percent species composition based on greatly increased sample size.

Computer generated numbers and all totals in the reports are subject to rounding error. All catches are reported in pounds, and effort, in boat hours. In the offshore expansion reports, the boat counts by fishing method will not add to the total boat count when the same boat was used for more than one method on a

single trip. In these cases, the boat is included in the count for each method used but included only once in the total count. A CV is included for each statistic in the expansion reports. The CV provides a measurement of the relative variation associated with the estimate preceding it and is calculated by dividing the standard error of the estimate by the estimate and multiplying by 100 and rounding to express the answer as a whole percentage. The larger the CV, the larger the relative variation in the data used to generate the estimate and, therefore, the less precise the estimate. An asterisk following a line means the number of samples collected for that method during that month were insufficient to properly calculate the CV. There must be at least two weekday and two weekend-holiday samples for each method to properly compute a standard error and, therefore, properly compute the CV. If an asterisk is present and the CV is greater than zero, then samples on either weekdays or weekend-holidays were sufficient to compute a standard error for that type of day but not for the other type of day. In this case, the CV provided in the report is for the type of day in which sample information met the minimum requirements for calculating CV. If an asterisk is present and the CV equals zero, then neither type of day had sufficient number of samples to calculate CV. It follows then, anytime an asterisk is present for any of the fishing methods, the totals for the month are questionable.

The following species, species groups, and abbreviations are used in the tables and graphs of American Samoa's data:

I. Pelagic Management Unit Species (PMUS)

Although the Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to include tunas in the Pacific PMUS (PPMUS), this report series will continue to specify tunas as a separate category from the PPMUS. The PMUS category includes:

Mahimahi (dolphin)
Blue marlin
Black marlin
Sailfish
Shortbill spearfish
Wahoo
Sharks

II. Bottom Fish Management Unit Species (BMUS)

Jacks (unclassified)
Black jack
Amberjack
Giant trevally
Bottom fish (unclassified)
Groupers (unclassified)
Blacktip grouper
Lunartail grouper

II. Bottom Fish Management Unit Species (BMUS) (cont.)

Snappers (unclassified)
Bluelined snapper
Gray jobfish (uku)
Deepwater bottom fish (unclassified)
Yellow opakapaka
Hawaiian opakapaka
Opakapaka
Gindai (flower snapper)
Yellowtail snapper
Lehi (silverjaw snapper)
Onaga (red or longtail snapper)
Ehu (red snapper)
Emperorfish (unclassified)
Ambon emperor
Redgill emperor

III. Billfish

Blue marlin
Black marlin
Sailfish
Shortbill spearfish

IV. Tunas

Tunas (unclassified)
Skipjack tuna
Yellowfin tuna
Dogtooth tuna
Albacore
Bigeye tuna
Kawakawa

V. Other Tuna

The above tuna species excluding skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:
Troll fish (unclassified)
Barracuda
Rainbow runner

B. Bottom Fish

All BMUS plus the following:
Bigeye trevally
Bluefin trevally
Goldspot trevally

B. Bottom Fish (cont.)

Trevally
Whitemouth trevally
Peacock grouper
Flagtail grouper
Tomato grouper
Yellowspot grouper
Striped grouper
Spotted grouper
Small mouth grouper
Giant grouper
Rufous snapper
Blacktail snapper
Onespot snapper
Twinspot/red snapper
Humpback snapper
Blood snapper
Brown snapper
Bluelined gindai
Black snapper
Stone's snapper
Kusakar's snapper
Bigeye emperor
Goldenline bream
Longnose emperor
Bluelined bream
Orangespot emperor
Snake mackerel
Oilfish

C. Reef Fish

Reef fish (unclassified)
Mullet
Rabbitfish
Surgeonfish and tangs (unclassified)
Lined surgeon
Yelloweyed surgeon
Convict tang
Dussumier's surgeon
Spotted surgeon
Unicornfish
Squirrelfish (unclassified)
Berndt's soldierfish
Bigeye squirrelfish
Parrotfish
Terapon perch
Wrasse
Goatfish (unclassified)
Pink goatfish
Inshore groupers (unclassified)
Triggerfish
Butterflyfish

C. Reef Fish (cont.)

Porcupinefish
Inshore snappers (unclassified)

D. Other

Miscellaneous
Bigeye scad
Rays
Eels
Invertebrates (unclassified)
Crabs (unclassified)
Kona crab
Mangrove crab
Spiny lobster
Slipper lobster
Shrimp
Octopus
Squid
Clams
Turtle

INTERPRETATION OF STATISTICS

The user is reminded to pay heed to the precautions and assumptions identified earlier in this document, when making interpretations of or inferences from data reported in the tables and graphs. Remember also that neither the commercial landings summaries nor the creel summaries are based on a census of all the fishing activities, but on samples of those activities. One of the major factors in expanding the creel survey data into monthly and annual estimates is the use of proportionality constants to adjust for percent coverage of the surveys. The flexibility of the survey design allows for refinement of these constants as additional information is gained on the fishing activities. If the constants are improved upon, the basic survey data can be re-expanded to create better overall estimates. However, the variability and species composition would not be expected to change since these statistics are based on the actual survey information collected from the fishermen. The estimates of total landings are considered to be conservative because the catch from the subsistence inshore fisheries are currently not included in this document. DMWR has implemented an inshore sampling program and WPACFIN staff recently completed writing the computer software to process the data. Therefore, inshore data summaries should be available in future volumes of this report series.

Table II.1.1

American Samoa 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	2,020	3,493	1.73
Black jack	345	718	2.08
Bigeye trevally	554	1,080	1.95
Barracudas	1,420	1,753	1.23
Large barracuda	957	1,925	2.01
Small barracuda	2,064	3,526	1.71
Sharks	4,288	7,083	1.65
Rays	341	648	1.90
Moray eels	107	107	1.00
Groupers (misc)	451	857	1.90
Peacock grouper	401	802	2.00
Tomato grouper	556	990	1.78
Yellowspot grouper	29	56	1.95
Spotted grouper	159	301	1.90
Lunartail grouper	1,870	3,520	1.88
Blue lined snapper	3,739	7,483	2.00
Rufous snapper	238	476	2.00
Onespot snapper	79	154	1.96
Twinspot/red snapper	642	1,219	1.90
Humpback snapper	1,643	3,250	1.98
Gray jobfish	4,133	7,979	1.93
Opakapaka	2,720	6,706	2.47
Gindai (flower snap)	669	1,339	2.00
Yellowtail snapper	7	13	1.80
Lehi (silverjaw)	1,522	3,388	2.23
Onaga (longtail snapper)	2,780	5,769	2.08
Ehu (squirrelfish snap.)	3,025	6,873	2.27
Black snapper	230	466	2.03
Stone's snapper	268	553	2.06
Emperors (misc)	2,683	5,610	2.09
Longnose emperor	2,139	4,168	1.95
Ambon emperor	3,120	6,154	1.97
Redgill emperor	1,203	2,409	2.00
Reef fish (Assorted)	204	356	1.75
Rudderfish	74	142	1.92
Sargent major	50	111	2.22
Lined surgeon	939	2,074	2.21
Striped bristletooth	78	177	2.25
Yellowfin surgeonfish	332	739	2.23
Unicornfishes (misc)	51	108	2.12

Table II.1.1 (Cont.)

Species	Pounds	Value	$/lb
Squirrelfish	711	1,295	1.82
Saber squirrelfish	7	14	2.00
Bigscale soldierfish	3	6	1.70
Bigeye squirrelfish	38	78	2.07
Parrotfishes	2,541	5,583	2.20
Terapon perch	22	50	2.25
Goatfish	11	14	1.25
Inshore groupers	513	1,147	2.24
Triggerfish	11	14	1.25
Red snapper, mu	7	16	2.30
Mahimahi (dolphin)	10,955	19,600	1.79
Blue marlin	12,678	21,613	1.70
Black marlin	1,345	2,355	1.75
Sailfish	1,705	4,775	2.80
Rainbow runner	394	635	1.61
Wahoo	9,000	11,617	1.29
Tunas	243	243	1.00
Skipjack tuna	148,852	152,941	1.03
Dogtooth tuna	2,121	3,546	1.67
Albacore	1,676	1,676	1.00
Yellowfin tuna	50,274	117,407	2.34
Kawakawa	672	1,286	1.91
Crabs	34	120	3.50
Spiny lobster	586	2,204	3.76
** TOTAL **	292,529	442,812	1.51

Table II.1.2

American Samoa January 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	146	287	1.97
Black jack	7	12	1.65
Small barracuda	18	30	1.65
Groupers (misc)	14	32	2.30
Tomato grouper	14	32	2.25
Lunartail grouper	23	52	2.25
Blue lined snapper	95	215	2.26
Humpback snapper	146	335	2.30
Gray jobfish	54	108	2.01
Opakapaka	14	24	1.70
Gindai (flower snap)	76	171	2.25
Lehi (silverjaw)	241	550	2.28
Onaga (longtail snapper)	318	719	2.26
Ehu (squirrelfish snap.)	144	321	2.23
Stone's snapper	83	191	2.30
Ambon emperor	255	586	2.30
Squirrelfish	38	80	2.13
Mahimahi (dolphin)	40	40	1.00
Blue marlin	275	482	1.75
Rainbow runner	17	33	1.90
Skipjack tuna	4,173	4,173	1.00
Yellowfin tuna	1,318	2,457	1.86
** SUBTOTAL **	7,509	10,928	1.46

Table II.1.3

American Samoa February 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	40	50	1.25
Black jack	71	158	2.21
Large barracuda	179	370	2.07
Groupers (misc)	14	31	2.30
Tomato grouper	80	100	1.25
Lunartail grouper	74	93	1.25
Blue lined snapper	67	91	1.36
Humpback snapper	162	374	2.30
Gray jobfish	226	519	2.30
Opakapaka	16	36	2.30
Gindai (flower snap)	68	136	2.00
Lehi (silverjaw)	6	11	1.87
Onaga (longtail snapper)	380	829	2.18
Ehu (squirrelfish snap.)	700	1,559	2.23
Black snapper	16	36	2.30
Emperors (misc)	467	1,074	2.30
Rudderfish	45	90	2.00
Red snapper, mu	7	16	2.30
Mahimahi (dolphin)	82	246	3.00
Blue marlin	2,280	3,990	1.75
Wahoo	6	9	1.50
Skipjack tuna	4,391	4,391	1.00
Albacore	237	237	1.00
Yellowfin tuna	1,504	2,655	1.77
** SUBTOTAL **	11,117	17,100	1.54

Table II.1.4

American Samoa March 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	20	29	1.43
Bigeye trevally	6	12	2.00
Barracudas	30	30	1.00
Small barracuda	176	263	1.49
Tomato grouper	70	123	1.76
Lunartail grouper	73	133	1.82
Blue lined snapper	241	656	2.72
Humpback snapper	20	40	2.00
Gray jobfish	23	43	1.87
Gindai (flower snap)	29	58	2.01
Lehi (silverjaw)	11	21	1.87
Onaga (longtail snapper)	199	559	2.81
Ehu (squirrelfish snap.)	31	60	1.95
Black snapper	12	36	3.00
Emperors (misc)	60	181	3.00
Ambon emperor	18	36	2.00
Redgill emperor	181	362	2.00
Mahimahi (dolphin)	78	234	3.00
Blue marlin	3,768	6,594	1.75
Rainbow runner	16	31	1.90
Wahoo	160	209	1.31
Skipjack tuna	4,372	5,431	1.24
Dogtooth tuna	215	409	1.90
Yellowfin tuna	2,901	6,327	2.18
** SUBTOTAL **	12,712	21,879	1.72

Table II.1.5

American Samoa April 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	110	157	1.43
Bigeye trevally	145	283	1.95
Barracudas	270	305	1.13
Small barracuda	175	285	1.63
Tomato grouper	60	106	1.76
Yellowspot grouper	29	56	1.95
Lunartail grouper	50	89	1.78
Blue lined snapper	185	348	1.89
Humpback snapper	239	417	1.74
Gray jobfish	288	545	1.89
Black snapper	86	167	1.95
Ambon emperor	228	446	1.95
Redgill emperor	19	37	1.95
Rainbow runner	100	150	1.50
Wahoo	7	9	1.25
Skipjack tuna	1,861	1,861	1.00
Dogtooth tuna	224	280	1.25
Yellowfin tuna	1,208	1,652	1.37
** SUBTOTAL **	5,284	7,194	1.36

Table II.1.6

American Samoa May 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	374	572	1.53
Black jack	58	114	1.95
Bigeye trevally	356	694	1.95
Barracudas	185	272	1.47
Small barracuda	514	861	1.67
Rays	341	648	1.90
Peacock grouper	21	42	2.00
Tomato grouper	54	108	2.00
Spotted grouper	106	201	1.90
Lunartail grouper	284	554	1.95
Blue lined snapper	628	1,212	1.93
Onespot snapper	12	24	2.00
Twinspot/red snapper	88	168	1.90
Humpback snapper	169	297	1.76
Gray jobfish	345	603	1.75
Gindai (flower snap)	122	244	2.00
Lehi (silverjaw)	184	367	2.00
Onaga (longtail snapper)	180	360	2.00
Ehu (squirrelfish snap.)	48	96	2.00
Stone's snapper	185	361	1.95
Ambon emperor	503	980	1.95
Redgill emperor	356	676	1.90
Lined surgeon	20	34	1.70
Squirrelfish	130	215	1.65
Saber squirrelfish	7	14	2.00
Parrotfishes	40	66	1.65
Mahimahi (dolphin)	4	8	2.00
Rainbow runner	110	165	1.50
Wahoo	14	18	1.25
Skipjack tuna	4,113	4,113	1.00
Dogtooth tuna	212	290	1.37
Yellowfin tuna	5,415	12,875	2.38
Spiny lobster	35	123	3.50
** SUBTOTAL **	15,212	27,374	1.80

Table II.1.7

American Samoa June 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	110	165	1.50
Black jack	42	84	2.00
Barracudas	142	227	1.60
Large barracuda	90	176	1.95
Small barracuda	168	168	1.00
Groupers (misc)	16	32	2.00
Tomato grouper	91	182	2.00
Spotted grouper	13	24	1.90
Lunartail grouper	176	330	1.87
Blue lined snapper	222	451	2.03
Rufous snapper	238	476	2.00
Twinspot/red snapper	452	860	1.90
Gray jobfish	84	155	1.86
Opakapaka	60	90	1.50
Gindai (flower snap)	147	294	2.00
Lehi (silverjaw)	42	84	2.00
Onaga (longtail snapper)	190	380	2.00
Ehu (squirrelfish snap.)	90	155	1.72
Redgill emperor	306	648	2.12
Sargent major	6	12	2.00
Lined surgeon	15	26	1.70
Squirrelfish	15	25	1.65
Parrotfishes	30	50	1.65
Mahimahi (dolphin)	72	144	2.00
Rainbow runner	75	113	1.50
Wahoo	382	478	1.25
Skipjack tuna	15,231	15,231	1.00
Dogtooth tuna	275	383	1.39
Yellowfin tuna	10,767	26,099	2.42
Spiny lobster	20	70	3.50
** SUBTOTAL **	29,568	47,611	1.61

Table II.1.8

American Samoa July 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	171	333	1.95
Black jack	27	54	2.00
Bigeye trevally	47	91	1.95
Barracudas	79	127	1.60
Small barracuda	214	419	1.96
Tomato grouper	22	44	2.00
Spotted grouper	40	76	1.90
Lunartail grouper	57	115	2.00
Blue lined snapper	332	647	1.95
Twinspot/red snapper	34	64	1.90
Humpback snapper	104	203	1.95
Gray jobfish	333	650	1.95
Gindai (flower snap)	30	60	2.00
Lehi (silverjaw)	48	96	2.00
Onaga (longtail snapper)	265	524	1.98
Ehu (squirrelfish snap.)	118	236	2.00
Black snapper	74	144	1.95
Redgill emperor	161	314	1.95
Sargent major	44	99	2.25
Lined surgeon	88	199	2.25
Striped bristletooth	18	40	2.25
Yellowfin surgeonfish	18	40	2.25
Unicornfishes (misc)	40	89	2.25
Squirrelfish	1	1	1.95
Bigscale soldierfish	3	6	1.70
Bigeye squirrelfish	27	60	2.25
Parrotfishes	552	1,243	2.25
Terapon perch	22	50	2.25
Inshore groupers	208	467	2.25
Mahimahi (dolphin)	1,835	3,330	1.81
Blue marlin	1,682	2,943	1.75
Black marlin	1,345	2,355	1.75
Sailfish	1,705	4,775	2.80
Wahoo	439	585	1.33
Skipjack tuna	10,007	10,163	1.02
Dogtooth tuna	9	18	2.00
Yellowfin tuna	7,737	18,414	2.38
Spiny lobster	164	646	3.95
** SUBTOTAL **	28,098	49,719	1.77

Table II.1.9

American Samoa August 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	100	187	1.87
Black jack	16	23	1.50
Barracudas	310	310	1.00
Large barracuda	64	124	1.95
Small barracuda	58	111	1.93
Sharks	987	1,678	1.70
Groupers (misc)	175	313	1.79
Tomato grouper	43	58	1.33
Lunartail grouper	123	192	1.55
Blue lined snapper	303	577	1.90
Onespot snapper	67	130	1.95
Twinspot/red snapper	12	23	1.90
Humpback snapper	12	24	1.95
Gray jobfish	374	663	1.77
Gindai (flower snap)	36	53	1.50
Lehi (silverjaw)	62	95	1.54
Onaga (longtail snapper)	118	177	1.50
Ehu (squirrelfish snap.)	31	62	2.00
Emperors (misc)	507	918	1.81
Longnose emperor	204	397	1.95
Squirrelfish	11	22	1.91
Goatfish	11	14	1.25
Triggerfish	11	14	1.25
Mahimahi (dolphin)	1,525	2,724	1.79
Blue marlin	914	1,600	1.75
Wahoo	1,529	1,960	1.28
Skipjack tuna	3,973	3,973	1.00
Dogtooth tuna	130	260	2.00
Albacore	1,438	1,438	1.00
Yellowfin tuna	4,798	11,631	2.42
Kawakawa	62	120	1.93
** SUBTOTAL **	18,003	29,871	1.66

Table II.1.10

American Samoa September 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	566	1,081	1.91
Black jack	115	256	2.22
Barracudas	262	294	1.12
Large barracuda	289	563	1.95
Small barracuda	238	463	1.95
Sharks	3,006	5,110	1.70
Moray eels	107	107	1.00
Groupers (misc)	233	449	1.93
Peacock grouper	353	706	2.00
Tomato grouper	101	196	1.95
Lunartail grouper	608	1,189	1.96
Blue lined snapper	879	1,705	1.94
Twinspot/red snapper	43	81	1.90
Humpback snapper	636	1,241	1.95
Gray jobfish	1,699	3,298	1.94
Opakapaka	2,409	6,023	2.50
Gindai (flower snap)	91	182	2.00
Lehi (silverjaw)	332	812	2.44
Onaga (longtail snapper)	997	1,955	1.96
Ehu (squirrelfish snap.)	650	1,575	2.42
Black snapper	42	83	1.95
Emperors (misc)	190	344	1.81
Longnose emperor	1,124	2,192	1.95
Ambon emperor	1,794	3,463	1.93
Redgill emperor	40	79	1.95
Rudderfish	14	29	2.00
Lined surgeon	467	1,044	2.24
Yellowfin surgeonfish	11	18	1.65
Unicornfishes (misc)	11	18	1.65
Squirrelfish	365	685	1.87
Bigeye squirrelfish	11	18	1.65
Parrotfishes	822	1,790	2.18
Inshore groupers	76	163	2.16
Mahimahi (dolphin)	2,647	4,321	1.63
Blue marlin	222	389	1.75
Wahoo	2,817	3,605	1.28
Skipjack tuna	9,760	9,977	1.02
Dogtooth tuna	597	1,167	1.96
Yellowfin tuna	6,431	15,758	2.45
Kawakawa	610	1,166	1.91
Crabs	34	120	3.50
Spiny lobster	129	483	3.76
** SUBTOTAL **	41,827	74,198	1.77

Table II.1.11

American Samoa October 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	259	400	1.54
Barracudas	141	188	1.33
Large barracuda	207	426	2.06
Small barracuda	191	372	1.95
Sharks	296	296	1.00
Peacock grouper	27	55	2.00
Lunartail grouper	189	357	1.89
Blue lined snapper	482	968	2.01
Twinspot/red snapper	13	24	1.90
Humpback snapper	155	320	2.07
Gray jobfish	304	598	1.97
Opakapaka	201	503	2.50
Lehi (silverjaw)	177	405	2.29
Emperors (misc)	1,105	2,342	2.12
Longnose emperor	639	1,213	1.90
Ambon emperor	314	629	2.00
Lined surgeon	224	505	2.25
Striped bristletooth	52	117	2.25
Squirrelfish	93	162	1.75
Parrotfishes	409	921	2.25
Inshore groupers	153	344	2.25
Mahimahi (dolphin)	1,162	2,127	1.83
Blue marlin	396	692	1.75
Rainbow runner	37	69	1.90
Wahoo	1,400	1,792	1.28
Tunas	243	243	1.00
Skipjack tuna	19,112	19,680	1.03
Dogtooth tuna	296	443	1.50
Yellowfin tuna	1,880	4,613	2.45
Spiny lobster	188	745	3.95
** SUBTOTAL **	30,344	41,549	1.37

Table II.1.12

American Samoa November 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	125	232	1.86
Large barracuda	129	265	2.06
Small barracuda	186	363	1.95
Lunartail grouper	150	292	1.95
Blue lined snapper	275	569	2.07
Gray jobfish	382	752	1.97
Yellowtail snapper	7	13	1.80
Lehi (silverjaw)	368	842	2.29
Emperors (misc)	355	752	2.12
Longnose emperor	173	366	2.12
Ambon emperor	7	14	2.00
Redgill emperor	140	293	2.09
Rudderfish	14	23	1.60
Lined surgeon	25	44	1.75
Squirrelfish	57	105	1.83
Parrotfishes	67	117	1.75
Mahimahi (dolphin)	977	1,796	1.84
Blue marlin	2,540	4,322	1.70
Rainbow runner	39	75	1.90
Wahoo	933	1,267	1.36
Skipjack tuna	24,980	25,692	1.03
Dogtooth tuna	151	277	1.84
Yellowfin tuna	1,392	3,314	2.38
Spiny lobster	50	138	2.75
** SUBTOTAL **	33,522	41,924	1.25

Table II.1.13

American Samoa December 1994 Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	9	18	2.00
Small barracuda	127	191	1.50
Tomato grouper	21	42	2.00
Lunartail grouper	63	126	2.00
Blue lined snapper	30	45	1.50
Gray jobfish	22	44	2.00
Opakapaka	20	30	1.50
Gindai (flower snap)	70	140	2.00
Lehi (silverjaw)	52	104	2.00
Onaga (longtail snapper)	133	266	2.00
Ehu (squirrelfish snap.)	1,214	2,808	2.31
Reef fish (Assorted)	204	356	1.75
Lined surgeon	99	223	2.25
Striped bristletooth	9	20	2.25
Yellowfin surgeonfish	303	681	2.25
Parrotfishes	621	1,396	2.25
Inshore groupers	77	172	2.25
Mahimahi (dolphin)	2,534	4,630	1.83
Blue marlin	600	600	1.00
Wahoo	1,312	1,686	1.29
Skipjack tuna	46,881	48,256	1.03
Dogtooth tuna	12	18	1.50
Yellowfin tuna	4,923	11,612	2.36
** SUBTOTAL **	59,334	73,465	1.24
** TOTAL **	292,529	442,812	1.51

Table II.2.1

American Samoa 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	512	740	1.45
Black jack	180	348	1.94
Barracudas	1,114	1,291	1.16
Large barracuda	40	50	1.25
Small barracuda	656	787	1.20
Groupers (misc)	33	53	1.62
Peacock grouper	21	42	2.00
Tomato grouper	501	885	1.77
Lunartail grouper	721	1,290	1.79
Blue lined snapper	346	612	1.77
Humpback snapper	115	144	1.25
Gray jobfish	401	672	1.68
Opakapaka	94	144	1.53
Gindai (flower snap)	669	1,339	2.00
Lehi (silverjaw)	285	536	1.88
Onaga (longtail snapper)	1,441	2,888	2.01
Ehu (squirrelfish snap.)	796	1,573	1.98
Rudderfish	59	119	2.00
Sargent major	6	12	2.00
Lined surgeon	71	122	1.72
Yellowfin surgeonfish	11	18	1.65
Unicornfishes (misc)	11	18	1.65
Squirrelfish	131	218	1.67
Saber squirrelfish	7	14	2.00
Bigeye squirrelfish	11	18	1.65
Parrotfishes	237	397	1.68
Goatfish	11	14	1.25
Inshore groupers	11	18	1.65
Triggerfish	11	14	1.25
Mahimahi (dolphin)	1,454	2,389	1.64
Blue marlin	1,156	1,449	1.25
Rainbow runner	285	428	1.50
Wahoo	327	530	1.62
Skipjack tuna	13,802	14,204	1.03
Dogtooth tuna	834	1,261	1.51
Yellowfin tuna	6,516	8,013	1.23
Kawakawa	11	11	1.00
Spiny lobster	161	524	3.27
** TOTAL **	33,045	43,186	1.31

Table II.2.2

American Samoa January 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	7	12	1.65
Small barracuda	18	30	1.65
Tomato grouper	14	32	2.25
Lunartail grouper	23	52	2.25
Blue lined snapper	83	187	2.25
Gray jobfish	26	44	1.70
Opakapaka	14	24	1.70
Gindai (flower snap)	76	171	2.25
Lehi (silverjaw)	14	28	2.00
Onaga (longtail snapper)	263	592	2.25
Ehu (squirrelfish snap.)	33	66	2.00
Squirrelfish	10	17	1.65
Mahimahi (dolphin)	40	40	1.00
Skipjack tuna	970	970	1.00
Yellowfin tuna	608	681	1.12
** SUBTOTAL **	2,199	2,944	1.34

Table II.2.3

American Samoa February 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	40	50	1.25
Black jack	17	33	1.94
Large barracuda	40	50	1.25
Tomato grouper	80	100	1.25
Lunartail grouper	74	93	1.25
Blue lined snapper	60	75	1.25
Gindai (flower snap)	68	136	2.00
Lehi (silverjaw)	6	11	1.87
Onaga (longtail snapper)	150	300	2.00
Ehu (squirrelfish snap.)	167	334	2.00
Rudderfish	45	90	2.00
Wahoo	6	9	1.50
Skipjack tuna	1,105	1,105	1.00
Yellowfin tuna	884	1,105	1.25
** SUBTOTAL **	2,742	3,491	1.27

Table II.2.4

American Samoa March 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	20	29	1.43
Barracudas	30	30	1.00
Small barracuda	97	110	1.13
Tomato grouper	70	123	1.76
Lunartail grouper	59	105	1.78
Blue lined snapper	40	72	1.80
Gray jobfish	9	15	1.66
Gindai (flower snap)	29	58	2.01
Lehi (silverjaw)	11	21	1.87
Onaga (longtail snapper)	38	76	2.01
Ehu (squirrelfish snap.)	31	60	1.95
Wahoo	46	67	1.46
Skipjack tuna	1,764	1,764	1.00
Yellowfin tuna	740	925	1.25
** SUBTOTAL **	2,984	3,455	1.16

Table II.2.5

American Samoa April 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	110	157	1.43
Barracudas	270	305	1.13
Small barracuda	58	58	1.00
Tomato grouper	60	106	1.76
Lunartail grouper	50	89	1.78
Blue lined snapper	80	144	1.80
Humpback snapper	70	88	1.25
Gray jobfish	60	100	1.66
Rainbow runner	100	150	1.50
Wahoo	7	9	1.25
Skipjack tuna	1,775	1,775	1.00
Dogtooth tuna	224	280	1.25
Yellowfin tuna	1,054	1,268	1.20
** SUBTOTAL **	3,918	4,527	1.16

Table II.2.6

American Samoa May 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	215	310	1.44
Black jack	32	64	2.00
Barracudas	185	272	1.47
Small barracuda	145	145	1.00
Peacock grouper	21	42	2.00
Tomato grouper	54	108	2.00
Lunartail grouper	90	176	1.95
Blue lined snapper	16	32	2.00
Humpback snapper	45	56	1.25
Gray jobfish	119	173	1.45
Gindai (flower snap)	122	244	2.00
Lehi (silverjaw)	25	50	2.00
Onaga (longtail snapper)	180	360	2.00
Ehu (squirrelfish snap.)	48	96	2.00
Lined surgeon	20	34	1.70
Squirrelfish	42	69	1.65
Saber squirrelfish	7	14	2.00
Parrotfishes	40	66	1.65
Mahimahi (dolphin)	4	8	2.00
Rainbow runner	110	165	1.50
Wahoo	14	18	1.25
Skipjack tuna	706	706	1.00
Dogtooth tuna	212	290	1.37
Yellowfin tuna	530	663	1.25
Spiny lobster	35	123	3.50
** SUBTOTAL **	3,017	4,283	1.42

Table II.2.7

American Samoa June 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	110	165	1.50
Black jack	42	84	2.00
Barracudas	110	165	1.50
Small barracuda	168	168	1.00
Groupers (misc)	16	32	2.00
Tomato grouper	91	182	2.00
Lunartail grouper	147	273	1.86
Blue lined snapper	20	36	1.80
Gray jobfish	51	92	1.80
Opakapaka	60	90	1.50
Gindai (flower snap)	147	294	2.00
Lehi (silverjaw)	42	84	2.00
Onaga (longtail snapper)	190	380	2.00
Ehu (squirrelfish snap.)	90	155	1.72
Sargent major	6	12	2.00
Lined surgeon	15	26	1.70
Squirrelfish	15	25	1.65
Parrotfishes	30	50	1.65
Rainbow runner	75	113	1.50
Wahoo	37	46	1.25
Skipjack tuna	1,097	1,097	1.00
Dogtooth tuna	185	270	1.46
Yellowfin tuna	654	818	1.25
Spiny lobster	20	70	3.50
** SUBTOTAL **	3,418	4,726	1.38

Table II.2.8

American Samoa July 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	27	54	2.00
Small barracuda	43	86	2.00
Tomato grouper	22	44	2.00
Lunartail grouper	54	108	2.00
Gray jobfish	18	36	2.00
Gindai (flower snap)	30	60	2.00
Lehi (silverjaw)	48	96	2.00
Onaga (longtail snapper)	141	282	2.00
Ehu (squirrelfish snap.)	118	236	2.00
Mahimahi (dolphin)	476	952	2.00
Wahoo	32	64	2.00
Skipjack tuna	1,117	1,273	1.14
Dogtooth tuna	9	18	2.00
Yellowfin tuna	742	928	1.25
** SUBTOTAL **	2,877	4,237	1.47

Table II.2.9

American Samoa August 1994 Manua Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	16	23	1.50
Barracudas	310	310	1.00
Groupers (misc)	17	21	1.25
Tomato grouper	43	58	1.33
Lunartail grouper	78	103	1.32
Blue lined snapper	17	21	1.25
Gray jobfish	46	68	1.50
Gindai (flower snap)	36	53	1.50
Lehi (silverjaw)	56	83	1.50
Onaga (longtail snapper)	118	177	1.50
Ehu (squirrelfish snap.)	31	62	2.00
Goatfish	11	14	1.25
Triggerfish	11	14	1.25
Mahimahi (dolphin)	223	447	2.00
Wahoo	10	16	1.58
Skipjack tuna	738	738	1.00
Dogtooth tuna	130	260	2.00
Yellowfin tuna	291	364	1.25
** SUBTOTAL **	2,180	2,831	1.30

Table II.2.10

American Samoa September 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	30	60	2.00
Barracudas	209	209	1.00
Tomato grouper	46	91	2.00
Lunartail grouper	83	167	2.00
Gray jobfish	50	100	2.00
Gindai (flower snap)	91	182	2.00
Lehi (silverjaw)	31	59	1.90
Onaga (longtail snapper)	228	456	2.00
Ehu (squirrelfish snap.)	98	196	2.00
Rudderfish	14	29	2.00
Lined surgeon	11	19	1.70
Yellowfin surgeonfish	11	18	1.65
Unicornfishes (misc)	11	18	1.65
Squirrelfish	39	64	1.65
Bigeye squirrelfish	11	18	1.65
Parrotfishes	100	165	1.65
Inshore groupers	11	18	1.65
Mahimahi (dolphin)	621	776	1.25
Blue marlin	222	389	1.75
Wahoo	36	44	1.25
Skipjack tuna	1,144	1,362	1.19
Dogtooth tuna	62	124	2.00
Yellowfin tuna	257	321	1.25
Kawakawa	11	11	1.00
Spiny lobster	56	194	3.50
** SUBTOTAL **	3,483	5,092	1.46

Table II.2.11

American Samoa October 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Skipjack tuna	160	160	1.00
Yellowfin tuna	70	88	1.25
** SUBTOTAL **	230	248	1.08

Table II.2.12

American Samoa November 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Jacks (misc)	17	29	1.75
Lined surgeon	25	44	1.75
Squirrelfish	25	44	1.75
Parrotfishes	67	117	1.75
Mahimahi (dolphin)	50	100	2.00
Blue marlin	333	460	1.38
Wahoo	100	200	2.00
Skipjack tuna	1,233	1,233	1.00
Yellowfin tuna	133	167	1.25
Spiny lobster	50	138	2.75
** SUBTOTAL **	2,033	2,531	1.24

Table II.2.13

American Samoa December 1994 Manu'a Estimated Commercial Landings

Species	Pounds	Value	$/lb
Black jack	9	18	2.00
Small barracuda	127	191	1.50
Tomato grouper	21	42	2.00
Lunartail grouper	63	126	2.00
Blue lined snapper	30	45	1.50
Gray jobfish	22	44	2.00
Opakapaka	20	30	1.50
Gindai (flower snap)	70	140	2.00
Lehi (silverjaw)	52	104	2.00
Onaga (longtail snapper)	133	266	2.00
Ehu (squirrelfish snap.)	180	368	2.04
Mahimahi (dolphin)	40	66	1.65
Blue marlin	600	600	1.00
Wahoo	39	57	1.46
Skipjack tuna	1,992	2,021	1.01
Dogtooth tuna	12	18	1.50
Yellowfin tuna	553	688	1.24
** SUBTOTAL **	3,963	4,823	1.22
** TOTAL **	33,045	43,186	1.31

Figure II.1.1

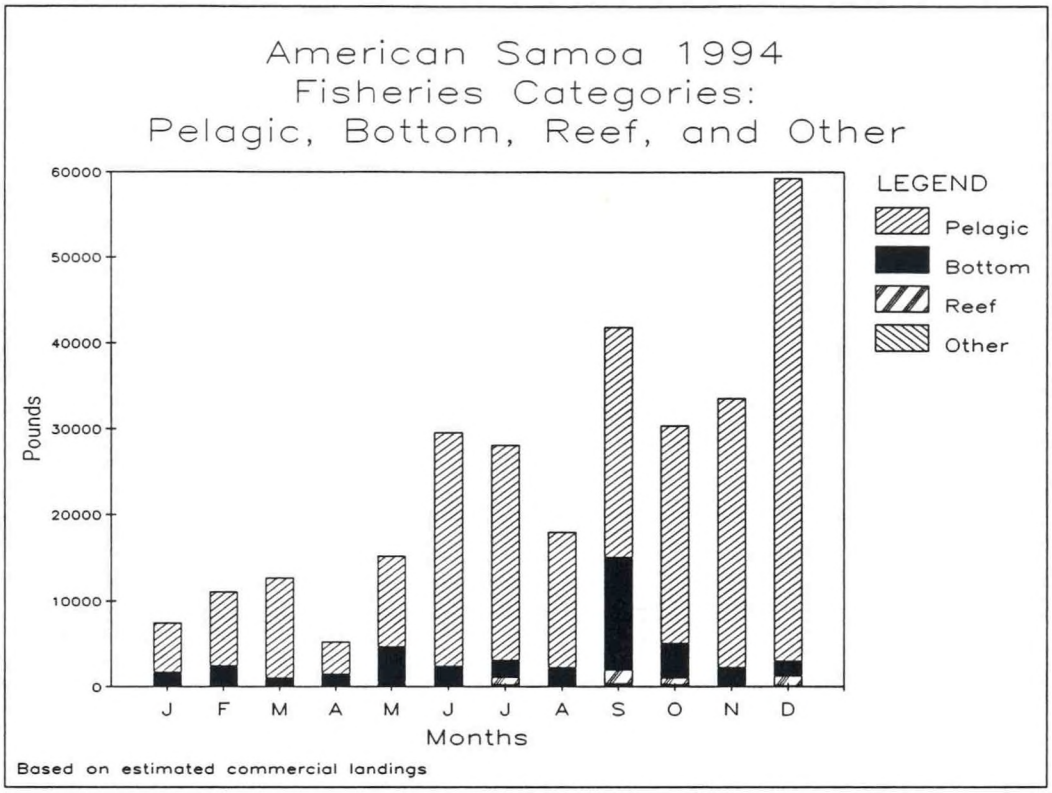
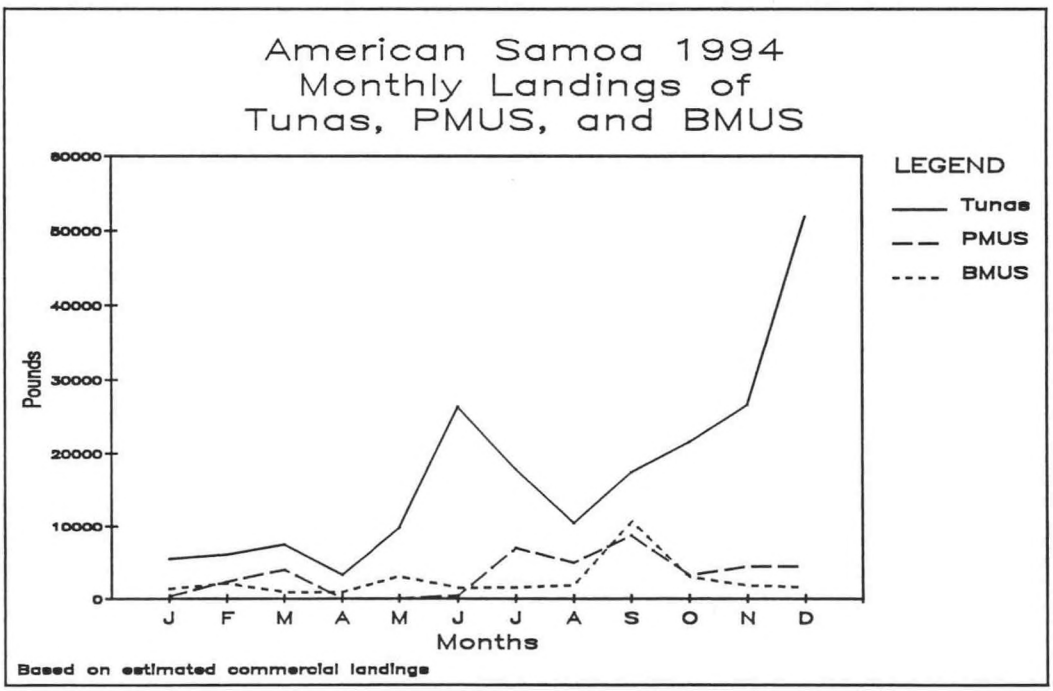


Figure II.1.2



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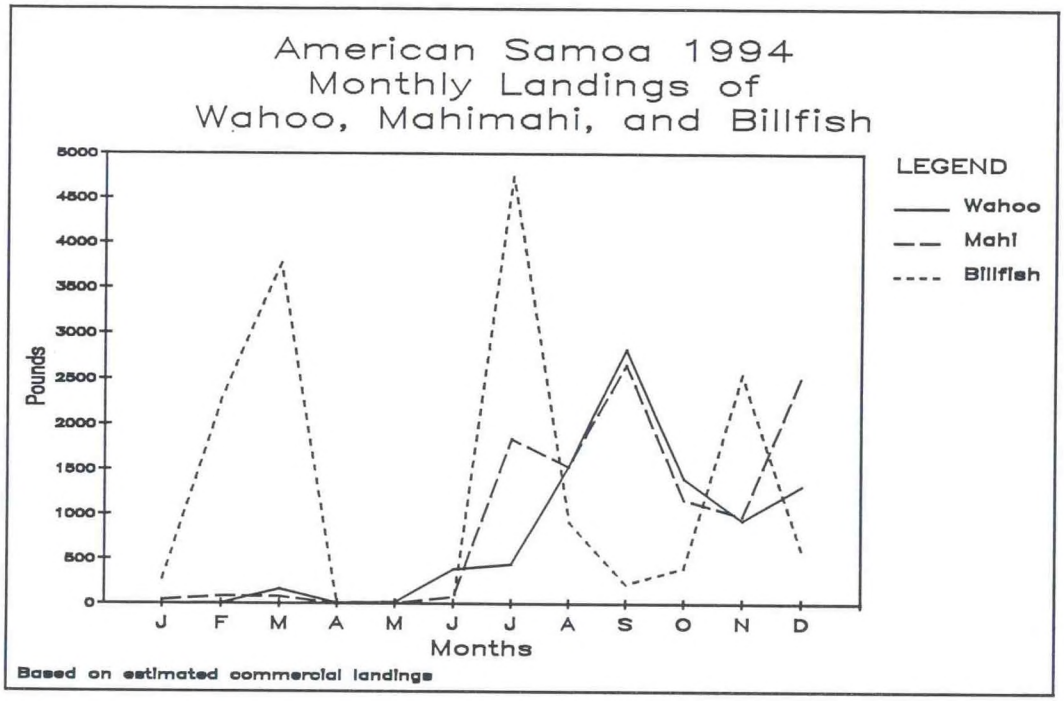

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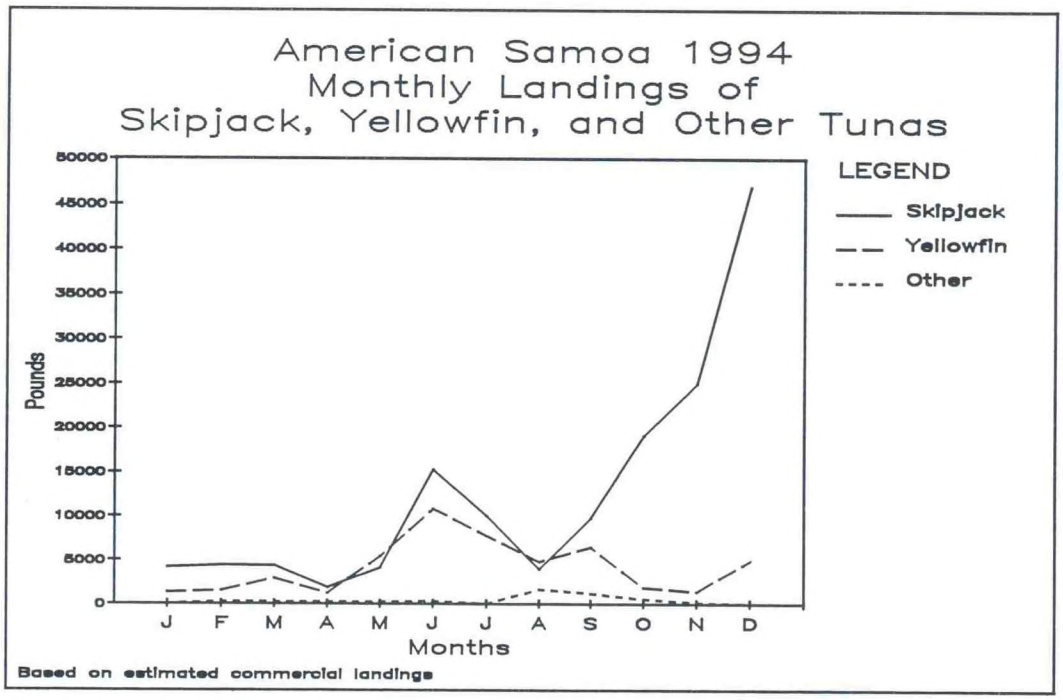

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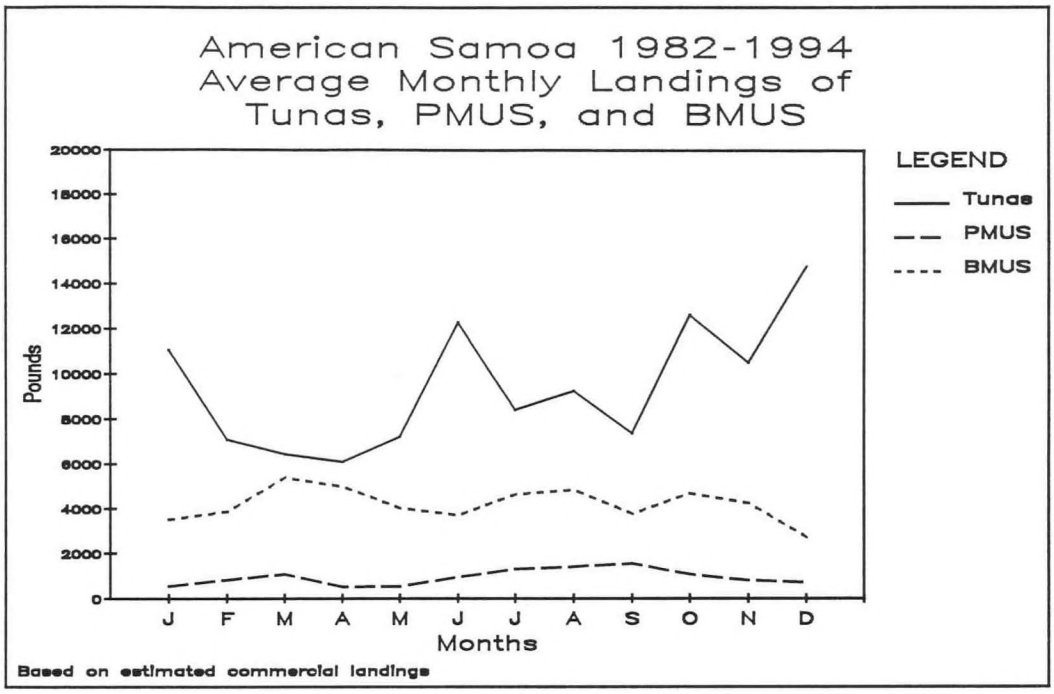

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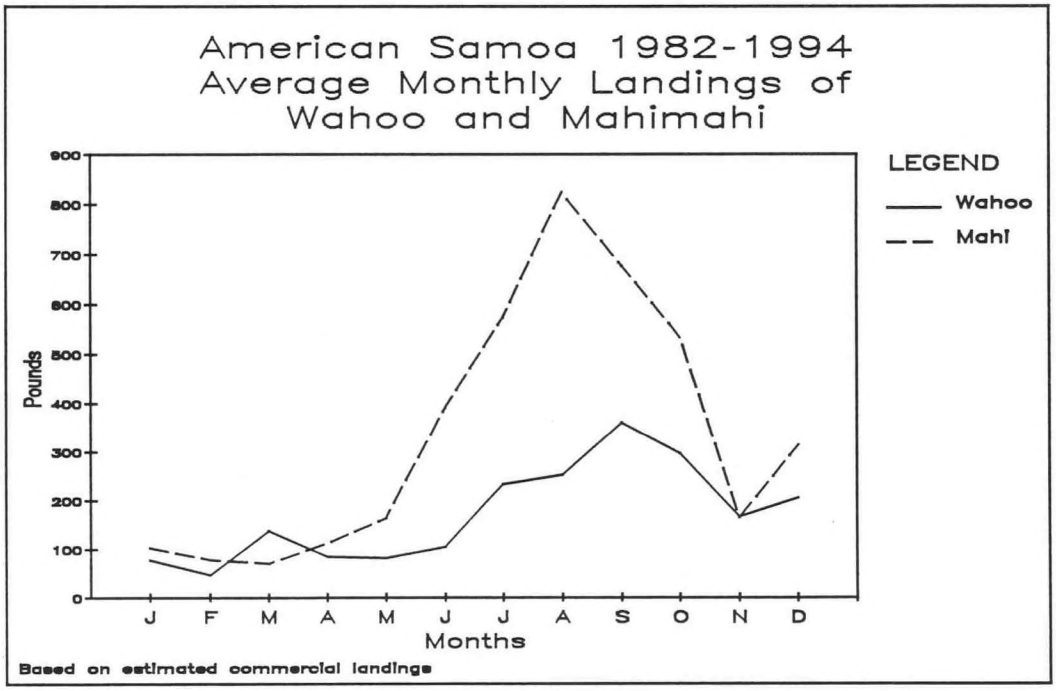

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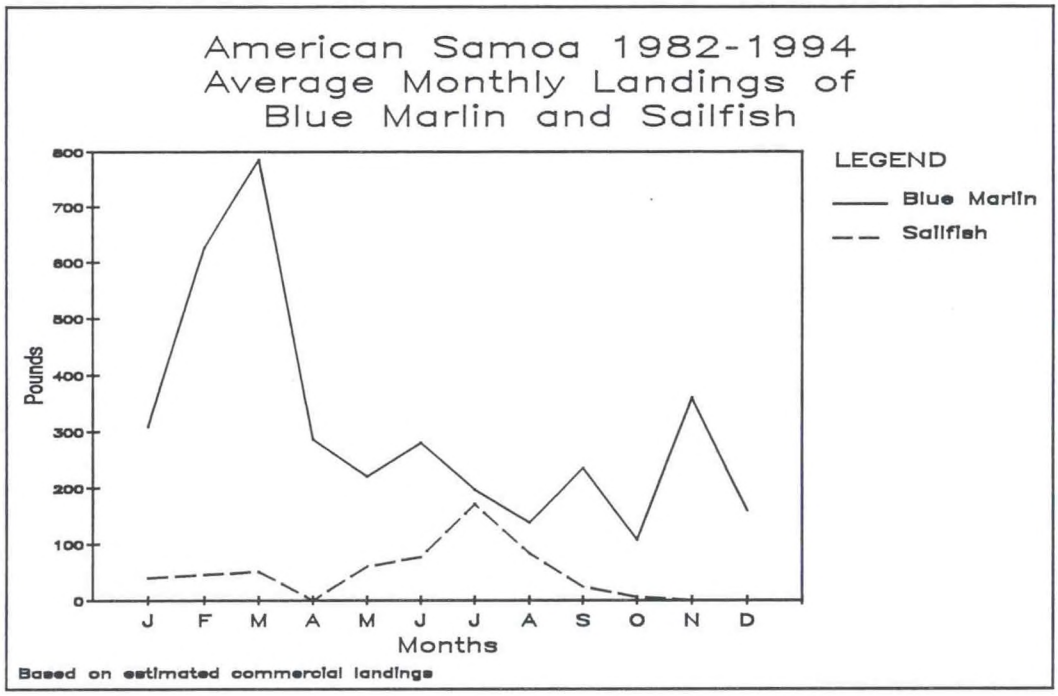

