

Southwest Fisheries Science Center
Administrative Report H-01-05

FISHERY STATISTICS OF THE WESTERN PACIFIC
VOLUME XVI

Territory of American Samoa (1999)
Commonwealth of the Northern Mariana Islands (1999)
Territory of Guam (1999)
State of Hawaii (1999)

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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 (NMFS) Southwest Fisheries Science Center (SWFSC) initiated the Western Pacific Fishery Information Network (WPacFIN) to assist Pacific island fisheries agencies in upgrading their data collecting, processing, and reporting capabilities. Several agencies participate in this program:

American Samoa	<ul style="list-style-type: none"> • Department of Marine and Wildlife Resources (DMWR) • NMFS SWR Fisheries Monitoring Field Office
Commonwealth of the Northern Mariana Islands (CNMI)	<ul style="list-style-type: none"> • Division of Fish and Wildlife (DFW)
Guam	<ul style="list-style-type: none"> • Division of Aquatic and Wildlife Resources (DAWR) • Department of Commerce (DOC)
Hawaii	<ul style="list-style-type: none"> • Hawaii Division of Aquatic Resources (HDAR) • NMFS Southwest Fisheries Science Center (SWFSC), Honolulu Laboratory • NMFS Southwest Region (SWR), Pacific Islands Area Office (PIAO) • Western Pacific Regional Fisheries 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 their activities. Significant progress has been made by all participating agencies, particularly in the areas of upgrading data collecting and processing systems.

In a major step to improve and coordinate the data reporting and distributing systems of the agencies, in May 1985 the FDCC agreed to produce 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

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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 sixteenth volume in the series "Fishery Statistics of the Western Pacific" and contains 1999 summaries of commercial landings for American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawaii. As with previous volumes, this volume is divided into sections, one each for the major island areas.

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BACKGROUND

This report is compiled by fisheries agencies participating in the Western Pacific Fishery Information Network (WPacFIN, formerly referenced as WPACFIN). A collaborative effort between agencies in Hawaii, Guam, the Commonwealth of the Mariana Islands (CNMI) and American Samoa, WPacFIN strives to improve the availability and dissemination of fisheries information. Participating groups include:

American Samoa	<ul style="list-style-type: none"> • Department of Marine and Wildlife Resources (DMWR) • NMFS SWR Fisheries Monitoring Field Office
Commonwealth of the Northern Mariana Islands (CNMI)	<ul style="list-style-type: none"> • Division of Fish and Wildlife (DFW)
Guam	<ul style="list-style-type: none"> • Division of Aquatic and Wildlife Resources (DAWR) • Department of Commerce (DOC)
Hawaii	<ul style="list-style-type: none"> • Hawaii Division of Aquatic Resources (HDAR) • NMFS Southwest Fisheries Science Center (SWFSC), Honolulu Laboratory • NMFS Southwest Region (SWR), Pacific Islands Area Office (PIAO) • Western Pacific Regional Fisheries Management Council

WPacFIN and these groups collect, computerize, edit, and process data from these agencies. Ultimately WPacFIN staff at the Honolulu Laboratory creates the summaries and graphs found in this document.

Data from DMWR, DAWR, and DFW are supplied on portable computer media in established WPacFIN database formats, whereas data for Hawaii are provided by HDAR via a dial-in telecommunications link. Once data from all agencies are put into the proper format on the central WPacFIN computer and appropriate edit and verification procedures completed, summary reports and files are produced using software developed by WPacFIN staff specifically for this purpose. Graphs are produced using commercially available software.

PROGRESS

In 1981 when WPacFIN began assisting agencies improve 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 were using WPacFIN supplied computers to process data. 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 preliminary fishery statistics to WPacFIN within 45 days of the date of collection.

In particular, the HDAR has significantly improved its procedures for editing, updating, and processing Hawaii's data; it has reduced the lag time