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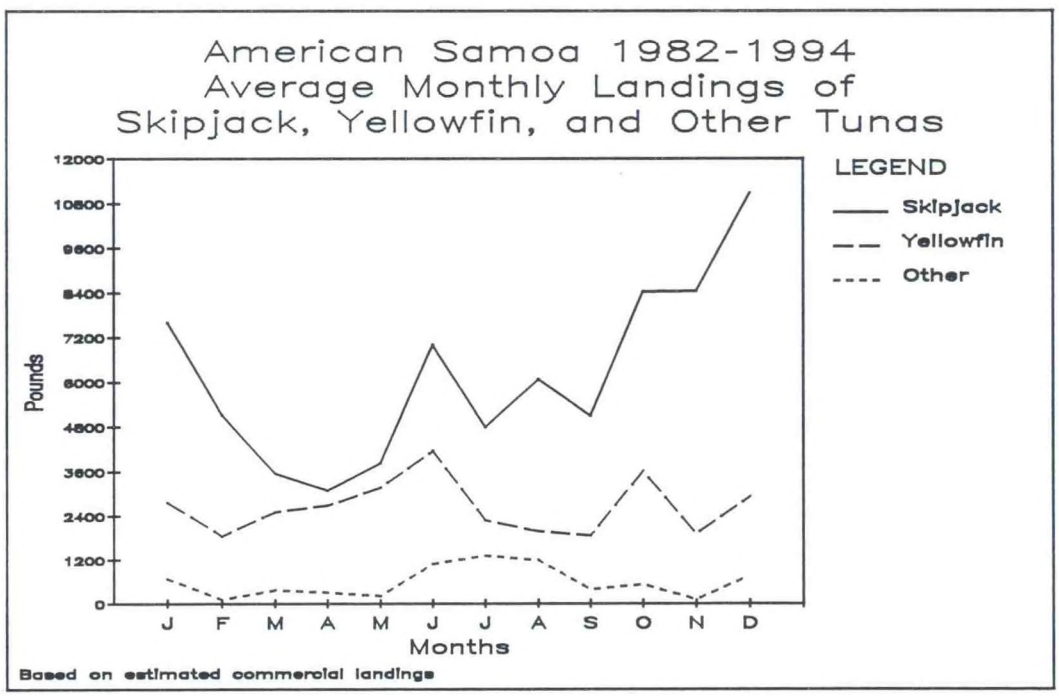

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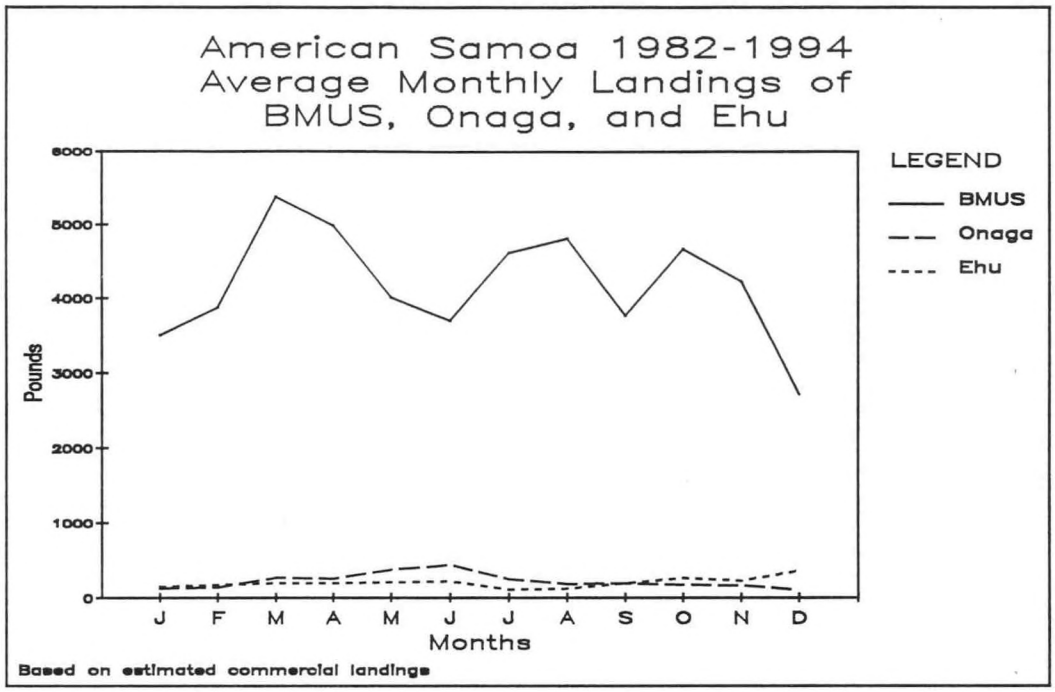

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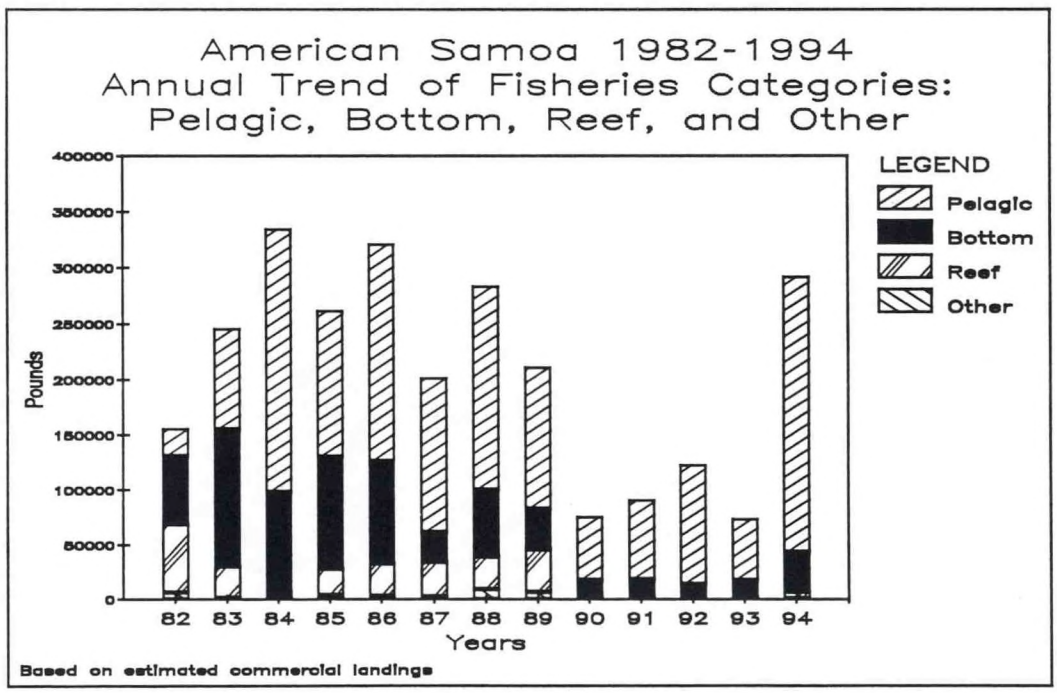

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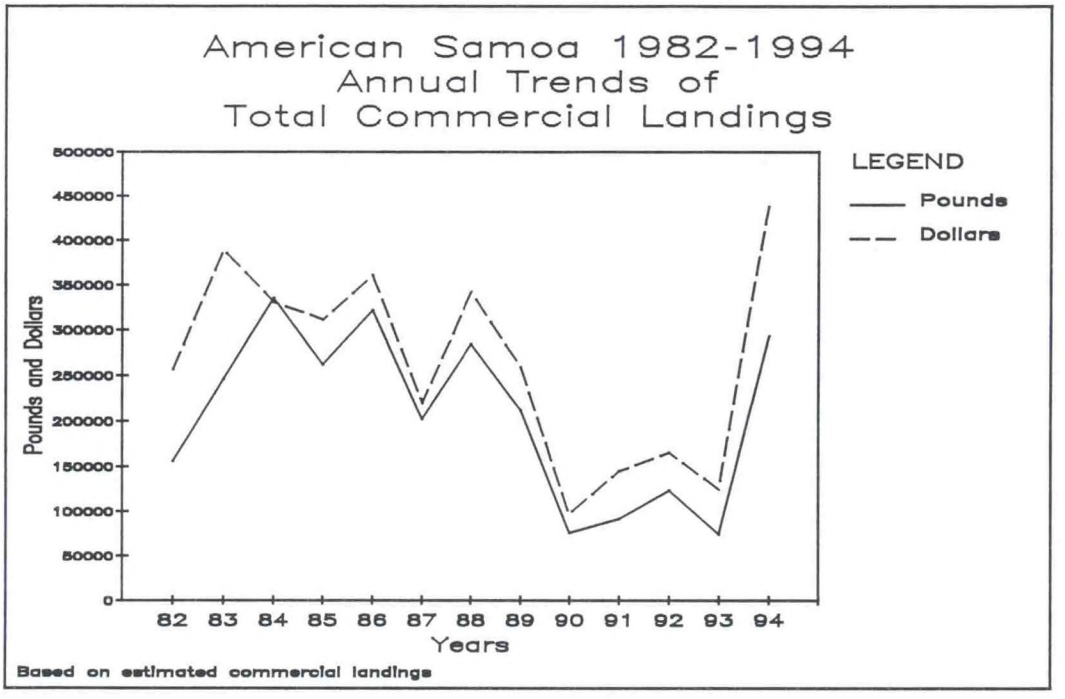

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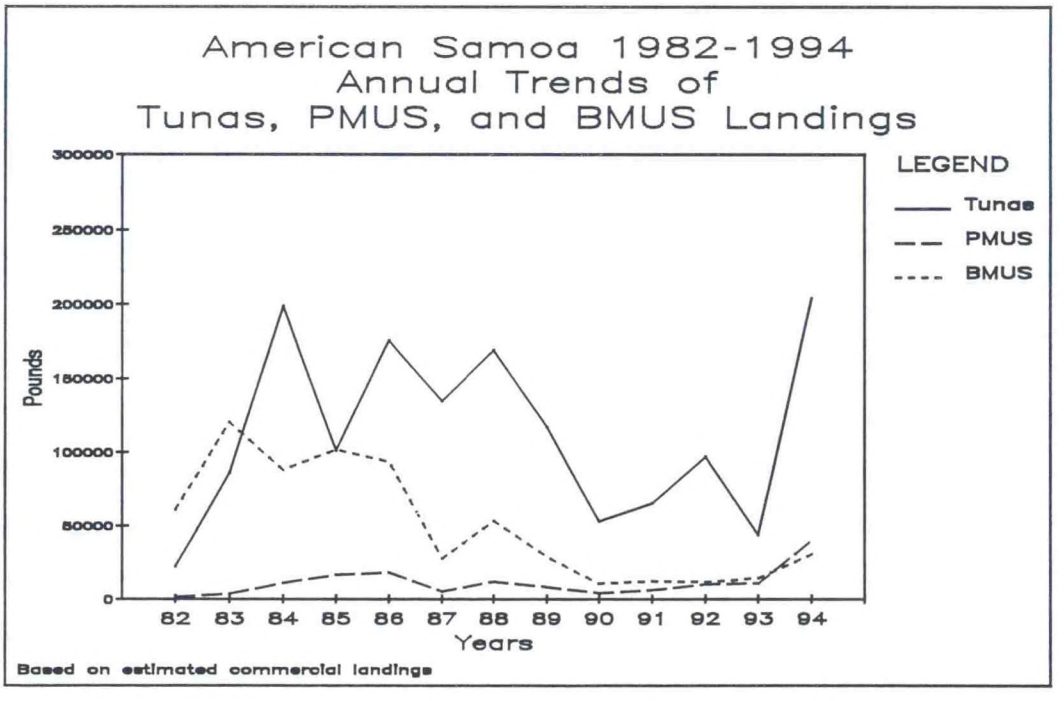

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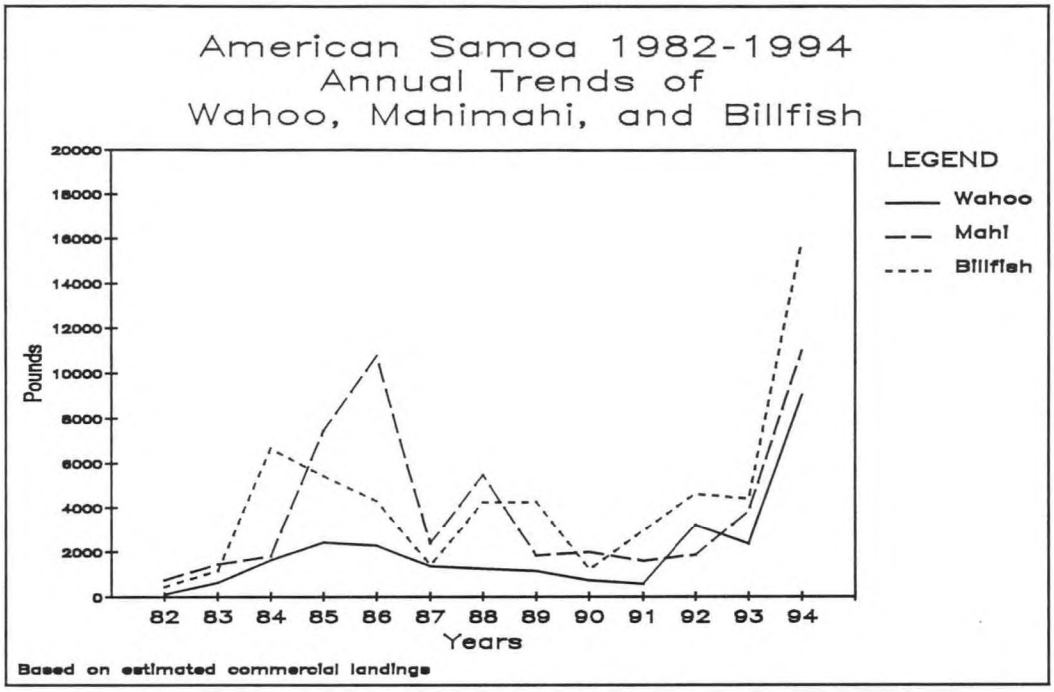

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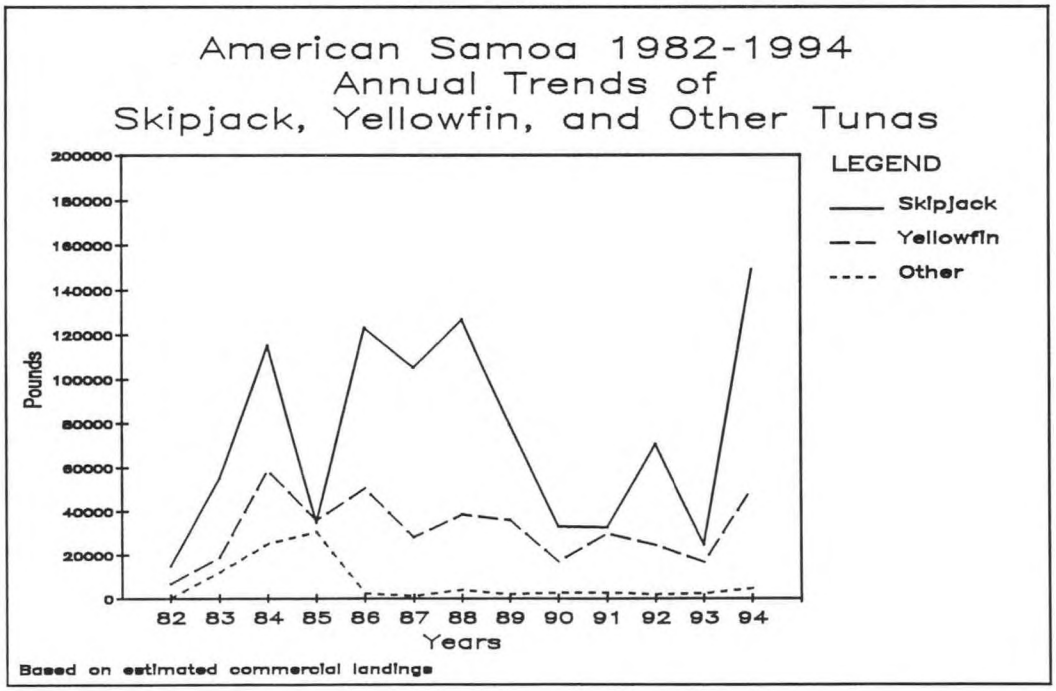
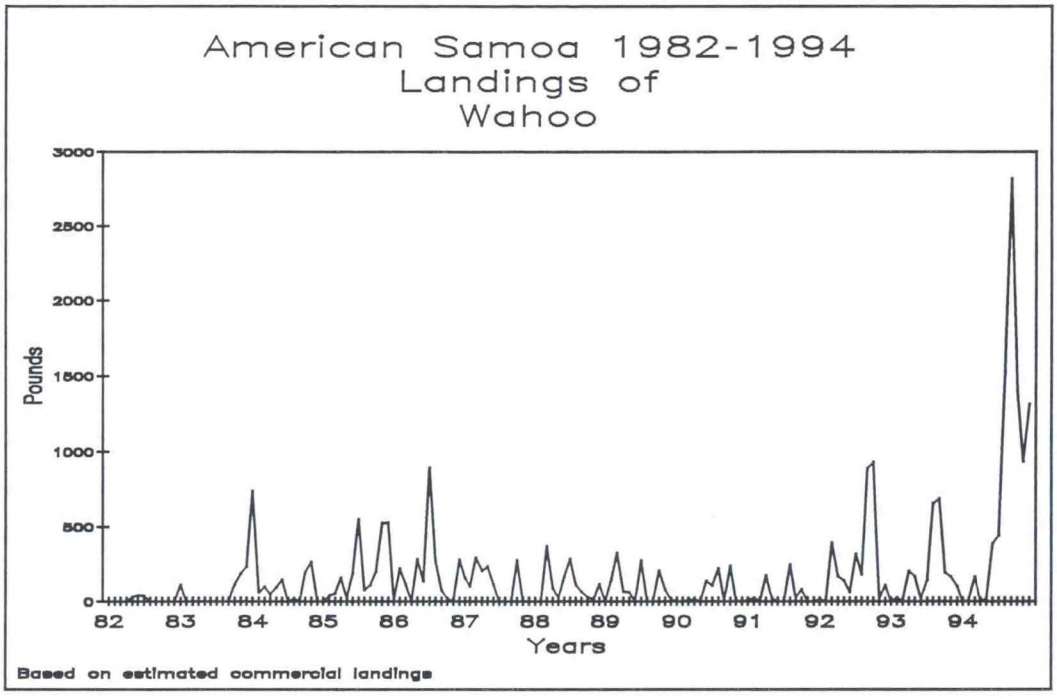


Figure II.4.1



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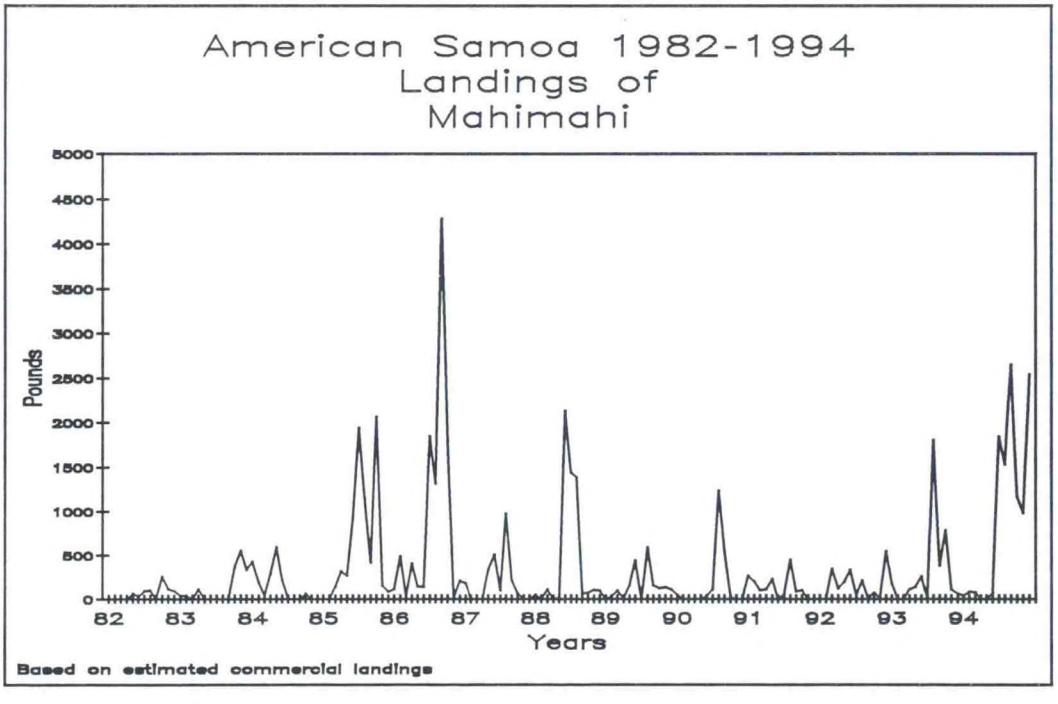

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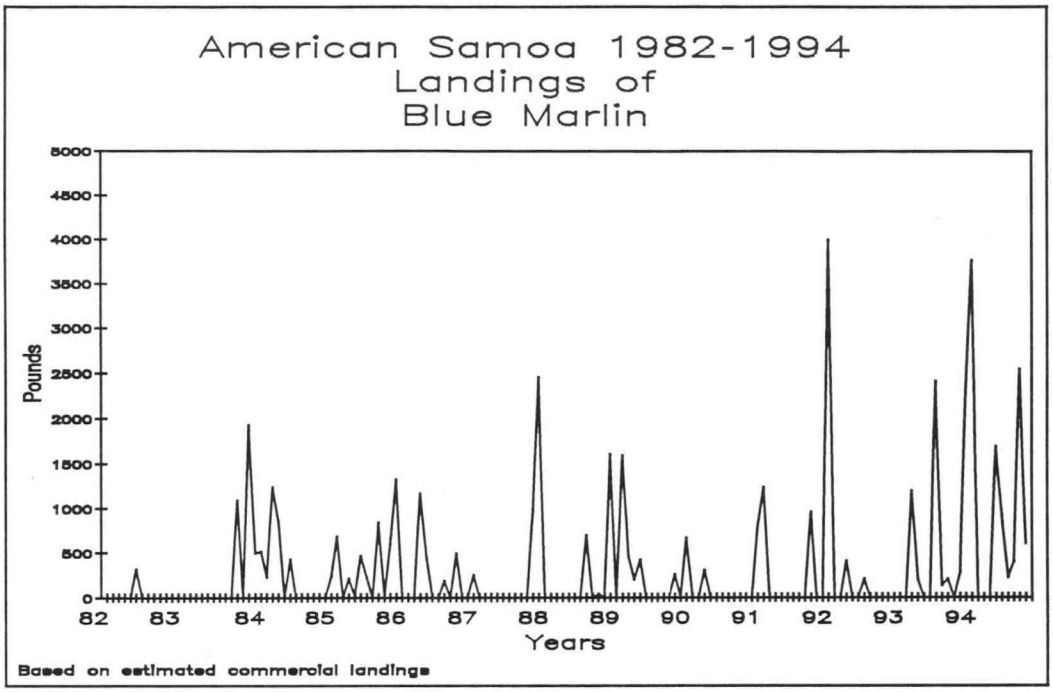

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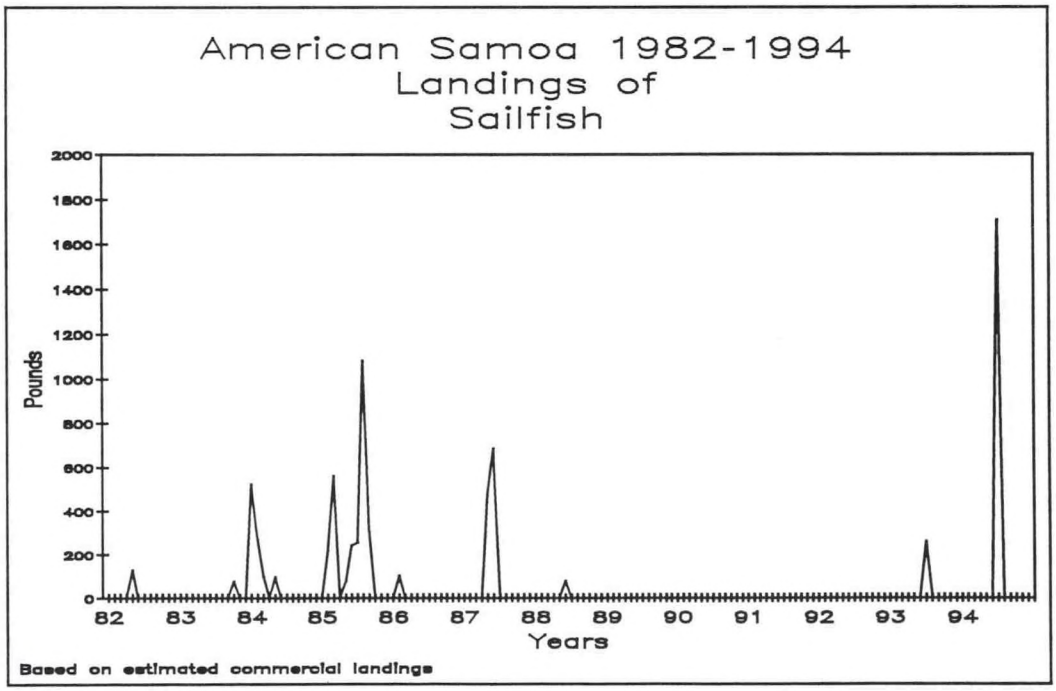

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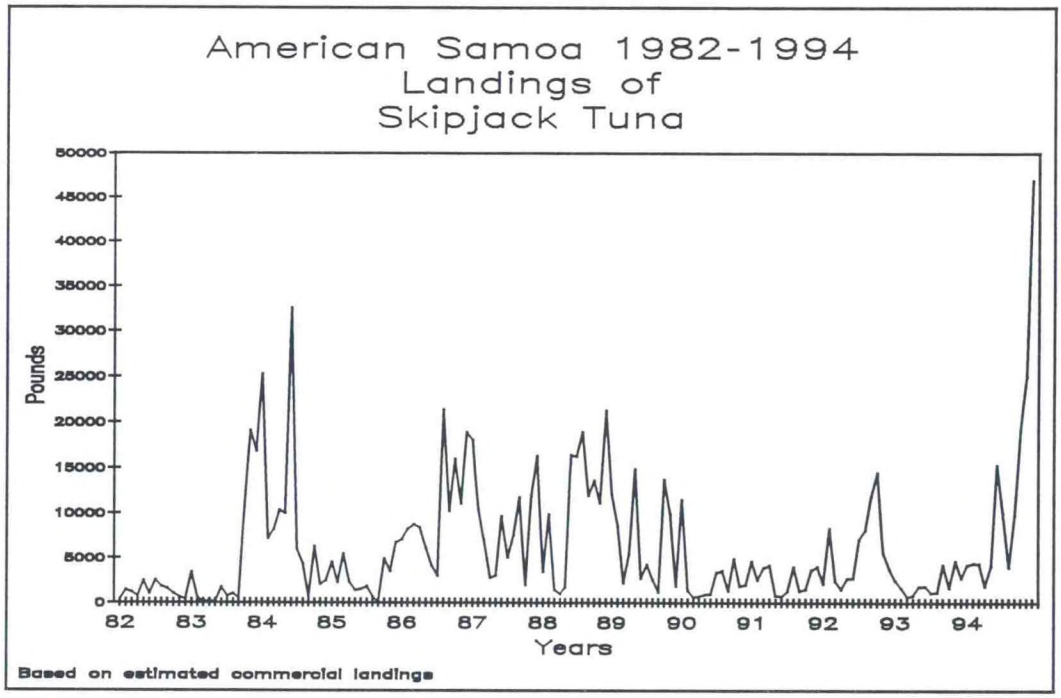

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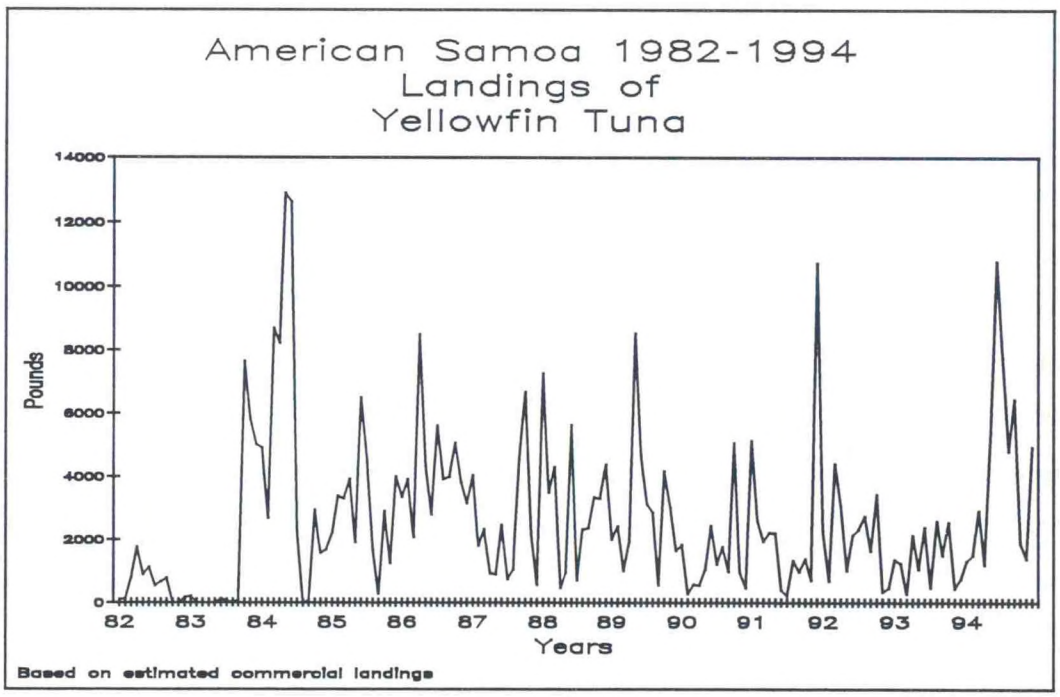

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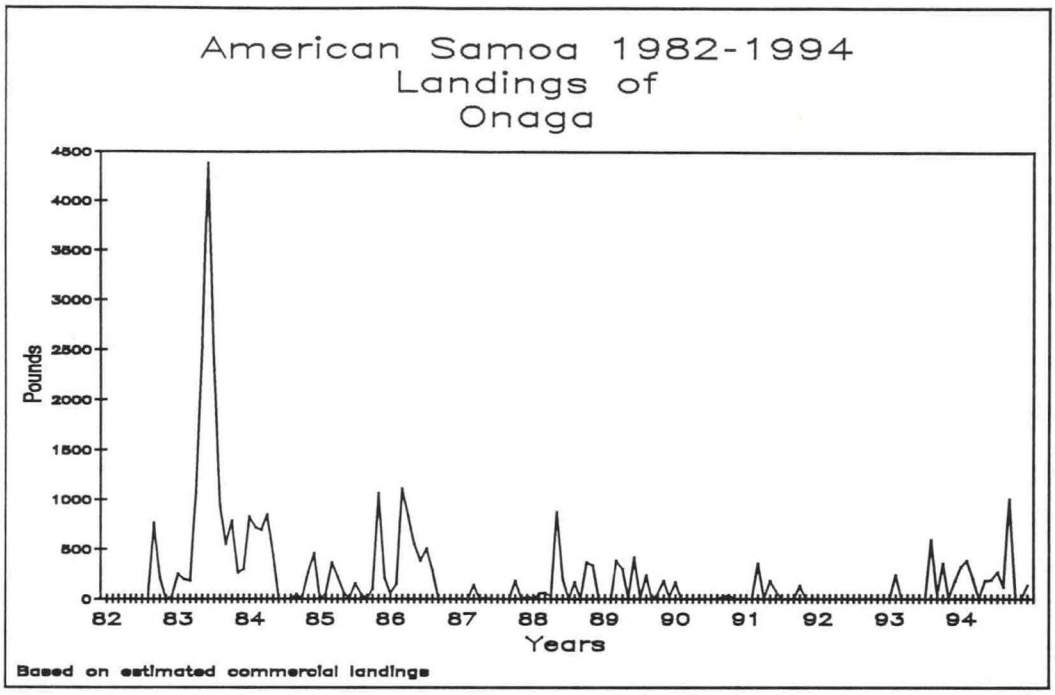

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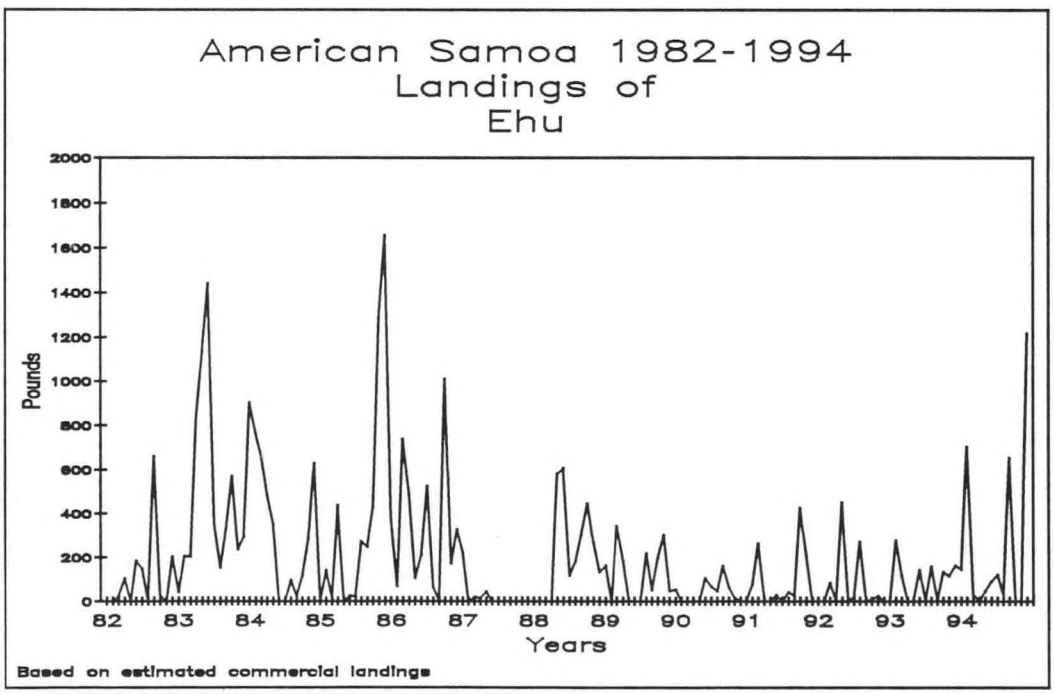


Table II.3.1

Tutuila 1994 Annual Offshore Creel Survey
Summary Expansion Report

Based on 247 Weekdays and 118 Weekend/Holidays

	TROLL	BOTTOM	BTM/TRL MIX	SPEAR	LONGLINE	TOTAL
Number of Days Sampled	139	139	139	139	139	139
Total Number of Interviews	178	39	9	4	4	234
Number of Interviews with Hours	178	39	9	7	4	237
Number of Interviews with Fishers	178	39	9	7	4	237
Estimated Trips on Survey Days	414	93	20	9	9	545
Average Trips per Day	3.0(14)	0.7(10)	0.2(18)	0.1(12)	0.1(22)	3.9(11)
Average Hours per Trip	9.5(4)	19.2(4)	19.4(10)	17.0(23)	7.5(21)	11.7(8)
Average Fishers per Trip	2.6(3)	2.4(5)	3.0(12)	3.1(31)	2.0(0)	2.6(8)
Average Catch per Trip	189.8(8)	124.2(48)	192.5(29)	267.9(44)	214.3(12)	180.7(19)
Average Catch per Hour	19.9(8)	6.5(46)	9.9(35)	15.2(31)	28.6(38)	15.5(17)
Expanded Number of Trips	1095(6)	248(6)	52(7)	24(6)	23(8)	1443(5)
Expanded Boat Hours Fished	10448(7)	4767(7)	1034(9)	413(24)	170(18)	16832(5)
Expanded Number of Fishers	2858(5)	600(7)	152(6)	69(26)	46(3)	3725(4)
Expanded Fisher Hours	20019(10)	10371(9)	1742(22)	888(47)	148(41)	33167(7)
Expanded Catch (based on trips)	211932(9)	30006(17)	9986(23)	6598(38)	4920(12)	263443(7)
Expanded Catch (based on hours)	211910(10)	30022(17)	9988(26)	6598(37)	4921(34)	263439(8)

Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	211932.0	9	10447.5	7	1095.1	6	20018.7	10	2857.8	5	189.8	8
BOTTOM	30006.4	17	4767.0	7	248.3	6	10370.9	9	599.5	7	124.2	48
BTM/TRL MIX	9985.8	23	1034.2	9	52.2	7	1741.6	22	152.3	6	192.5	29
SPEAR	6598.1	38	413.4	24	24.5	6	888.0	47	69.3	26	267.9	44
LONGLINE	4920.5	12	169.7	18	23.0	8	148.2	41	45.9	3	214.3	12
Total:	263442.8	7	16831.8	5	1443.0	5	33167.3	7	3724.8	4	988.6	15

Table II.3.2

Tutuila 1994 Annual
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	1179.0	0.45	0.0	0.00	1082.6	3.61	96.3	0.45
Black jack	172.2	0.07	0.0	0.00	107.9	0.36	64.2	0.30
Bigeye trevally	650.7	0.25	0.0	0.00	650.7	2.17	0.0	0.00
Barracudas	151.3	0.06	45.5	0.02	105.8	0.35	0.0	0.00
Large barracuda	900.9	0.34	546.1	0.26	68.7	0.23	286.1	1.33
Small barracuda	1434.0	0.54	252.0	0.12	1149.9	3.83	32.1	0.15
Sharks	8094.4	3.07	4606.8	2.17	1393.5	4.64	2094.1	9.74
Rays	513.2	0.19	0.0	0.00	513.2	1.71	0.0	0.00
Moray eels	82.3	0.03	0.0	0.00	0.0	0.00	82.3	0.38
Groupers (misc)	383.5	0.15	0.0	0.00	383.5	1.28	0.0	0.00
Peacock grouper	225.0	0.09	0.0	0.00	202.5	0.67	22.6	0.11
Tomato grouper	42.5	0.02	0.0	0.00	42.5	0.14	0.0	0.00
Yellowspot grouper	39.2	0.01	0.0	0.00	39.2	0.13	0.0	0.00
Spotted grouper	172.9	0.07	0.0	0.00	156.8	0.52	16.1	0.07
Lunartail grouper	833.3	0.32	0.0	0.00	714.2	2.38	119.1	0.55
Blue lined snapper	3165.1	1.20	0.0	0.00	2788.0	9.29	377.1	1.75
Rufous snapper	342.9	0.13	0.0	0.00	326.9	1.09	16.1	0.07
Onespot snapper	85.0	0.03	0.0	0.00	85.0	0.28	0.0	0.00
Twinspot/red snapper	1018.2	0.39	0.0	0.00	568.7	1.90	449.5	2.09
Humpback snapper	1728.0	0.66	0.0	0.00	1728.0	5.76	0.0	0.00
Gray jobfish	3365.5	1.28	136.5	0.06	2724.0	9.08	505.0	2.35
Opakapaka	1633.3	0.62	0.0	0.00	1518.0	5.06	115.4	0.54
Yellowtail snapper	6.4	0.00	0.0	0.00	0.0	0.00	6.4	0.03
Lehi (silverjaw)	1085.6	0.41	0.0	0.00	1085.6	3.62	0.0	0.00
Onaga (longtail snappe	1261.8	0.48	0.0	0.00	1261.8	4.21	0.0	0.00
Ehu (squirrelfish snap	2470.7	0.94	0.0	0.00	2271.6	7.57	199.1	0.93
Black snapper	264.8	0.10	0.0	0.00	264.8	0.88	0.0	0.00
Stone's snapper	362.8	0.14	0.0	0.00	362.8	1.21	0.0	0.00
Emperors (misc)	2391.2	0.91	0.0	0.00	2316.0	7.72	75.2	0.35
Longnose emperor	1356.1	0.51	0.0	0.00	830.9	2.77	525.2	2.44
Ambon emperor	3039.4	1.15	0.0	0.00	3033.0	10.11	6.4	0.03
Redgill emperor	1466.3	0.56	0.0	0.00	1296.1	4.32	170.2	0.79
Reef fish (Assorted)	533.5	0.20	0.0	0.00	0.0	0.00	533.5	2.48
Rudderfish	12.9	0.00	0.0	0.00	0.0	0.00	12.9	0.06
Sargent major	32.9	0.01	0.0	0.00	0.0	0.00	32.9	0.15
Lined surgeon	923.8	0.35	0.0	0.00	0.0	0.00	923.8	4.30
Striped bristletooth	93.9	0.04	0.0	0.00	0.0	0.00	93.9	0.44
Yellowfin surgeonfish	806.8	0.31	0.0	0.00	0.0	0.00	806.8	3.75
Unicornfishes (misc)	29.6	0.01	0.0	0.00	0.0	0.00	29.6	0.14
Squirrelfish	426.5	0.16	0.0	0.00	342.3	1.14	84.2	0.39
Bigscale soldierfish	3.3	0.00	0.0	0.00	3.3	0.01	0.0	0.00
Bigeye squirrelfish	19.8	0.00	0.0	0.00	0.0	0.00	19.8	0.09
Parrotfishes	3046.0	1.16	0.0	0.00	0.0	0.00	3046.0	14.16
Terapon perch	16.5	0.00	0.0	0.00	0.0	0.00	16.5	0.08
Wrasse	4.0	0.00	0.0	0.00	4.0	0.01	0.0	0.00
Inshore groupers	574.5	0.22	0.0	0.00	0.0	0.00	574.5	2.67
Red snapper, mu	26.2	0.00	0.0	0.00	26.2	0.09	0.0	0.00
Dolphin (mahimahi)	8230.6	3.12	7713.8	3.64	0.0	0.00	516.8	2.40
Blue marlin	15151.9	5.75	15151.9	7.15	0.0	0.00	0.0	0.00
Black marlin	1325.0	0.50	1325.0	0.63	0.0	0.00	0.0	0.00
Sailfish	1678.5	0.64	1678.5	0.79	0.0	0.00	0.0	0.00
Rainbow runner	126.6	0.05	94.0	0.04	32.6	0.11	0.0	0.00
Wahoo	7576.3	2.88	7013.3	3.31	0.0	0.00	562.9	2.62
Tunas	200.6	0.08	0.0	0.00	0.0	0.00	200.6	0.93
Skipjack tuna	130338.6	49.48	128586.0	60.67	0.0	0.00	1752.5	8.15
Dogtooth tuna	1016.5	0.39	512.8	0.24	333.5	1.11	170.2	0.79
Albacore	1802.1	0.68	344.8	0.16	0.0	0.00	1457.3	6.78
Yellowfin tuna	48576.6	18.44	43660.2	20.60	0.0	0.00	4916.5	22.86
Kawakawa	538.7	0.20	264.3	0.12	193.0	0.64	81.5	0.38
Crabs	26.4	0.01	0.0	0.00	0.0	0.00	26.4	0.12
Spiny lobster	386.9	0.15	0.0	0.00	0.0	0.00	386.9	1.80
Total all species:	263443.0	100.00	211931.5	80.45	30007.1	11.39	21504.5	8.16

Table II.4.1

Tutuila January 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	4188.2	37	247.7	26	34.4	24	718.3	27	99.8	26	121.8	27
BOTTOM	1130.2	40	232.2	25	10.4	24	620.1	28	27.8	27	108.7	32
Total:	5318.4	30	479.9	18	44.8	19	1338.4	20	127.5	21	230.4	21

Table II.4.2

Tutuila February 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	6644.1	39	469.5	45	36.9	21	1101.7	51	94.4	21	166.7	35
BOTTOM	1730.6	51	352.0	26	18.1	22	791.9	28	40.6	25	95.9	45
Total:	8374.7	32	821.5	28	54.9	16	1893.6	32	135.0	17	262.6	28

Table II.4.3

Tutuila March 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	9009.4	45	325.1	32	35.5	32	730.7	52	117.3	30	255.2	34
BOTTOM	718.5	43	148.9	41	8.1	40	446.8	41	24.2	40	89.3	15
Total:	9727.8	42	474.0	26	43.6	27	1177.5	36	141.5	26	344.5	25

Table II.4.4

Tutuila April 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	424.2	73	71.4	39	8.4	39	101.2	75	21.0	23	50.5	76
BOTTOM	1125.7	82	157.1	34	9.5	34	392.7	40	23.8	40	118.3	70
Total:	1549.9	63	228.5	27	17.9	26	493.9	36	44.8	24	168.8	54

Table II.4.5

Tutuila May 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	8419.0	48	546.3	43	65.7	35	632.1	**	185.4	14	121.5	48
BOTTOM	3991.3	30	491.0	26	29.4	25	1276.6	28	76.4	27	135.8	16
Total:	12410.3	34	1037.3	26	95.1	26	1908.6	41	261.8	12	257.3	24

Table II.4.6

Tutuila June 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	25134.5	24	1338.6	19	133.1	17	2823.4	24	358.0	16	189.0	25
BOTTOM	771.2	22	175.9	20	9.0	20	351.8	20	18.0	20	85.5	9
BTM/TRL MIX	888.2	23	67.0	23	4.6	19	232.4	24	16.0	21	192.3	12
Total:	26793.9	22	1581.5	16	146.8	16	3407.6	20	392.1	14	466.8	11

Table II.4.7

Tutuila July 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	20493.2	24	1114.0	19	113.6	18	2074.8	30	320.8	16	172.3	18
BOTTOM	1841.5	21	292.2	43	17.8	19	428.8	58	35.6	18	101.2	16
SPEAR	1179.8	35	66.1	37	6.8	24	286.2	40	29.4	27	173.5	26
LONGLINE	1889.8	25	79.2	26	8.8	24	158.4	26	17.6	24	214.8	9
Total:	25404.3	19	1551.5	16	147.0	14	2948.1	23	403.5	13	661.7	9

Table II.4.8

Tutuila August 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	11103.1	23	802.3	17	84.1	14	1534.7	21	188.0	10	128.9	24
BOTTOM	1545.9	40	488.8	22	30.4	11	977.6	22	60.7	11	50.9	39
BTM/TRL MIX	707.5	80	53.4	80	3.7	78	185.2	81	12.8	79	192.3	12
LONGLINE	2605.6	18	73.1	35	12.2	11	146.3	35	24.4	11	213.8	15
Total:	15962.2	17	1417.6	13	130.3	10	2843.8	15	285.8	8	585.8	9

Table II.4.9

Tutuila September 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	19499.9	25	1410.9	15	129.0	7	2665.1	20	292.5	8	151.9	31
BOTTOM	15534.6	49	1319.9	9	60.5	8	2708.2	19	164.0	11	252.0	84
BTM/TRL MIX	2432.4	33	433.8	9	17.0	7	867.5	9	34.0	7	143.0	32
SPEAR	1457.4	27	81.7	29	8.4	7	353.5	32	36.4	15	173.5	26
Total:	38924.3	23	3246.3	7	215.0	5	6594.3	11	526.9	6	720.4	31

Table II.4.10

Tutuila October 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	23067.5	33	1190.6	18	119.6	12	1085.8	52	303.6	11	165.4	38
BOTTOM	7012.7	34	1188.5	21	58.8	21	2529.5	30	148.8	24	112.9	27
BTM/TRL MIX	3621.5	43	246.5	15	18.3	11	986.0	21	73.0	18	198.3	41
SPEAR	1049.7	28	58.8	30	6.1	12	254.7	33	26.2	17	173.5	26
Total:	34751.4	23	2684.4	12	202.8	10	4856.0	20	551.7	9	650.1	18

Table II.4.11

Tutuila November 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	29913.2	28	1006.0	23	106.7	21	1922.5	27	234.8	22	279.5	18
BOTTOM	987.4	25	91.2	24	7.2	24	299.3	24	23.6	24	137.1	8
BTM/TRL MIX	3304.8	74	273.6	26	14.4	23	820.8	26	43.2	23	229.5	69
Total:	34205.4	26	1370.8	18	128.3	18	3042.6	19	301.6	17	646.2	26

Table II.4.12

Tutuila December 1994
Offshore Creel Survey Expansion Summary

Gear	Catch	CV	Boat Hrs	CV	Boat Trips	CV	Prsn Hrs	CV	Prsn Cnt	CV	C/TRIP	CV
TROLL	53573.1	16	1470.5	11	188.9	9	2895.8	22	501.2	10	292.0	17
BOTTOM	1036.8	12	95.8	10	7.6	9	314.2	11	24.8	9	137.1	8
SPEAR	1311.7	27	73.5	29	7.6	9	318.1	32	32.7	16	173.5	26
Total:	55921.5	15	1639.8	10	204.0	9	3528.1	18	558.8	9	602.7	11

Table II.5.1

Tutuila January 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	145.6	2.74	0.0	0.00	145.6	12.88	0.0	0.00
Groupers (misc)	13.9	0.26	0.0	0.00	13.9	1.23	0.0	0.00
Blue lined snapper	12.1	0.23	0.0	0.00	12.1	1.07	0.0	0.00
Humpback snapper	145.6	2.74	0.0	0.00	145.6	12.88	0.0	0.00
Gray jobfish	27.7	0.52	0.0	0.00	27.7	2.45	0.0	0.00
Lehi (silverjaw)	227.1	4.27	0.0	0.00	227.1	20.10	0.0	0.00
Onaga (longtail snappe	55.5	1.04	0.0	0.00	55.5	4.91	0.0	0.00
Ehu (squirrelfish snap	110.9	2.09	0.0	0.00	110.9	9.81	0.0	0.00
Stone's snapper	83.2	1.56	0.0	0.00	83.2	7.36	0.0	0.00
Ambon emperor	254.8	4.79	0.0	0.00	254.8	22.55	0.0	0.00
Squirrelfish	27.7	0.52	0.0	0.00	27.7	2.45	0.0	0.00
Red snapper, mu	8.7	0.16	0.0	0.00	8.7	0.77	0.0	0.00
Blue marlin	275.2	5.17	275.2	6.57	0.0	0.00	0.0	0.00
Rainbow runner	17.3	0.33	0.0	0.00	17.3	1.53	0.0	0.00
Skipjack tuna	3202.6	60.22	3202.6	76.47	0.0	0.00	0.0	0.00
Yellowfin tuna	710.4	13.36	710.4	16.96	0.0	0.00	0.0	0.00
Total all species:	5318.3	100.00	4188.2	78.75	1130.1	21.25	0.0	0.00

Table II.5.2

Tutuila February 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Black jack	54.2	0.65	0.0	0.00	54.2	3.13	0.0	0.00
Large barracuda	139.1	1.66	139.1	2.09	0.0	0.00	0.0	0.00
Groupers (misc)	13.5	0.16	0.0	0.00	13.5	0.78	0.0	0.00
Blue lined snapper	6.8	0.08	0.0	0.00	6.8	0.39	0.0	0.00
Humpback snapper	162.5	1.94	0.0	0.00	162.5	9.39	0.0	0.00
Gray jobfish	225.6	2.69	0.0	0.00	225.6	13.03	0.0	0.00
Opakapaka	15.8	0.19	0.0	0.00	15.8	0.91	0.0	0.00
Onaga (longtail snappe	230.2	2.75	0.0	0.00	230.2	13.30	0.0	0.00
Ehu (squirrelfish snap	532.5	6.36	0.0	0.00	532.5	30.77	0.0	0.00
Black snapper	15.8	0.19	0.0	0.00	15.8	0.91	0.0	0.00
Emperors (misc)	467.1	5.58	0.0	0.00	467.1	26.99	0.0	0.00
Red snapper, mu	6.8	0.08	0.0	0.00	6.8	0.39	0.0	0.00
Dolphin (mahimahi)	82.1	0.98	82.1	1.24	0.0	0.00	0.0	0.00
Blue marlin	2280.0	27.22	2280.0	34.32	0.0	0.00	0.0	0.00
Skipjack tuna	3285.6	39.23	3285.6	49.45	0.0	0.00	0.0	0.00
Albacore	237.1	2.83	237.1	3.57	0.0	0.00	0.0	0.00
Yellowfin tuna	620.2	7.41	620.2	9.33	0.0	0.00	0.0	0.00
Total all species:	8374.9	100.00	6644.1	79.33	1730.8	20.67	0.0	0.00

Table II.5.3

Tutuila March 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Bigeye trevally	6.0	0.06	0.0	0.00	6.0	0.84	0.0	0.00
Small barracuda	78.9	0.81	48.7	0.54	30.2	4.20	0.0	0.00
Lunartail grouper	14.1	0.14	0.0	0.00	14.1	1.96	0.0	0.00
Blue lined snapper	201.3	2.07	0.0	0.00	201.3	28.02	0.0	0.00
Humpback snapper	20.1	0.21	0.0	0.00	20.1	2.80	0.0	0.00
Gray jobfish	14.1	0.14	0.0	0.00	14.1	1.96	0.0	0.00
Onaga (longtail snappe	161.0	1.66	0.0	0.00	161.0	22.41	0.0	0.00
Black snapper	12.1	0.12	0.0	0.00	12.1	1.68	0.0	0.00
Emperors (misc)	60.4	0.62	0.0	0.00	60.4	8.41	0.0	0.00
Ambon emperor	18.1	0.19	0.0	0.00	18.1	2.52	0.0	0.00
Redgill emperor	181.1	1.86	0.0	0.00	181.1	25.21	0.0	0.00
Dolphin (mahimahi)	77.9	0.80	77.9	0.86	0.0	0.00	0.0	0.00
Blue marlin	3768.2	38.74	3768.2	41.83	0.0	0.00	0.0	0.00
Rainbow runner	16.3	0.17	16.3	0.18	0.0	0.00	0.0	0.00
Wahoo	113.8	1.17	113.8	1.26	0.0	0.00	0.0	0.00
Skipjack tuna	2608.3	26.81	2608.3	28.95	0.0	0.00	0.0	0.00
Dogtooth tuna	215.3	2.21	215.3	2.39	0.0	0.00	0.0	0.00
Yellowfin tuna	2160.9	22.21	2160.9	23.98	0.0	0.00	0.0	0.00
Total all species:	9727.9	100.00	9009.4	92.61	718.5	7.39	0.0	0.00

Table II.5.4

Tutuila April 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Bigeye trevally	145.2	9.37	0.0	0.00	145.2	12.90	0.0	0.00
Small barracuda	116.6	7.52	0.0	0.00	116.6	10.36	0.0	0.00
Yellowspot grouper	28.6	1.85	0.0	0.00	28.6	2.54	0.0	0.00
Blue lined snapper	104.7	6.75	0.0	0.00	104.7	9.30	0.0	0.00
Humpback snapper	169.0	10.90	0.0	0.00	169.0	15.01	0.0	0.00
Gray jobfish	228.5	14.74	0.0	0.00	228.5	20.30	0.0	0.00
Black snapper	85.7	5.53	0.0	0.00	85.7	7.61	0.0	0.00
Ambon emperor	228.5	14.74	0.0	0.00	228.5	20.30	0.0	0.00
Redgill emperor	19.0	1.23	0.0	0.00	19.0	1.69	0.0	0.00
Skipjack tuna	270.3	17.44	270.3	63.70	0.0	0.00	0.0	0.00
Yellowfin tuna	154.0	9.93	154.0	36.30	0.0	0.00	0.0	0.00
Total all species:	1550.1	100.00	424.3	27.37	1125.8	72.63	0.0	0.00

Table II.5.5

Tutuila May 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	158.8	1.28	0.0	0.00	158.8	3.98	0.0	0.00
Black jack	26.5	0.21	0.0	0.00	26.5	0.66	0.0	0.00
Bigeye trevally	355.8	2.87	0.0	0.00	355.8	8.91	0.0	0.00
Small barracuda	369.3	2.98	0.0	0.00	369.3	9.25	0.0	0.00
Sharks	88.2	0.71	0.0	0.00	88.2	2.21	0.0	0.00
Rays	341.0	2.75	0.0	0.00	341.0	8.54	0.0	0.00
Spotted grouper	105.9	0.85	0.0	0.00	105.9	2.65	0.0	0.00
Lunartail grouper	194.1	1.56	0.0	0.00	194.1	4.86	0.0	0.00
Blue lined snapper	611.5	4.93	0.0	0.00	611.5	15.32	0.0	0.00
Onespot snapper	11.8	0.10	0.0	0.00	11.8	0.30	0.0	0.00
Twinspot/red snapper	88.2	0.71	0.0	0.00	88.2	2.21	0.0	0.00
Humpback snapper	123.5	1.00	0.0	0.00	123.5	3.09	0.0	0.00
Gray jobfish	226.4	1.82	0.0	0.00	226.4	5.67	0.0	0.00
Lehi (silverjaw)	158.8	1.28	0.0	0.00	158.8	3.98	0.0	0.00
Stone's snapper	185.2	1.49	0.0	0.00	185.2	4.64	0.0	0.00
Ambon emperor	502.8	4.05	0.0	0.00	502.8	12.60	0.0	0.00
Redgill emperor	355.8	2.87	0.0	0.00	355.8	8.91	0.0	0.00
Squirrelfish	88.2	0.71	0.0	0.00	88.2	2.21	0.0	0.00
Skipjack tuna	3534.1	28.48	3534.1	41.98	0.0	0.00	0.0	0.00
Yellowfin tuna	4884.9	39.36	4884.9	58.02	0.0	0.00	0.0	0.00
Total all species:	12410.8	100.00	8419.0	67.84	3991.8	32.16	0.0	0.00

Table II.5.6

Tutuila June 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Barracudas	31.6	0.12	31.6	0.13	0.0	0.00	0.0	0.00
Large barracuda	90.3	0.34	0.0	0.00	0.0	0.00	90.3	10.17
Sharks	295.8	1.10	295.8	1.18	0.0	0.00	0.0	0.00
Spotted grouper	12.5	0.05	0.0	0.00	0.0	0.00	12.5	1.41
Lunartail grouper	29.3	0.11	0.0	0.00	29.3	3.80	0.0	0.00
Blue lined snapper	202.3	0.76	0.0	0.00	119.5	15.50	82.8	9.32
Rufous snapper	238.0	0.89	0.0	0.00	225.5	29.24	12.5	1.41
Twinspot/red snapper	452.5	1.69	0.0	0.00	126.3	16.38	326.2	36.73
Gray jobfish	32.6	0.12	0.0	0.00	0.0	0.00	32.6	3.67
Redgill emperor	305.7	1.14	0.0	0.00	270.6	35.09	35.1	3.95
Dolphin (mahimahi)	72.3	0.27	72.3	0.29	0.0	0.00	0.0	0.00
Wahoo	345.3	1.29	345.3	1.37	0.0	0.00	0.0	0.00
Skipjack tuna	14482.7	54.05	14276.9	56.80	0.0	0.00	205.8	23.17
Dogtooth tuna	90.3	0.34	0.0	0.00	0.0	0.00	90.3	10.17
Yellowfin tuna	10112.7	37.74	10112.7	40.23	0.0	0.00	0.0	0.00
Total all species:	26793.9	100.00	25134.6	93.81	771.2	2.88	888.1	3.31

Table II.5.7

Tutuila July 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	170.9	0.67	0.0	0.00	170.9	9.28	0.0	0.00
Bigeye trevally	46.9	0.18	0.0	0.00	46.9	2.55	0.0	0.00
Barracudas	79.5	0.31	0.0	0.00	79.5	4.32	0.0	0.00
Small barracuda	170.9	0.67	0.0	0.00	170.9	9.28	0.0	0.00
Sharks	183.4	0.72	0.0	0.00	183.4	9.96	0.0	0.00
Spotted grouper	40.2	0.16	0.0	0.00	40.2	2.18	0.0	0.00
Lunartail grouper	3.4	0.01	0.0	0.00	3.4	0.18	0.0	0.00
Blue lined snapper	331.7	1.31	0.0	0.00	331.7	18.01	0.0	0.00
Twinspot/red snapper	33.5	0.13	0.0	0.00	33.5	1.82	0.0	0.00
Humpback snapper	103.9	0.41	0.0	0.00	103.9	5.64	0.0	0.00
Gray jobfish	314.9	1.24	0.0	0.00	314.9	17.10	0.0	0.00
Onaga (longtail snappe	124.0	0.49	0.0	0.00	124.0	6.73	0.0	0.00
Black snapper	73.7	0.29	0.0	0.00	73.7	4.00	0.0	0.00
Redgill emperor	160.8	0.63	0.0	0.00	160.8	8.73	0.0	0.00
Sargent major	44.2	0.17	0.0	0.00	0.0	0.00	44.2	1.44
Lined surgeon	88.4	0.35	0.0	0.00	0.0	0.00	88.4	2.88
Striped bristletooth	17.7	0.07	0.0	0.00	0.0	0.00	17.7	0.58
Yellowfin surgeonfish	17.7	0.07	0.0	0.00	0.0	0.00	17.7	0.58
Unicornfishes (misc)	39.8	0.16	0.0	0.00	0.0	0.00	39.8	1.30
Squirrelfish	0.7	0.00	0.0	0.00	0.7	0.04	0.0	0.00
Bigscale soldierfish	3.4	0.01	0.0	0.00	3.4	0.18	0.0	0.00
Bigeye squirrelfish	26.5	0.10	0.0	0.00	0.0	0.00	26.5	0.86
Parrotfishes	552.3	2.17	0.0	0.00	0.0	0.00	552.3	17.99
Terapon perch	22.1	0.09	0.0	0.00	0.0	0.00	22.1	0.72
Inshore groupers	207.7	0.82	0.0	0.00	0.0	0.00	207.7	6.77
Dolphin (mahimahi)	1358.7	5.35	1358.7	6.63	0.0	0.00	0.0	0.00
Blue marlin	1681.9	6.62	1681.9	8.21	0.0	0.00	0.0	0.00
Black marlin	1345.5	5.30	1345.5	6.57	0.0	0.00	0.0	0.00
Sailfish	1705.4	6.71	1705.4	8.32	0.0	0.00	0.0	0.00
Wahoo	407.0	1.60	407.0	1.99	0.0	0.00	0.0	0.00
Skipjack tuna	8890.1	34.99	8890.1	43.38	0.0	0.00	0.0	0.00
Yellowfin tuna	6994.7	27.53	5104.9	24.91	0.0	0.00	1889.8	61.56
Spiny lobster	163.5	0.64	0.0	0.00	0.0	0.00	163.5	5.33
Total all species:	25405.0	100.00	20493.5	80.67	1841.8	7.25	3069.7	12.08

Table II.5.8

Tutuila August 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	100.2	0.63	0.0	0.00	100.2	6.48	0.0	0.00
Large barracuda	63.8	0.40	0.0	0.00	63.8	4.13	0.0	0.00
Small barracuda	57.7	0.36	0.0	0.00	57.7	3.73	0.0	0.00
Sharks	986.8	6.18	853.3	7.69	94.1	6.09	39.4	1.19
Groupers (misc)	157.9	0.99	0.0	0.00	157.9	10.21	0.0	0.00
Lunartail grouper	45.5	0.29	0.0	0.00	45.5	2.94	0.0	0.00
Blue lined snapper	286.5	1.79	0.0	0.00	191.3	12.37	95.2	2.87
Onespot snapper	66.8	0.42	0.0	0.00	66.8	4.32	0.0	0.00
Twinspot/red snapper	12.1	0.08	0.0	0.00	12.1	0.78	0.0	0.00
Humpback snapper	12.1	0.08	0.0	0.00	12.1	0.78	0.0	0.00
Gray jobfish	328.8	2.06	51.9	0.47	227.7	14.73	49.3	1.49
Lehi (silverjaw)	6.1	0.04	0.0	0.00	6.1	0.39	0.0	0.00
Emperors (misc)	507.0	3.18	0.0	0.00	507.0	32.79	0.0	0.00
Longnose emperor	203.6	1.28	0.0	0.00	0.0	0.00	203.6	6.14
Squirrelfish	11.5	0.07	0.0	0.00	0.0	0.00	11.5	0.35
Wrasse	3.8	0.02	0.0	0.00	3.8	0.25	0.0	0.00
Dolphin (mahimahi)	1363.5	8.54	1258.4	11.33	0.0	0.00	105.1	3.17
Blue marlin	914.2	5.73	914.2	8.23	0.0	0.00	0.0	0.00
Wahoo	1519.1	9.52	1440.3	12.97	0.0	0.00	78.8	2.38
Skipjack tuna	3307.9	20.72	3202.8	28.85	0.0	0.00	105.1	3.17
Albacore	1438.4	9.01	0.0	0.00	0.0	0.00	1438.4	43.41
Yellowfin tuna	4506.6	28.23	3339.5	30.08	0.0	0.00	1167.2	35.23
Kawakawa	62.4	0.39	42.7	0.38	0.0	0.00	19.7	0.59
Total all species:	15962.3	100.00	11103.1	69.56	1546.1	9.69	3313.3	20.76

Table II.5.9

Tutuila September 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	565.7	1.45	0.0	0.00	565.7	3.64	0.0	0.00
Black jack	85.1	0.22	0.0	0.00	0.0	0.00	85.1	2.19
Barracudas	53.0	0.14	0.0	0.00	53.0	0.34	0.0	0.00
Large barracuda	288.6	0.74	288.6	1.48	0.0	0.00	0.0	0.00
Small barracuda	237.5	0.61	42.4	0.22	195.1	1.26	0.0	0.00
Sharks	3005.7	7.72	1061.0	5.44	1944.7	12.52	0.0	0.00
Rays	173.9	0.45	0.0	0.00	173.9	1.12	0.0	0.00
Moray eels	107.5	0.28	0.0	0.00	0.0	0.00	107.5	2.76
Groupers (misc)	232.8	0.60	0.0	0.00	232.8	1.50	0.0	0.00
Peacock grouper	352.8	0.91	0.0	0.00	352.8	2.27	0.0	0.00
Tomato grouper	55.1	0.14	0.0	0.00	55.1	0.35	0.0	0.00
Lunartail grouper	524.2	1.35	0.0	0.00	524.2	3.37	0.0	0.00
Blue lined snapper	879.1	2.26	0.0	0.00	879.1	5.66	0.0	0.00
Twinspot/red snapper	343.7	0.88	0.0	0.00	301.2	1.94	42.5	1.09
Humpback snapper	742.4	1.91	0.0	0.00	742.4	4.78	0.0	0.00
Gray jobfish	1648.6	4.24	101.9	0.52	1546.8	9.96	0.0	0.00
Opakapaka	2409.3	6.19	0.0	0.00	2409.3	15.51	0.0	0.00
Lehi (silverjaw)	301.2	0.77	0.0	0.00	301.2	1.94	0.0	0.00
Onaga (longtail snappe	768.9	1.98	0.0	0.00	768.9	4.95	0.0	0.00
Ehu (squirrelfish snap	551.8	1.42	0.0	0.00	288.1	1.85	263.7	6.78
Black snapper	42.4	0.11	0.0	0.00	42.4	0.27	0.0	0.00
Emperors (misc)	190.0	0.49	0.0	0.00	190.0	1.22	0.0	0.00
Longnose emperor	1124.2	2.89	0.0	0.00	1124.2	7.24	0.0	0.00
Ambon emperor	1794.3	4.61	0.0	0.00	1794.3	11.55	0.0	0.00
Redgill emperor	40.3	0.10	0.0	0.00	40.3	0.26	0.0	0.00
Lined surgeon	455.7	1.17	0.0	0.00	0.0	0.00	455.7	11.71
Squirrelfish	326.6	0.84	0.0	0.00	326.6	2.10	0.0	0.00
Parrotfishes	722.3	1.86	0.0	0.00	0.0	0.00	722.3	18.57
Inshore groupers	64.5	0.17	0.0	0.00	0.0	0.00	64.5	1.66
Dolphin (mahimahi)	2025.6	5.20	1872.5	9.60	0.0	0.00	153.1	3.94
Wahoo	2781.6	7.15	2607.2	13.37	0.0	0.00	174.4	4.48
Skipjack tuna	8615.4	22.13	8615.4	44.18	0.0	0.00	0.0	0.00
Dogtooth tuna	534.6	1.37	101.9	0.52	432.7	2.79	0.0	0.00
Yellowfin tuna	6174.7	15.86	4529.0	23.23	0.0	0.00	1645.7	42.31
Kawakawa	598.4	1.54	280.1	1.44	250.3	1.61	68.0	1.75
Crabs	34.4	0.09	0.0	0.00	0.0	0.00	34.4	0.88
Spiny lobster	73.1	0.19	0.0	0.00	0.0	0.00	73.1	1.88
Total all species:	38925.0	100.00	19500.0	50.10	15535.1	39.91	3890.0	9.99

Table II.5.10

Tutuila October 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	443.6	1.28	0.0	0.00	443.6	6.33	0.0	0.00
Barracudas	260.2	0.75	0.0	0.00	260.2	3.71	0.0	0.00
Large barracuda	206.9	0.60	0.0	0.00	0.0	0.00	206.9	4.43
Small barracuda	314.6	0.91	0.0	0.00	314.6	4.49	0.0	0.00
Sharks	4536.1	13.05	3262.0	14.14	543.7	7.75	730.4	15.64
Peacock grouper	27.4	0.08	0.0	0.00	0.0	0.00	27.4	0.59
Lunartail grouper	260.4	0.75	0.0	0.00	178.2	2.54	82.2	1.76
Blue lined snapper	758.3	2.18	0.0	0.00	718.8	10.25	39.6	0.85
Twinspot/red snapper	23.3	0.07	0.0	0.00	23.3	0.33	0.0	0.00
Humpback snapper	179.5	0.52	0.0	0.00	179.5	2.56	0.0	0.00
Gray jobfish	455.9	1.31	0.0	0.00	398.1	5.68	57.8	1.24
Opakapaka	201.1	0.58	0.0	0.00	61.1	0.87	140.0	3.00
Lehi (silverjaw)	177.0	0.51	0.0	0.00	177.0	2.52	0.0	0.00
Emperors (misc)	1806.2	5.20	0.0	0.00	1714.9	24.45	91.3	1.95
Longnose emperor	1113.8	3.21	0.0	0.00	1040.7	14.84	73.1	1.56
Ambon emperor	314.4	0.90	0.0	0.00	314.4	4.48	0.0	0.00
Lined surgeon	224.2	0.65	0.0	0.00	0.0	0.00	224.2	4.80
Striped bristletooth	52.0	0.15	0.0	0.00	0.0	0.00	52.0	1.11
Squirrelfish	138.9	0.40	0.0	0.00	101.0	1.44	38.0	0.81
Parrotfishes	409.5	1.18	0.0	0.00	0.0	0.00	409.5	8.77
Inshore groupers	152.7	0.44	0.0	0.00	0.0	0.00	152.7	3.27
Dolphin (mahimahi)	1162.5	3.35	870.3	3.77	0.0	0.00	292.2	6.26
Blue marlin	395.6	1.14	395.6	1.71	0.0	0.00	0.0	0.00
Rainbow runner	36.5	0.11	36.5	0.16	0.0	0.00	0.0	0.00
Wahoo	1399.9	4.03	1022.5	4.43	0.0	0.00	377.4	8.08
Tunas	243.5	0.70	0.0	0.00	0.0	0.00	243.5	5.21
Skipjack tuna	17109.7	49.23	16120.6	69.89	0.0	0.00	989.1	21.17
Dogtooth tuna	543.7	1.56	0.0	0.00	543.7	7.75	0.0	0.00
Yellowfin tuna	1615.4	4.65	1359.8	5.89	0.0	0.00	255.6	5.47
Spiny lobster	188.5	0.54	0.0	0.00	0.0	0.00	188.5	4.04
Total all species:	34751.3	100.00	23067.3	66.38	7012.8	20.18	4671.4	13.44

Table II.5.11

Tutuila November 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Jacks (misc)	108.0	0.32	0.0	0.00	0.0	0.00	108.0	3.27
Large barracuda	128.8	0.38	128.8	0.43	0.0	0.00	0.0	0.00
Small barracuda	186.4	0.54	150.4	0.50	0.0	0.00	36.0	1.09
Sharks	2714.6	7.94	1109.0	3.71	0.0	0.00	1605.6	48.58
Lunartail grouper	149.8	0.44	0.0	0.00	92.2	9.34	57.6	1.74
Blue lined snapper	275.6	0.81	0.0	0.00	171.2	17.34	104.4	3.16
Gray jobfish	381.6	1.12	0.0	0.00	0.0	0.00	381.6	11.55
Yellowtail snapper	7.2	0.02	0.0	0.00	0.0	0.00	7.2	0.22
Lehi (silverjaw)	368.6	1.08	0.0	0.00	368.6	37.33	0.0	0.00
Emperors (misc)	355.5	1.04	0.0	0.00	355.5	36.00	0.0	0.00
Longnose emperor	172.8	0.51	0.0	0.00	0.0	0.00	172.8	5.23
Ambon emperor	7.2	0.02	0.0	0.00	0.0	0.00	7.2	0.22
Redgill emperor	140.4	0.41	0.0	0.00	0.0	0.00	140.4	4.25
Rudderfish	14.4	0.04	0.0	0.00	0.0	0.00	14.4	0.44
Squirrelfish	32.4	0.09	0.0	0.00	0.0	0.00	32.4	0.98
Dolphin (mahimahi)	926.9	2.71	926.9	3.10	0.0	0.00	0.0	0.00
Blue marlin	2207.0	6.45	2207.0	7.38	0.0	0.00	0.0	0.00
Rainbow runner	39.3	0.11	39.3	0.13	0.0	0.00	0.0	0.00
Wahoo	833.5	2.44	833.5	2.79	0.0	0.00	0.0	0.00
Skipjack tuna	23746.3	69.42	23170.3	77.46	0.0	0.00	576.0	17.43
Dogtooth tuna	150.7	0.44	89.5	0.30	0.0	0.00	61.2	1.85
Yellowfin tuna	1259.0	3.68	1259.0	4.21	0.0	0.00	0.0	0.00
Total all species:	34206.0	100.00	29913.7	87.45	987.5	2.89	3304.8	9.66

Table II.5.12

Tutuila December 1994
Offshore Creel Survey Species Composition

Common Name	Total all gears	% all gears	trolling	% this gear	bottom	% this gear	other	% this gear
Ehu (squirrelfish snap	1036.8	1.85	0.0	0.00	1036.8	100.00	0.0	0.00
Reef fish (Assorted)	203.5	0.36	0.0	0.00	0.0	0.00	203.5	15.51
Lined surgeon	99.3	0.18	0.0	0.00	0.0	0.00	99.3	7.57
Striped bristletooth	8.8	0.02	0.0	0.00	0.0	0.00	8.8	0.67
Yellowfin surgeonfish	302.8	0.54	0.0	0.00	0.0	0.00	302.8	23.08
Parrotfishes	620.7	1.11	0.0	0.00	0.0	0.00	620.7	47.32
Inshore groupers	76.6	0.14	0.0	0.00	0.0	0.00	76.6	5.84
Dolphin (mahimahi)	2493.9	4.46	2493.9	4.66	0.0	0.00	0.0	0.00
Wahoo	1273.0	2.28	1273.0	2.38	0.0	0.00	0.0	0.00
Skipjack tuna	45436.7	81.25	45436.7	84.81	0.0	0.00	0.0	0.00
Yellowfin tuna	4369.5	7.81	4369.5	8.16	0.0	0.00	0.0	0.00
Total all species:	55921.6	100.00	53573.1	95.80	1036.8	1.85	1311.7	2.35

Figure II.5.1

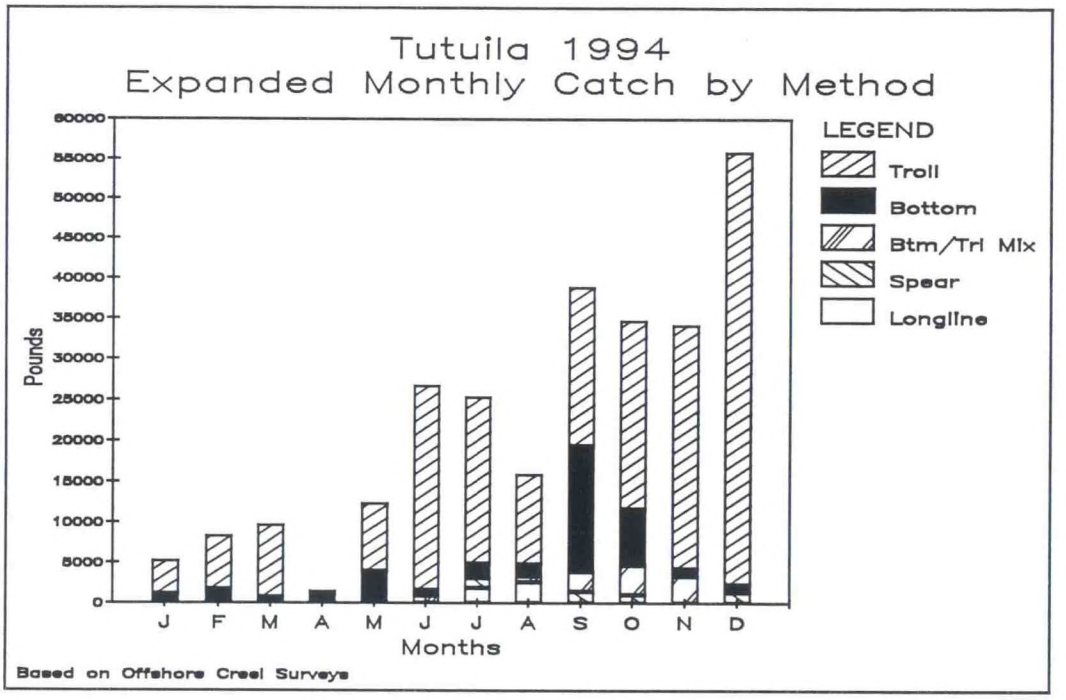


Figure II.5.2

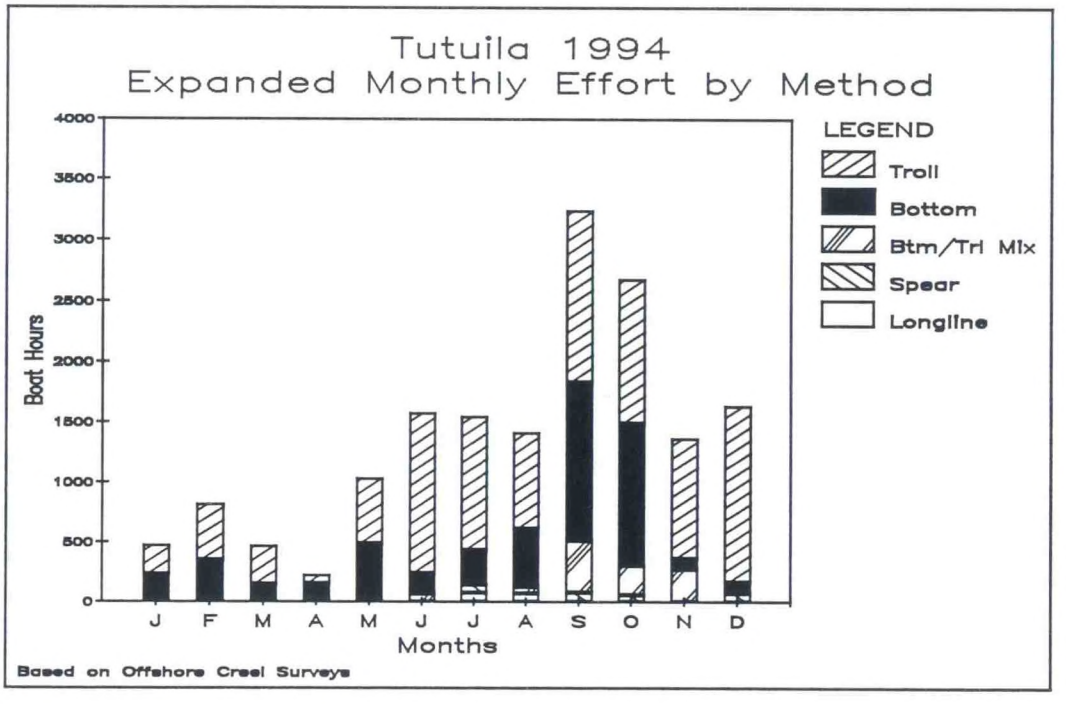
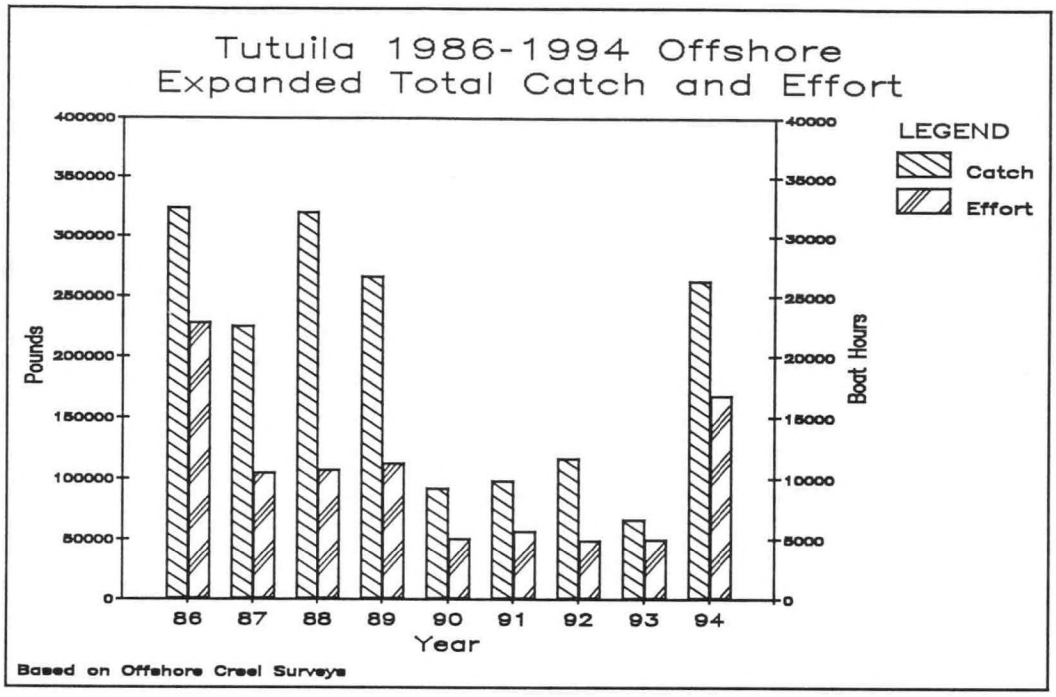


Figure II.5.3


Tutuila 1986-1994 Offshore
Expanded Total Catch and Effort
LEGEND
Catch
Effort
Pounds
Boat Hours
400000
350000
300000
250000
200000
150000
100000
50000
0
40000
35000
30000
25000
20000
15000
10000
5000
0
86
87
88
89
90
91
92
93
94
Year
Based on Offshore Creel Surveys

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

Fishery Statistics 1994

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
1994 FISHERY STATISTICS

Compiled by

Division of Fish and Wildlife

and the

Western Pacific Fishery Information Network

August 1996

CONTENTS

LIST OF CNMI SUMMARY TABLES

LIST OF CNMI FIGURES

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
1994 FISHERY STATISTICS

INTRODUCTION

The Commonwealth of the Northern Mariana Islands (CNMI) comprises a string of islands located at about long. 145° E and extending northward from about lat. 14 to 21° N. All of the 43,000 inhabitants of the CNMI live on the three main islands, Saipan, Rota, and Tinian, with the vast majority living on Saipan. The Division of Fish and Wildlife (DFW) has been collecting fishery statistics on the commercial fishing fleet of Saipan since the mid-1970's. In 1983, DFW also began collecting information on vessels transshipping tuna out of Tinian. Significant improvements to the data collecting and processing systems were made in 1982 when microcomputer hardware, software, and training were provided by the WPACFIN program.

The major domestic commercial fishery of the CNMI is a small boat, one-day troll fishery. Most of the boats are 12- to 24-foot outboard-powered, runabout-type vessels; however, a few larger boats are also used. In the past few years, there has been a fairly rapid increase in the number of boats in the CNMI, about 70% of which are used in the commercial fisheries. Although trolling is by far the most common fishing method, many boats are also used for bottom fishing and reef fishing activities. Reef fish are an important component of the local diet and are a significant portion of the total commercial catch. Additionally, an increasing amount of reef fish is being imported from other Pacific islands to meet the local demand. In recent years, several larger boats have started fishing more intensively for bottom fish around the islands north of Saipan. The vast majority of the domestic catch is consumed locally, but there have been some exports of fish to Guam and Hawaii.

Beginning in 1983, fishing vessels from several nations began using the Tinian harbor as a port to off-load tuna catches to large transshipment vessels. In 1994, transshipments out of Tinian totaled nearly 20,000 metric tons, of which 27% were made by 5 U.S. registered purse seiners, with the remainder made by Taiwanese vessels.

DATA COLLECTING SYSTEM

The principal method used by DFW to collect domestic commercial fisheries data is a dealer invoicing system, sometimes referred to as a "trip ticket" system. The DFW provides numbered two-part invoices to all purchasers of fresh fishery products, including hotels, restaurants, stores, fish markets, and roadside vendors. Dealers complete an invoice each time they purchase

fish directly from fishermen. They keep one copy for their records and provide one copy to DFW. Some advantages of this method of data collection are that it is relatively inexpensive to implement and maintain, nearly complete coverage of the commercial fisheries is fairly easy to accomplish, and DFW can provide feedback to dealers and fishermen to ensure data accuracy and continued cooperation. Disadvantages include a dependence on non-DFW personnel to identify the catch and record the data, the types of data that can be collected are somewhat restricted, education and cooperation of all fish purchasers are required, and only the fish that are actually sold to dealers are recorded and a potentially important portion of the total landings is unrecorded. Since 1982, DFW has tried to minimize these disadvantages as much as possible by maintaining a close working relationship with dealers, by educating and adding new dealers to their list as they enter the business, and by implementing a creel survey to help estimate total catch, including recreational and subsistence catch.

The current system collects data from dealers on the island of Saipan, where DFW estimates over 90% of all CNMI commercial landings are made. The DFW further estimates that the proportion of total commercial landings that is recorded in the data base for Saipan since 1983 is over 90%.

Information collected for each commercial purchase of fish from the fishermen includes the following:

Date
Buyer's name (dealer)
Seller's name (fisherman)
Species
Weight (pounds)
Price per pound
Value
Invoice number

All of these data elements are collected for all purchases of fishery products; however, species identification is frequently made only to a group level, especially for reef fish.

DATA PROCESSING SYSTEM

At the beginning of each month, a DFW employee visits each of the dealers on Saipan to obtain the previous month's invoices, resolve problems, and answer any questions the dealer may have. The invoices are returned to the office for an initial visual edit during the coding process, and are then entered into the "Purchase" data base on the microcomputer. After the records are entered, reports are generated to help verify that all data were entered correctly. On a quarterly basis, copies of the data base are sent to the Honolulu Laboratory, where the data are transferred to the central computer for additional editing and

verification before generation of summary reports. These reports and databases are then ready for use by qualified WPACFIN participants.

DATA REPORTING SYSTEM

After all editing and quality control activities have been accomplished, monthly and annual summary reports by species are generated. Each of the following reports for 1994 contains information on the pounds, value and the average price per pound. Each monthly report contains a subtotal for the sum of all species for that month, and the December report also includes the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species for the calendar year.

The following species, species groups, and abbreviations are used in the tables and graphs of CNMI's data:

I. Pelagic Management Unit Species (PMUS)

Although the Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to include tunas in the Pacific PMUS (PPMUS), this report series will continue to specify tunas as a separate category from the PPMUS. The PMUS category in this report includes:

Mahimahi (dolphin)
Marlin
Shortbill spearfish
Sailfish
Wahoo
Sharks

II. Bottomfish Management Unit Species (BMUS)

Jacks (unclassified, but excluding bigeye scad)
Bottom fish (unclassified)
Ehu (red snapper)
Gindai (flower snapper)
Grouper (unclassified)
Kalekale (pink snapper)
Lehi (silverjaw snapper)
Onaga (red or longtail snapper)
Opakapaka (pink snapper)
Uku (gray snapper)
Emperorfish

III. Billfish

Marlin (probably all blue marlin but could also include the rarely landed striped and black marlin)
Shortbill spearfish
Sailfish

IV. Tunas

Tunas (unclassified)
Skipjack tuna
Yellowfin tuna
Dogtooth tuna

V. Other Tuna

The above tunas excluding skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:
Troll fish (unclassified)
Barracuda
Rainbow runner

B. Bottom Fish

Same as BMUS

C. Reef Fish

Reef fish (unclassified)
Giant wrasse
Rabbitfish (hitting, hitting feda, menahac, and sesjun)
Rudderfish
Squirrelfish
Parrotfish
Snapper
Surgeonfish
Unicornfish
Goatfish

D. Other

Miscellaneous
Bigeye scad
Mullet
Eels
Milkfish
Invertebrates (unclassified)
Crabs (unclassified)
Coconut crab
Lobster
Shrimp
Octopus
Squid
Turtle
Seaweeds
Imported

Table III.1.1

CNMI 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	2,933	7,308	2.49
Jacks	935	2,209	2.36
Bottom fish	10,401	26,564	2.55
Gindai (flower snap)	46	117	2.54
Grouper	3,162	7,743	2.45
Onaga (red snapper)	3,662	14,741	4.02
Opakapaka (pink snp)	659	1,645	2.50
Reef fish	161,600	386,763	2.39
Wrasse	206	385	1.87
Rabbitfish (hitting)	1,745	3,688	2.11
Rudderfish (guilli)	120	335	2.79
Emperor (mafute)	1,496	3,384	2.26
Squirrelfish	177	359	2.03
Parrotfish	9,085	15,863	1.75
Snapper	13	39	3.00
Surgeonfish	107	216	2.02
Unicornfish	137	233	1.70
Goatfish	332	815	2.46
Troll fish	9,730	16,367	1.68
Mahimahi (dolphin)	11,993	21,404	1.78
Marlin	2,108	2,432	1.15
Sailfish	77	108	1.40
Rainbow runner	638	1,270	1.99
Wahoo	3,090	6,182	2.00
Tunas	228	430	1.88
Skipjack tuna	73,769	125,390	1.70
Dogtooth tuna	5,433	11,422	2.10
Yellowfin tuna	10,600	22,120	2.09
Invertebrates	30	225	7.50
Lobster	3,425	18,895	5.52
Octopus	105	280	2.67
Shrimp (saltwater)	608	3,346	5.50
** TOTAL **	318,652	702,279	2.20

Table III.1.2

CNMI January 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	16	40	2.50
Bottom fish	951	2,261	2.38
Gindai (flower snap)	14	46	3.25
Grouper	364	913	2.51
Onaga (red snapper)	208	757	3.64
Opakapaka (pink snp)	37	120	3.25
Reef fish	11,302	30,719	2.72
Rabbitfish (hitting)	327	525	1.60
Emperor (mafute)	640	1,280	2.00
Parrotfish	2,361	3,615	1.53
Goatfish	28	56	2.00
Troll fish	3,772	5,718	1.52
Mahimahi (dolphin)	1,595	2,714	1.70
Sailfish	45	68	1.50
Rainbow runner	58	106	1.82
Wahoo	89	175	1.98
Skipjack tuna	1,824	3,263	1.79
Dogtooth tuna	51	77	1.50
Yellowfin tuna	396	927	2.34
Lobster	77	231	3.00
** SUBTOTAL **	24,155	53,609	2.22

Table III.1.3

CNMI February 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	12	30	2.50
Bottom fish	1,102	2,944	2.67
Gindai (flower snap)	2	4	2.00
Grouper	651	1,295	1.99
Onaga (red snapper)	18	81	4.50
Opakapaka (pink snp)	87	253	2.91
Reef fish	13,523	37,543	2.78
Rabbitfish (hitting)	47	95	2.00
Emperor (mafute)	177	397	2.25
Parrotfish	1,352	2,028	1.50
Troll fish	4,336	7,639	1.76
Mahimahi (dolphin)	3,050	5,776	1.89
Rainbow runner	109	196	1.81
Wahoo	90	202	2.25
Tunas	5	8	1.50
Skipjack tuna	2,926	5,390	1.84
Dogtooth tuna	218	446	2.05
Yellowfin tuna	715	1,677	2.34
Lobster	13	40	3.00
** SUBTOTAL **	28,433	66,043	2.32

Table III.1.4

CNMI March 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	63	112	1.77
Bottom fish	738	1,882	2.55
Grouper	92	169	1.84
Onaga (red snapper)	51	214	4.18
Opakapaka (pink snp)	10	33	3.25
Reef fish	11,325	29,386	2.59
Rabbitfish (hitting)	674	1,429	2.12
Rudderfish (guilli)	12	27	2.25
Emperor (mafute)	177	443	2.50
Squirrelfish	22	50	2.25
Parrotfish	1,905	3,368	1.77
Surgeonfish	29	65	2.25
Unicornfish	100	150	1.50
Goatfish	6	14	2.25
Troll fish	142	237	1.67
Mahimahi (dolphin)	3,844	6,473	1.68
Rainbow runner	8	16	2.00
Wahoo	519	977	1.88
Skipjack tuna	7,449	13,625	1.83
Dogtooth tuna	587	1,251	2.13
Yellowfin tuna	798	1,952	2.44
Lobster	166	953	5.75
Octopus	7	18	2.50
** SUBTOTAL **	28,725	62,841	2.19

Table III.1.5

CNMI April 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	24	60	2.50
Bottom fish	2,039	4,852	2.38
Grouper	207	517	2.50
Onaga (red snapper)	330	1,265	3.83
Opakapaka (pink snp)	19	52	2.75
Reef fish	14,396	36,957	2.57
Rabbitfish (hitting)	191	309	1.62
Rudderfish (guilli)	16	32	2.00
Emperor (mafute)	42	100	2.38
Parrotfish	2,040	3,268	1.60
Surgeonfish	40	60	1.50
Goatfish	13	33	2.65
Troll fish	265	623	2.35
Mahimahi (dolphin)	1,502	3,068	2.04
Wahoo	388	835	2.15
Skipjack tuna	9,937	15,547	1.56
Dogtooth tuna	470	1,015	2.16
Yellowfin tuna	702	1,521	2.17
Lobster	540	3,144	5.82
** SUBTOTAL **	33,159	73,258	2.21

Table III.1.6

CNMI May 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	32	80	2.50
Bottom fish	696	1,692	2.43
Grouper	61	168	2.75
Onaga (red snapper)	196	688	3.51
Reef fish	14,382	39,396	2.74
Rabbitfish (hitting)	14	35	2.50
Emperor (mafute)	74	191	2.57
Parrotfish	47	140	3.00
Unicornfish	37	83	2.25
Troll fish	24	66	2.75
Mahimahi (dolphin)	1,036	1,709	1.65
Marlin	197	251	1.27
Sailfish	32	40	1.25
Rainbow runner	56	129	2.31
Wahoo	110	221	2.01
Tunas	92	115	1.25
Skipjack tuna	8,804	15,392	1.75
Dogtooth tuna	447	739	1.65
Yellowfin tuna	799	1,584	1.98
Lobster	523	3,132	5.99
** SUBTOTAL **	27,659	65,849	2.38

Table III.1.7

CNMI June 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	35	91	2.62
Bottom fish	635	1,798	2.83
Onaga (red snapper)	573	2,316	4.04
Reef fish	14,688	36,187	2.46
Wrasse	110	193	1.75
Rabbitfish (hitting)	98	262	2.69
Rudderfish (guilli)	37	111	3.00
Emperor (mafute)	10	29	3.00
Parrotfish	211	581	2.76
Marlin	60	60	1.00
Rainbow runner	71	142	1.99
Wahoo	147	353	2.40
Tunas	64	128	2.00
Skipjack tuna	9,654	16,163	1.67
Dogtooth tuna	791	1,693	2.14
Yellowfin tuna	689	1,149	1.67
Lobster	447	2,471	5.54
Octopus	15	73	5.00
** SUBTOTAL **	28,332	63,798	2.25

Table III.1.8

CNMI July 1994 Commercial Landings

Species	Pounds	Value	$/lb
Jacks	54	125	2.31
Bottom fish	581	1,480	2.55
Onaga (red snapper)	386	1,545	4.00
Reef fish	16,162	34,427	2.13
Rabbitfish (hitting)	22	55	2.50
Rudderfish (guilli)	55	165	3.00
Emperor (mafute)	44	131	3.00
Parrotfish	348	958	2.76
Snapper	13	39	3.00
Surgeonfish	15	45	3.00
Goatfish	155	419	2.70
Mahimahi (dolphin)	40	76	1.91
Marlin	396	396	1.00
Rainbow runner	168	273	1.63
Wahoo	67	101	1.50
Skipjack tuna	5,908	9,918	1.68
Dogtooth tuna	1,495	3,253	2.18
Yellowfin tuna	829	1,392	1.68
Invertebrates	30	225	7.50
Lobster	728	4,154	5.70
Octopus	8	15	2.00
** SUBTOTAL **	27,502	59,191	2.15

Table III.1.9

CNMI August 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	226	565	2.50
Jacks	370	839	2.27
Bottom fish	1,441	3,654	2.54
Grouper	459	1,040	2.27
Onaga (red snapper)	525	2,088	3.98
Opakapaka (pink snp)	141	341	2.41
Reef fish	23,196	44,276	1.91
Wrasse	96	192	2.00
Rabbitfish (hitting)	145	366	2.52
Emperor (mafute)	169	423	2.51
Parrotfish	5	15	2.75
Goatfish	68	168	2.49
Marlin	680	779	1.15
Rainbow runner	30	61	2.06
Wahoo	172	372	2.17
Skipjack tuna	8,304	13,005	1.57
Dogtooth tuna	577	1,363	2.36
Yellowfin tuna	915	2,110	2.31
Lobster	662	3,198	4.83
Octopus	30	60	2.00
** SUBTOTAL **	38,209	74,913	1.96

Table III.1.10

CNMI September 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	46	92	2.00
Jacks	41	112	2.72
Bottom fish	65	183	2.83
Gindai (flower snap)	30	68	2.25
Onaga (red snapper)	309	1,351	4.37
Opakapaka (pink snp)	175	399	2.28
Reef fish	7,427	17,547	2.36
Rabbitfish (hitting)	130	370	2.86
Squirrelfish	73	145	2.00
Parrotfish	94	258	2.75
Marlin	90	90	1.00
Rainbow runner	66	164	2.46
Wahoo	225	598	2.65
Tunas	6	14	2.50
Skipjack tuna	1,246	2,986	2.40
Dogtooth tuna	112	161	1.44
Yellowfin tuna	376	904	2.40
Lobster	100	570	5.70
** SUBTOTAL **	10,610	26,010	2.45

Table III.1.11

CNMI October 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	97	243	2.50
Jacks	25	63	2.50
Bottom fish	671	1,752	2.61
Grouper	431	1,041	2.42
Onaga (red snapper)	240	1,002	4.18
Opakapaka (pink snp)	190	448	2.36
Reef fish	11,804	26,159	2.22
Rabbitfish (hitting)	81	202	2.50
Emperor (mafute)	40	100	2.50
Parrotfish	517	1,139	2.21
Troll fish	17	43	2.50
Mahimahi (dolphin)	103	194	1.88
Marlin	299	470	1.57
Rainbow runner	34	72	2.15
Wahoo	677	1,169	1.73
Tunas	35	98	2.83
Skipjack tuna	6,035	10,201	1.69
Dogtooth tuna	163	270	1.66
Yellowfin tuna	1,063	2,425	2.28
Lobster	170	1,001	5.90
Octopus	46	115	2.50
** SUBTOTAL **	22,737	48,205	2.12

Table III.1.12

CNMI November 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	2,564	6,409	2.50
Jacks	264	660	2.50
Bottom fish	659	1,740	2.64
Grouper	274	1,034	3.77
Onaga (red snapper)	494	2,058	4.17
Reef fish	13,606	31,809	2.34
Rabbitfish (hitting)	16	40	2.50
Emperor (mafute)	104	243	2.35
Squirrelfish	82	164	2.00
Parrotfish	173	400	2.31
Goatfish	63	126	2.00
Troll fish	162	361	2.23
Mahimahi (dolphin)	171	271	1.58
Marlin	350	350	1.00
Wahoo	213	438	2.05
Skipjack tuna	5,381	9,442	1.75
Dogtooth tuna	349	779	2.23
Yellowfin tuna	2,036	4,059	1.99
Shrimp (saltwater)	50	288	5.75
** SUBTOTAL **	27,008	60,669	2.25

Table III.1.13

CNMI December 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bottom fish	825	2,328	2.82
Grouper	625	1,567	2.51
Onaga (red snapper)	333	1,377	4.14
Reef fish	9,790	22,356	2.28
Emperor (mafute)	21	47	2.25
Parrotfish	33	91	2.75
Surgeonfish	23	46	2.00
Troll fish	1,013	1,681	1.66
Mahimahi (dolphin)	653	1,125	1.72
Marlin	36	36	1.00
Rainbow runner	40	113	2.81
Wahoo	394	744	1.89
Tunas	27	68	2.50
Skipjack tuna	6,301	10,458	1.66
Dogtooth tuna	173	376	2.17
Yellowfin tuna	1,281	2,420	1.89
Shrimp (saltwater)	558	3,059	5.48
** SUBTOTAL **	22,124	47,890	2.16
** TOTAL **	318,652	702,279	2.20

Figure III.1.1

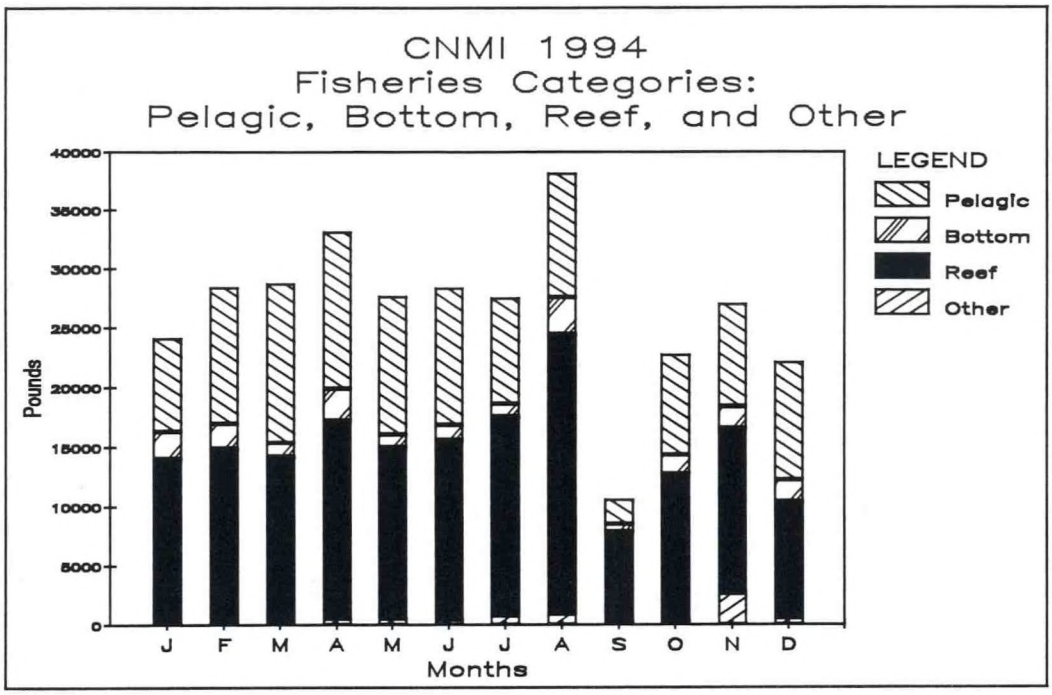


Figure III.1.2

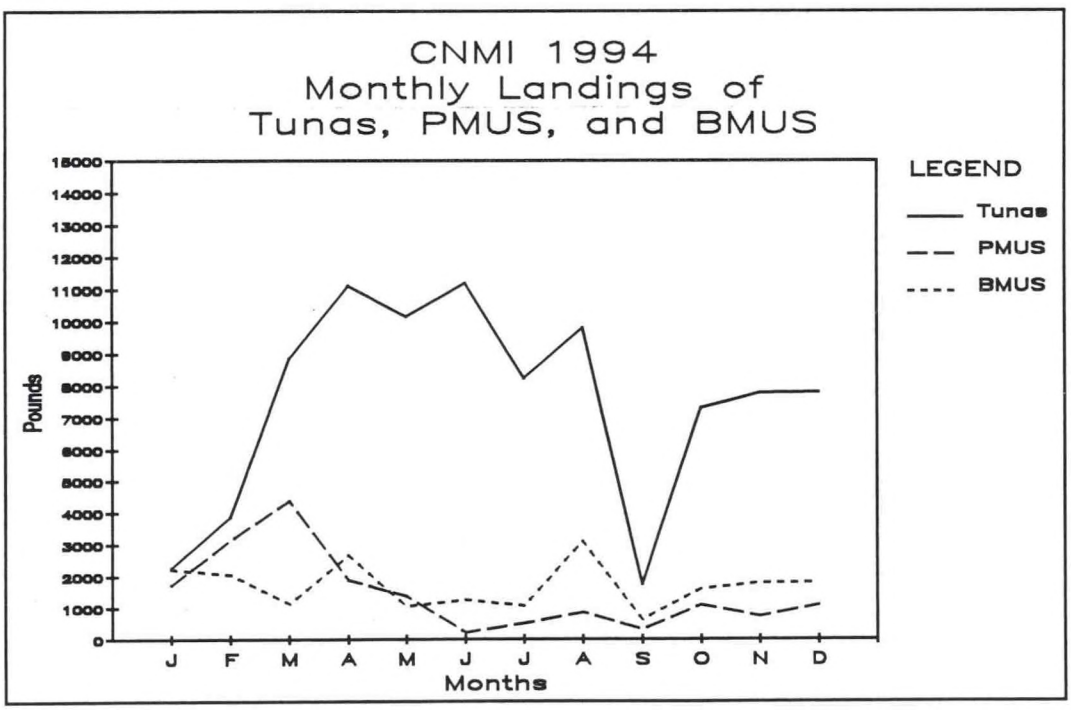


Figure III.1.3

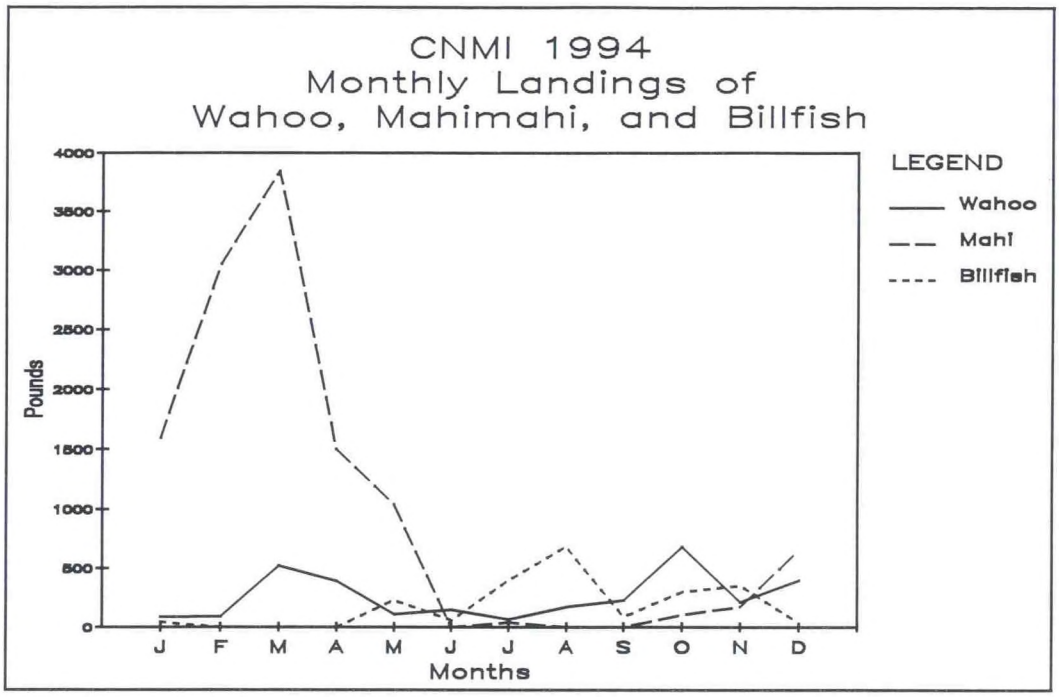


Figure III.1.4

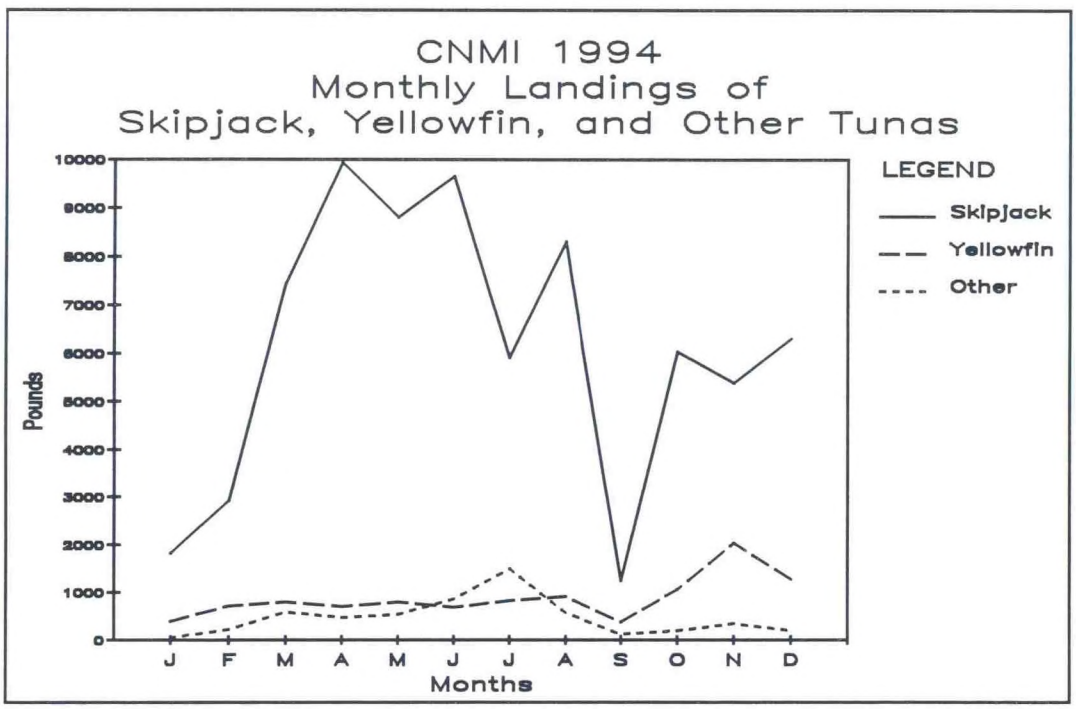


Figure III.2.1

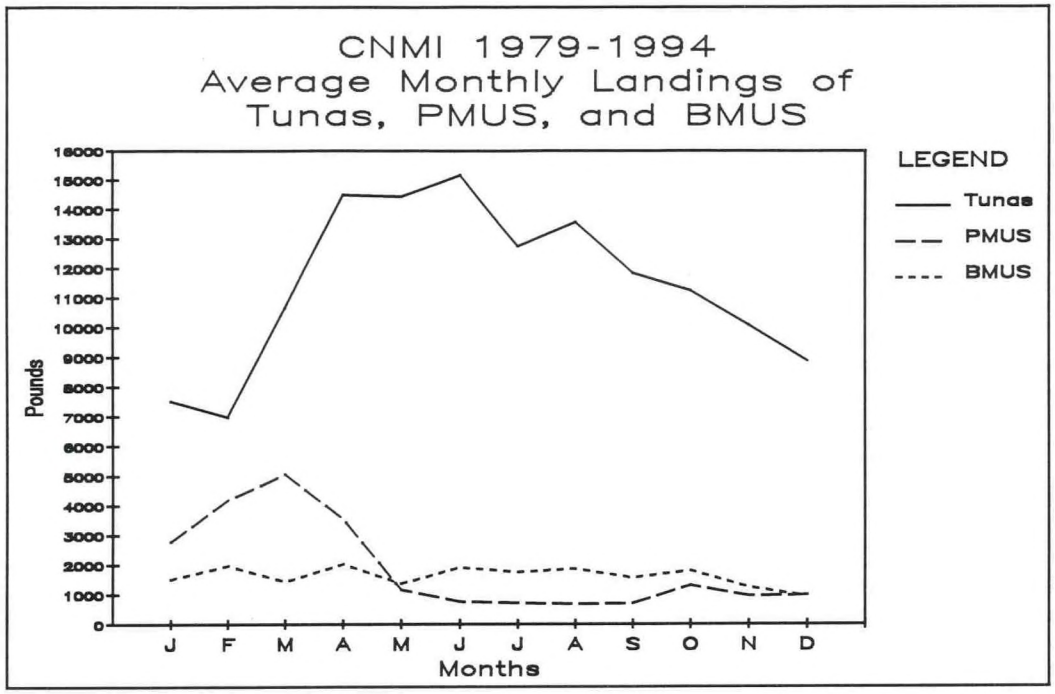
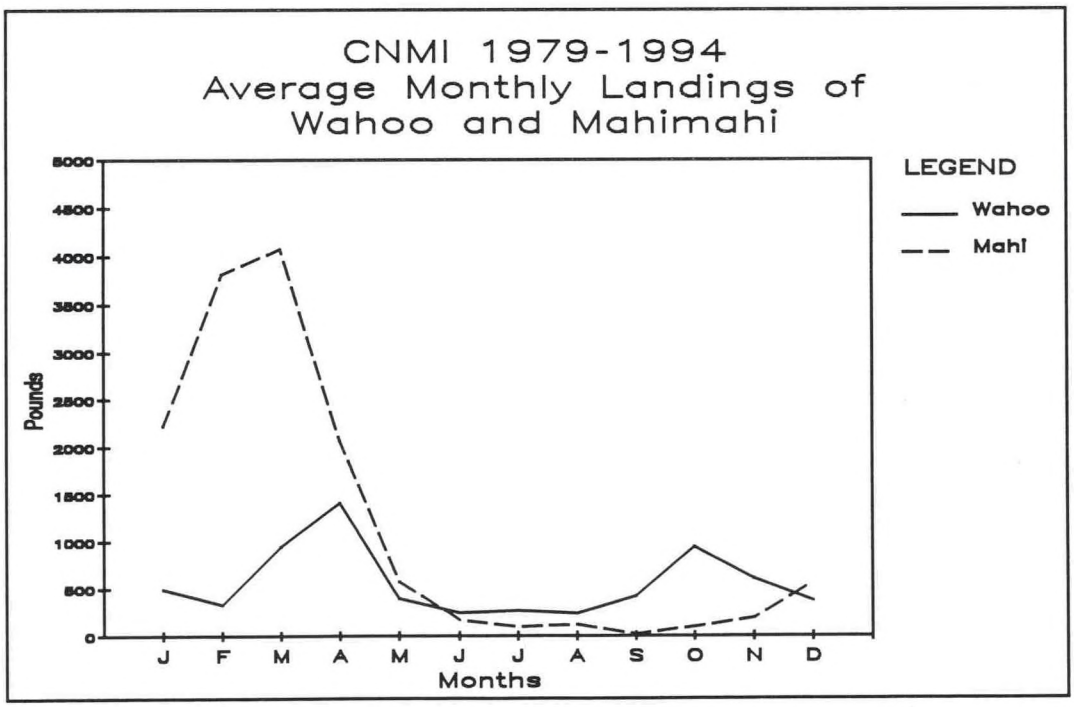


Figure III.2.2



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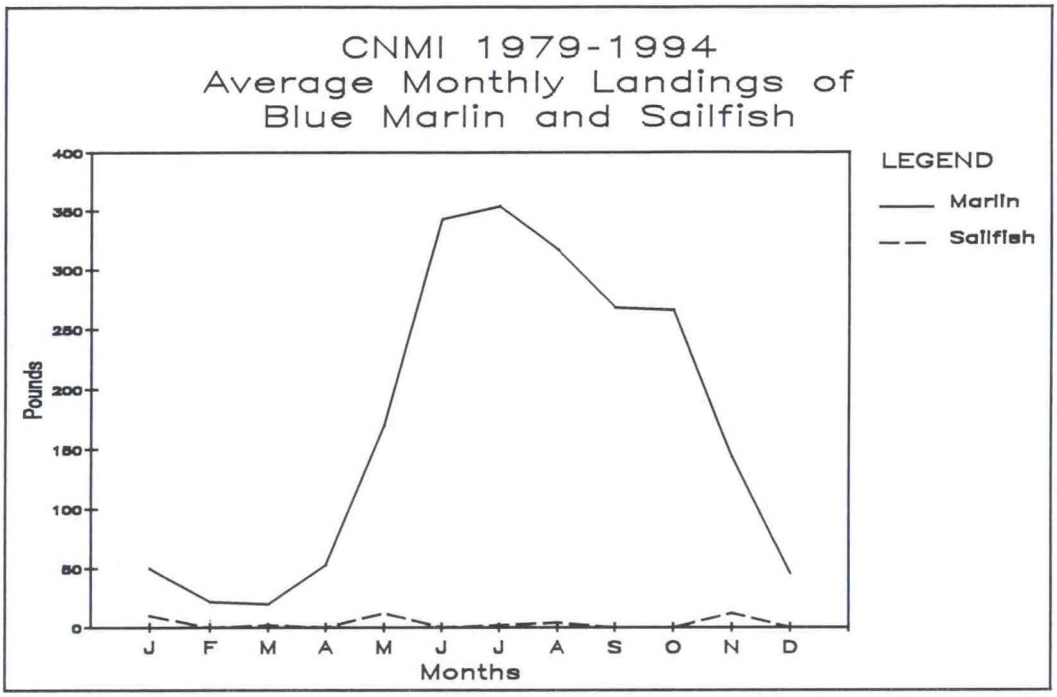

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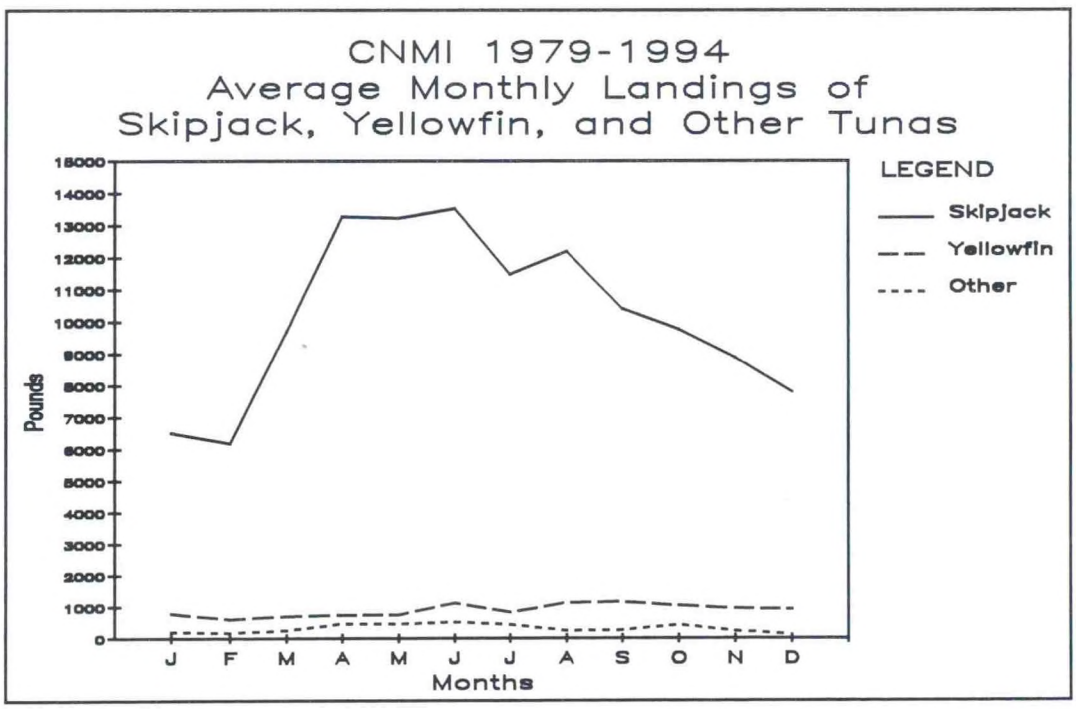


Figure III.2.5

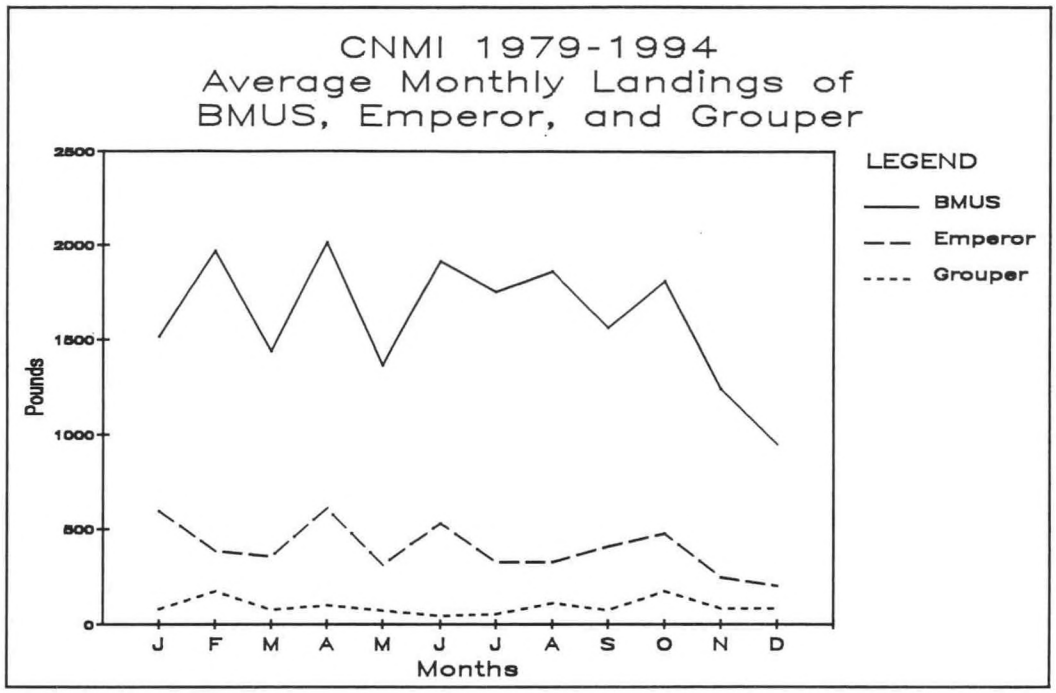


Figure III.3.1

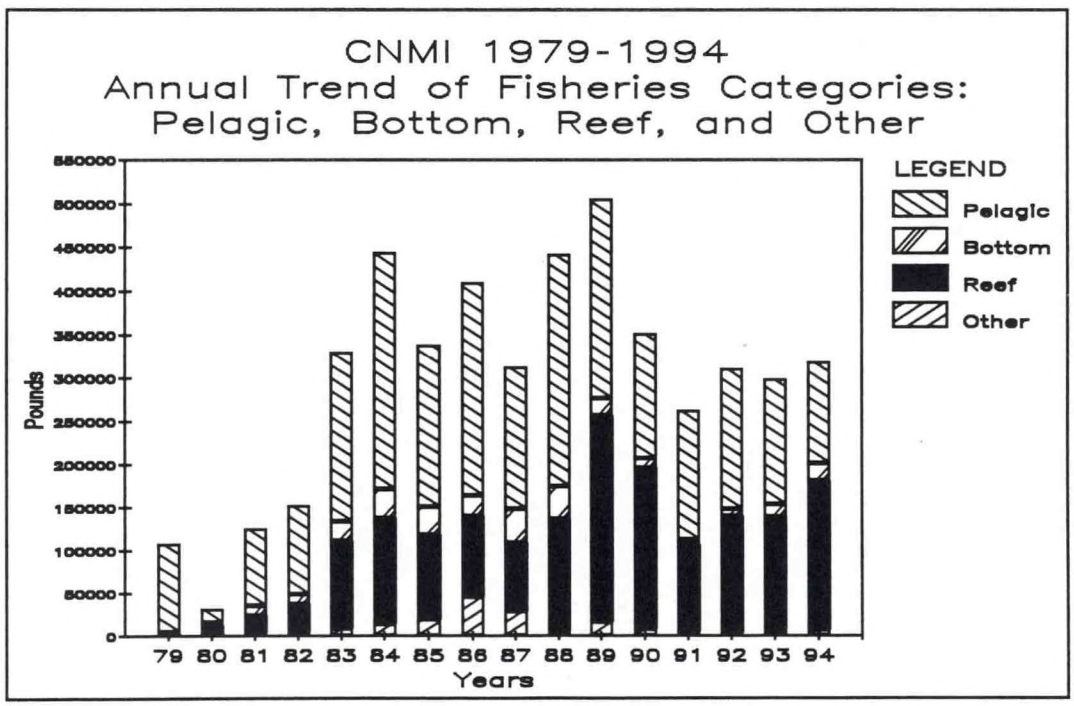
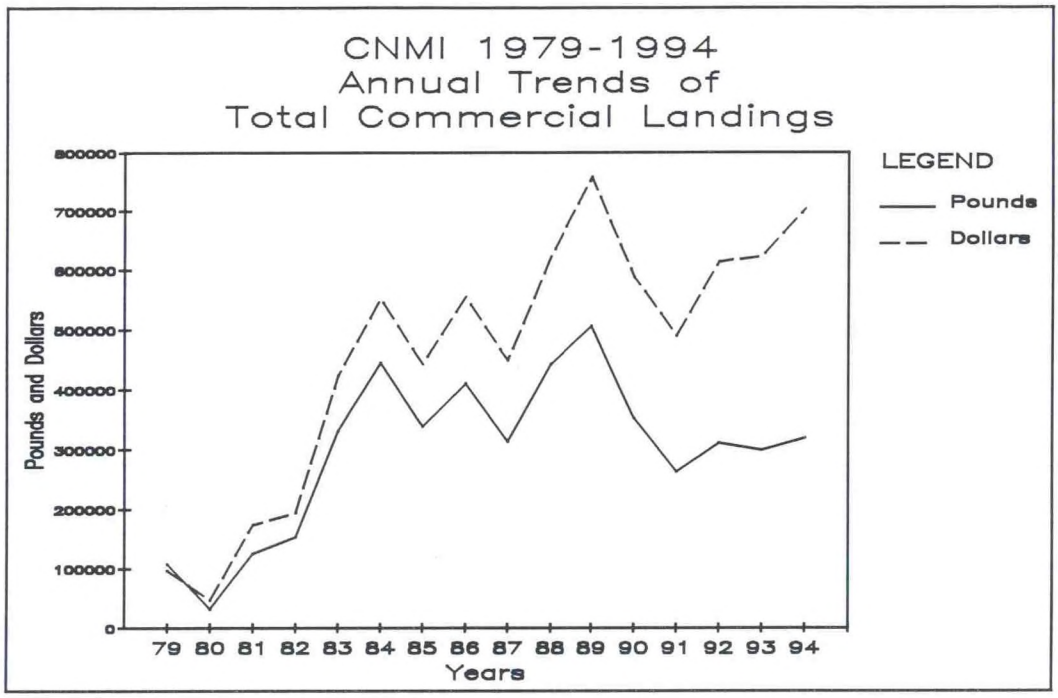


Figure III.3.2



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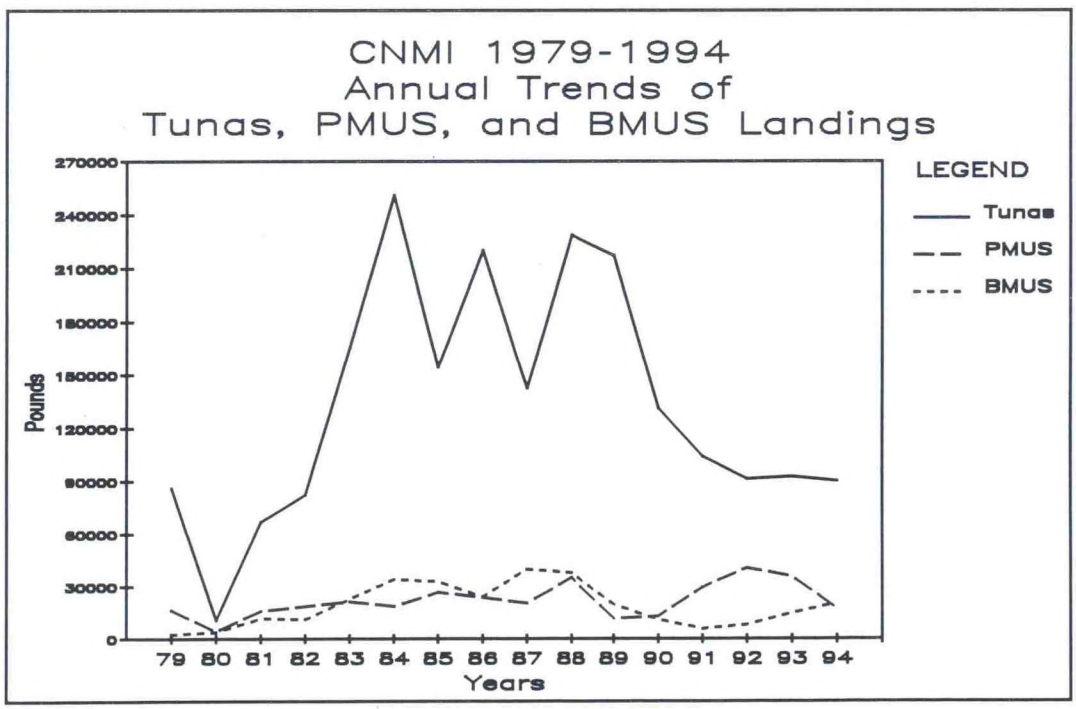

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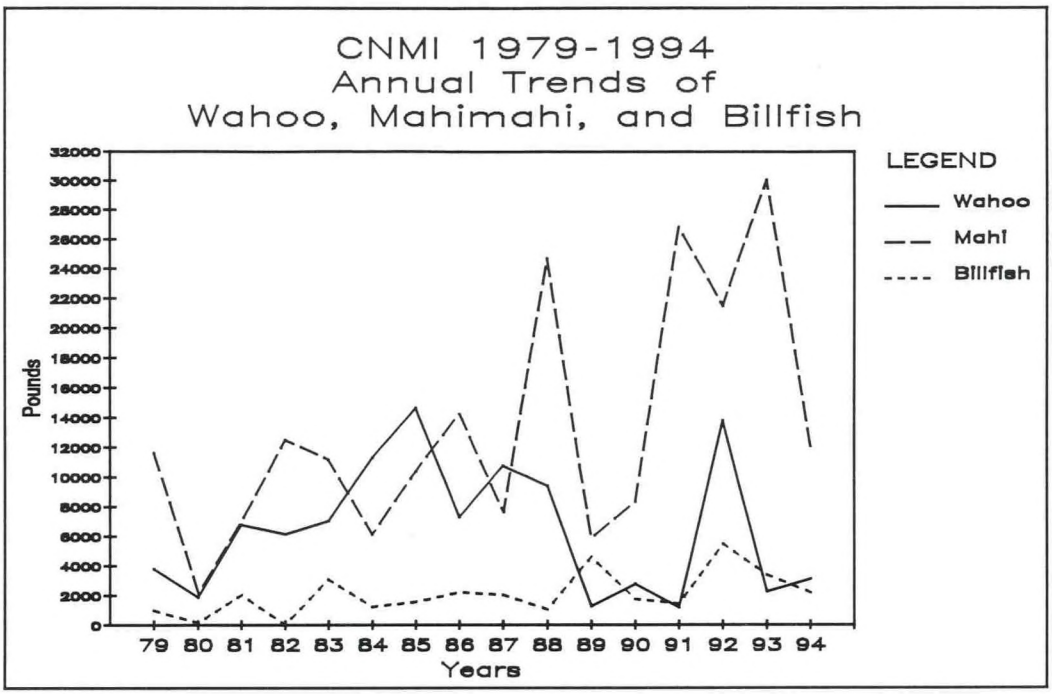

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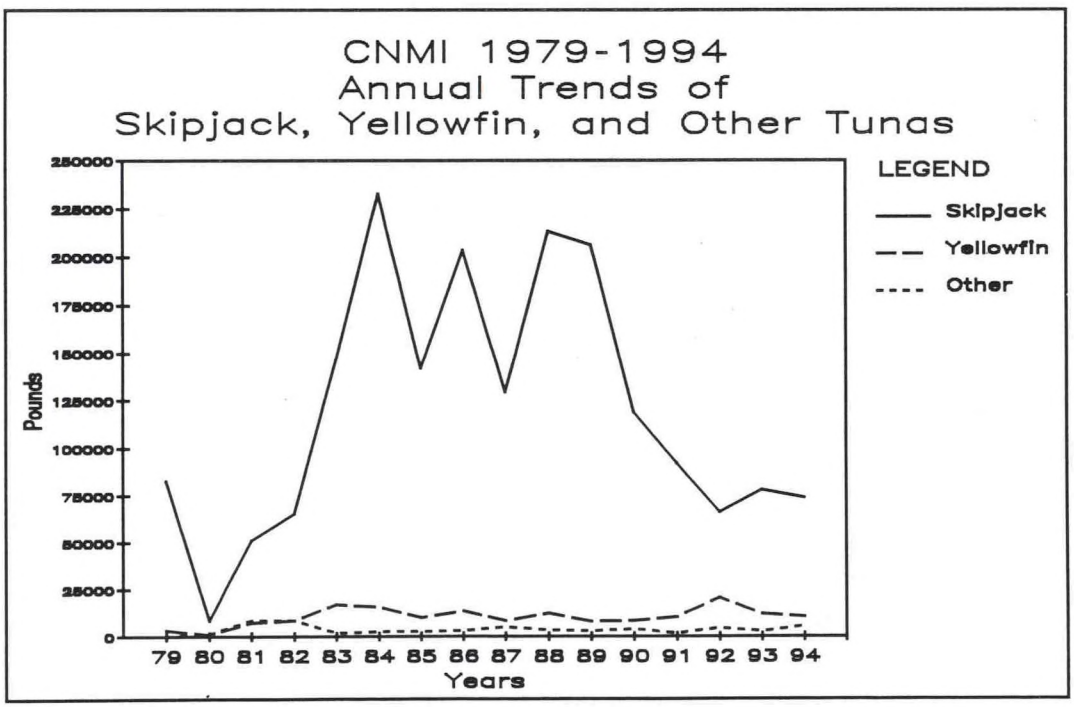


Figure III.4.1

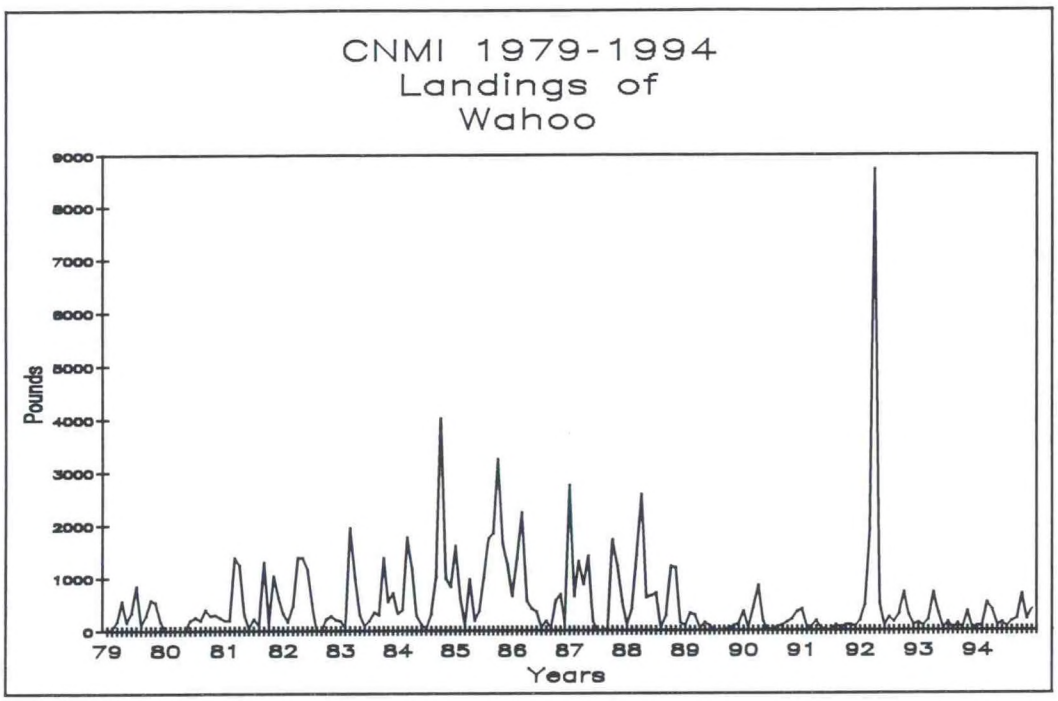


Figure III.4.2

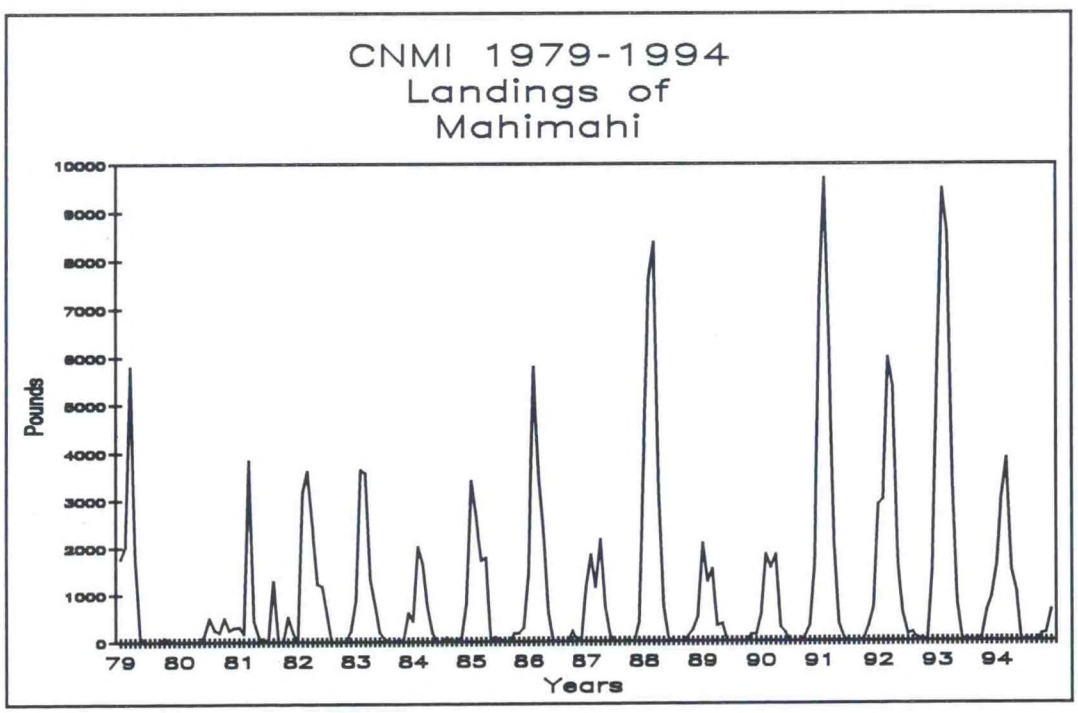


Figure III.4.3

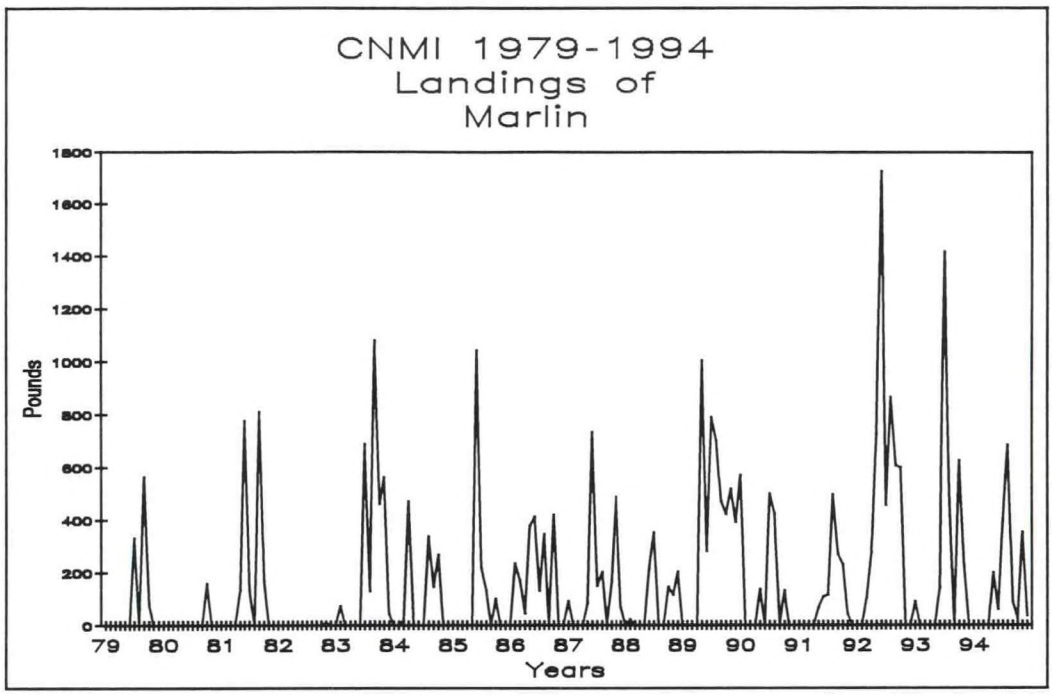


Figure III.4.4

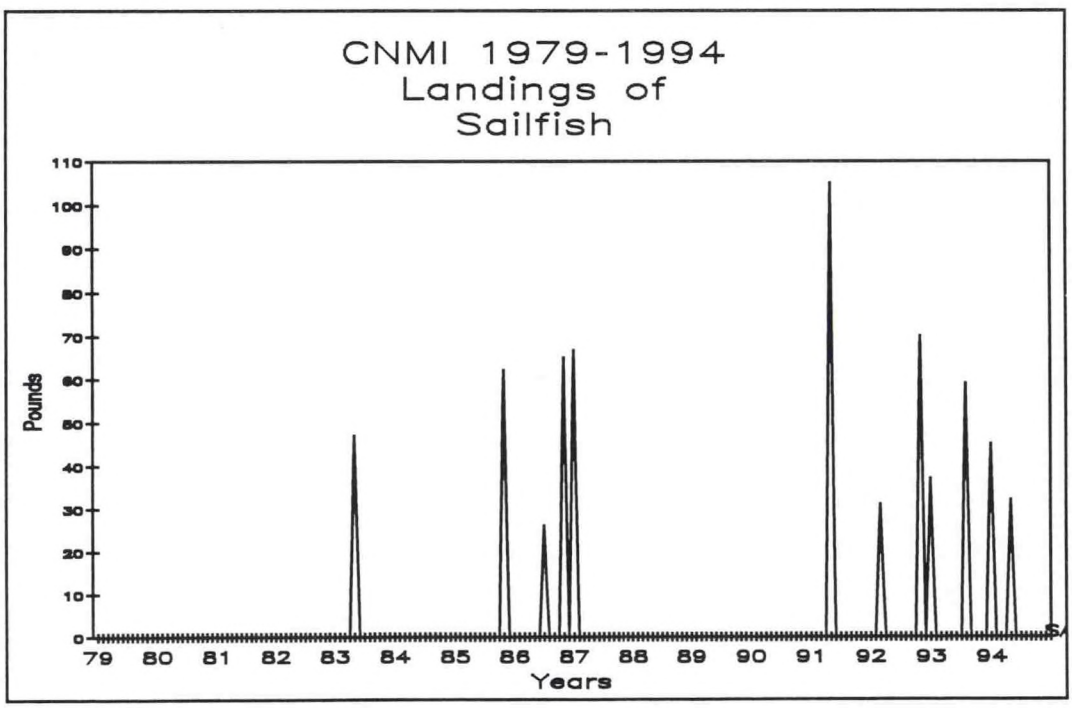
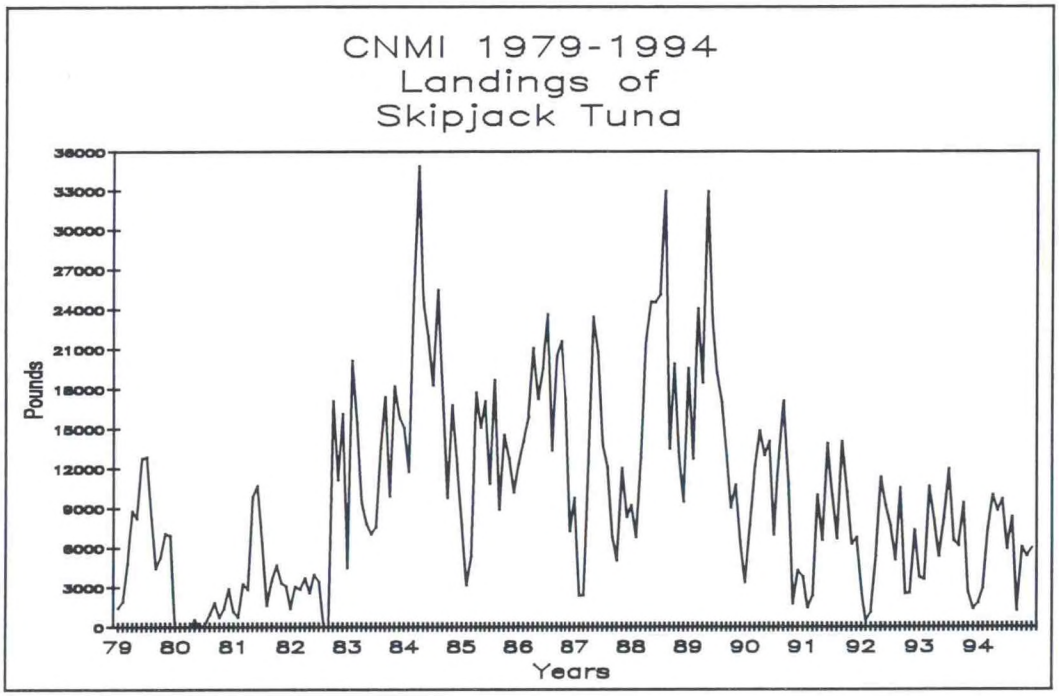


Figure III.4.5



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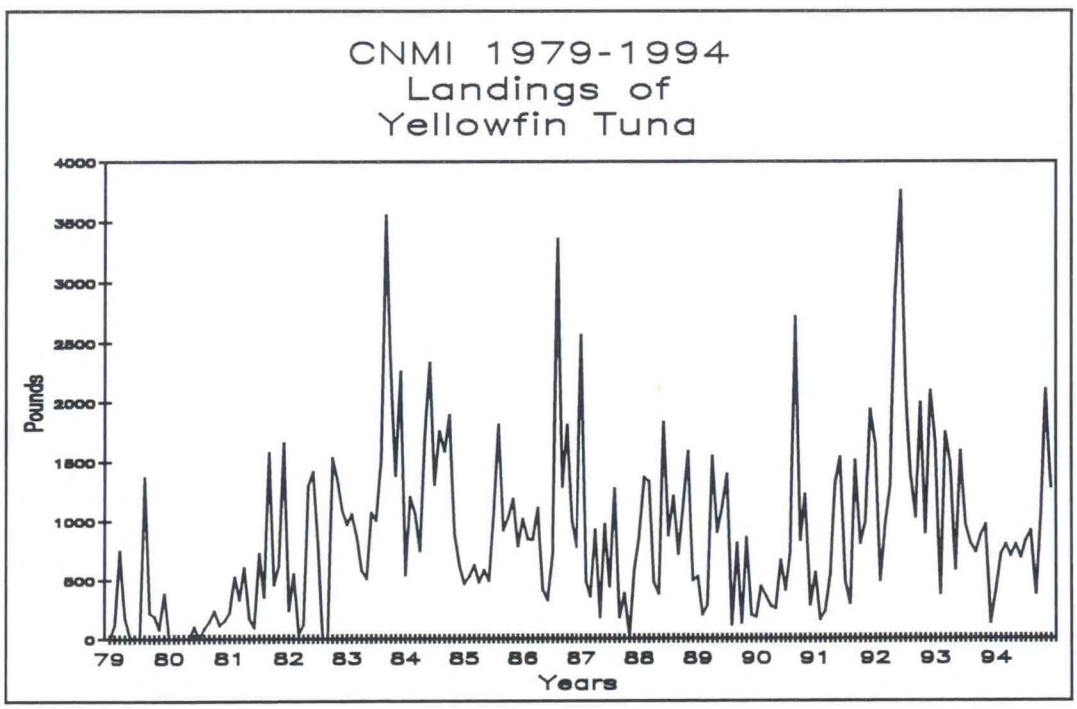

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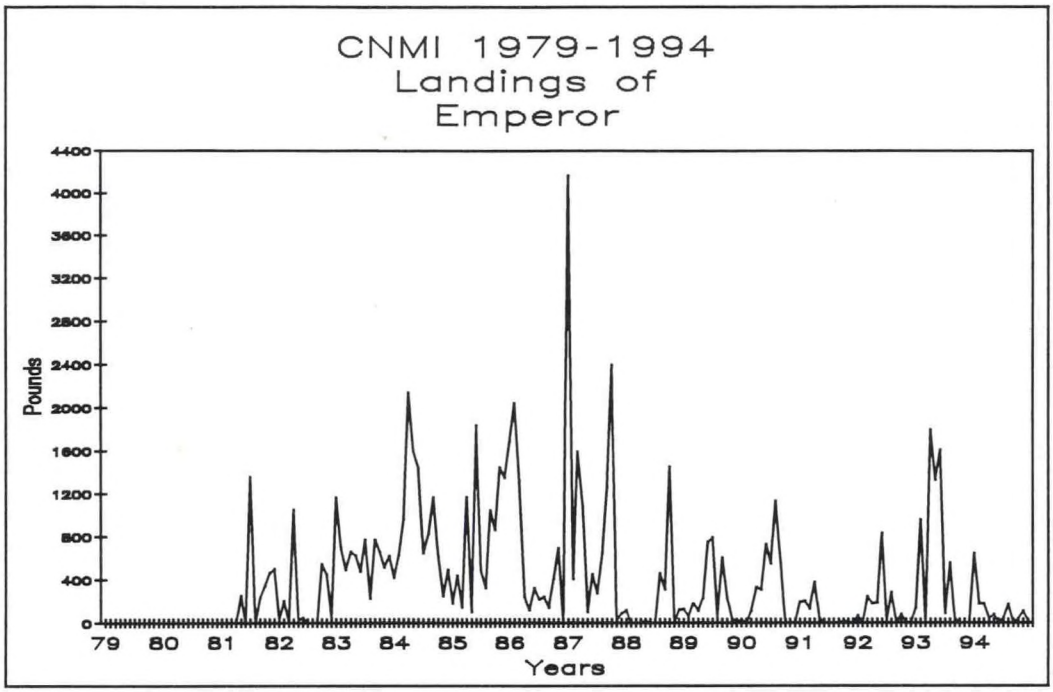

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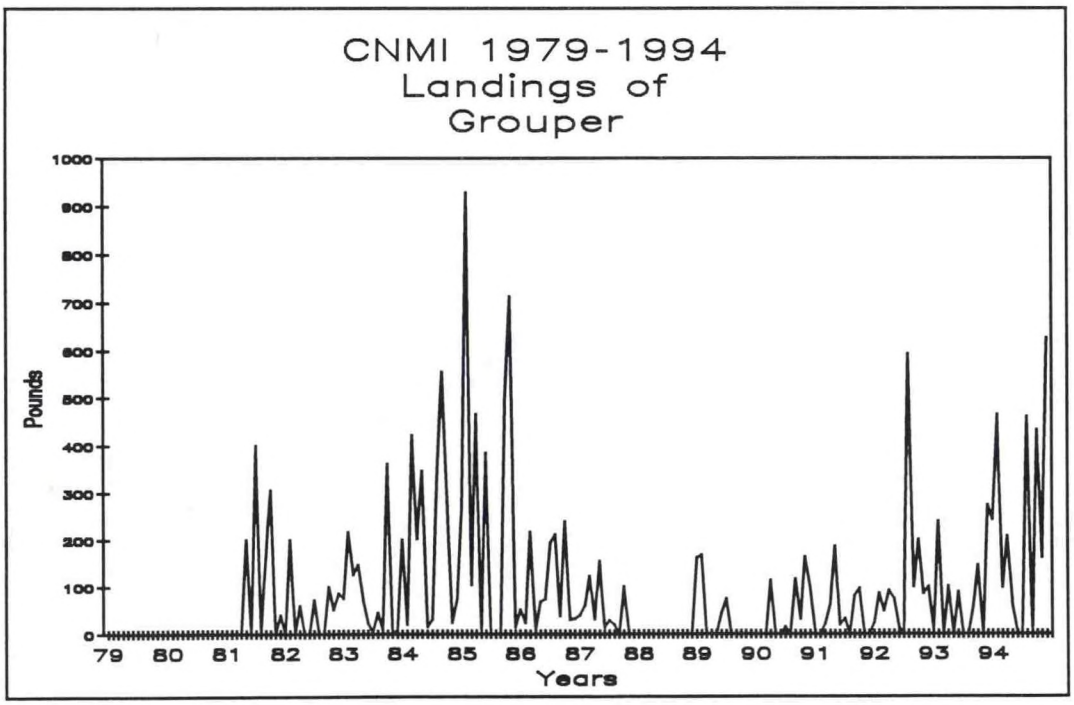


GUAM

Fishery Statistics 1994

GUAM 1994 FISHERY STATISTICS

Compiled by

Guam Division of Aquatic and Wildlife Resources

and the

Western Pacific Fishery Information Network

August 1996

CONTENTS

LIST OF GUAM SUMMARY TABLES

LIST OF GUAM FIGURES

IV.1

GUAM 1994 FISHERY STATISTICS

INTRODUCTION

The Territory of Guam (lat. 13.4° N and long. 144.4° E) is the southernmost, largest, and most populous island in the Mariana Archipelago. All of the islands in the chain north of Guam belong to the Commonwealth of the Northern Mariana Islands. Guam is located about 6,000 km (3,700 mi) west-southwest of Honolulu, 2,500 km (1,550 mi) south-southeast of Tokyo, and 2,600 km (1,600 mi) east of Manila. Guam is about 48 km (30 mi) long, varies from 6 to 14 km (4 to 9 mi) wide, and has an estimated land area of 554 km^2 (214 mi^2) and a population of about 133,000.

Fishing activities on Guam can be divided into two basic categories: offshore and inshore fishing. Offshore fishing typically involves small boat (12 to 48 feet), 1 to 2-day trolling and bottom fishing trips that usually originate from one of the three principal harbors located on the west coast and southern tip of the island. In recent years, the sportfishing charter boat industry has increased significantly. Inshore fishing is typically conducted without the use of a boat and consists mostly of nearshore casting, netting, and spearfishing. The Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (DAWR) has been conducting offshore and inshore creel surveys since the early 1970's. Beginning in 1982, DAWR began modifying its data collecting and processing systems to improve estimates of catch and effort by improving sampling techniques and by incorporating the use of microcomputers to expand the survey data. The WPACFIN provided microcomputers and training and worked with DAWR staff and a contractor to redesign the sampling program. Summary statistics from the inshore and offshore creel survey sampling programs have been included in previous volumes of this report series using the original data processing systems provided to DAWR through WPACFIN. However, DAWR is in the process of converting all data systems to a new microcomputer environment and survey data for 1994 are not available to include in this volume. Sampling has continued without interruption to maintain the continuity of the data base and summary statistics should be available for publication in the next volume of this report series.

In 1982, WPACFIN also began working with local fish wholesalers to obtain information on the commercial landings of Guam through volunteer use of invoices provided by WPACFIN. No interruptions in collecting or processing these data have occurred and summaries from all participating wholesalers combined are provided in this volume as in previous volumes of this report series.

COMMERCIAL LANDINGS DATA COLLECTION SYSTEM

Fish enter the commercial market in Guam from three sources: full-time commercial fishermen, part-time commercial fishermen, and subsistence or recreational fishermen who frequently sell portions of their catch. No licenses are required to sell fish in Guam, nor are there any reporting requirements for those selling fish. Before 1979, there was no central place to sell fish, so fishermen had to develop their own markets and peddle their own fish after each trip. The Guam Fishermen's Coop was established, via some government funding, in Agana in July 1979. The Coop subsequently became the central distribution center for fresh local fish. In 1982, WPACFIN began working with the Coop to improve their invoicing system and obtain data on all fish purchases. A cooperative system was established whereby the Coop would use the forms and coding schemes designed by WPACFIN and would supply copies of all invoices to WPACFIN for entering into computer format. In return, WPACFIN would provide the Coop with document quality control and computer generated summary statistics. All purchase data back to July 1979 also were coded and computerized.

Data from two other fish wholesalers were collected beginning in 1983 and continued until early 1987 by which time both had left the business. One other major fish wholesaler and several other important retailers who make purchases directly from fishermen have begun operating since then, and are providing data to WPACFIN by using the invoices given to them through DAWR. A law is has been proposed that will require reporting by dealers and possibly fishermen, but until it is implemented, the commercial landings data collection system will remain a voluntary system. Therefore, the reported commercial data do not reflect the true commercial fisheries. All tables and figures of commercial landings information included in this report are provided with the consent of the participating dealers.

Data collected on commercial forms include

- Date
- Fisherman code
- Number of fishermen
- Hours fished
- Area fished
- Species caught
- Number of pieces caught
- Pounds caught
- Price per pound

COMMERCIAL LANDINGS DATA PROCESSING SYSTEM

The processing system for the commercial landings data collected from the fish dealers is fairly straightforward. A purchase form is completed by the dealer each time fish are purchased from a fisherman. Catches are divided into categories

for weighing by species or species group, and where practicable, number of pieces is recorded. Preferably, coding and initial quality control of the forms are done by Coop or DAWR personnel before they are shipped to WPACFIN for computer processing; however, these activities must sometimes be done by WPACFIN staff. Invoices are collected by DAWR and sent to the WPACFIN central office in Honolulu. Data are entered into a computer and loaded into central WPACFIN data bases, where edit reports are generated and used to locate and correct any errors in the data base. Once all edits, verifications, and corrections are made, summary reports are generated. Standard reports available include total monthly and annual landings by species, total landings by fisherman, and landings by fisherman by species. Purchase forms are returned to DAWR along with summary reports and graphs for their use and for distribution to dealers.

COMMERCIAL LANDINGS DATA REPORTING SYSTEM

After completing all editing and quality control activities for the commercial landings data, monthly and annual summary reports by species are generated. The commercial landings reports section of this document includes monthly and annual reports for 1994. Each table contains information on the pounds, value and the average price per pound for each species or species group. Each monthly report contains a subtotal for the sum of all species combined for that month, and the December report also includes the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species for the calendar year.

Included with the commercial landings summary reports are graphs of some of the important statistics. The following groupings of species, species categories, and abbreviations are used in the tables and graphs for Guam's commercial landings:

I. Pelagic Management Unit Species (PMUS)

Although the Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to include tunas in the Pacific PMUS (PPMUS), this report series will continue to specify tunas as a separate category from the PPMUS. The PMUS category in this report includes:

Mahimahi (dolphin)
Marlin (probably all blue but possibly striped or black)
Spearfish
Sailfish
Wahoo
Sharks

II. Bottom Fish Management Unit Species (BMUS)

Jacks (unclassified but excluding bigeye scad)
Bottom fish (unclassified)
Ehu (red snapper)
Gindai (flower snapper)
Grouper
Kalekale (pink snapper)
Lehi (silverjaw snapper)
Onaga (red or longtail snapper)
Opakapaka (pink snapper)
Uku (gray snapper)
Emperor (mafute)

III. Billfish

Marlin (probably all blue but possibly striped or black)
Spearfish
Sailfish

IV. Tunas

Tunas (unclassified)
Skipjack tuna
Yellowfin tuna
Dogtooth or white tuna
Kawakawa

V. Other Tuna

All the above tunas excluding skipjack and yellowfin tunas.

VI. Fisheries Categories

A. Pelagic Species

All PMUS and tuna species plus the following:
Troll fish (unclassified)
Barracuda
Rainbow runner

B. Bottom Fish

Same as the BMUS

C. Reef Fish

Reef fish (unclassified)
Giant wrasse
Rabbitfish
Rudderfish
Squirrelfish
Parrotfish
Snapper
Surgeonfish
Unicornfish
Goatfish

D. Other

Miscellaneous (unclassified)
Bigeye scad
Mullet
Eels
Milkfish
Invertebrates (unclassified)
Crabs (unclassified)
Coconut crab
Lobster
Shrimp
Octopus
Squid
Seaweeds
Imported

INTERPRETATION OF STATISTICS

The user is reminded again to pay heed to the precautions and assumptions identified earlier in this document when making interpretations of or inferences from data reported in the tables and graphs. Remember also that the commercial landings summaries are not based on a census of all the fishing activities, but on samples of those activities. Guam's commercial landings reported in this volume for 1994 are believed to include approximately 60% of the actual commercial landings made on Guam during that year.

Table IV.1.1

Guam 1994 Commercial Landings

Species	Pounds	Value	$/lb
Assorted	71	213	3.00
Miscellaneous	334	402	1.21
Bigeye scad (atulai)	625	1,859	2.97
Jacks	1,172	2,394	2.04
Mullet	1,079	2,578	2.39
Sharks	205	102	0.50
Bottom fish	1,759	6,326	3.60
Ehu (red snapper)	991	3,867	3.90
Gindai (flower snap)	1,117	4,492	4.02
Grouper	3,386	6,821	2.01
Kalekale (pink snap)	733	2,616	3.57
Lehi (silverjaw)	3,234	13,293	4.11
Onaga (red snapper)	2,378	11,660	4.90
Opakapaka (pink snp)	2,225	8,614	3.87
Uku (gray snapper)	412	889	2.16
Reef fish	5,191	14,240	2.74
Wrasse	184	346	1.88
Rabbitfish (hitting)	88	250	2.85
Emperor (mafute)	737	1,925	2.61
Parrotfish	723	1,982	2.74
Snapper	71	179	2.51
Surgeonfish	17	33	2.00
Unicornfish	672	1,409	2.10
Troll fish	99	169	1.71
Barracuda	1,545	2,511	1.63
Mahimahi (dolphin)	65,881	111,904	1.70
Marlin	37,471	39,672	1.06
Spearfish	71	112	1.58
Sailfish	1,099	1,474	1.34
Rainbow runner	1,668	3,279	1.97
Wahoo	43,389	93,835	2.16
Skipjack tuna	27,343	26,649	0.97
Dogtooth tuna	2,093	4,068	1.94
Yellowfin tuna	29,838	72,514	2.43
Kawakawa	12	15	1.21
Invertebrates	7	24	3.50
Lobster	129	511	3.97
Octopus	371	1,018	2.74
Squid	11	36	3.25
Imported	4,589	11,808	2.57
** TOTAL **	243,016	456,085	1.88

Table IV.1.2

Guam January 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	118	294	2.50
Bigeye scad (atulai)	126	377	3.00
Jacks	83	165	2.00
Bottom fish	33	98	3.00
Uku (gray snapper)	18	36	2.00
Reef fish	874	2,596	2.97
Wrasse	119	240	2.02
Rabbitfish (hitting)	10	30	3.00
Barracuda	90	179	2.00
Mahimahi (dolphin)	15,142	23,857	1.58
Marlin	339	508	1.50
Spearfish	11	22	2.00
Sailfish	24	36	1.50
Rainbow runner	60	119	2.00
Wahoo	1,656	3,681	2.22
Skipjack tuna	2,409	3,705	1.54
Dogtooth tuna	52	103	2.00
Yellowfin tuna	2,012	5,252	2.61
Imported	661	1,666	2.52
** SUBTOTAL **	23,832	42,961	1.80

Table IV.1.3

Guam February 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bottom fish	13	39	3.00
Onaga (red snapper)	10	45	4.50
Uku (gray snapper)	10	20	2.00
Reef fish	984	2,743	2.79
Wrasse	50	74	1.50
Snapper	1	2	2.67
Barracuda	231	435	1.88
Mahimahi (dolphin)	12,420	17,314	1.39
Marlin	169	253	1.50
Rainbow runner	40	76	1.91
Wahoo	4,833	9,901	2.05
Skipjack tuna	1,942	2,610	1.34
Dogtooth tuna	26	50	1.90
Yellowfin tuna	1,773	4,729	2.67
Octopus	13	38	3.00
Imported	1,497	3,658	2.44
** SUBTOTAL **	24,008	41,985	1.75

Table IV.1.4

Guam March 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	27	81	3.00
Bottom fish	131	392	3.00
Ehu (red snapper)	153	612	4.00
Gindai (flower snap)	28	84	3.00
Grouper	5	14	2.75
Kalekale (pink snap)	1	2	3.00
Lehi (silverjaw)	48	143	3.00
Onaga (red snapper)	16	72	4.50
Opakapaka (pink snp)	23	69	3.00
Uku (gray snapper)	33	76	2.32
Reef fish	1,269	3,422	2.70
Wrasse	16	32	2.00
Rabbitfish (hitting)	4	12	3.00
Emperor (mafute)	7	19	2.75
Unicornfish	38	75	2.00
Troll fish	37	73	2.00
Barracuda	156	267	1.72
Mahimahi (dolphin)	17,914	26,439	1.48
Marlin	290	435	1.50
Spearfish	32	47	1.50
Sailfish	124	185	1.50
Rainbow runner	9	17	2.00
Wahoo	3,937	8,254	2.10
Skipjack tuna	2,859	3,230	1.13
Yellowfin tuna	1,245	3,234	2.60
Kawakawa	2	3	1.25
Octopus	155	417	2.70
Imported	567	1,399	2.47
** SUBTOTAL **	29,120	49,102	1.69

Table IV.1.5

Guam April 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	140	420	3.00
Jacks	41	88	2.15
Mullet	208	469	2.25
Bottom fish	42	126	3.00
Ehu (red snapper)	41	164	4.04
Gindai (flower snap)	20	74	3.70
Onaga (red snapper)	31	143	4.64
Opakapaka (pink snp)	14	40	2.94
Reef fish	370	968	2.62
Rabbitfish (hitting)	22	55	2.50
Parrotfish	224	560	2.50
Troll fish	5	10	2.00
Barracuda	371	513	1.38
Mahimahi (dolphin)	7,214	12,317	1.71
Marlin	3,146	4,686	1.49
Spearfish	29	43	1.50
Sailfish	186	279	1.50
Rainbow runner	85	179	2.11
Wahoo	4,298	8,794	2.05
Skipjack tuna	2,650	2,109	0.80
Dogtooth tuna	169	337	2.00
Yellowfin tuna	2,703	6,521	2.41
Lobster	4	12	3.00
Octopus	89	244	2.73
Imported	263	656	2.50
** SUBTOTAL **	22,362	39,805	1.78

Table IV.1.6

Guam May 1994 Commercial Landings

Species	Pounds	Value	$/lb
Assorted	14	42	3.00
Miscellaneous	3	8	2.50
Bigeye scad (atulai)	28	84	3.00
Jacks	103	214	2.08
Mullet	59	166	2.80
Sharks	35	17	0.50
Bottom fish	21	63	3.00
Ehu (red snapper)	90	358	3.98
Gindai (flower snap)	30	124	4.19
Grouper	15	45	3.00
Kalekale (pink snap)	76	194	2.56
Lehi (silverjaw)	103	308	3.00
Onaga (red snapper)	89	424	4.79
Opakapaka (pink snp)	158	484	3.06
Uku (gray snapper)	65	148	2.27
Reef fish	603	1,530	2.54
Emperor (mafute)	63	188	3.00
Parrotfish	7	21	3.00
Surgeonfish	8	16	2.00
Unicornfish	34	85	2.50
Barracuda	148	232	1.57
Mahimahi (dolphin)	4,556	11,127	2.44
Marlin	5,304	7,531	1.42
Sailfish	422	550	1.31
Rainbow runner	421	851	2.02
Wahoo	2,098	5,714	2.72
Skipjack tuna	3,302	2,178	0.66
Dogtooth tuna	209	434	2.08
Yellowfin tuna	4,373	10,273	2.35
Invertebrates	7	24	3.50
Lobster	16	62	4.00
Octopus	44	126	2.82
Imported	335	826	2.47
** SUBTOTAL **	22,833	44,444	1.95

Table IV.1.7

Guam June 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	145	13	0.09
Bigeye scad (atulai)	42	126	3.00
Jacks	160	319	2.00
Mullet	276	751	2.72
Sharks	162	81	0.50
Bottom fish	131	443	3.38
Ehu (red snapper)	97	422	4.35
Gindai (flower snap)	330	1,475	4.48
Grouper	1,246	2,515	2.02
Kalekale (pink snap)	64	263	4.11
Lehi (silverjaw)	1,004	4,416	4.40
Onaga (red snapper)	451	2,255	5.00
Opakapaka (pink snp)	395	1,520	3.85
Uku (gray snapper)	29	58	2.00
Reef fish	260	767	2.95
Rabbitfish (hitting)	5	12	2.56
Emperor (mafute)	218	652	2.99
Parrotfish	53	149	2.83
Unicornfish	136	258	1.89
Troll fish	15	23	1.50
Barracuda	131	233	1.79
Mahimahi (dolphin)	266	455	1.71
Marlin	7,933	8,730	1.10
Sailfish	10	20	2.00
Rainbow runner	239	479	2.01
Wahoo	1,231	3,635	2.95
Skipjack tuna	3,695	2,981	0.81
Dogtooth tuna	150	276	1.84
Yellowfin tuna	4,113	9,794	2.38
Lobster	32	129	4.00
Octopus	58	157	2.74
Imported	84	210	2.50
** SUBTOTAL **	23,156	43,617	1.88

Table IV.1.8

Guam July 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	68	88	1.29
Bigeye scad (atulai)	3	8	3.00
Jacks	225	421	1.87
Mullet	146	286	1.96
Bottom fish	696	2,620	3.77
Ehu (red snapper)	81	255	3.15
Gindai (flower snap)	93	314	3.40
Grouper	626	1,279	2.04
Kalekale (pink snap)	157	562	3.58
Lehi (silverjaw)	541	2,320	4.29
Onaga (red snapper)	463	2,282	4.93
Opakapaka (pink snp)	161	591	3.67
Uku (gray snapper)	31	47	1.50
Reef fish	183	519	2.84
Emperor (mafute)	219	521	2.39
Parrotfish	113	304	2.69
Snapper	10	30	3.00
Surgeonfish	9	17	2.00
Unicornfish	146	277	1.89
Barracuda	42	70	1.67
Marlin	8,146	6,654	0.82
Sailfish	15	15	1.00
Rainbow runner	362	639	1.77
Wahoo	1,197	3,444	2.88
Skipjack tuna	2,489	2,218	0.89
Dogtooth tuna	562	1,002	1.78
Yellowfin tuna	2,498	5,601	2.24
Lobster	19	78	4.00
Octopus	8	21	2.75
Imported	86	214	2.50
** SUBTOTAL **	19,391	32,696	1.69

Table IV.1.9

Guam August 1994 Commercial Landings

Species	Pounds	Value	$/lb
Assorted	23	52	2.25
Bigeye scad (atulai)	16	47	3.00
Jacks	320	658	2.06
Mullet	210	478	2.28
Bottom fish	382	1,461	3.83
Ehu (red snapper)	237	886	3.74
Gindai (flower snap)	311	1,228	3.95
Grouper	1,005	1,981	1.97
Kalekale (pink snap)	314	1,198	3.82
Lehi (silverjaw)	892	3,532	3.96
Onaga (red snapper)	581	2,905	5.00
Opakapaka (pink snp)	602	2,366	3.93
Uku (gray snapper)	102	217	2.12
Reef fish	328	776	2.37
Rabbitfish (hitting)	47	141	3.00
Emperor (mafute)	17	44	2.62
Parrotfish	244	708	2.90
Snapper	7	12	1.75
Unicornfish	202	400	1.98
Barracuda	290	444	1.53
Mahimahi (dolphin)	40	105	2.66
Marlin	4,106	3,541	0.86
Sailfish	45	67	1.50
Rainbow runner	141	218	1.55
Wahoo	3,356	8,965	2.67
Skipjack tuna	3,490	2,516	0.72
Dogtooth tuna	303	603	1.99
Yellowfin tuna	2,466	5,736	2.33
Lobster	56	224	4.00
Squid	11	36	3.25
Imported	1,098	3,180	2.90
** SUBTOTAL **	21,237	44,721	2.11

Table IV.1.10

Guam September 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	220	659	3.00
Jacks	102	204	2.00
Mullet	58	113	1.96
Sharks	9	4	0.50
Bottom fish	42	105	2.49
Ehu (red snapper)	144	574	4.00
Gindai (flower snap)	171	653	3.83
Grouper	323	642	1.99
Kalekale (pink snap)	83	270	3.25
Lehi (silverjaw)	270	1,060	3.93
Onaga (red snapper)	334	1,503	4.50
Opakapaka (pink snp)	539	2,205	4.09
Uku (gray snapper)	31	61	2.00
Reef fish	25	68	2.78
Emperor (mafute)	107	259	2.44
Parrotfish	59	170	2.91
Snapper	11	24	2.25
Unicornfish	19	33	1.78
Troll fish	42	63	1.50
Barracuda	64	96	1.50
Mahimahi (dolphin)	81	236	2.93
Marlin	4,320	3,657	0.85
Rainbow runner	39	59	1.50
Wahoo	1,582	4,174	2.64
Skipjack tuna	1,336	951	0.71
Dogtooth tuna	82	163	2.00
Yellowfin tuna	2,001	4,593	2.30
** SUBTOTAL **	12,086	22,598	1.87

Table IV.1.11

Guam October 1994 Commercial Landings

Species	Pounds	Value	$/lb
Bigeye scad (atulai)	25	59	2.34
Jacks	135	315	2.33
Mullet	93	206	2.22
Bottom fish	198	671	3.39
Ehu (red snapper)	145	580	4.00
Gindai (flower snap)	136	540	3.98
Grouper	168	346	2.06
Kalekale (pink snap)	34	111	3.25
Lehi (silverjaw)	368	1,472	4.00
Onaga (red snapper)	377	1,883	5.00
Opakapaka (pink snp)	335	1,340	4.00
Uku (gray snapper)	83	200	2.41
Reef fish	92	235	2.55
Emperor (mafute)	107	242	2.26
Parrotfish	11	33	3.00
Snapper	43	111	2.59
Unicornfish	36	95	2.65
Barracuda	4	4	1.00
Mahimahi (dolphin)	733	1,979	2.70
Marlin	2,985	2,766	0.93
Sailfish	266	303	1.14
Rainbow runner	42	63	1.50
Wahoo	3,269	8,012	2.45
Skipjack tuna	1,311	1,311	1.00
Dogtooth tuna	282	563	2.00
Yellowfin tuna	2,516	4,728	1.88
Kawakawa	5	5	1.00
Lobster	2	6	4.00
Octopus	5	15	3.00
** SUBTOTAL **	13,803	28,191	2.04

Table IV.1.12

Guam November 1994 Commercial Landings

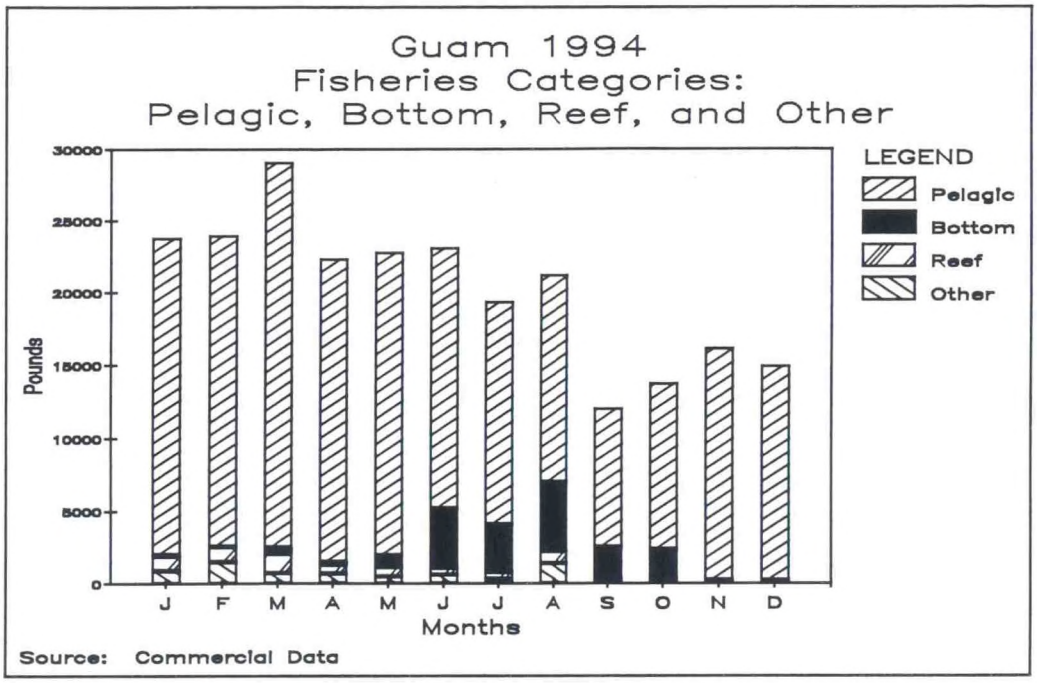
Species	Pounds	Value	$/lb
Jacks	4	10	2.50
Mullet	14	46	3.25
Bottom fish	48	202	4.25
Ehu (red snapper)	4	17	4.25
Kalekale (pink snap)	5	18	3.50
Lehi (silverjaw)	10	43	4.25
Uku (gray snapper)	11	28	2.50
Reef fish	119	356	3.00
Parrotfish	13	38	3.00
Unicornfish	25	74	3.00
Mahimahi (dolphin)	1,336	3,988	2.98
Marlin	641	748	1.17
Rainbow runner	54	133	2.46
Wahoo	11,195	18,680	1.67
Skipjack tuna	828	1,127	1.36
Dogtooth tuna	20	49	2.50
Yellowfin tuna	1,870	5,854	3.13
** SUBTOTAL **	16,195	31,408	1.94

Table IV.1.13

Guam December 1994 Commercial Landings

Species	Pounds	Value	$/lb
Assorted	34	119	3.50
Mullet	16	64	4.00
Bottom fish	24	108	4.50
Onaga (red snapper)	27	149	5.50
Reef fish	87	261	3.00
Unicornfish	37	111	3.00
Barracuda	19	38	2.00
Mahimahi (dolphin)	6,181	14,087	2.28
Marlin	94	165	1.75
Sailfish	9	19	2.20
Rainbow runner	179	447	2.51
Wahoo	4,739	10,583	2.23
Skipjack tuna	1,035	1,713	1.66
Dogtooth tuna	242	489	2.02
Yellowfin tuna	2,269	6,198	2.73
Kawakawa	5	7	1.41
** SUBTOTAL **	14,994	34,558	2.30
** TOTAL **	243,016	456,085	1.88

Figure IV.1.1



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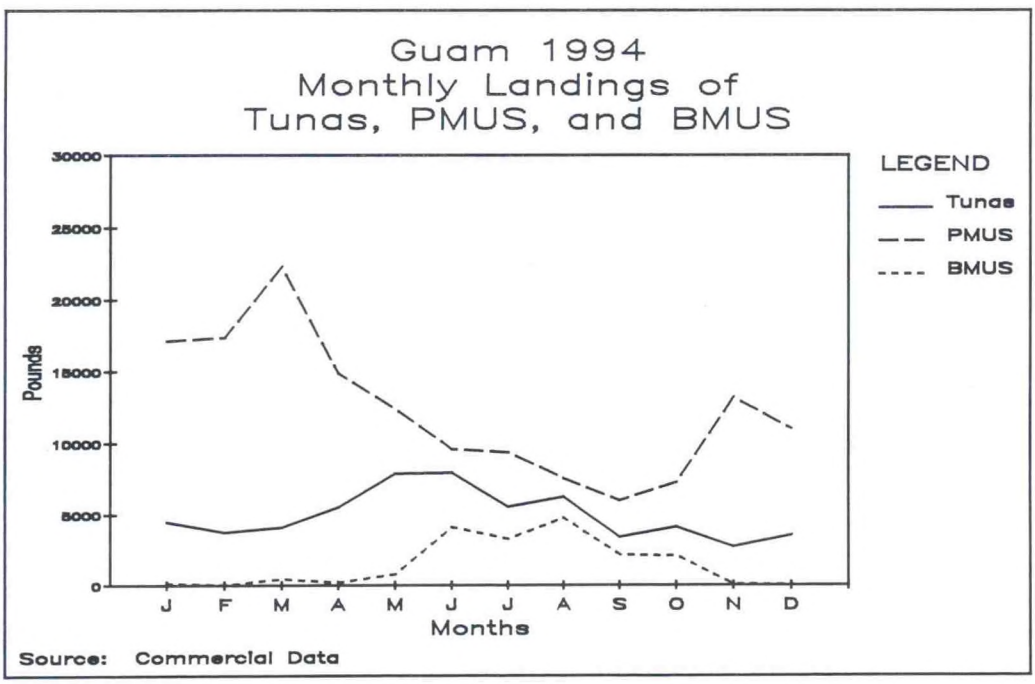

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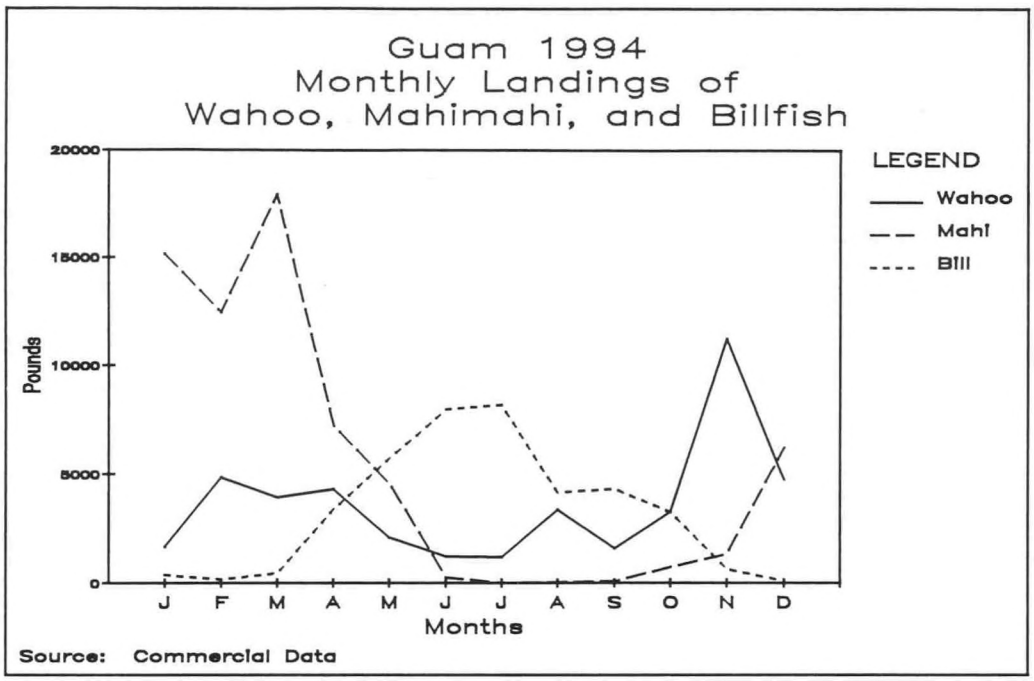

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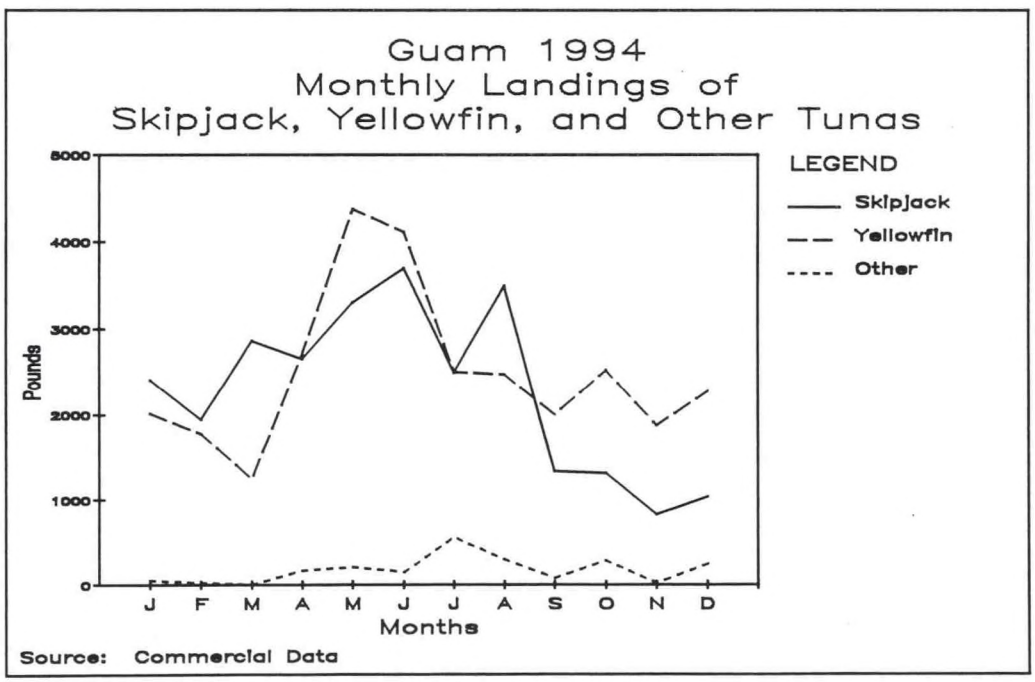

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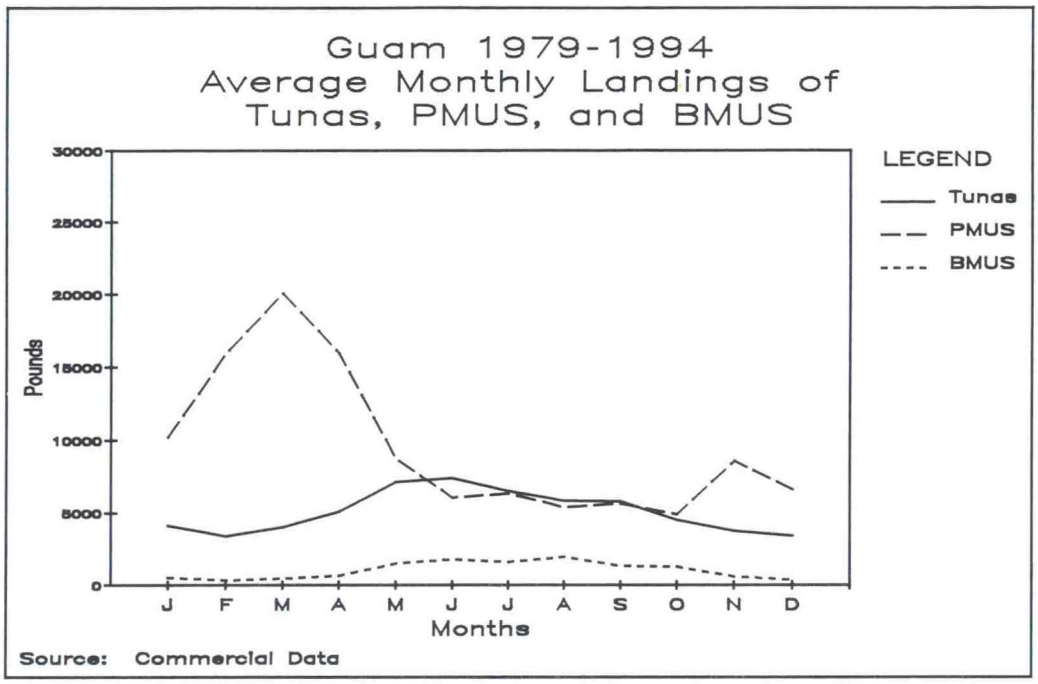

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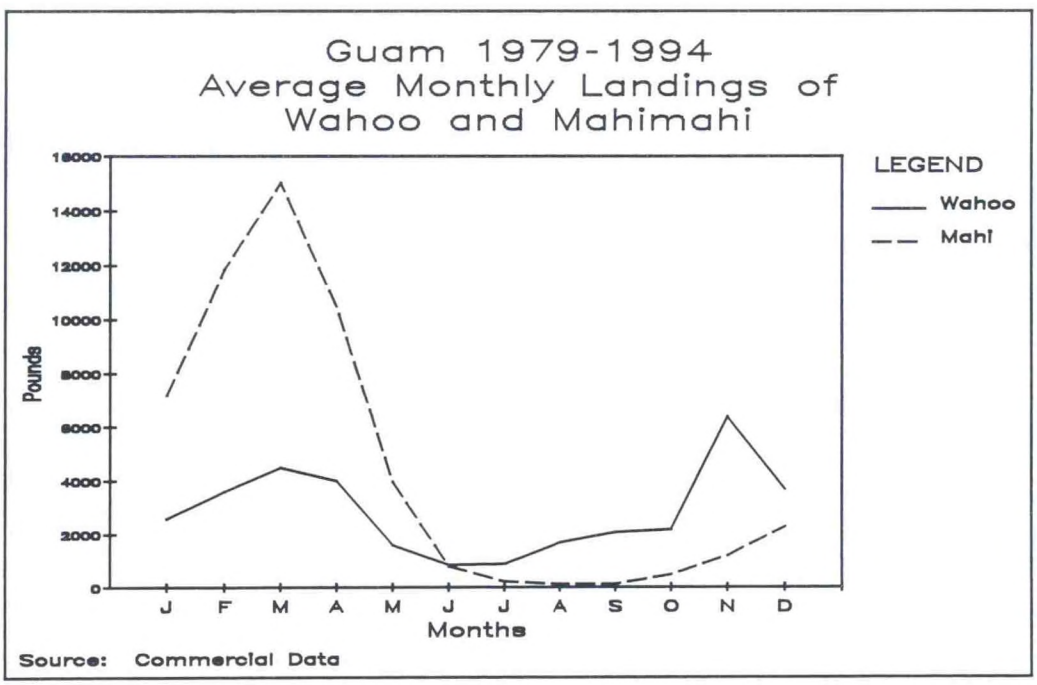

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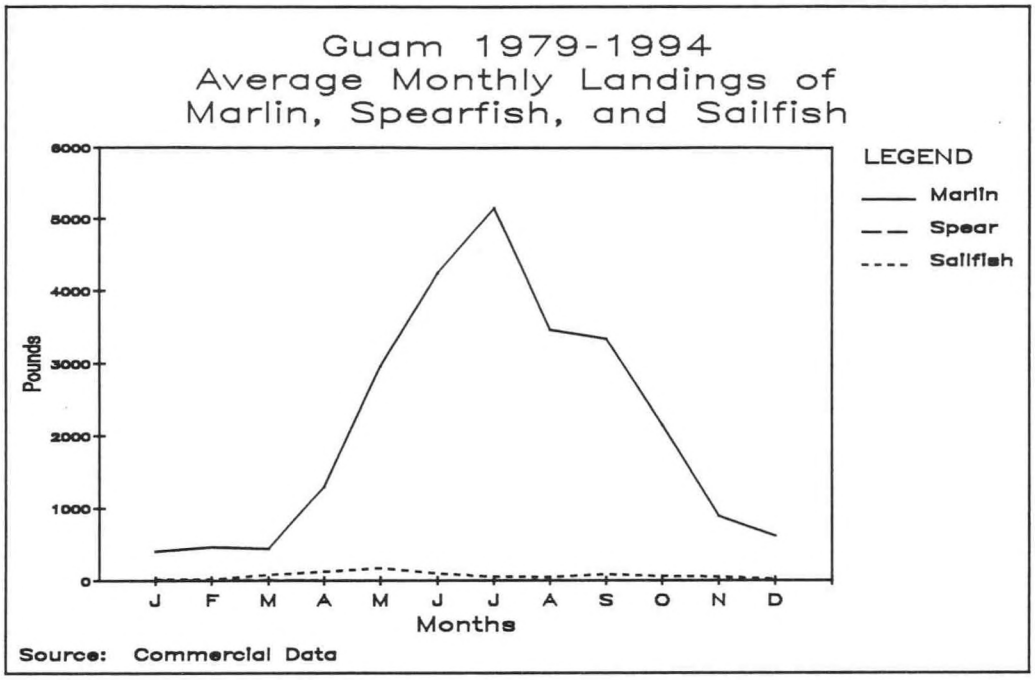

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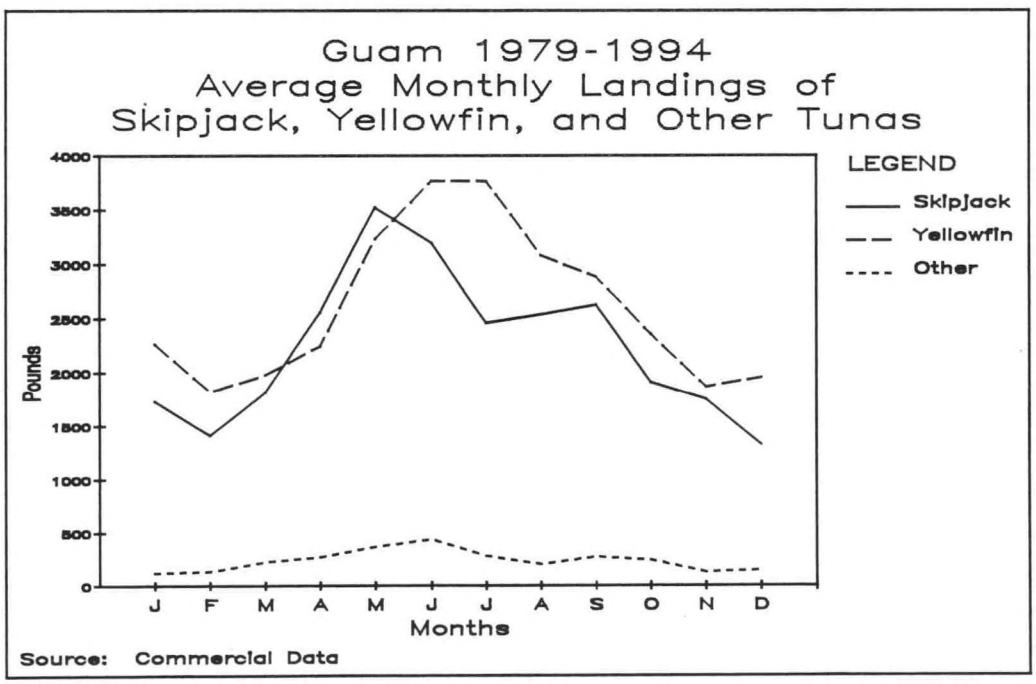

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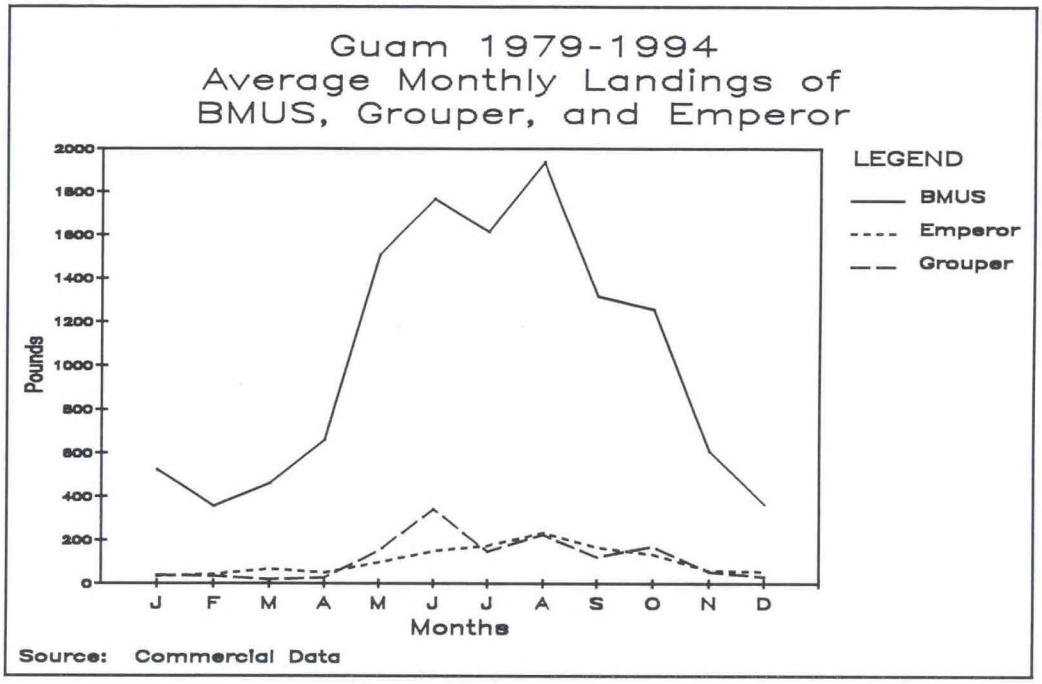

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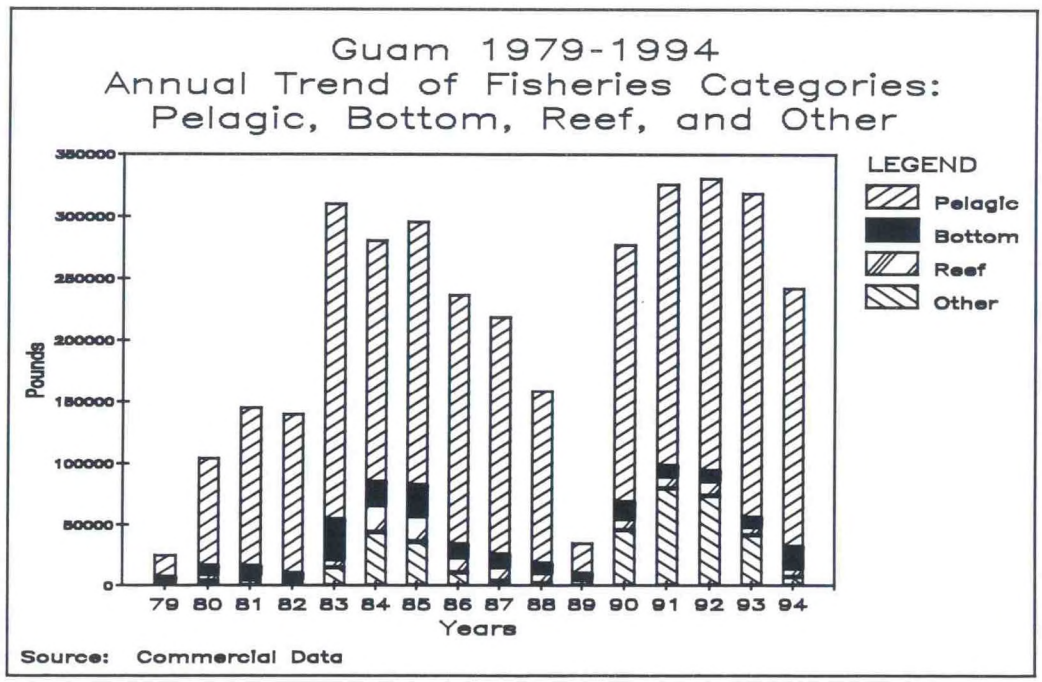

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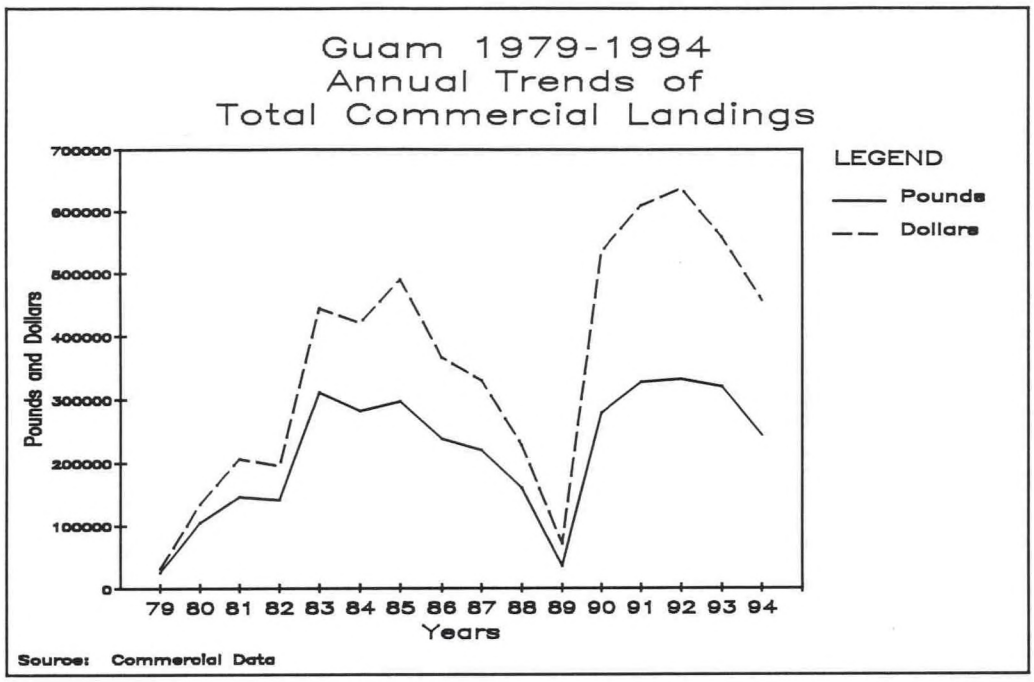

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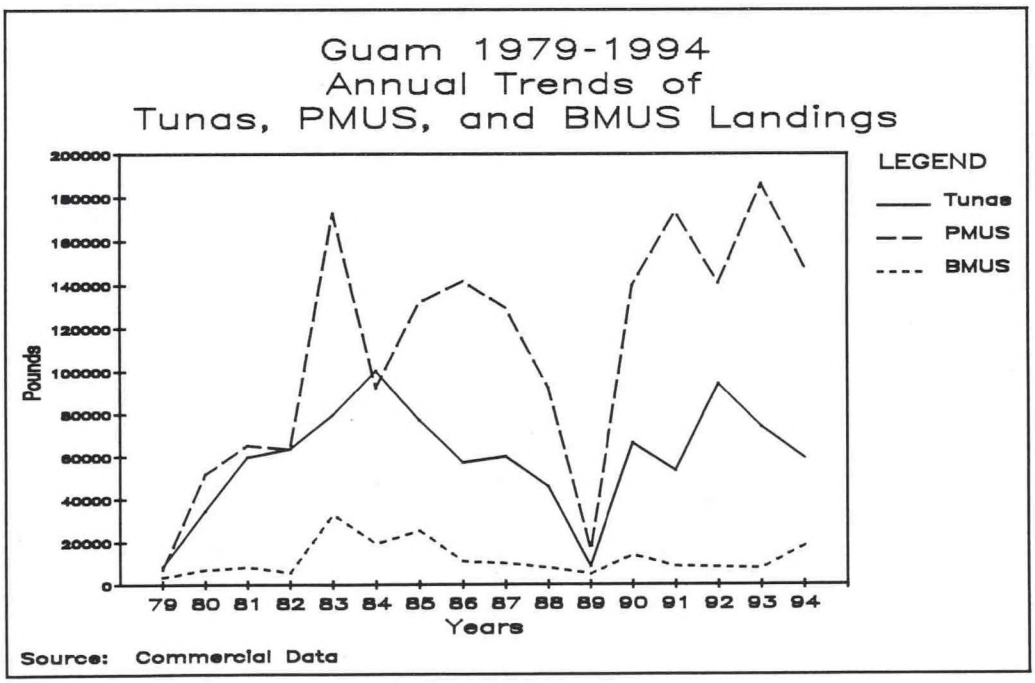

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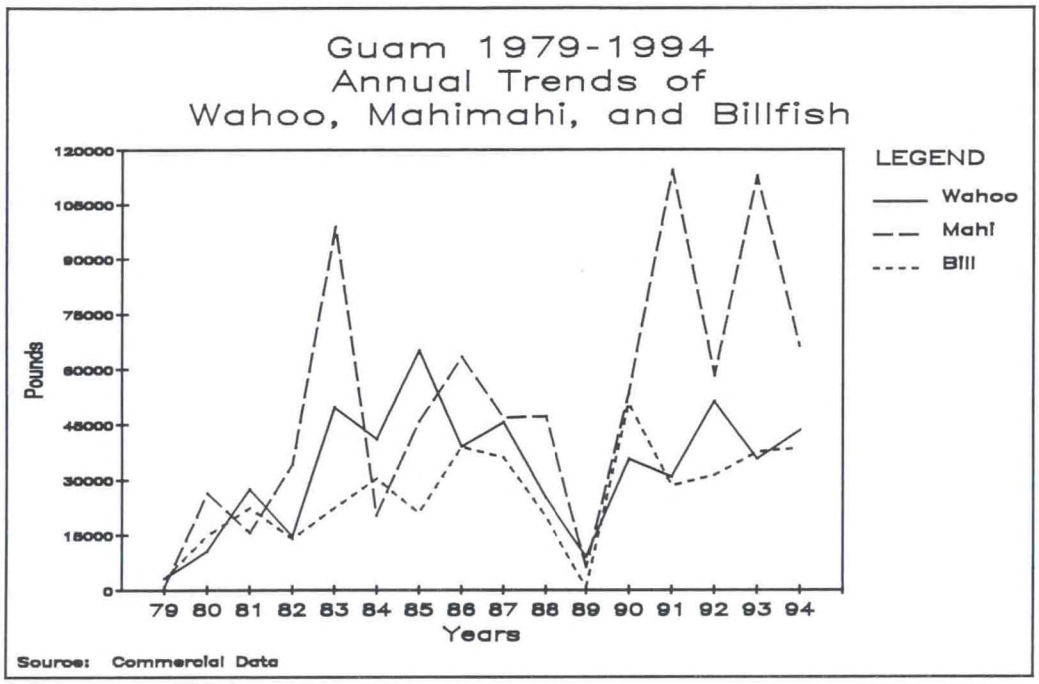

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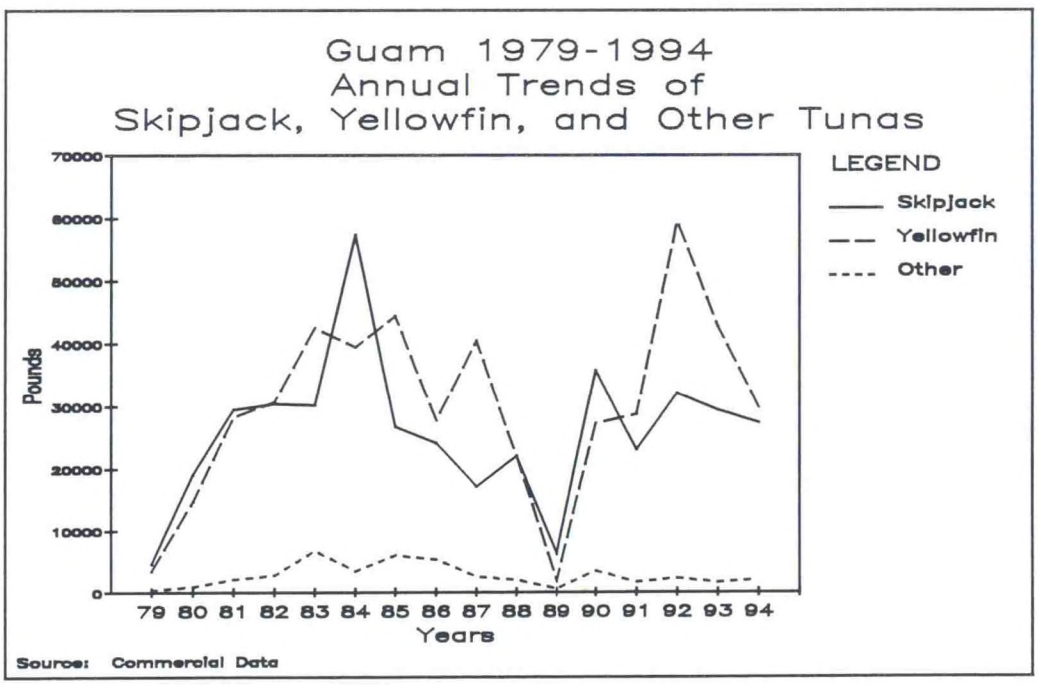

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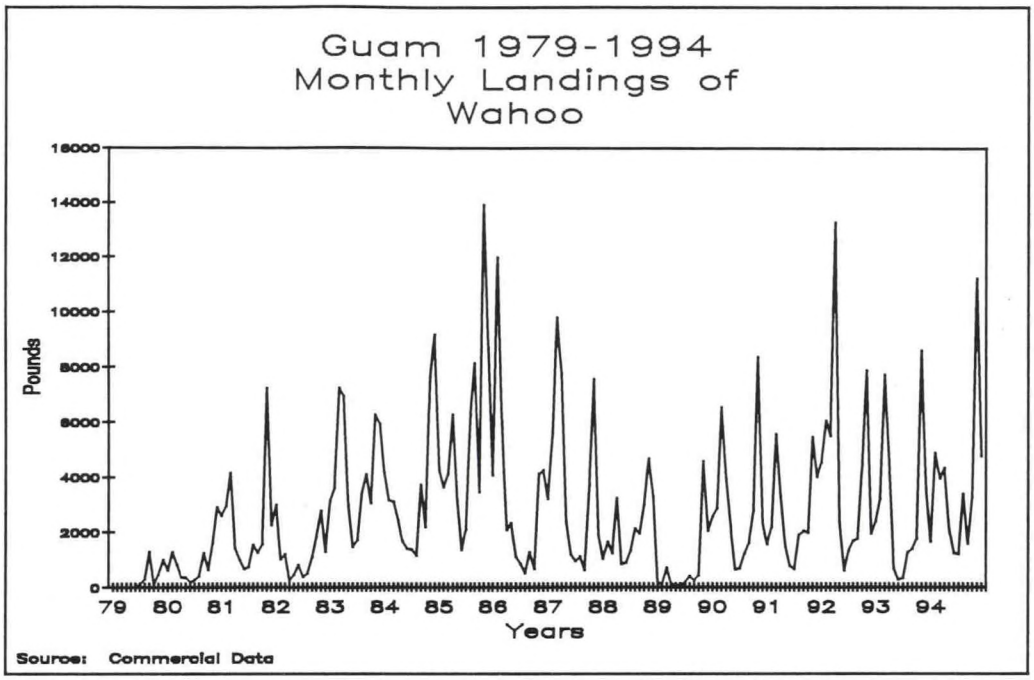

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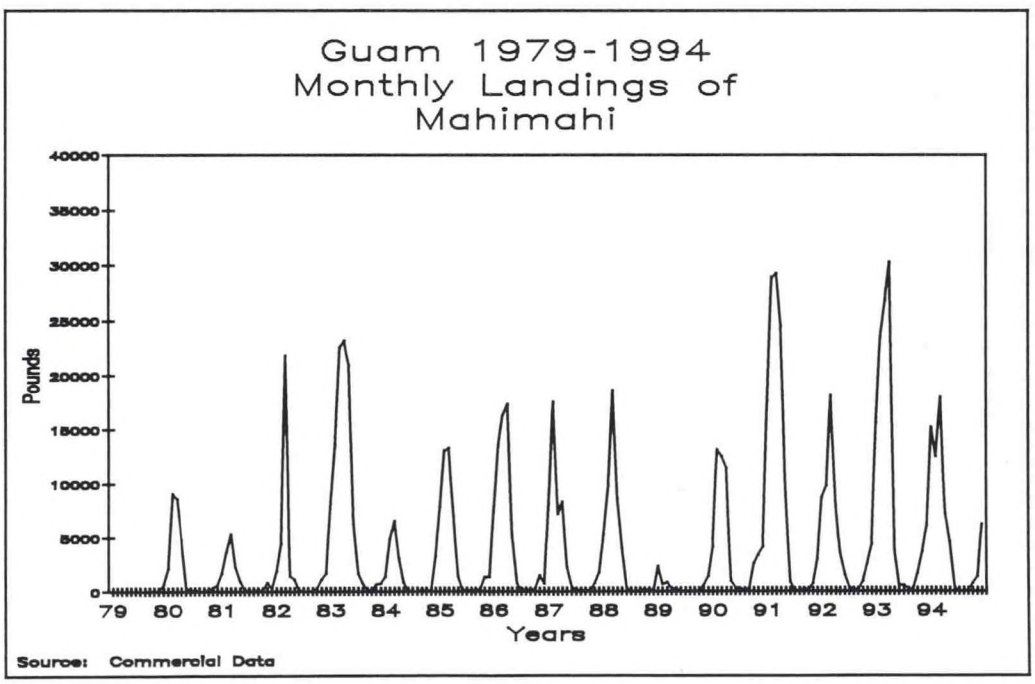

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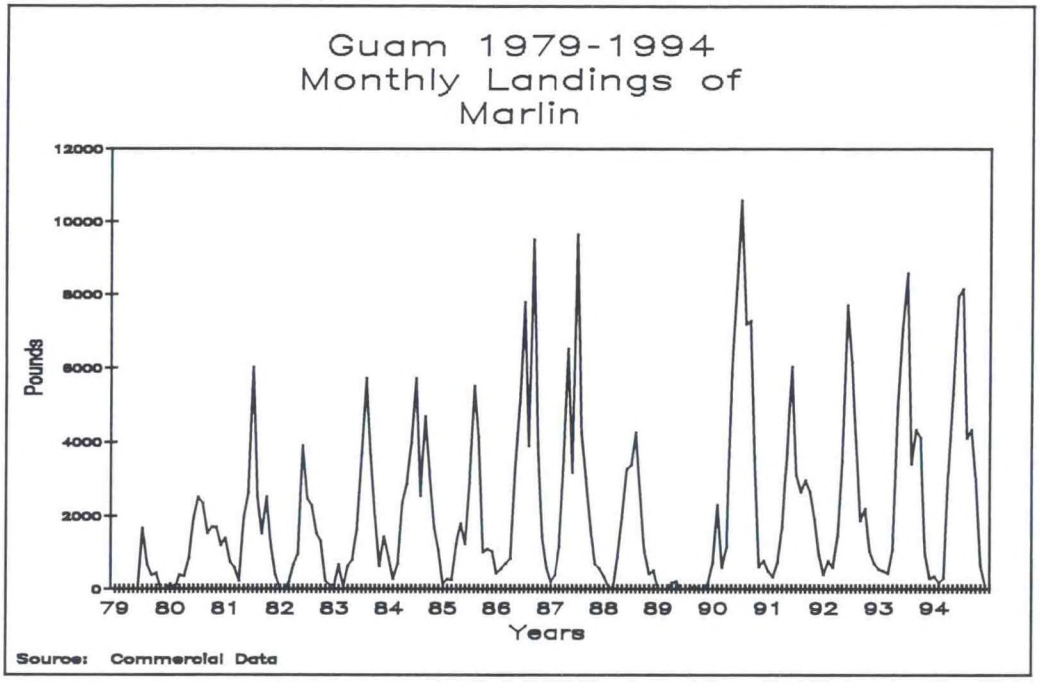

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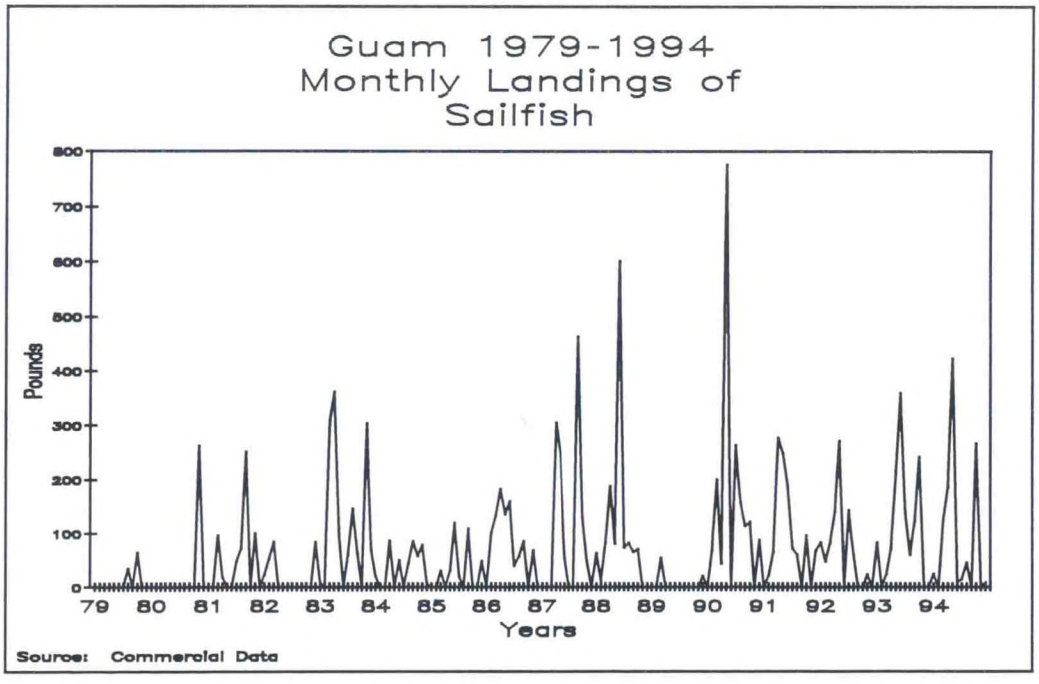

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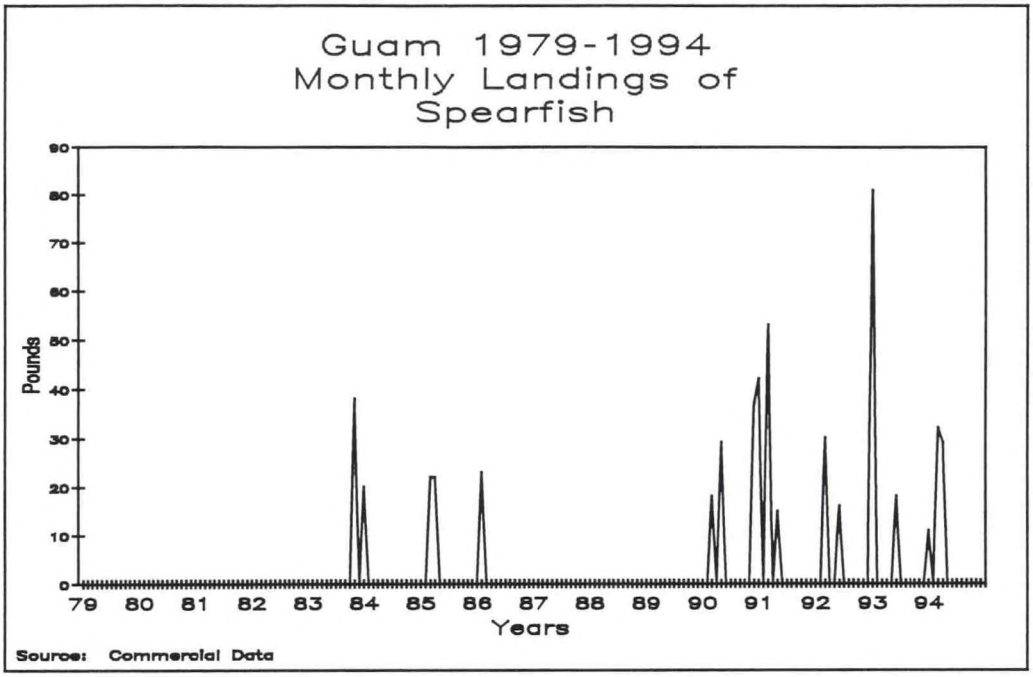

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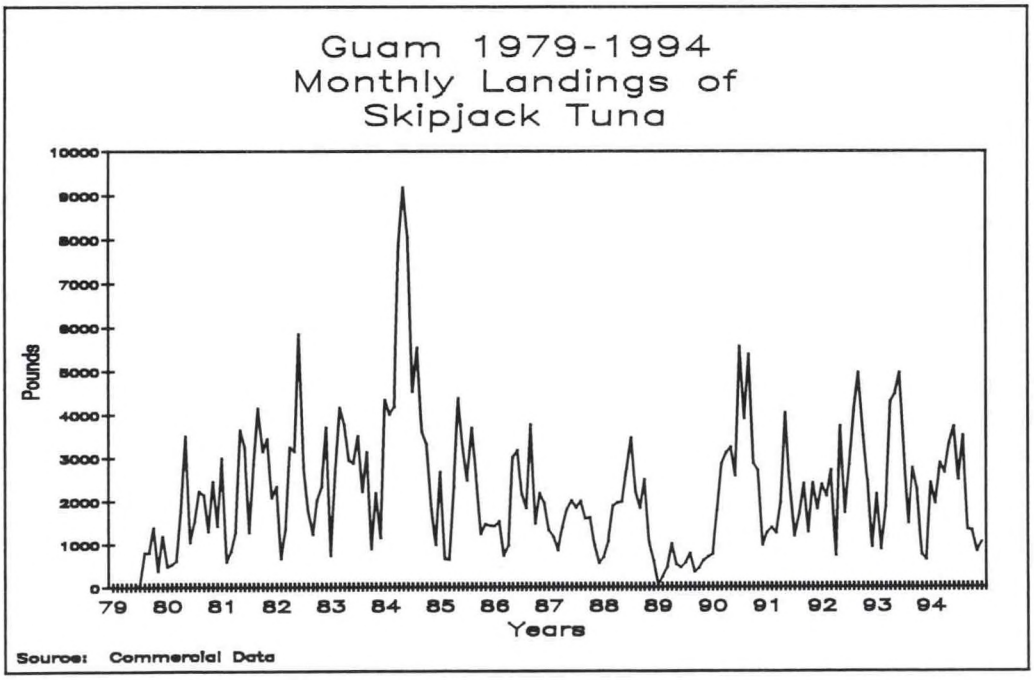

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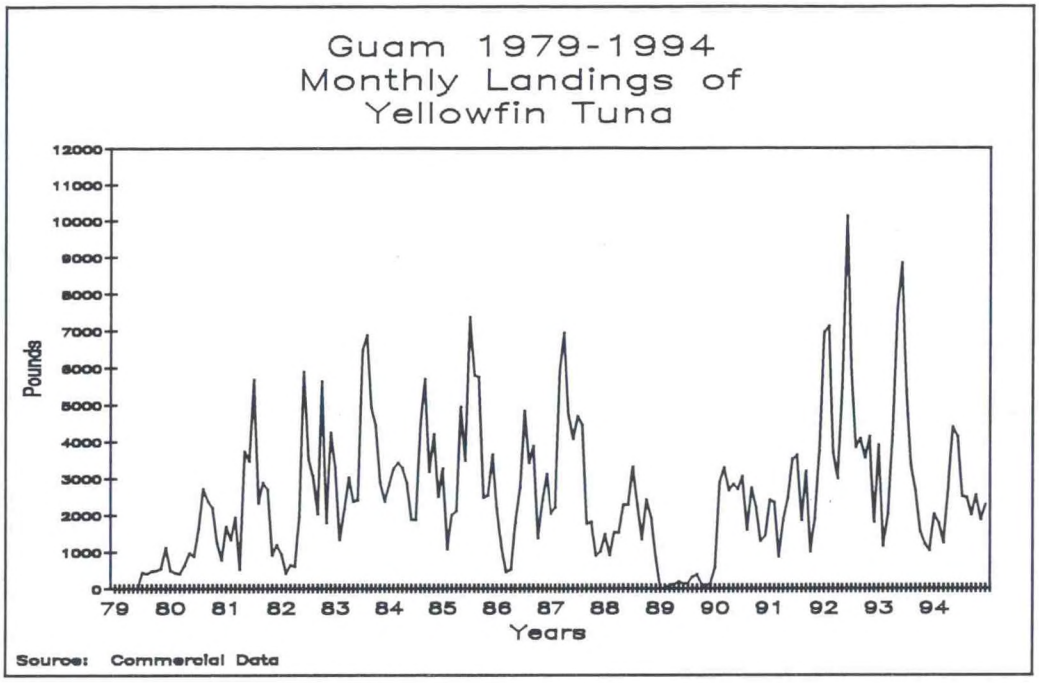

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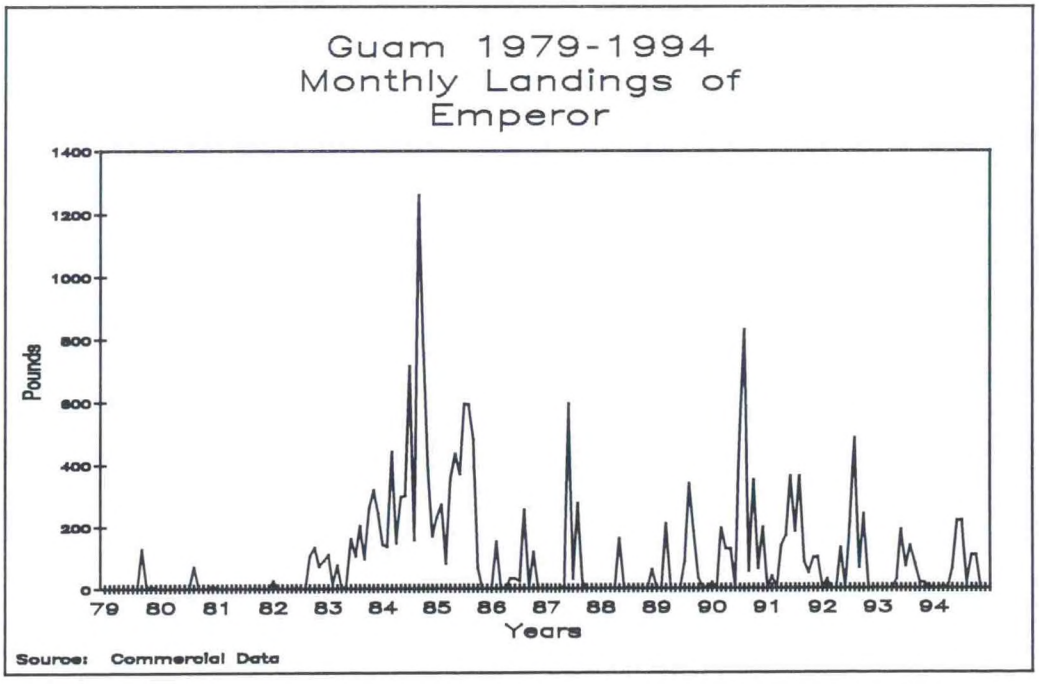

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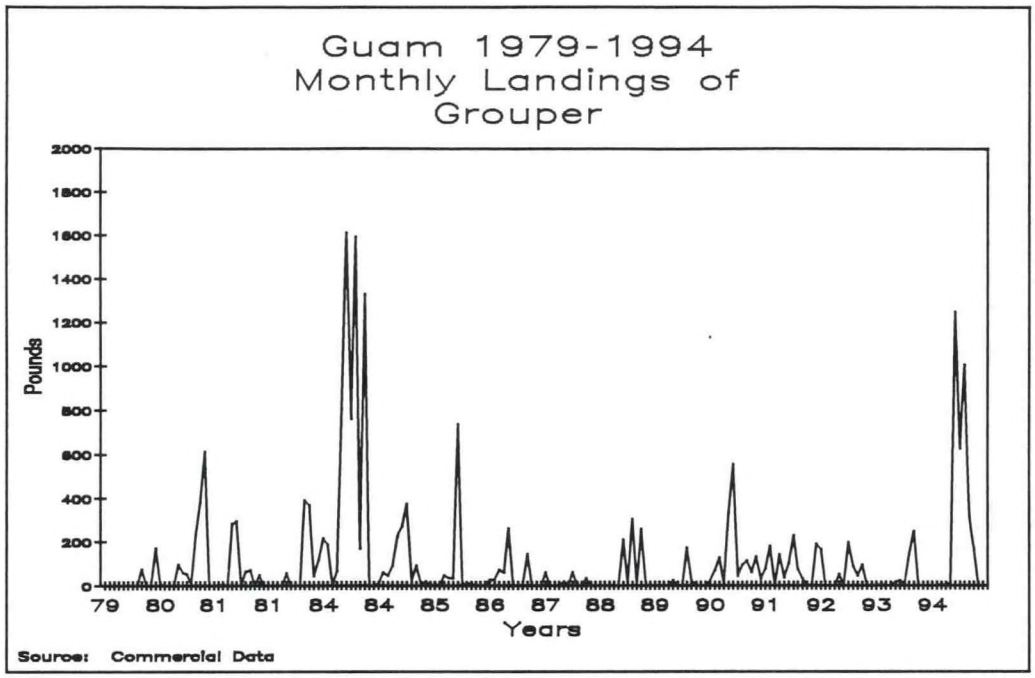

Guam 1979-1994
Monthly Landings of
Grouper
Pounds
2000
1800
1600
1400
1200
1000
800
600
400
200
0
79 80 81 81 84 84 85 86 87 88 89 90 91 92 93 94
Years
Source: Commercial Data

HAWAII

Fishery Statistics
1994

STATE OF HAWAII 1994 FISHERY STATISTICS

Compiled by

Division of Aquatic Resources

and the

Western Pacific Fishery Information Network

August 1996

CONTENTS

LIST OF HAWAII SUMMARY TABLES

LIST OF HAWAII FIGURES

LIST OF HAWAII FIGURES (cont.)

STATE OF HAWAII 1994 FISHERY STATISTICS

INTRODUCTION

The Hawaiian Archipelago stretches northwestward over 1,500 miles, from about lat. 19° N and long. 155° W to about lat. 28° N and long. 178° W. The seven main Hawaiian Islands--Hawaii, Maui, Lanai, Molokai, Oahu, Kauai, and Niihau--comprise over 99% of the total land area and have virtually all of the State's population of over 1 million residents. In 1994, 76% of the State's commercial catch was landed on Oahu, about 18% on Hawaii, 4% on Kauai, and 2% on Maui. The Department of Land and Natural Resources' Division of Aquatic Resources (DAR) has been collecting statistics on the commercial fisheries of Hawaii for over 40 years.

The fisheries of the State of Hawaii are quite diverse and vary from hand harvesting algae to large vessel fisheries, such as longlining and lobster fishing. The major fisheries include tuna fishing using several methods, longlining for broadbill swordfish, lobster trapping, hook-and-line bottom fishing for the grouper-snapper-jack complex, net fishing for such species as the bigeye scad, and trolling for such pelagic species as marlin, wahoo, and mahimahi. Of the approximately 16,000 vessels in Hawaii, about 80% are pleasure boats, 10% commercial fishing or charter boats, and the remainder are registered in other categories. The pleasure category includes boats used for recreational, subsistence, and part-time commercial fishing as well as boats not typically used for fishing such as sailboats. To fish commercially (i.e., sell catches or provide charter fishing services) in Hawaii requires purchasing commercial marine fishing license. In 1994, there were currently about 3,200 licensed commercial fishermen required to submit monthly reports to DAR. Substantial subsistence and recreational fisheries, which are primarily small boat, one-day fisheries, also exist. Summary data provided in this document were created from licensed commercial fishermen reports processed by DAR as of May 1996, and is believed to represent about 99% of what may eventually be submitted and processed.

DATA COLLECTING SYSTEM

The major data collecting system used by DAR is based on a State law that requires commercial fishermen to report their catches on a monthly basis. Several different data collection forms are used because of the diversity of fishing methods and a desire to obtain specific information on some of these methods. The vast majority of commercial fishermen use the standard C-3 Fish Catch Report, which is submitted each month and requires the following information for each trip taken:

Fisherman's name and commercial license number
Boat's name and its registration number
Date
Area or buoy fished
Type of gear used
Species caught
Number caught
Pounds caught
Pounds sold
Value of sales
Port of landing

The other forms used to report commercial catches are for specific fisheries including the C-4 Aku Catch Report for the pole-and-line or bait-boat fishery for skipjack tuna, the C-5 Flagline Catch Report for the longline fishery for tunas and other pelagic species, and the Pond Operator's Monthly Fish Report for operators of saltwater fish ponds. All of the forms request basic catch and revenue information by species, plus additional fishery-specific information such as effort and bait.

Commercial collectors of tropical marine fish are required to have an aquarium permit in addition to their commercial marine license and are required to report monthly on the C-6 Aquarium Fish Catch Report. However, the aquarium fish catch is not included in the statistics provided in this document.

Some of the advantages of a mandatory fisherman-reporting system are its relative efficiency, low cost, the potential for excellent percent coverage, and the amount of information that can be collected directly from the fishermen. The major disadvantage is that it places the responsibility for accurate data recording and timely data submission on the fishermen. The assumption is made, therefore, that the data submitted by the fishermen are complete and accurate. The DAR is continuing its efforts to improve the quality of data and decrease the time delays in receiving and processing the data. No real measurement is available for what percent of the total commercial catch is actually reported to DAR, but estimates have ranged from about 10% to over 99%, depending on the species and fishery. The overall percent coverage was probably over 80% in 1994.

DATA PROCESSING SYSTEM

When the various data reporting forms are received by DAR, they undergo a series of coding and editing procedures before being sent out for keypunching. Forms that fail the initial editing by DAR staff are returned to the fishermen for correction and resubmission. Notices are sent to fishermen who fall more than a few months behind in the submission of their reports. Once the data are keypunched, computer generated reports are used

by DAR staff to verify and correct errors in the database. When the database is considered to be reasonably complete and error free, it is ready for production of a variety of summary catch reports.

Since this system is based on submission of data from fishermen, late reporting has always been a problem. The DAR has tried to include as much information as possible in its published monthly and annual reports. Before about 1982, statistics from fishermen's reports received after the generation of the computerized monthly summary reports were hand tallied and added to the final version of the reports before they were published. However, because of processing restrictions or complications, the original databases were not updated. Since 1982, additional editing and data correction procedures were implemented, making database updates possible. The DAR has made significant progress recently in reducing late reporting by fishermen and the time lag before data are available. Data presented in this report series for 1979-86 were based on published monthly DAR reports and differ from final annual data base totals by some small percent (refer to Volumes I and III for details). Beginning with 1987, data were processed directly from the annual detailed databases received from DAR after enough time had passed to ensure that a high percentage of the required fisherman had submitted all reports.

DATA REPORTING SYSTEM

Recorded in DAR's monthly landings reports are more than 150 marine species and species groups, many of which are insignificant in the total catch. To help reduce the volume of this document and improve the usability of the tables, WPACFIN staff combined some of the less important species, reorganized the order of presentation, created a new species coding system, and translated all records in the database. The new coding system has 100 species and species groups based on flexible ecological and phylogenetic criteria. All of the commercially important pelagic and bottom fish species or unique species groups have individual codes and are reported separately. Marine pond catches are included in the species totals, but are less than 0.4% of the total landings for each year.

The monthly and annual reports included in this document contain the common name, weight in pounds, value rounded to the nearest dollar, and the average price per pound for each species. Also included are separate annual reports for commercial fishermen's landings that were not sold. Each monthly report contains a subtotal for the sum of all species for that month, and the December report contains the December subtotal and the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species combined for the calendar year.

Four graphs of monthly landings are presented for 1994, and 26 trend and seasonality graphs, based on 1979-94 data, are also provided. The following species, species groups, and abbreviations are used in the tables and graphs of Hawaii's fishery statistics:

I. Pelagic Management Unit Species (PMUS)

Although the Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to include tunas in the Pacific PMUS (PPMUS), this report series will continue to specify tunas as a separate category from the PPMUS. The PMUS category in this report includes:

Mahimahi (dolphin)	Wahoo
Blue marlin	Black marlin
Striped marlin	Shortnose spearfish
Sailfish	Broadbill swordfish
Sharks	Billfish (misc)

II. Bottomfish Management Unit Species (BMUS)

Deep water jacks (misc.)	Amberjack
Pig-lipped ulua (jack)	White ulua
Giant sea bass	Blue lined snapper
Ehu (red snapper)	Gindai (flower snapper)
Kalekale (pink snapper)	Lehi (silverjaw snapper)
Onaga (long tailed snapper)	Opakapaka (pink snapper)
Uku (gray snapper)	

III. Billfish

Billfish (misc.)	Blue marlin
Black marlin	Striped marlin
Shortbill spearfish	Sailfish
Swordfish	

IV. Tunas

Tunas (misc.)	Skipjack tuna
Yellowfin tuna	Albacore
Bigeye tuna	Kawakawa
Dogtooth tuna	

V. Other Tunas

All of the previous tunas excluding skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:

Rainbow runner	Barracuda
Japanese mackerel	Frigate tuna
Ocean sunfish	Ocean moonfish

B. Bottom Fish

All BMUS plus the following:

Blue crevally	Dobe ulua (jack)
Paapaa ulua	Blue spot grouper
Porgy	

C. Reef Fish

Reef jacks (misc.)	Squirrelfish
Trumpetfish	Scorpionfish
Mountain bass	Bigeyes
Cardinalfish	Goatfish
Rudderfish	Butterflyfish
Damselfish	Hawkfish
Tilapia	Wrasse
Parrotfish	Gobies
Surgeonfish-tangs	Flounders
Triggerfish	Filefish
Pufferfish	

D. Other

Miscellaneous	Rays
Eels	Bigeye scad (akule)
Mackerel scad (opelu)	Leatherback
Anchovy	Ten pounder
Bonefish	Herring-sardine
Milkfish	Flyingfish
Needlefish	Halfbeaks
Threadfin	Mullet
Pomfret	Snake mackerel
Freshwater fish	Spiny lobster
Slipper lobster	Crabs
Shrimp (freshwater)	Shrimp (saltwater)
Octopus	Squid
Limpets (saltwater)	Limpets (freshwater)
Clams	Stoney corals
Precious corals	Sea urchins
Sea cucumbers	Sea turtles
Algae	

Table V.1.1

Hawaii 1994 Annual Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	11,864	23,622	1.99
Sharks	86,813	78,893	0.91
Eels	875	814	0.93
Alfonsin	10	45	4.45
Bigeye scad (akule)	576,915	987,884	1.71
Mackerel scad	284,840	530,220	1.86
Leatherback	612	1,035	1.69
Ten pounder	2,695	2,553	0.95
Bonefish	6,184	6,050	0.98
Milkfish	1,420	1,972	1.39
Needlefish	314	327	1.04
Threadfin	884	4,656	5.27
Mullet	6,453	17,580	2.72
Pomfret	93,375	146,411	1.57
Snake mackerel	768	1,114	1.45
Jacks (misc)	33,111	65,933	1.99
Amberjack	577	580	1.00
Blue crevally	2,366	4,083	1.73
Pig-lipped ulua	58,459	96,952	1.66
Dobe ulua	22	55	2.48
Paapaa ulua	5,171	10,994	2.13
White ulua	10,523	12,848	1.22
Black ulua	341	665	1.95
Giant sea bass	70,783	200,552	2.83
Blue spot grouper	86	253	2.95
Snappers	3,211	9,875	3.08
Blue lined snapper	56,188	51,161	0.91
Ehu (red snapper)	32,864	136,261	4.15
Gindai (flower snapper)	8,353	22,735	2.72
Kalekale (pink snapper)	22,122	59,598	2.69
Lehi (silverjaw)	10,340	31,373	3.03
Onaga (red snapper)	89,048	521,672	5.86
Opakapaka (pink snapper)	291,948	1,195,597	4.10
Uku (gray snapper)	136,694	394,015	2.88
Porgy	2,470	6,130	2.48
Reef jacks	66	190	2.87
Squirrelfish	35,799	113,638	3.17
Trumpetfish	98	167	1.71
Scorpionfish	3,303	12,892	3.90
Mountain bass	4,170	9,991	2.40
Bigeyes	4,907	12,648	2.58
Cardinalfish	24	45	1.87
Goatfish	43,221	128,695	2.98

Table V.1.1 (Cont.)

Species	Pounds	Value	$/lb
Rudderfish	9,958	8,550	0.86
Damselfish	1,071	1,933	1.81
Hawkfish	815	1,609	1.97
Tilapia	9,830	11,311	1.15
Wrasse	6,666	15,665	2.35
Parrotfish	36,331	82,037	2.26
Surgeon/tangs	75,743	102,677	1.36
Flounders	60	78	1.30
Triggerfish	108	33	0.30
Filefish	295	494	1.67
Rainbow runner	5,034	7,256	1.44
Mahimahi (dolphin)	833,526	1,729,737	2.08
Barracudas	25,573	34,328	1.34
Wahoo	326,248	948,157	2.91
Japanese mackerel	40	82	2.05
Tunas	35,277	346,690	9.83
Skipjack tuna	1,447,971	2,304,903	1.59
Yellowfin tuna	3,903,905	9,599,164	2.46
Albacore	1,180,833	1,341,962	1.14
Bigeye tuna	3,810,398	14,179,115	3.72
Kawakawa	18,894	26,823	1.42
Frigate tuna	1,916	2,687	1.40
Broadbill swordfish	4,545,378	15,369,771	3.38
Blue marlin	1,154,587	1,251,891	1.08
Black marlin	29,385	34,116	1.16
Striped marlin	739,608	1,202,821	1.63
Shortnose spearfish	167,408	187,414	1.12
Sailfish	6,652	8,082	1.21
Ocean moonfish	434,508	485,946	1.12
Spiny lobster	11,133	165,369	14.85
Slipper lobster	4,029	42,180	10.47
Crabs	35,103	146,008	4.16
Shrimp (freshwater)	95	475	5.00
Shrimp (saltwater)	66,942	347,362	5.19
Octopus	10,907	32,315	2.96
Squid	7,598	19,633	2.58
Limpets (saltwater)	9,316	44,320	4.76
Precious corals	4,209	84,180	20.00
Sea cucumbers	63	443	7.03
Algae	17,657	62,738	3.55
** TOTAL **	20,975,357	55,133,126	2.63

Table V.1.2

Hawaii 1994 Annual Commercial Landings (not sold)

Species	Pounds
Miscellaneous	615
Sharks	82,775
Eels	111
Bigeye scad (akule)	25,931
Mackerel scad	18,353
Leatherback	171
Anchovy	20
Ten pounder	64
Bonefish	1,070
Herring/sardine	39
Milkfish	47
Needlefish	34
Threadfin	451
Mullet	726
Pomfret	453
Snake mackerel	818
Jacks (misc)	7,589
Amberjack	18,134
Blue crevally	556
Pig-lipped ulua	1,003
Paapaa ulua	366
White ulua	1,533
Black ulua	5
Giant sea bass	1,076
Blue spot grouper	105
Snappers	113
Blue lined snapper	3,606
Ehu (red snapper)	2,291
Gindai (flower snapper)	574
Kalekale (pink snapper)	2,803
Lehi (silverjaw)	666
Onaga (red snapper)	3,194
Opakapaka (pink snapper)	12,267
Uku (gray snapper)	5,548
Porgy	289
Squirrelfish	3,055
Trumpetfish	31
Scorpionfish	267
Mountain bass	466
Bigeyes	427
Cardinalfish	1
Goatfish	5,183
Rudderfish	778

Table V.1.2 (Cont.)

Species	Pounds
Damselfish	98
Hawkfish	56
Tilapia	1,523
Wrasse	1,137
Parrotfish	3,681
Surgeon/tangs	4,660
Flounders	3
Triggerfish	401
Filefish	83
Pufferfish	3
Rainbow runner	832
Mahimahi (dolphin)	79,427
Barracudas	3,037
Wahoo	29,412
Tunas	280
Skipjack tuna	81,321
Yellowfin tuna	139,011
Albacore	4,403
Bigeye tuna	59,572
Kawakawa	7,769
Frigate tuna	282
Broadbill swordfish	20,072
Blue marlin	84,694
Black marlin	2,731
Striped marlin	30,573
Shortnose spearfish	11,292
Sailfish	460
Ocean moonfish	11,274
Spiny lobster	773
Slipper lobster	25
Crabs	4,536
Shrimp (freshwater)	39
Shrimp (saltwater)	1,640
Octopus	5,537
Squid	2,915
Limpets (saltwater)	2,128
Precious corals	145
Algae	1,144
** TOTAL **	800,573

Table V.1.3

Hawaii January 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	724	1,700	2.35
Sharks	7,289	5,829	0.80
Bigeye scad (akule)	46,981	80,340	1.71
Mackerel scad	26,781	45,400	1.70
Leatherback	18	31	1.73
Ten pounder	348	343	0.99
Bonefish	2,459	2,037	0.83
Milkfish	72	125	1.74
Needlefish	72	66	0.91
Threadfin	84	418	4.97
Mullet	115	317	2.75
Pomfret	6,135	12,460	2.03
Snake mackerel	123	95	0.77
Jacks (misc)	2,429	5,460	2.25
Amberjack	243	169	0.69
Blue crevally	72	97	1.34
Pig-lipped ulua	3,280	6,591	2.01
Paapaa ulua	216	635	2.94
White ulua	395	635	1.61
Black ulua	12	18	1.50
Giant sea bass	3,890	13,959	3.59
Snappers	121	362	2.99
Blue lined snapper	6,736	4,320	0.64
Ehu (red snapper)	3,627	13,030	3.59
Gindai (flower snapper)	848	2,161	2.55
Kalekale (pink snapper)	2,044	4,273	2.09
Lehi (silverjaw)	1,648	5,394	3.27
Onaga (red snapper)	10,376	57,901	5.58
Opakapaka (pink snapper)	40,639	155,370	3.82
Uku (gray snapper)	3,610	12,015	3.33
Porgy	120	290	2.41
Squirrelfish	2,883	9,121	3.16
Trumpetfish	10	5	0.49
Scorpionfish	484	1,801	3.72
Mountain bass	296	732	2.47
Bigeyes	239	621	2.60
Goatfish	5,174	13,905	2.69
Rudderfish	3,444	2,187	0.64
Damselfish	50	81	1.63
Hawkfish	141	275	1.95
Tilapia	2,096	1,449	0.69
Wrasse	847	1,865	2.20

Table V.1.3 (Cont.)

Species	Pounds	Value	$/lb
Parrotfish	3,407	7,355	2.16
Surgeon/tangs	6,125	7,992	1.30
Triggerfish	12	1	0.10
Filefish	17	28	1.62
Rainbow runner	114	150	1.32
Mahimahi (dolphin)	13,202	39,919	3.02
Barracudas	835	1,215	1.45
Wahoo	14,178	52,079	3.67
Tunas	962	22,016	22.89
Skipjack tuna	80,787	115,311	1.43
Yellowfin tuna	296,586	694,645	2.34
Albacore	32,831	36,610	1.12
Bigeye tuna	592,856	2,326,128	3.92
Kawakawa	3,015	4,229	1.40
Frigate tuna	230	344	1.49
Broadbill swordfish	263,128	1,068,215	4.06
Blue marlin	66,569	70,603	1.06
Black marlin	663	601	0.91
Striped marlin	126,472	147,433	1.17
Shortnose spearfish	17,246	19,265	1.12
Ocean moonfish	31,556	38,231	1.21
Spiny lobster	70	450	6.42
Slipper lobster	15	98	6.50
Crabs	2,802	10,678	3.81
Shrimp (saltwater)	1,916	10,462	5.46
Octopus	924	2,887	3.12
Limpets (saltwater)	567	2,849	5.02
Algae	1,252	6,002	4.79
** SUBTOTAL **	1,745,508	5,149,671	2.95

Table V.1.4

Hawaii February 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,366	2,227	1.63
Sharks	16,689	13,726	0.82
Eels	27	24	0.87
Bigeye scad (akule)	39,640	69,177	1.75
Mackerel scad	18,357	34,852	1.90
Leatherback	27	51	1.87
Ten pounder	357	332	0.93
Bonefish	225	235	1.04
Needlefish	4	6	1.50
Threadfin	83	462	5.56
Mullet	86	239	2.77
Pomfret	11,004	13,886	1.26
Snake mackerel	26	3	0.10
Jacks (misc)	1,760	3,582	2.04
Blue crevally	74	113	1.53
Pig-lipped ulua	9,248	15,686	1.70
Dobe ulua	9	28	3.14
Paapaa ulua	463	946	2.04
White ulua	16	25	1.55
Black ulua	16	21	1.30
Giant sea bass	9,205	22,579	2.45
Snappers	130	428	3.29
Blue lined snapper	2,646	3,010	1.14
Ehu (red snapper)	3,546	13,115	3.70
Gindai (flower snapper)	659	1,547	2.35
Kalekale (pink snapper)	2,601	6,501	2.50
Lehi (silverjaw)	1,220	3,521	2.89
Onaga (red snapper)	8,856	50,081	5.66
Opakapaka (pink snapper)	34,361	123,461	3.59
Uku (gray snapper)	4,903	15,450	3.15
Porgy	505	1,199	2.38
Squirrelfish	1,885	6,306	3.35
Scorpionfish	507	2,110	4.16
Mountain bass	543	1,114	2.05
Bigeyes	294	852	2.90
Goatfish	3,074	9,216	3.00
Rudderfish	401	522	1.30
Damselfish	55	97	1.76
Hawkfish	60	107	1.78
Tilapia	6	30	5.00
Wrasse	759	1,681	2.22
Parrotfish	3,229	6,436	1.99

Table V.1.4 (Cont.)

Species	Pounds	Value	$/lb
Surgeon/tangs	4,100	5,939	1.45
Triggerfish	8	6	0.70
Filefish	36	69	1.92
Rainbow runner	249	412	1.65
Mahimahi (dolphin)	17,311	43,708	2.52
Barracudas	712	1,188	1.67
Wahoo	18,520	65,938	3.56
Japanese mackerel	39	81	2.09
Tunas	4,897	85,741	17.51
Skipjack tuna	94,670	163,432	1.73
Yellowfin tuna	307,550	695,748	2.26
Albacore	77,516	72,712	0.94
Bigeye tuna	607,857	2,329,739	3.83
Kawakawa	801	1,117	1.39
Frigate tuna	201	305	1.52
Broadbill swordfish	554,673	1,955,055	3.52
Blue marlin	70,420	79,632	1.13
Black marlin	1,373	1,436	1.05
Striped marlin	78,756	135,613	1.72
Shortnose spearfish	12,604	15,452	1.23
Sailfish	68	37	0.55
Ocean moonfish	38,734	37,516	0.97
Spiny lobster	163	1,105	6.78
Crabs	3,412	13,856	4.06
Shrimp (saltwater)	1,416	7,080	5.00
Octopus	578	2,017	3.49
Squid	40	120	3.00
Limpets (saltwater)	337	1,475	4.38
Sea cucumbers	21	150	7.13
Algae	995	4,294	4.32
** SUBTOTAL **	2,076,979	6,145,955	2.96

Table V.1.5

Hawaii March 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,277	3,204	2.51
Sharks	11,519	13,160	1.14
Eels	27	21	0.76
Bigeye scad (akule)	37,069	69,385	1.87
Mackerel scad	16,053	30,688	1.91
Leatherback	48	71	1.48
Ten pounder	243	236	0.97
Bonefish	449	536	1.19
Milkfish	778	992	1.28
Needlefish	12	18	1.50
Threadfin	66	383	5.81
Mullet	1,929	5,280	2.74
Pomfret	9,734	13,033	1.34
Snake mackerel	215	277	1.29
Jacks (misc)	2,158	4,221	1.96
Amberjack	94	79	0.84
Blue crevally	88	164	1.86
Pig-lipped ulua	8,731	15,253	1.75
Paapaa ulua	582	1,161	2.00
White ulua	2,633	3,658	1.39
Black ulua	13	13	1.00
Giant sea bass	9,211	25,851	2.81
Snappers	212	613	2.89
Blue lined snapper	5,857	5,526	0.94
Ehu (red snapper)	4,020	14,944	3.72
Gindai (flower snapper)	984	2,707	2.75
Kalekale (pink snapper)	2,041	4,970	2.43
Lehi (silverjaw)	1,080	3,088	2.86
Onaga (red snapper)	8,796	46,339	5.27
Opakapaka (pink snapper)	35,532	139,527	3.93
Uku (gray snapper)	8,971	27,476	3.06
Porgy	320	871	2.72
Reef jacks	1	4	4.00
Squirrelfish	2,995	9,685	3.23
Scorpionfish	477	1,939	4.06
Mountain bass	658	1,622	2.47
Bigeyes	731	1,991	2.72
Goatfish	3,826	11,990	3.13
Rudderfish	564	605	1.07
Damselfish	84	136	1.62
Hawkfish	60	142	2.36
Tilapia	1,086	857	0.79

Table V.1.5 (Cont.)

Species	Pounds	Value	$/lb
Wrasse	721	1,715	2.38
Parrotfish	3,318	6,807	2.05
Surgeon/tangs	6,330	8,394	1.33
Triggerfish	31	15	0.47
Filefish	67	126	1.87
Rainbow runner	212	343	1.62
Mahimahi (dolphin)	35,049	93,740	2.67
Barracudas	1,157	1,859	1.61
Wahoo	28,413	90,624	3.19
Japanese mackerel	1	1	0.50
Tunas	1,205	17,401	14.44
Skipjack tuna	79,973	162,831	2.04
Yellowfin tuna	163,090	423,162	2.59
Albacore	42,038	55,012	1.31
Bigeye tuna	243,523	1,114,142	4.58
Kawakawa	1,028	1,781	1.73
Frigate tuna	86	144	1.68
Broadbill swordfish	850,408	2,731,899	3.21
Blue marlin	63,981	82,559	1.29
Black marlin	2,036	3,370	1.66
Striped marlin	54,645	124,036	2.27
Shortnose spearfish	14,388	23,646	1.64
Sailfish	61	79	1.30
Ocean moonfish	37,152	41,430	1.12
Spiny lobster	28	170	6.08
Slipper lobster	1	7	7.00
Crabs	1,918	8,592	4.48
Shrimp (saltwater)	2,345	11,414	4.87
Octopus	584	2,144	3.67
Squid	210	642	3.06
Limpets (saltwater)	825	3,391	4.11
Precious corals	225	4,500	20.00
Sea cucumbers	7	46	6.50
Algae	1,462	5,423	3.71
** SUBTOTAL **	1,817,742	5,484,158	3.02

Table V.1.6

Hawaii April 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,116	2,549	2.28
Sharks	6,459	7,826	1.21
Eels	36	25	0.68
Bigeye scad (akule)	51,506	93,997	1.82
Mackerel scad	11,687	23,519	2.01
Leatherback	88	108	1.23
Ten pounder	155	155	1.00
Bonefish	673	671	1.00
Milkfish	27	48	1.77
Needlefish	3	4	1.25
Threadfin	62	311	5.02
Mullet	613	1,718	2.80
Pomfret	6,332	16,136	2.55
Snake mackerel	161	311	1.93
Jacks (misc)	2,335	4,409	1.89
Amberjack	36	40	1.11
Blue crevally	67	105	1.56
Pig-lipped ulua	4,997	11,978	2.40
Paapaa ulua	630	1,680	2.67
White ulua	1,239	1,627	1.31
Black ulua	70	70	1.00
Giant sea bass	4,819	16,322	3.39
Snappers	343	1,045	3.05
Blue lined snapper	6,345	5,695	0.90
Ehu (red snapper)	2,563	12,182	4.75
Gindai (flower snapper)	761	1,725	2.27
Kalekale (pink snapper)	1,996	7,046	3.53
Lehi (silverjaw)	798	2,856	3.58
Onaga (red snapper)	7,296	55,236	7.57
Opakapaka (pink snapper)	18,810	96,914	5.15
Uku (gray snapper)	10,925	45,690	4.18
Porgy	191	535	2.80
Reef jacks	5	12	2.48
Squirrelfish	2,709	8,846	3.27
Scorpionfish	261	1,157	4.43
Mountain bass	329	760	2.31
Bigeyes	407	1,073	2.64
Cardinalfish	15	18	1.19
Goatfish	3,891	10,745	2.76
Rudderfish	633	661	1.04
Damselfish	175	353	2.02
Hawkfish	60	109	1.81

Table V.1.6 (Cont.)

Species	Pounds	Value	$/lb
Tilapia	191	150	0.79
Wrasse	483	1,105	2.29
Parrotfish	3,008	6,803	2.26
Surgeon/tangs	5,314	7,523	1.42
Flounders	9	12	1.31
Filefish	41	58	1.42
Rainbow runner	152	195	1.28
Mahimahi (dolphin)	65,144	188,228	2.89
Barracudas	2,191	3,134	1.43
Wahoo	40,037	123,545	3.09
Tunas	171	2,458	14.37
Skipjack tuna	85,337	154,823	1.81
Yellowfin tuna	178,089	451,050	2.53
Albacore	25,746	41,216	1.60
Bigeye tuna	217,438	903,081	4.15
Kawakawa	2,466	3,429	1.39
Frigate tuna	374	682	1.82
Broadbill swordfish	843,274	2,677,861	3.18
Blue marlin	71,181	94,626	1.33
Black marlin	1,143	865	0.76
Striped marlin	53,788	127,908	2.38
Shortnose spearfish	15,509	22,232	1.43
Sailfish	102	130	1.28
Ocean moonfish	23,700	34,316	1.45
Spiny lobster	29	185	6.37
Crabs	3,883	17,400	4.48
Shrimp (saltwater)	2,918	13,864	4.75
Octopus	379	1,226	3.24
Squid	450	1,255	2.79
Limpets (saltwater)	633	3,262	5.15
Precious corals	225	4,500	20.00
Algae	580	3,942	6.80
** SUBTOTAL **	1,795,609	5,327,330	2.97

Table V.1.7

Hawaii May 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,421	2,706	1.90
Sharks	7,457	6,417	0.86
Eels	18	29	1.61
Bigeye scad (akule)	62,563	108,683	1.74
Mackerel scad	17,255	33,374	1.93
Leatherback	39	44	1.13
Ten pounder	140	159	1.13
Bonefish	169	144	0.85
Milkfish	24	19	0.77
Needlefish	2	3	1.38
Threadfin	46	251	5.46
Mullet	243	520	2.14
Pomfret	7,474	13,529	1.81
Jacks (misc)	3,605	7,204	2.00
Amberjack	15	12	0.80
Blue crevally	90	189	2.10
Pig-lipped ulua	5,072	6,663	1.31
Paapaa ulua	601	1,218	2.03
White ulua	474	363	0.77
Giant sea bass	5,405	13,645	2.52
Snappers	117	312	2.67
Blue lined snapper	3,723	3,837	1.03
Ehu (red snapper)	2,624	11,088	4.23
Gindai (flower snapper)	495	1,350	2.73
Kalekale (pink snapper)	1,674	5,125	3.06
Lehi (silverjaw)	374	1,278	3.42
Onaga (red snapper)	4,732	35,251	7.45
Opakapaka (pink snapper)	12,186	56,659	4.65
Uku (gray snapper)	18,108	54,343	3.00
Porgy	109	300	2.75
Reef jacks	18	53	2.92
Squirrelfish	2,329	7,305	3.14
Trumpetfish	2	3	1.50
Scorpionfish	180	656	3.64
Mountain bass	349	779	2.23
Bigeyes	289	617	2.14
Goatfish	3,336	10,038	3.01
Rudderfish	1,274	1,031	0.81
Damselfish	118	223	1.89
Hawkfish	32	61	1.91
Tilapia	23	35	1.50
Wrasse	454	842	1.85

Table V.1.7 (Cont.)

Species	Pounds	Value	$/lb
Parrotfish	3,346	7,467	2.23
Surgeon/tangs	4,934	6,535	1.32
Triggerfish	18	2	0.10
Filefish	40	61	1.53
Rainbow runner	277	358	1.29
Mahimahi (dolphin)	65,595	164,525	2.51
Barracudas	2,413	2,658	1.10
Wahoo	49,091	121,448	2.47
Tunas	385	5,675	14.74
Skipjack tuna	178,756	299,783	1.68
Yellowfin tuna	306,129	659,108	2.15
Albacore	42,562	62,056	1.46
Bigeye tuna	195,564	628,780	3.22
Kawakawa	3,919	4,921	1.26
Frigate tuna	238	414	1.74
Broadbill swordfish	643,345	2,203,551	3.43
Blue marlin	69,693	73,319	1.05
Black marlin	2,205	3,380	1.53
Striped marlin	89,452	133,531	1.49
Shortnose spearfish	14,887	15,544	1.04
Sailfish	287	218	0.76
Ocean moonfish	32,469	35,631	1.10
Crabs	1,182	5,181	4.38
Shrimp (saltwater)	1,494	7,742	5.18
Octopus	442	1,248	2.82
Squid	753	1,884	2.50
Limpets (saltwater)	820	3,579	4.36
Precious corals	1,029	20,580	20.00
Algae	1,029	6,418	6.24
** SUBTOTAL **	1,877,013	4,861,958	2.59

Table V.1.8

Hawaii June 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,408	1,946	1.38
Sharks	6,089	6,129	1.01
Eels	6	9	1.50
Bigeye scad (akule)	63,102	115,350	1.83
Mackerel scad	14,676	30,082	2.05
Leatherback	16	22	1.35
Ten pounder	586	467	0.80
Bonefish	163	195	1.20
Milkfish	6	7	1.08
Needlefish	3	3	0.92
Threadfin	14	107	7.61
Mullet	226	518	2.29
Pomfret	5,886	11,460	1.95
Snake mackerel	94	94	1.00
Jacks (misc)	2,407	4,694	1.95
Blue crevally	175	405	2.31
Pig-lipped ulua	5,773	8,591	1.49
Paapaa ulua	86	136	1.58
White ulua	1,983	2,205	1.11
Giant sea bass	5,702	17,346	3.04
Blue spot grouper	5	15	2.90
Snappers	225	718	3.19
Blue lined snapper	4,552	3,675	0.81
Ehu (red snapper)	2,773	12,807	4.62
Gindai (flower snapper)	1,087	2,604	2.40
Kalekale (pink snapper)	1,853	5,296	2.86
Lehi (silverjaw)	116	354	3.05
Onaga (red snapper)	4,229	24,144	5.71
Opakapaka (pink snapper)	17,122	70,362	4.11
Uku (gray snapper)	24,412	63,164	2.59
Porgy	159	305	1.92
Reef jacks	19	57	3.00
Squirrelfish	3,428	10,740	3.13
Scorpionfish	238	910	3.82
Mountain bass	150	460	3.06
Bigeyes	583	1,208	2.07
Goatfish	2,434	7,279	2.99
Rudderfish	455	423	0.93
Damselfish	52	105	2.02
Hawkfish	63	133	2.11
Tilapia	2,149	1,417	0.66
Wrasse	378	611	1.62

Table V.1.8 (Cont.)

Species	Pounds	Value	$/lb
Parrotfish	2,534	5,760	2.27
Surgeon/tangs	5,453	6,804	1.25
Flounders	6	12	1.93
Triggerfish	3	0	0.08
Filefish	15	23	1.52
Rainbow runner	277	303	1.09
Mahimahi (dolphin)	55,560	139,032	2.50
Barracudas	3,077	3,407	1.11
Wahoo	42,295	104,878	2.48
Skipjack tuna	133,368	224,015	1.68
Yellowfin tuna	557,812	1,338,155	2.40
Albacore	105,664	141,510	1.34
Bigeye tuna	137,887	424,024	3.08
Kawakawa	1,838	2,168	1.18
Frigate tuna	10	19	1.89
Broadbill swordfish	262,563	1,008,704	3.84
Blue marlin	113,472	106,437	0.94
Black marlin	5,515	5,069	0.92
Striped marlin	105,844	129,210	1.22
Shortnose spearfish	19,369	18,602	0.96
Sailfish	775	981	1.27
Ocean moonfish	42,680	45,011	1.05
Crabs	507	2,334	4.60
Shrimp (saltwater)	15,150	75,561	4.99
Octopus	327	913	2.79
Squid	974	2,535	2.60
Limpets (saltwater)	636	3,145	4.95
Precious corals	585	11,700	20.00
Algae	1,231	5,278	4.29
** SUBTOTAL **	1,790,310	4,212,135	2.35

Table V.1.9

Hawaii July 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,120	2,143	1.91
Sharks	3,199	2,444	0.76
Eels	81	72	0.88
Alfonsin	10	45	4.45
Bigeye scad (akule)	84,222	135,328	1.61
Mackerel scad	14,827	30,814	2.08
Leatherback	60	77	1.28
Ten pounder	157	158	1.00
Bonefish	172	198	1.15
Needlefish	15	29	1.93
Threadfin	1	2	1.50
Mullet	189	433	2.29
Pomfret	4,593	8,565	1.86
Jacks (misc)	3,651	6,402	1.75
Amberjack	137	206	1.50
Blue crevally	699	1,073	1.53
Pig-lipped ulua	4,858	7,642	1.57
Paapaa ulua	133	210	1.58
White ulua	759	707	0.93
Giant sea bass	10,491	22,334	2.13
Blue spot grouper	25	72	2.86
Snappers	125	429	3.43
Blue lined snapper	2,674	2,696	1.01
Ehu (red snapper)	2,659	11,006	4.14
Gindai (flower snapper)	1,352	3,795	2.81
Kalekale (pink snapper)	1,232	4,130	3.35
Lehi (silverjaw)	180	461	2.56
Onaga (red snapper)	5,420	31,377	5.79
Opakapaka (pink snapper)	19,635	85,573	4.36
Uku (gray snapper)	19,485	45,928	2.36
Porgy	133	295	2.22
Reef jacks	5	14	2.70
Squirrelfish	3,161	9,841	3.11
Scorpionfish	178	652	3.66
Mountain bass	154	407	2.64
Bigeyes	436	1,135	2.60
Cardinalfish	9	27	3.00
Goatfish	4,339	10,156	2.34
Rudderfish	533	509	0.95
Damselfish	118	225	1.90
Hawkfish	93	169	1.82
Tilapia	2,575	3,139	1.22

Table V.1.9 (Cont.)

Species	Pounds	Value	$/lb
Wrasse	444	627	1.41
Parrotfish	2,605	6,877	2.64
Surgeon/tangs	13,914	18,218	1.31
Flounders	7	8	1.11
Triggerfish	3	0	0.10
Filefish	5	9	1.70
Rainbow runner	232	392	1.69
Mahimahi (dolphin)	61,037	136,418	2.24
Barracudas	3,956	5,618	1.42
Wahoo	34,049	88,192	2.59
Skipjack tuna	136,435	186,532	1.37
Yellowfin tuna	648,655	1,552,547	2.39
Albacore	113,833	155,469	1.37
Bigeye tuna	80,344	213,899	2.66
Kawakawa	741	989	1.33
Frigate tuna	21	27	1.29
Broadbill swordfish	253,339	1,033,077	4.08
Blue marlin	178,114	162,140	0.91
Black marlin	8,244	9,500	1.15
Striped marlin	39,197	50,086	1.28
Shortnose spearfish	11,404	12,496	1.10
Sailfish	1,104	1,021	0.92
Ocean moonfish	23,691	28,893	1.22
Crabs	1,850	6,985	3.78
Shrimp (saltwater)	1,370	6,365	4.65
Octopus	419	1,194	2.85
Squid	1,204	3,334	2.77
Limpets (saltwater)	417	2,264	5.43
Precious corals	315	6,300	20.00
Algae	1,153	4,654	4.04
** SUBTOTAL **	1,811,997	4,125,043	2.28

Table V.1.10

Hawaii August 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	1,309	2,600	1.99
Sharks	4,717	4,770	1.01
Eels	59	44	0.75
Bigeye scad (akule)	53,769	84,965	1.58
Mackerel scad	36,423	69,736	1.91
Leatherback	75	90	1.20
Ten pounder	185	184	0.99
Bonefish	214	253	1.18
Milkfish	4	6	1.50
Needlefish	39	29	0.74
Threadfin	3	18	6.10
Mullet	1,218	3,350	2.75
Pomfret	4,885	11,494	2.35
Snake mackerel	149	335	2.25
Jacks (misc)	3,413	5,804	1.70
Blue crevally	447	716	1.60
Pig-lipped ulua	4,074	8,187	2.01
Paapaa ulua	599	1,406	2.35
White ulua	321	519	1.62
Giant sea bass	6,576	17,377	2.64
Blue spot grouper	21	65	3.10
Snappers	259	1,044	4.03
Blue lined snapper	8,138	6,886	0.85
Ehu (red snapper)	1,964	8,413	4.28
Gindai (flower snapper)	866	2,646	3.05
Kalekale (pink snapper)	2,293	6,358	2.77
Lehi (silverjaw)	793	2,369	2.99
Onaga (red snapper)	8,289	44,242	5.34
Opakapaka (pink snapper)	15,617	70,335	4.50
Uku (gray snapper)	19,575	55,700	2.85
Porgy	123	292	2.38
Squirrelfish	3,232	9,756	3.02
Trumpetfish	43	84	1.94
Scorpionfish	192	819	4.27
Mountain bass	378	926	2.45
Bigeyes	391	1,074	2.75
Goatfish	3,015	10,025	3.33
Rudderfish	1,160	1,019	0.88
Damselfish	91	145	1.60
Hawkfish	40	70	1.76
Tilapia	510	304	0.60
Wrasse	673	3,252	4.83

Table V.1.10 (Cont.)

Species	Pounds	Value	$/lb
Parrotfish	3,122	7,426	2.38
Surgeon/tangs	7,440	9,412	1.27
Flounders	5	2	0.45
Triggerfish	4	2	0.41
Filefish	17	22	1.32
Rainbow runner	1,633	2,373	1.45
Mahimahi (dolphin)	119,066	263,386	2.21
Barracudas	4,779	5,617	1.18
Wahoo	29,096	85,507	2.94
Tunas	4	4	1.05
Skipjack tuna	148,552	209,193	1.41
Yellowfin tuna	484,853	1,517,816	3.13
Albacore	87,375	189,351	2.17
Bigeye tuna	68,873	284,549	4.13
Kawakawa	1,828	2,995	1.64
Frigate tuna	54	74	1.37
Broadbill swordfish	98,498	369,263	3.75
Blue marlin	203,782	225,133	1.10
Black marlin	2,643	3,343	1.26
Striped marlin	16,918	33,036	1.95
Shortnose spearfish	8,024	12,773	1.59
Sailfish	1,121	1,582	1.41
Ocean moonfish	34,190	46,562	1.36
Spiny lobster	9,800	156,800	16.00
Slipper lobster	4,000	42,000	10.50
Crabs	1,858	6,744	3.63
Shrimp (saltwater)	2,749	14,585	5.31
Octopus	1,219	3,685	3.02
Squid	2,089	6,403	3.06
Limpets (saltwater)	999	4,749	4.75
Precious corals	810	16,200	20.00
Sea cucumbers	25	177	7.07
Algae	1,096	4,118	3.76
** SUBTOTAL **	1,532,664	3,962,590	2.59

Table V.1.11

Hawaii September 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	614	1,690	2.75
Sharks	4,446	4,714	1.06
Eels	136	129	0.95
Bigeye scad (akule)	18,624	33,731	1.81
Mackerel scad	40,072	71,132	1.78
Leatherback	16	18	1.13
Ten pounder	7	9	1.25
Bonefish	153	185	1.21
Milkfish	5	5	1.05
Needlefish	128	108	0.84
Threadfin	116	677	5.83
Mullet	256	653	2.55
Pomfret	3,402	7,038	2.07
Jacks (misc)	3,631	7,689	2.12
Amberjack	12	22	1.80
Blue crevally	314	579	1.84
Pig-lipped ulua	5,365	4,587	0.86
Paapaa ulua	871	1,540	1.77
White ulua	695	838	1.21
Black ulua	22	69	3.15
Giant sea bass	3,316	11,157	3.36
Blue spot grouper	7	30	4.29
Snappers	791	2,511	3.17
Blue lined snapper	6,191	6,288	1.02
Ehu (red snapper)	1,573	6,587	4.19
Gindai (flower snapper)	189	641	3.39
Kalekale (pink snapper)	1,523	3,626	2.38
Lehi (silverjaw)	1,116	3,094	2.77
Onaga (red snapper)	7,468	40,525	5.43
Opakapaka (pink snapper)	20,968	86,028	4.10
Uku (gray snapper)	5,451	15,171	2.78
Porgy	116	317	2.73
Reef jacks	13	37	2.83
Squirrelfish	5,033	16,078	3.19
Trumpetfish	2	2	1.00
Scorpionfish	185	568	3.07
Mountain bass	400	1,065	2.66
Bigeyes	470	1,238	2.63
Goatfish	4,233	14,264	3.37
Rudderfish	441	580	1.32
Damselfish	59	100	1.70
Hawkfish	97	189	1.95

Table V.1.11 (Cont.)

Species	Pounds	Value	$/lb
Tilapia	125	475	3.80
Wrasse	546	899	1.65
Parrotfish	4,197	9,694	2.31
Surgeon/tangs	6,352	9,122	1.44
Flounders	4	6	1.50
Triggerfish	8	1	0.09
Filefish	11	22	2.00
Rainbow runner	503	688	1.37
Mahimahi (dolphin)	84,324	169,951	2.02
Barracudas	2,136	3,322	1.56
Wahoo	26,856	79,480	2.96
Tunas	160	3,000	18.75
Skipjack tuna	157,563	237,754	1.51
Yellowfin tuna	333,727	862,593	2.58
Albacore	59,663	92,223	1.55
Bigeye tuna	120,406	438,912	3.65
Kawakawa	824	1,228	1.49
Frigate tuna	532	388	0.73
Broadbill swordfish	79,189	309,266	3.91
Blue marlin	164,104	178,916	1.09
Black marlin	2,409	3,087	1.28
Striped marlin	12,391	28,979	2.34
Shortnose spearfish	7,151	10,105	1.41
Sailfish	799	1,157	1.45
Ocean moonfish	18,356	26,202	1.43
Spiny lobster	470	2,621	5.58
Slipper lobster	6	34	5.67
Crabs	5,997	26,278	4.38
Shrimp (saltwater)	11,820	63,458	5.37
Octopus	1,987	5,926	2.98
Squid	913	1,633	1.79
Limpets (saltwater)	1,365	6,547	4.80
Precious corals	225	4,500	20.00
Algae	2,434	6,075	2.50
** SUBTOTAL **	1,246,080	2,930,053	2.35

Table V.1.12

Hawaii October 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	260	457	1.76
Sharks	4,488	4,468	1.00
Eels	262	224	0.85
Bigeye scad (akule)	18,727	34,533	1.84
Mackerel scad	39,155	70,412	1.80
Leatherback	61	59	0.96
Ten pounder	267	267	1.00
Bonefish	370	434	1.17
Milkfish	20	23	1.17
Needlefish	20	30	1.50
Threadfin	148	777	5.25
Mullet	275	817	2.97
Pomfret	7,785	9,051	1.16
Jacks (misc)	2,623	4,711	1.80
Amberjack	34	43	1.25
Blue crevally	99	160	1.62
Pig-lipped ulua	677	1,392	2.06
Paapaa ulua	551	1,184	2.15
White ulua	1,856	2,061	1.11
Black ulua	41	82	2.00
Giant sea bass	4,372	14,177	3.24
Blue spot grouper	15	41	2.70
Snappers	463	1,162	2.51
Blue lined snapper	3,193	3,500	1.10
Ehu (red snapper)	1,985	7,944	4.00
Gindai (flower snapper)	273	811	2.97
Kalekale (pink snapper)	1,442	3,153	2.19
Lehi (silverjaw)	886	2,382	2.69
Onaga (red snapper)	5,556	29,317	5.28
Opakapaka (pink snapper)	23,593	86,584	3.67
Uku (gray snapper)	3,693	9,764	2.64
Porgy	219	610	2.78
Reef jacks	4	11	2.63
Squirrelfish	4,148	13,110	3.16
Trumpetfish	8	13	1.64
Scorpionfish	228	765	3.35
Mountain bass	545	1,200	2.20
Bigeyes	512	1,313	2.56
Goatfish	2,751	8,849	3.22
Rudderfish	274	359	1.31
Damselfish	53	85	1.60
Hawkfish	63	124	1.97

Table V.1.12 (Cont.)

Species	Pounds	Value	$/lb
Tilapia	242	666	2.75
Wrasse	670	1,599	2.39
Parrotfish	2,401	5,496	2.29
Surgeon/tangs	4,174	6,508	1.56
Flounders	16	22	1.40
Triggerfish	21	7	0.31
Filefish	13	17	1.34
Rainbow runner	677	1,034	1.53
Mahimahi (dolphin)	123,446	220,165	1.78
Barracudas	839	1,975	2.35
Wahoo	14,234	43,148	3.03
Tunas	19,790	88,177	4.46
Skipjack tuna	120,192	197,473	1.64
Yellowfin tuna	202,606	448,177	2.21
Albacore	81,546	63,150	0.77
Bigeye tuna	240,319	856,709	3.56
Kawakawa	797	1,375	1.73
Frigate tuna	18	36	2.00
Broadbill swordfish	146,281	454,625	3.11
Blue marlin	111,653	119,547	1.07
Black marlin	2,401	2,217	0.92
Striped marlin	37,376	63,807	1.71
Shortnose spearfish	8,192	9,812	1.20
Sailfish	1,359	1,842	1.36
Ocean moonfish	47,990	47,270	0.99
Spiny lobster	340	2,513	7.39
Slipper lobster	4	28	7.00
Crabs	5,961	24,486	4.11
Shrimp (saltwater)	13,314	69,953	5.25
Octopus	2,147	6,043	2.81
Squid	929	1,756	1.89
Limpets (saltwater)	884	4,174	4.72
Algae	1,652	4,369	2.64
** SUBTOTAL **	1,324,479	3,064,632	2.31

Table V.1.13

Hawaii November 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	528	623	1.18
Sharks	6,465	4,643	0.72
Eels	56	61	1.09
Bigeye scad (akule)	40,384	63,568	1.57
Mackerel scad	31,245	56,978	1.82
Leatherback	93	278	2.99
Ten pounder	176	176	1.00
Bonefish	943	894	0.95
Milkfish	385	574	1.49
Needlefish	13	26	2.00
Threadfin	92	448	4.87
Mullet	1,123	3,252	2.90
Pomfret	8,889	12,107	1.36
Jacks (misc)	2,220	5,657	2.55
Amberjack	6	10	1.61
Blue crevally	121	247	2.04
Pig-lipped ulua	3,215	5,640	1.75
Paapaa ulua	307	647	2.11
White ulua	76	123	1.62
Black ulua	152	360	2.37
Giant sea bass	2,319	8,951	3.86
Blue spot grouper	1	2	2.00
Snappers	128	408	3.19
Blue lined snapper	1,883	1,662	0.88
Ehu (red snapper)	1,410	7,543	5.35
Gindai (flower snapper)	245	887	3.62
Kalekale (pink snapper)	807	2,426	3.01
Lehi (silverjaw)	437	1,318	3.02
Onaga (red snapper)	3,775	27,710	7.34
Opakapaka (pink snapper)	16,121	78,460	4.87
Uku (gray snapper)	6,302	20,230	3.21
Porgy	259	571	2.21
Reef jacks	1	3	3.00
Squirrelfish	1,952	6,197	3.17
Trumpetfish	31	57	1.84
Scorpionfish	88	398	4.52
Mountain bass	142	468	3.30
Bigeyes	391	1,151	2.94
Goatfish	2,824	9,072	3.21
Rudderfish	392	328	0.84
Damselfish	72	152	2.11
Hawkfish	58	127	2.18

Table V.1.13 (Cont.)

Species	Pounds	Value	$/lb
Tilapia	420	1,461	3.48
Wrasse	294	524	1.78
Parrotfish	2,973	7,174	2.41
Surgeon/tangs	5,679	7,944	1.40
Flounders	11	13	1.18
Filefish	17	32	1.90
Rainbow runner	423	608	1.44
Mahimahi (dolphin)	117,342	175,642	1.50
Barracudas	884	1,750	1.98
Wahoo	15,385	52,644	3.42
Tunas	3,029	48,389	15.98
Skipjack tuna	77,440	149,779	1.93
Yellowfin tuna	162,917	328,519	2.02
Albacore	186,558	174,816	0.94
Bigeye tuna	465,650	1,473,407	3.16
Kawakawa	636	931	1.46
Frigate tuna	28	40	1.43
Broadbill swordfish	206,772	636,473	3.08
Blue marlin	24,373	36,497	1.50
Black marlin	437	687	1.57
Striped marlin	59,557	116,045	1.95
Shortnose spearfish	12,136	13,926	1.15
Sailfish	407	580	1.42
Ocean moonfish	47,654	49,638	1.04
Spiny lobster	147	942	6.41
Crabs	3,449	13,537	3.93
Shrimp (freshwater)	50	250	5.00
Shrimp (saltwater)	679	4,074	6.00
Octopus	1,224	3,262	2.67
Limpets (saltwater)	752	3,599	4.79
Precious corals	795	15,900	20.00
Algae	1,932	5,216	2.70
** SUBTOTAL **	1,536,177	3,648,730	2.38

Table V.1.14

Hawaii December 1994 Commercial Landings

Species	Pounds	Value	$/lb
Miscellaneous	721	1,776	2.46
Sharks	7,996	4,767	0.60
Eels	167	178	1.06
Bigeye scad (akule)	60,328	98,826	1.64
Mackerel scad	18,309	33,233	1.82
Leatherback	71	188	2.64
Ten pounder	74	70	0.94
Bonefish	194	267	1.38
Milkfish	99	173	1.75
Needlefish	3	6	2.00
Threadfin	169	804	4.76
Mullet	180	484	2.69
Pomfret	17,256	17,651	1.02
Jacks (misc)	2,879	6,100	2.12
Blue crevally	120	235	1.96
Pig-lipped ulua	3,169	4,744	1.50
Dobe ulua	13	26	2.02
Paapaa ulua	132	230	1.75
White ulua	76	86	1.14
Black ulua	15	32	2.10
Giant sea bass	5,477	16,855	3.08
Blue spot grouper	12	30	2.49
Snappers	297	844	2.84
Blue lined snapper	4,250	4,066	0.96
Ehu (red snapper)	4,120	17,602	4.27
Gindai (flower snapper)	594	1,862	3.13
Kalekale (pink snapper)	2,616	6,694	2.56
Lehi (silverjaw)	1,692	5,258	3.11
Onaga (red snapper)	14,255	79,549	5.58
Opakapaka (pink snapper)	37,364	146,324	3.92
Uku (gray snapper)	11,259	29,084	2.58
Porgy	216	544	2.52
Squirrelfish	2,044	6,653	3.26
Trumpetfish	2	4	2.00
Scorpionfish	285	1,118	3.92
Mountain bass	226	459	2.03
Bigeyes	164	375	2.29
Goatfish	4,324	13,157	3.04
Rudderfish	387	325	0.84
Damselfish	144	231	1.60
Hawkfish	48	103	2.14
Tilapia	407	1,327	3.26

Table V.1.14 (Cont.)

Species	Pounds	Value	$/lb
Wrasse	397	947	2.38
Parrotfish	2,191	4,743	2.16
Surgeon/tangs	5,928	8,287	1.40
Flounders	2	4	1.75
Filefish	16	27	1.67
Rainbow runner	285	400	1.40
Mahimahi (dolphin)	76,450	95,023	1.24
Barracudas	2,594	2,585	1.00
Wahoo	14,094	40,675	2.89
Tunas	4,674	73,830	15.80
Skipjack tuna	154,898	203,977	1.32
Yellowfin tuna	261,891	627,645	2.40
Albacore	325,501	257,837	0.79
Bigeye tuna	839,681	3,185,746	3.79
Kawakawa	1,001	1,657	1.66
Frigate tuna	124	215	1.73
Broadbill swordfish	343,908	921,784	2.68
Blue marlin	17,245	22,481	1.30
Black marlin	316	560	1.77
Striped marlin	65,212	113,139	1.73
Shortnose spearfish	26,498	13,560	0.51
Sailfish	569	455	0.80
Ocean moonfish	56,336	55,245	0.98
Spiny lobster	86	583	6.78
Slipper lobster	3	14	4.58
Crabs	2,284	9,937	4.35
Shrimp (freshwater)	45	225	5.00
Shrimp (saltwater)	11,771	62,806	5.34
Octopus	677	1,771	2.62
Squid	36	71	1.97
Limpets (saltwater)	1,081	5,286	4.89
Sea cucumbers	10	71	7.12
Algae	2,841	6,949	2.45
** SUBTOTAL **	2,420,799	6,220,873	2.57
** TOTAL **	20,975,357	55,133,126	2.63

Figure V.1.1

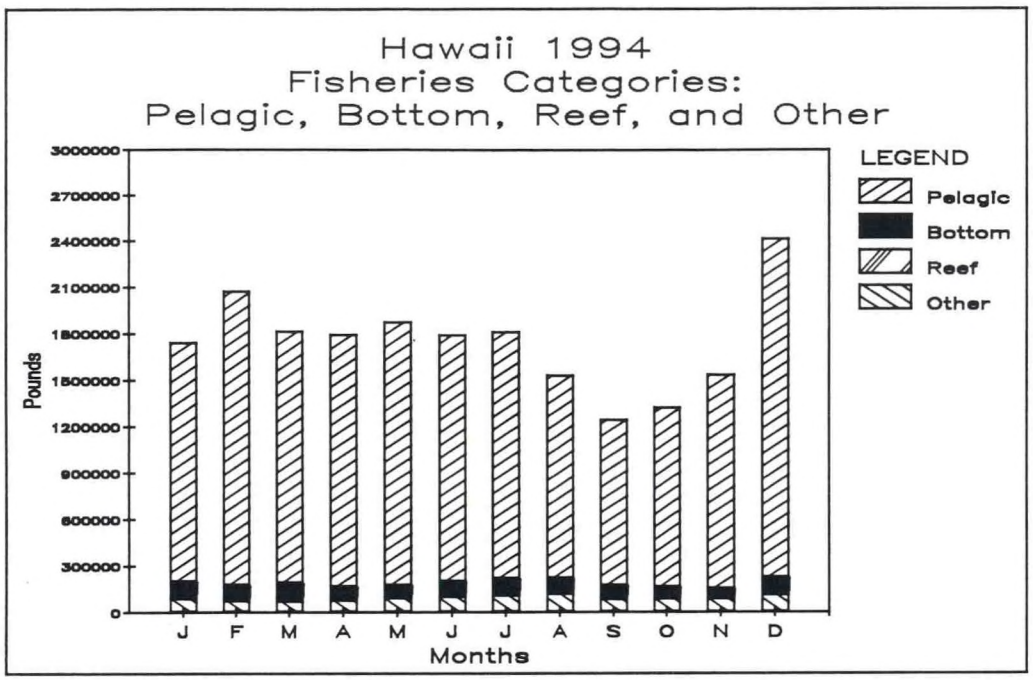


Figure V.1.2

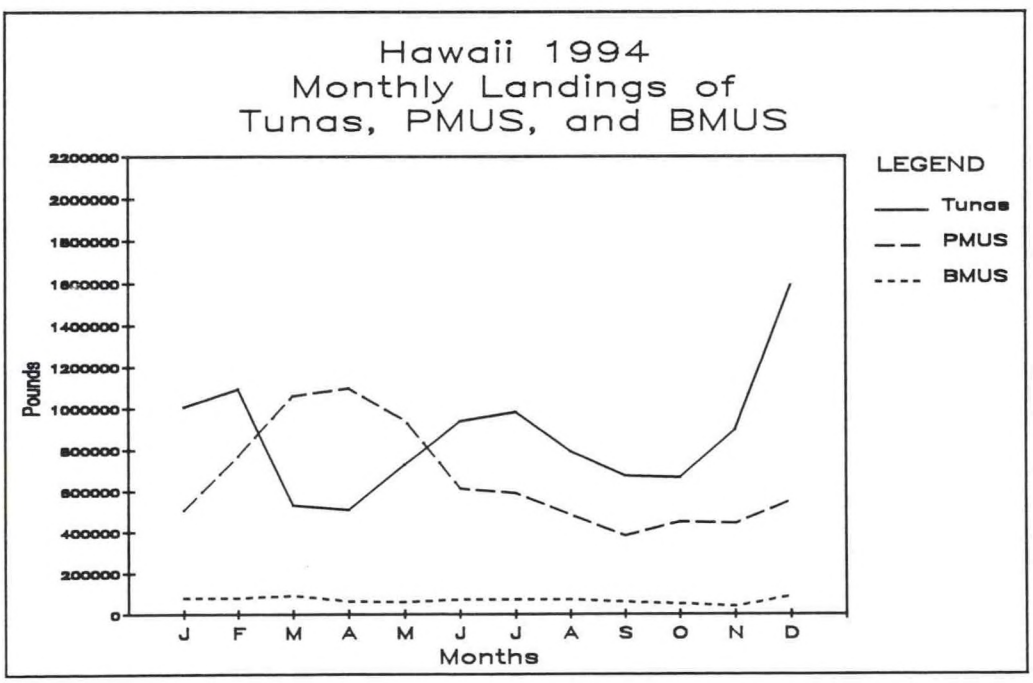


Figure V.1.3

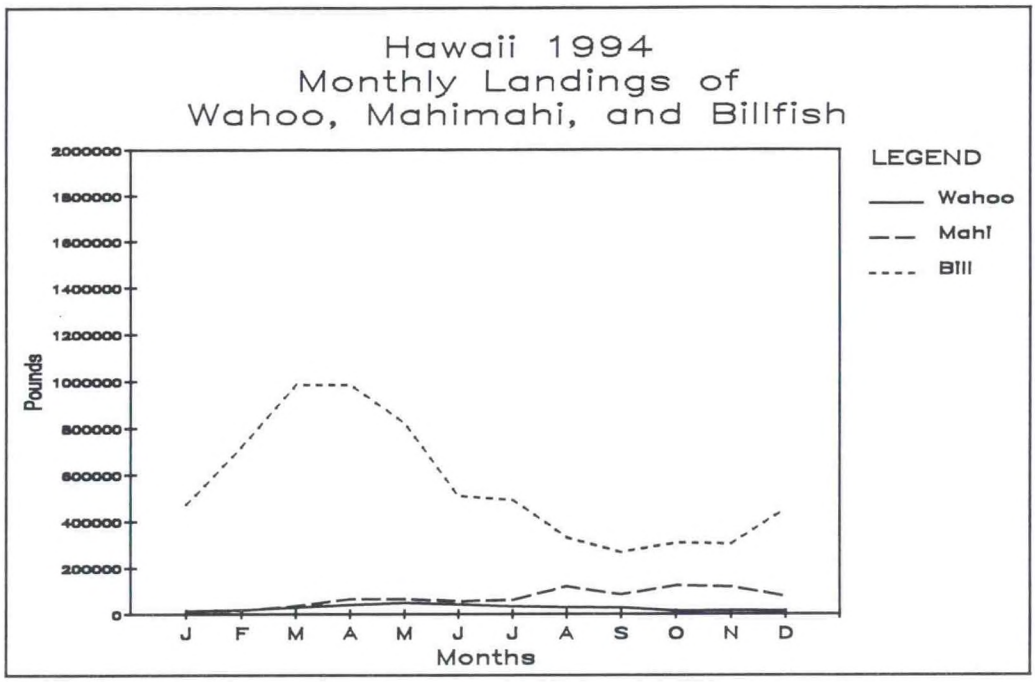


Figure V.1.4

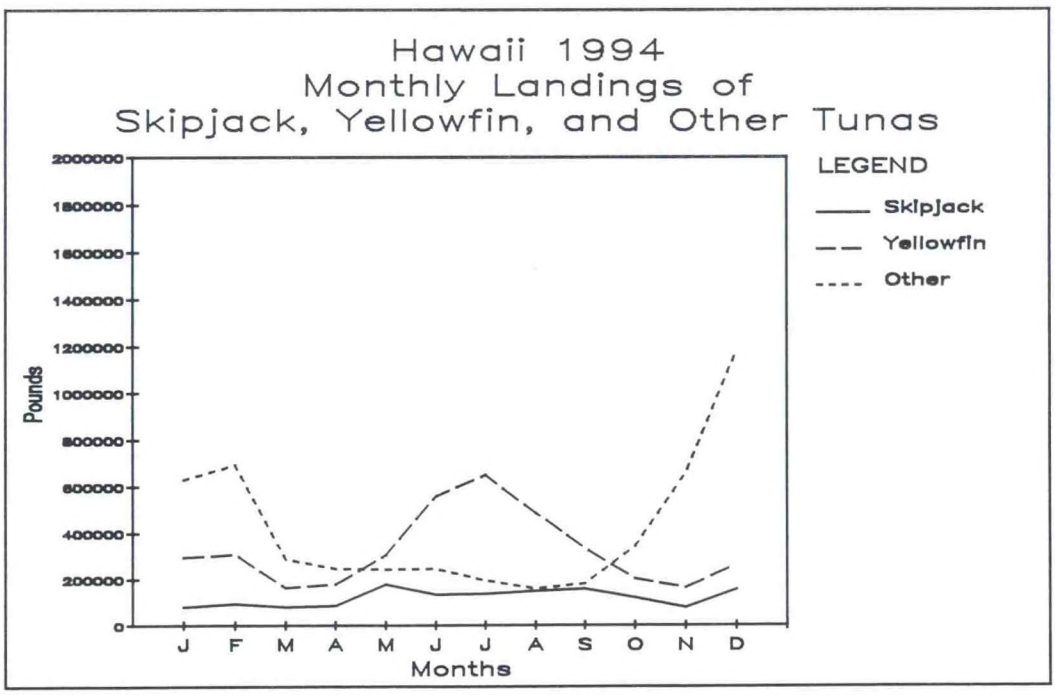


Figure V.2.1

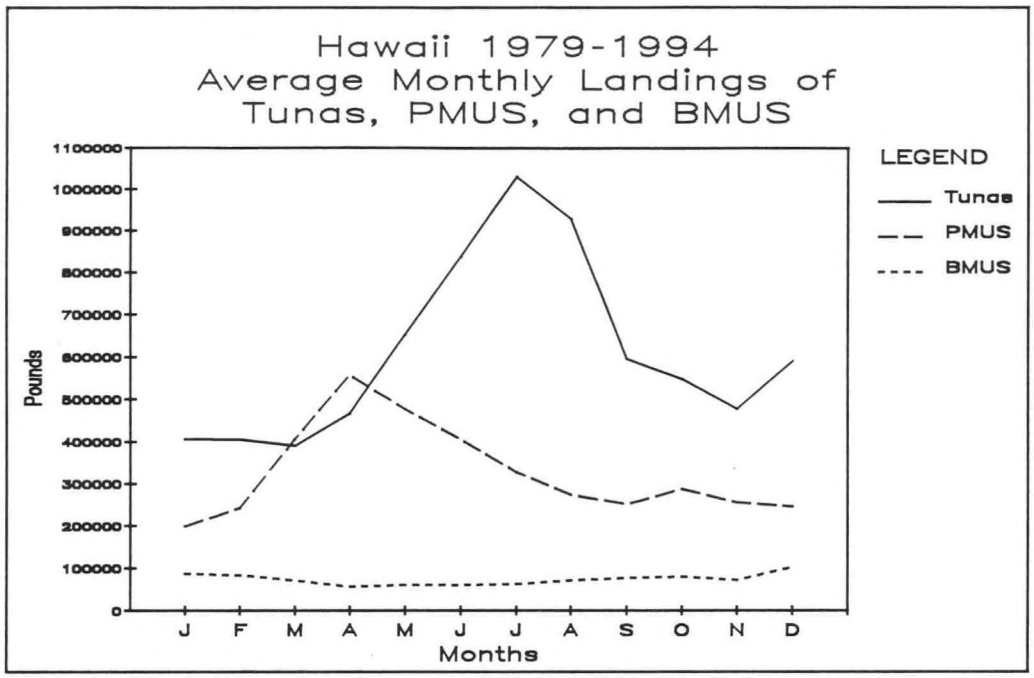


Figure V.2.2

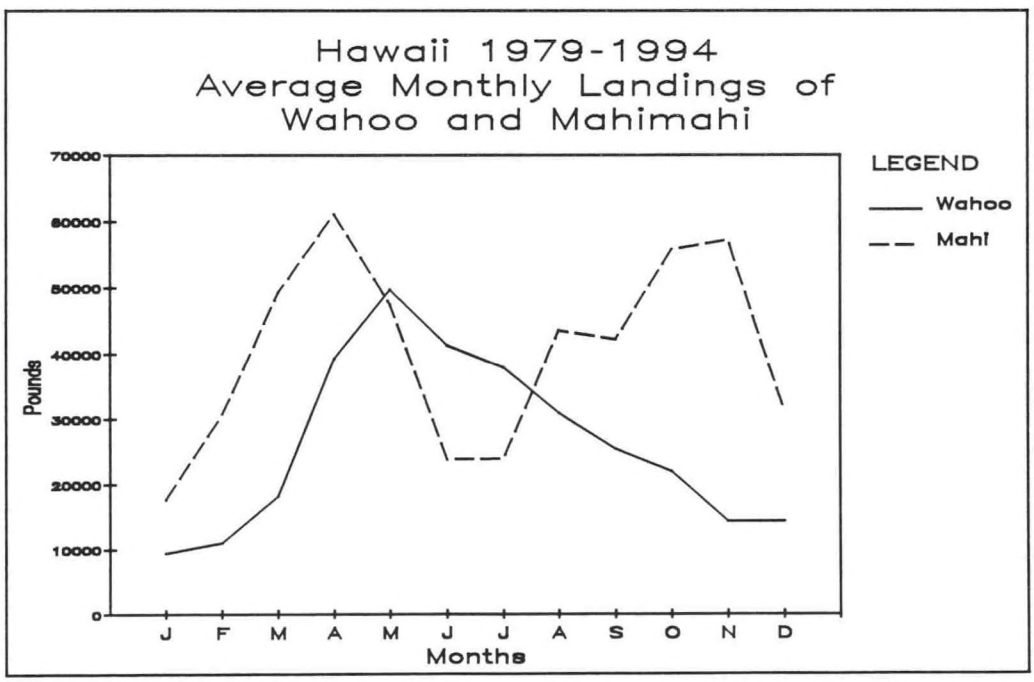
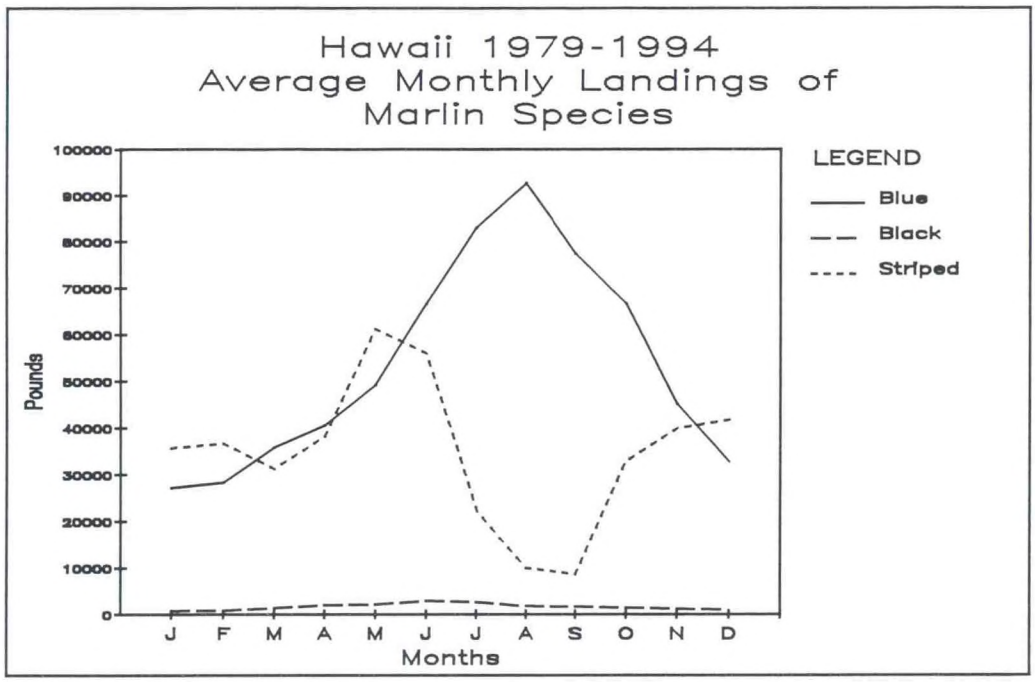


Figure V.2.3



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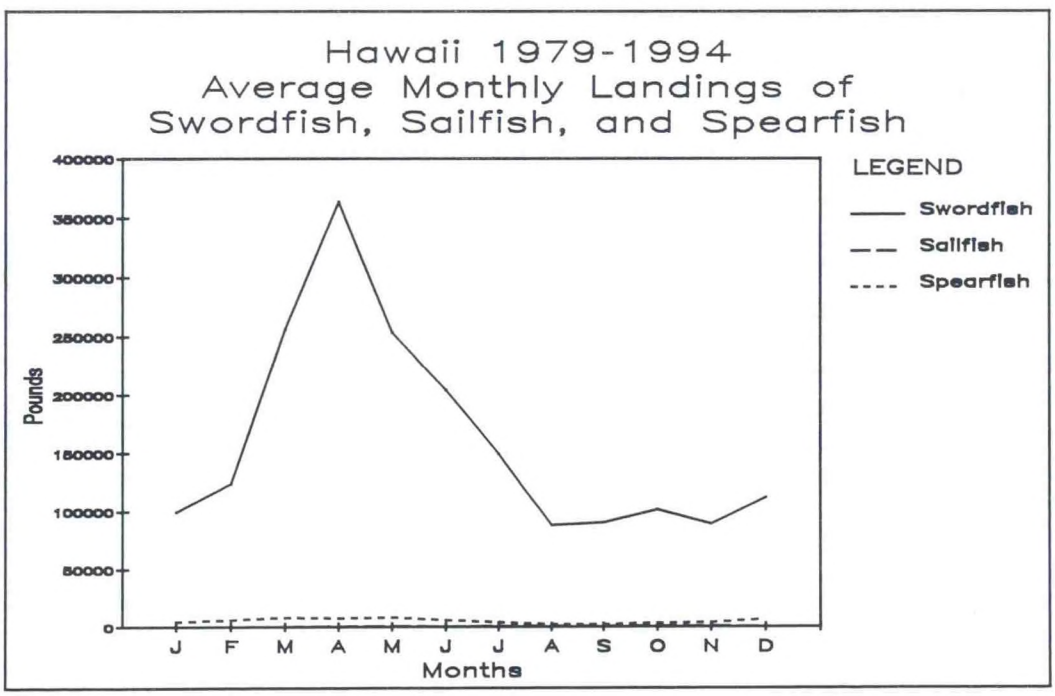


Figure V.2.5

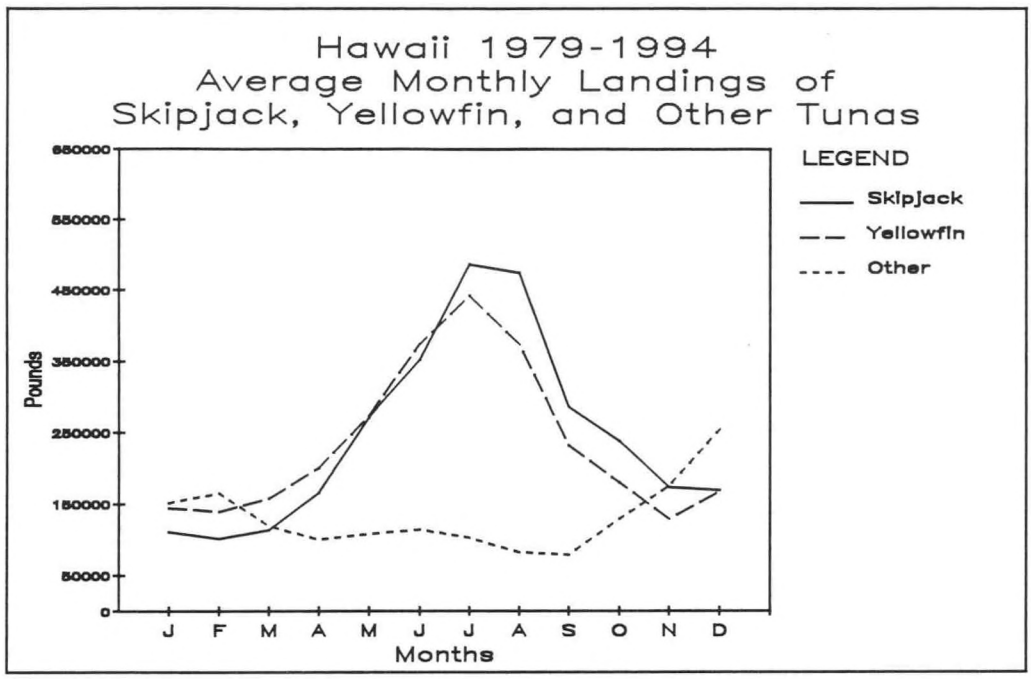


Figure V.2.6

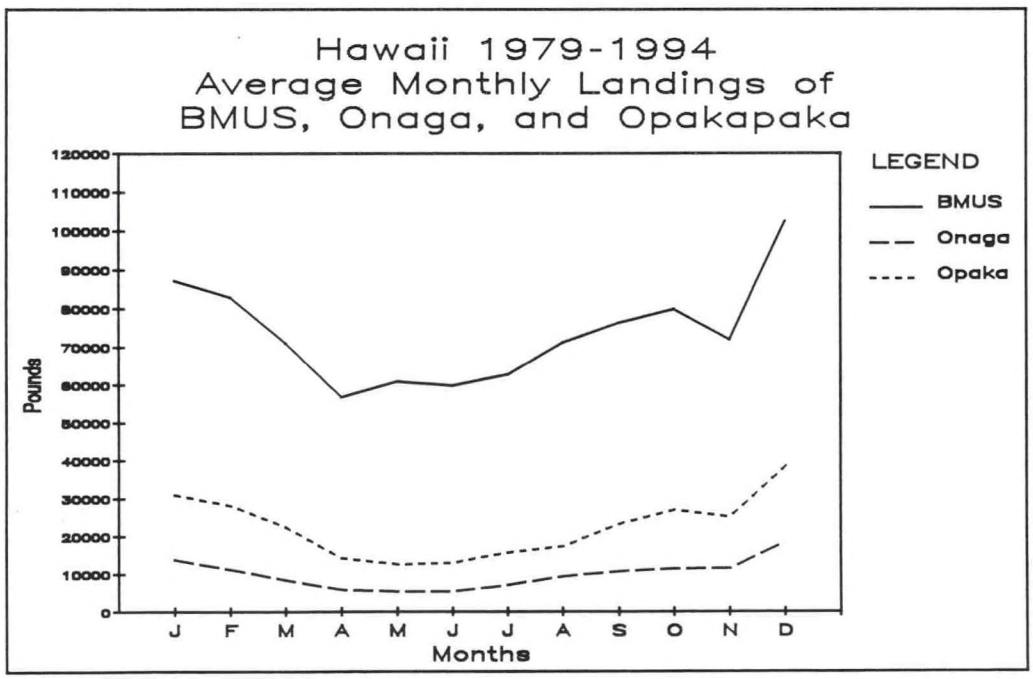


Figure V.2.7

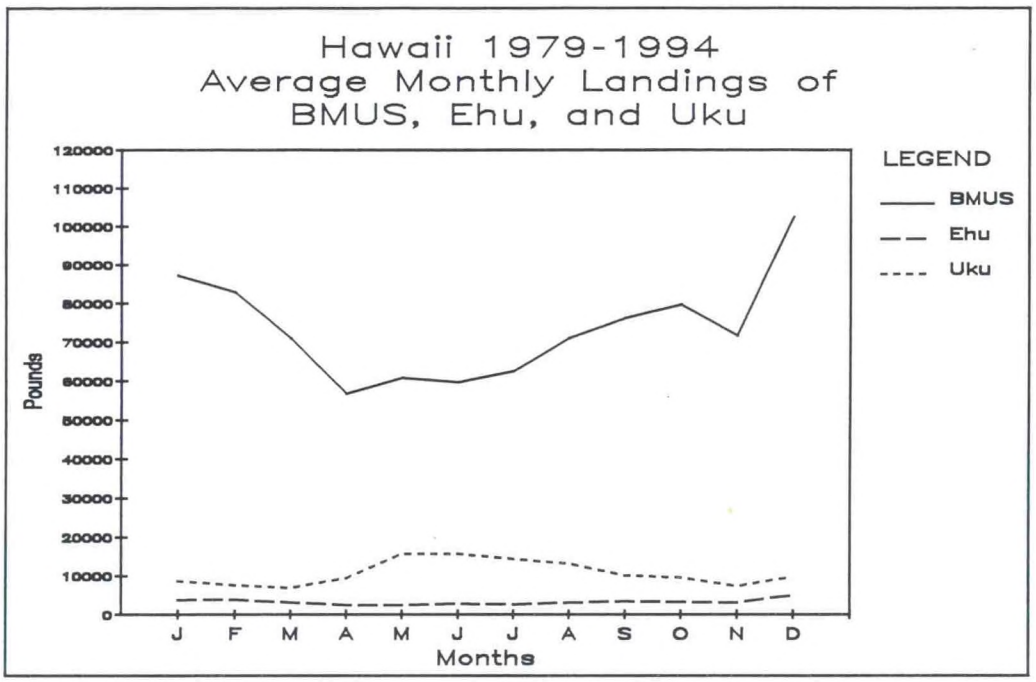


Figure V.3.1

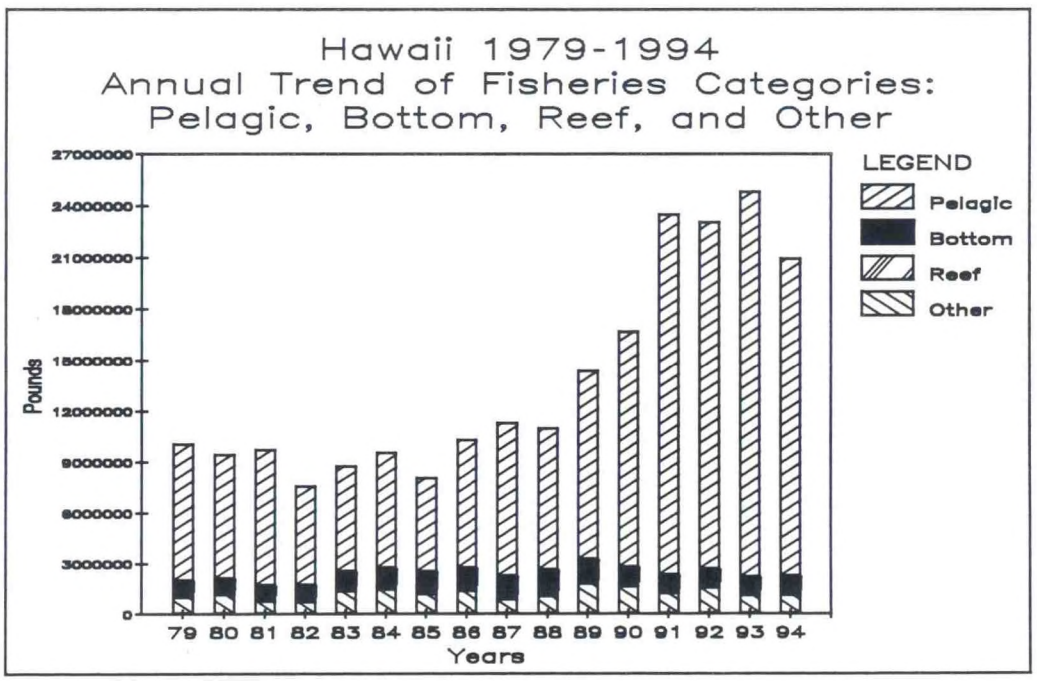


Figure V.3.2

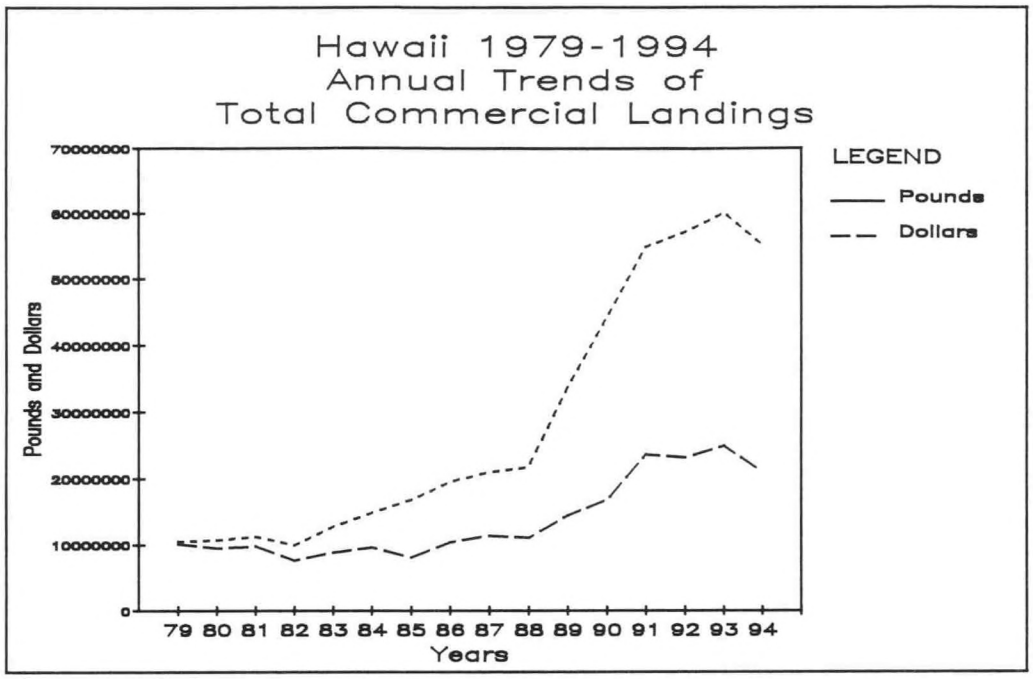
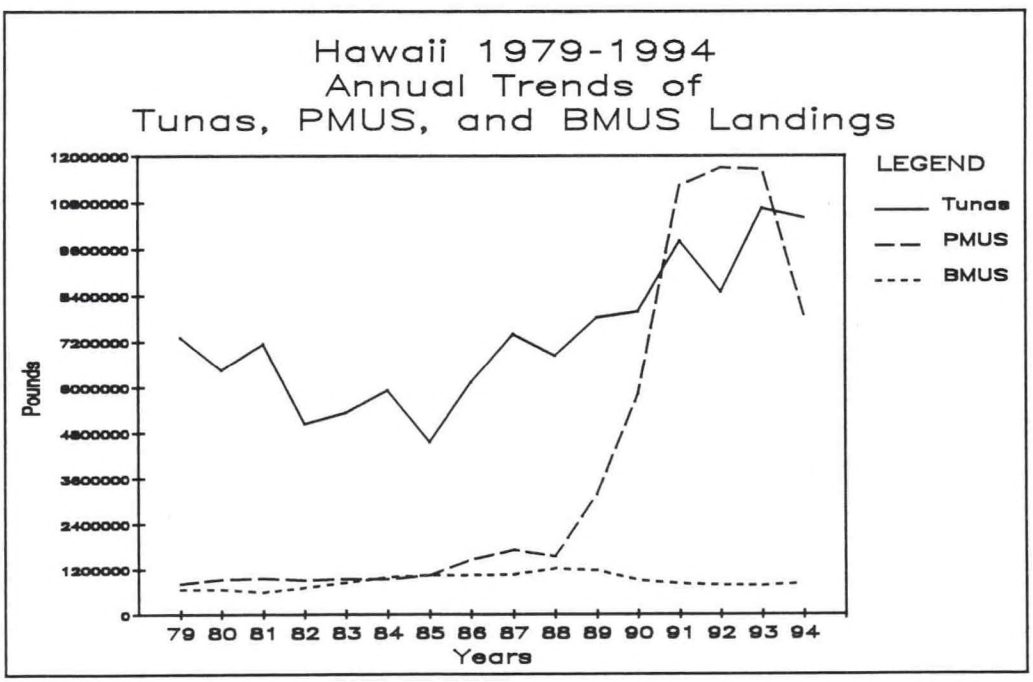


Figure V.3.3



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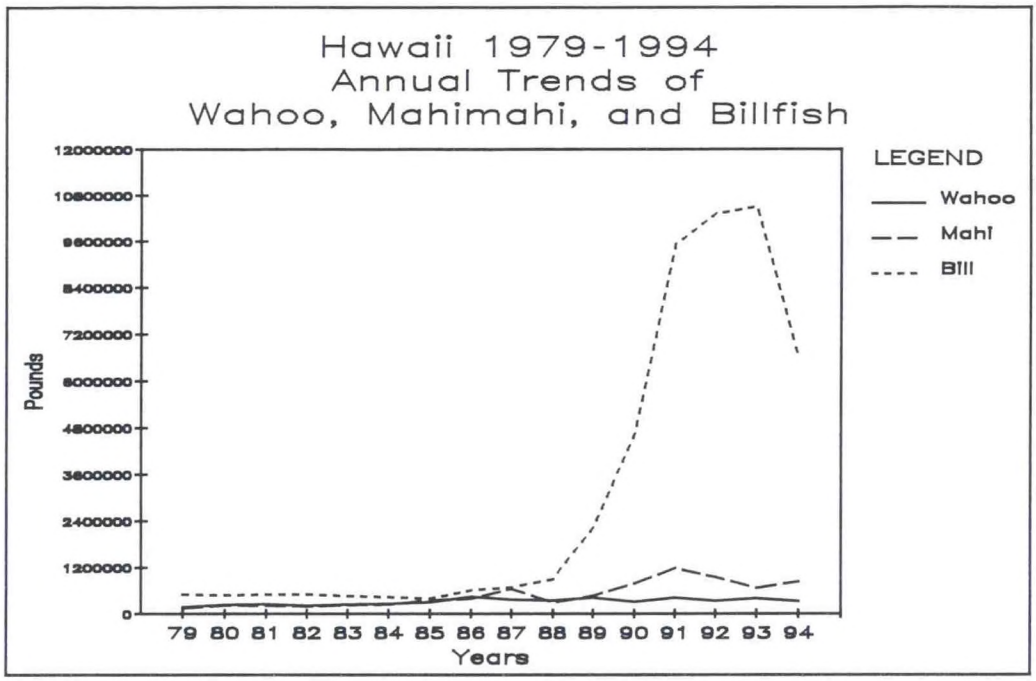

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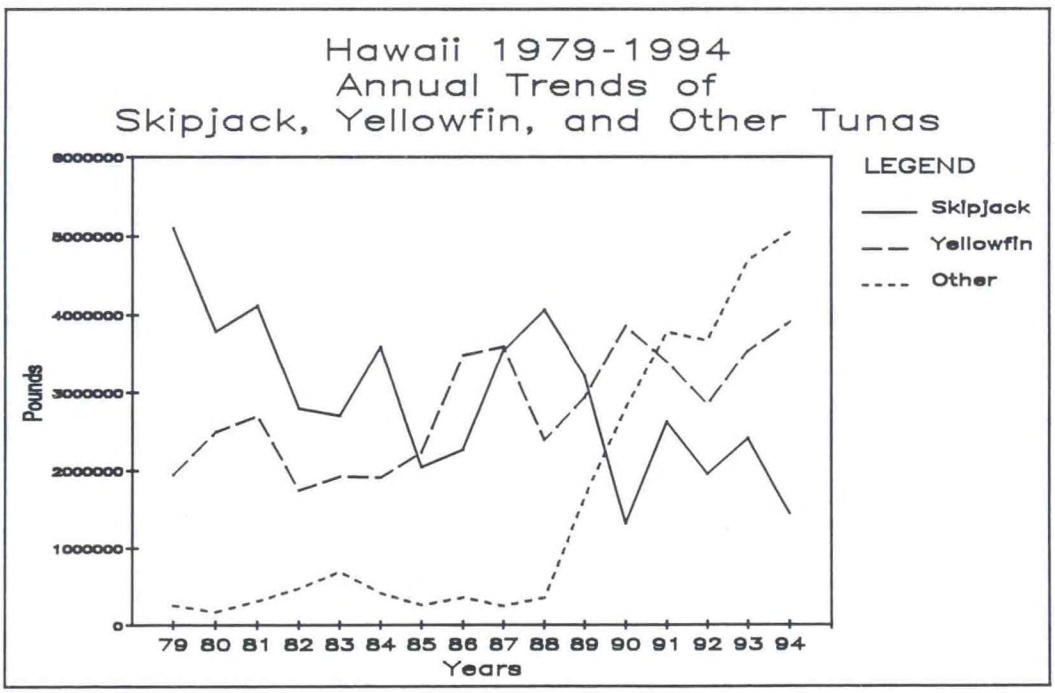
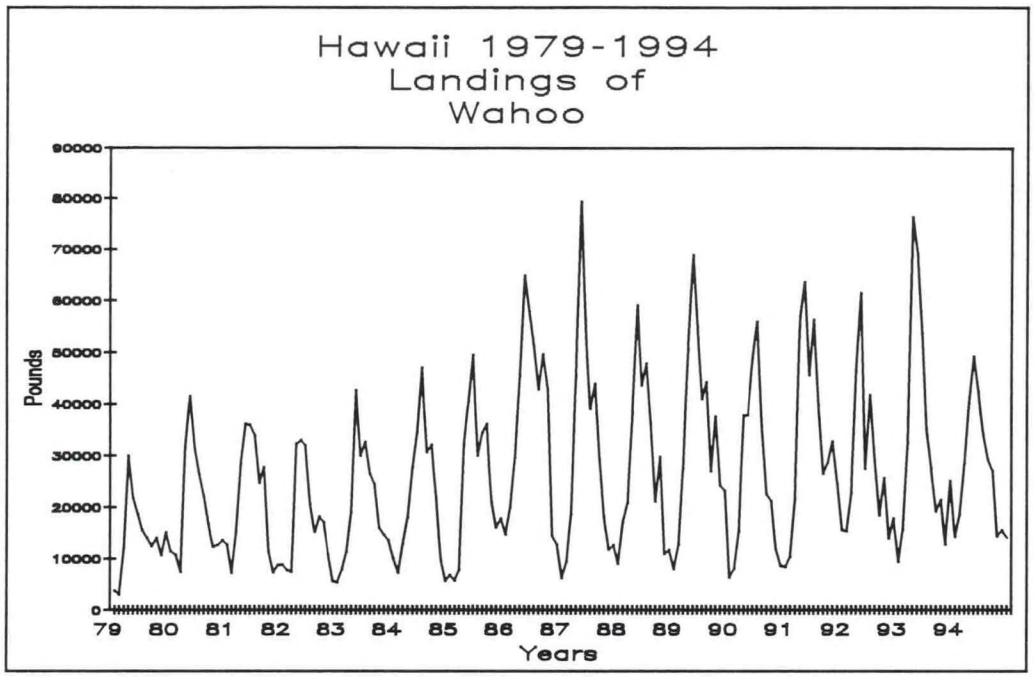


Figure V.4.1



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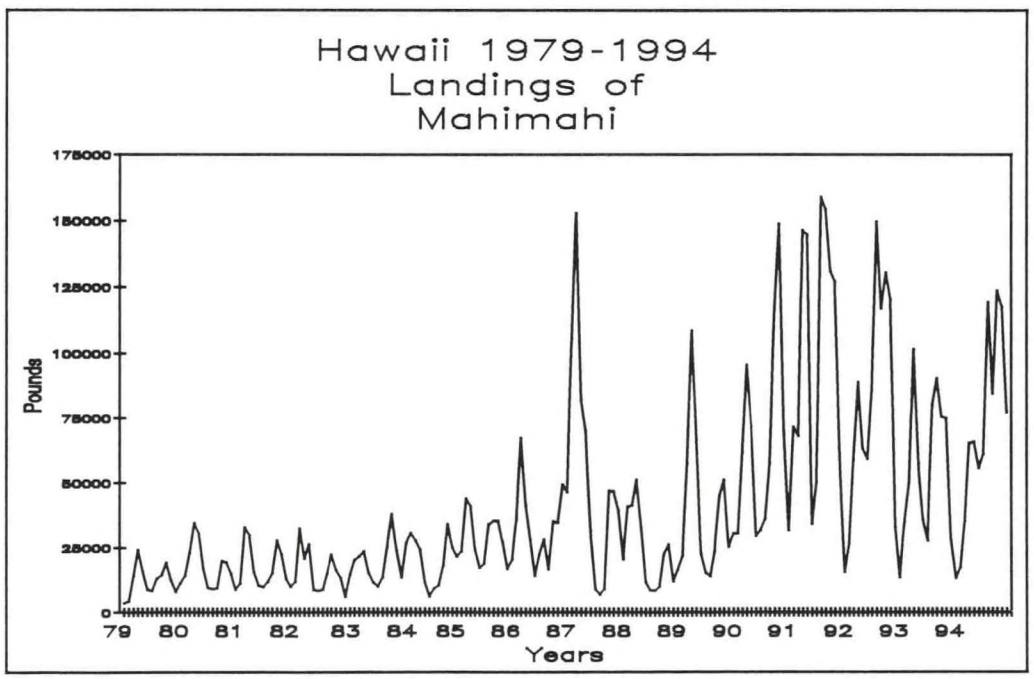

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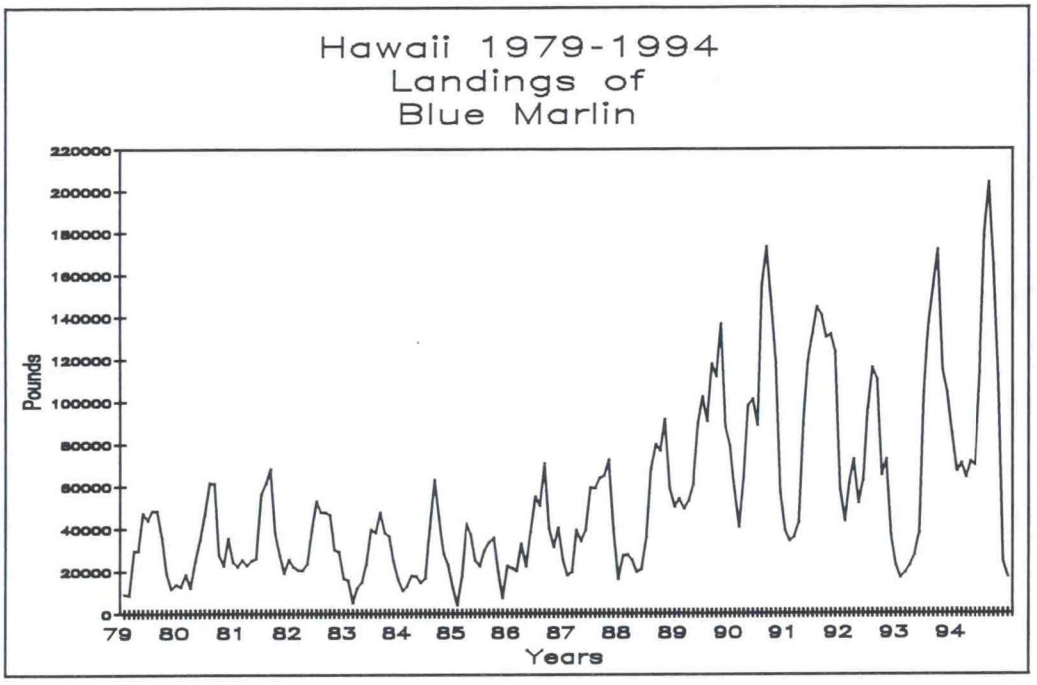

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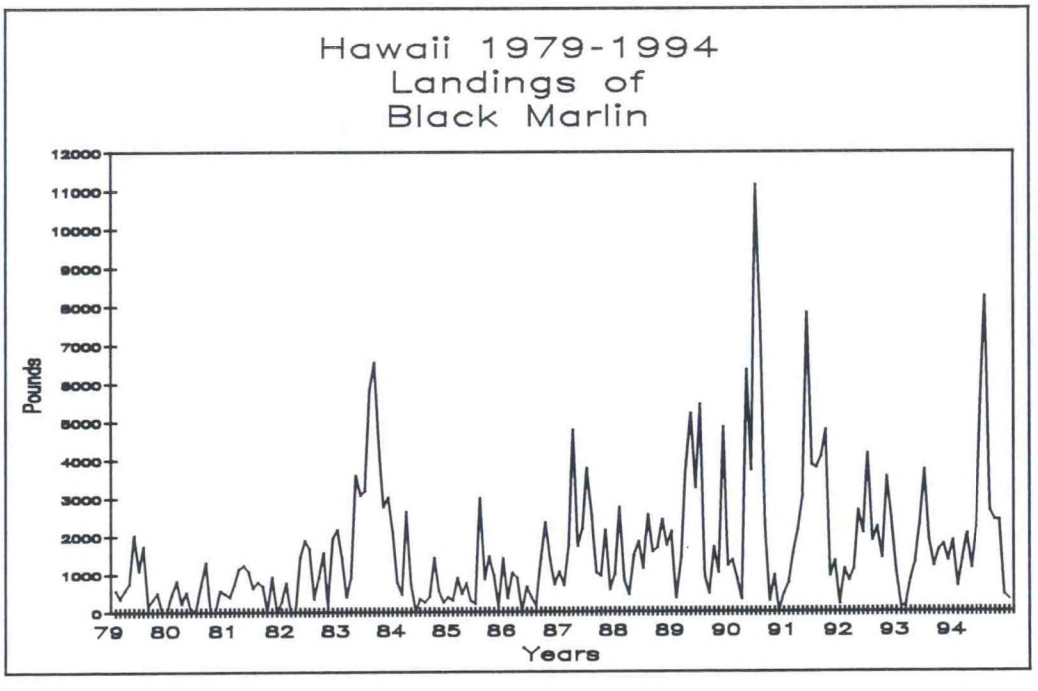

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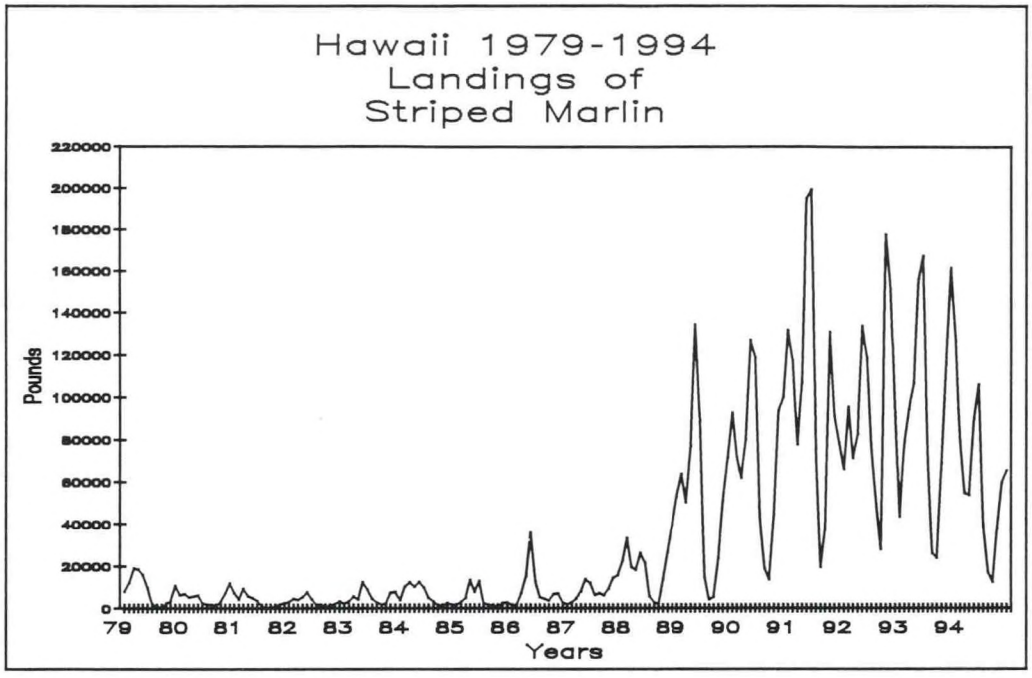
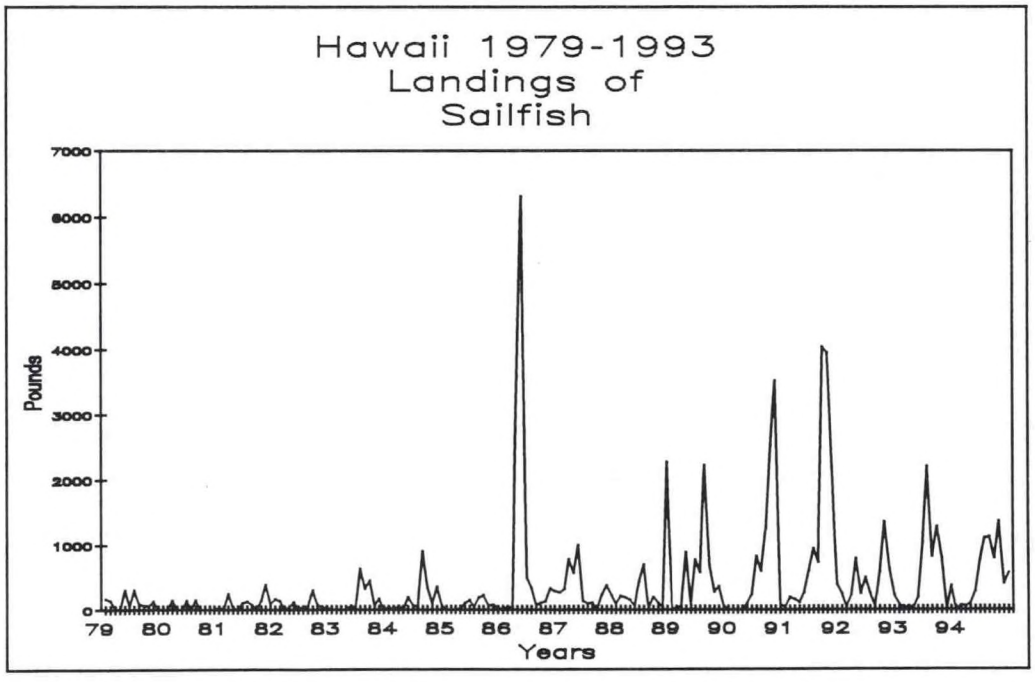


Figure V.4.6



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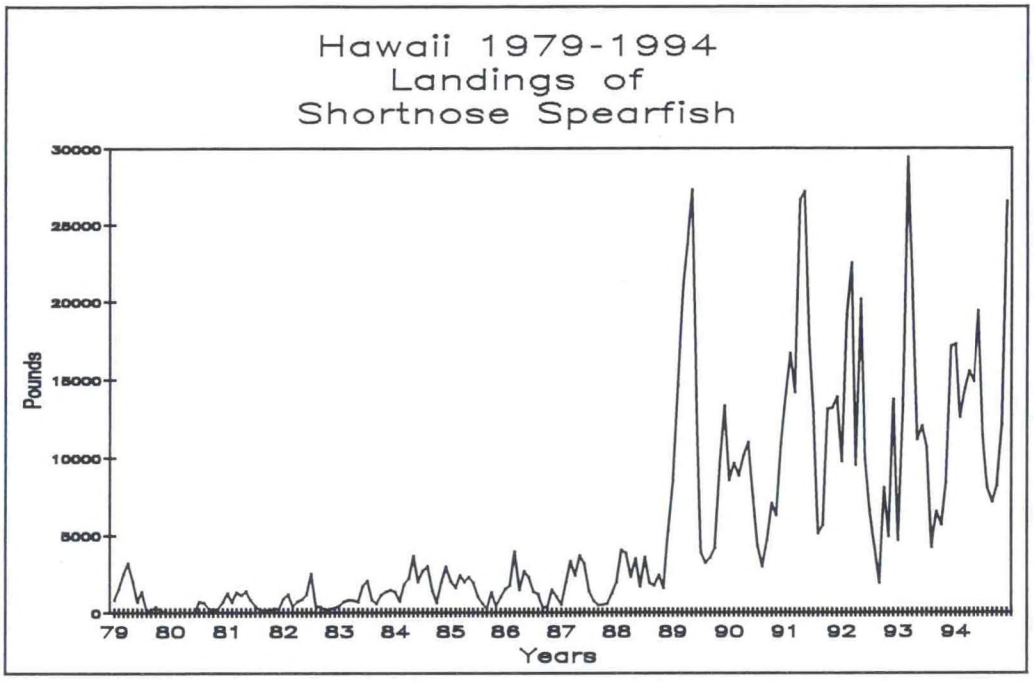

Figure V.4.8

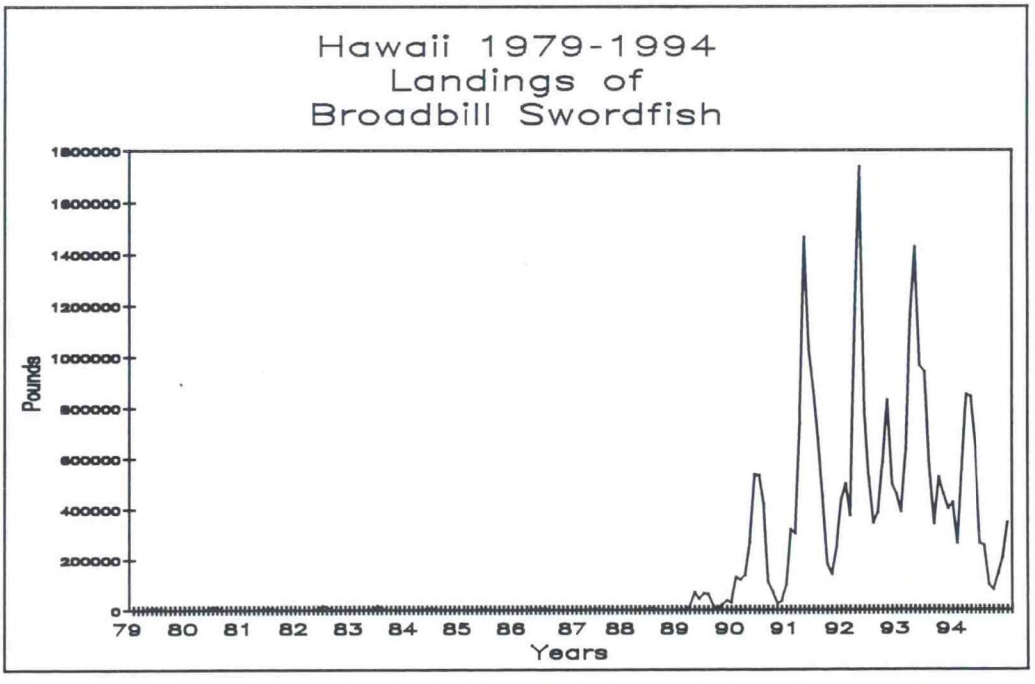

Figure V.4.9

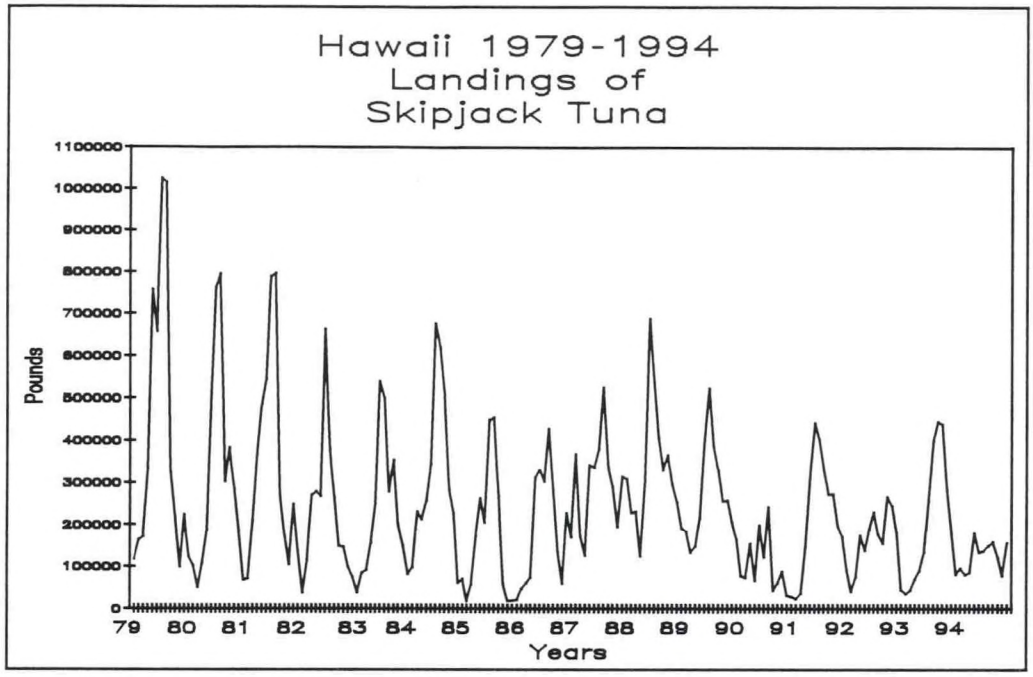

Figure V.4.10

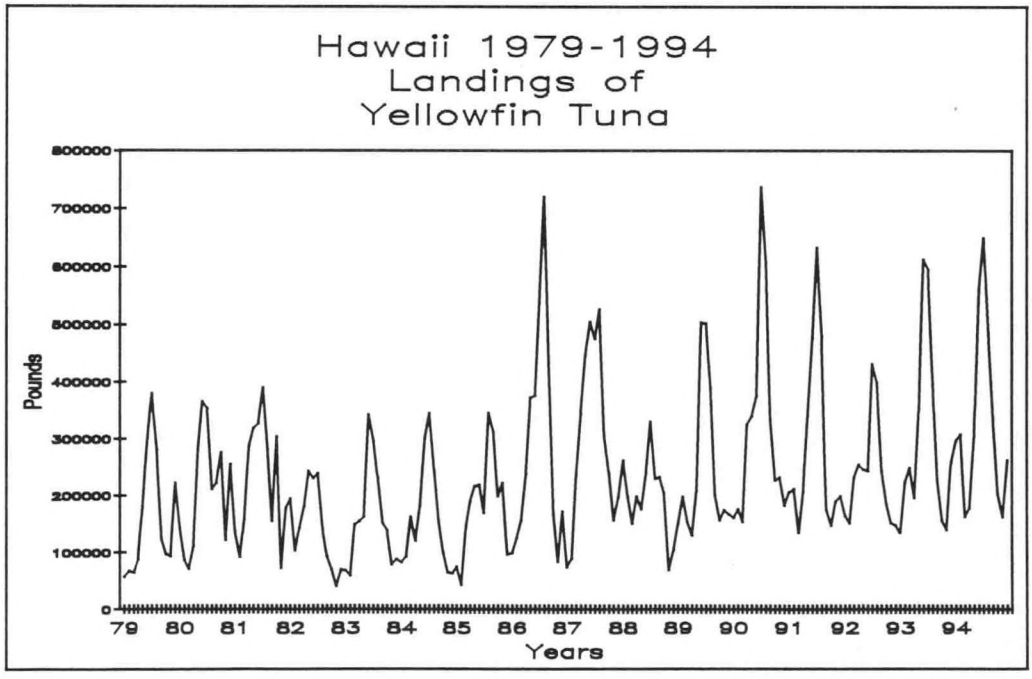

Figure V.4.11

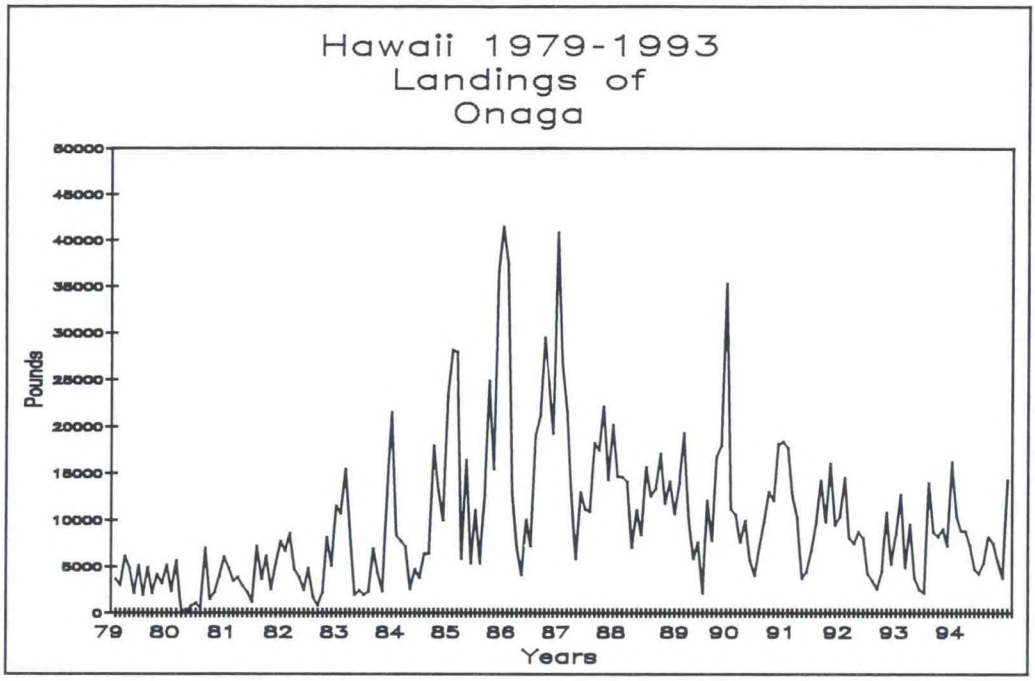

Figure V.4.12

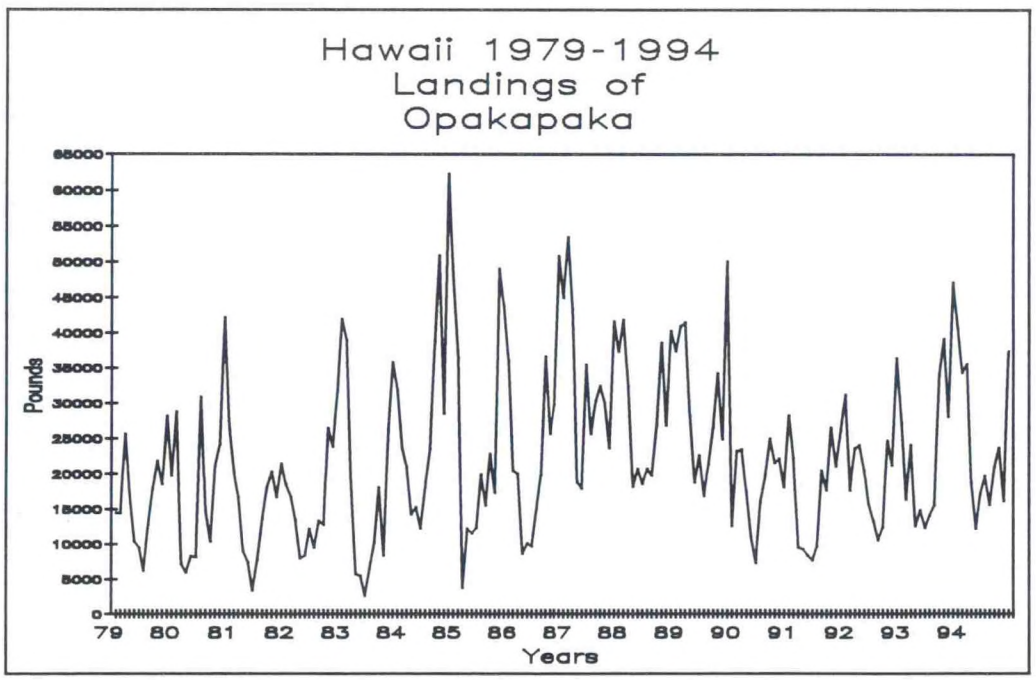

Figure V.4.13

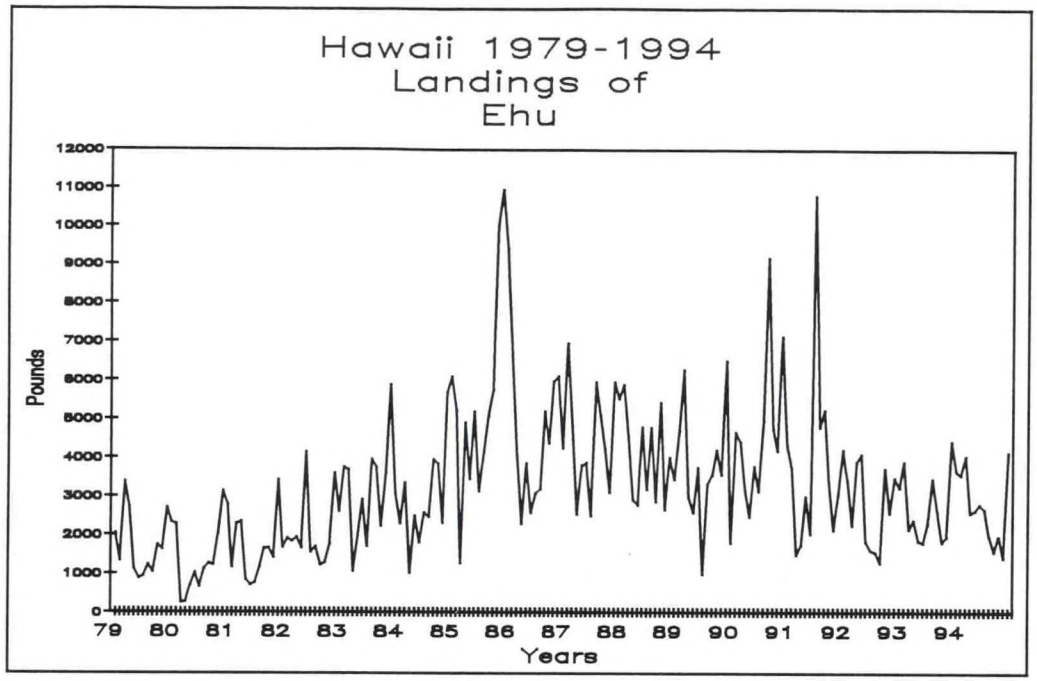

Figure V.4.14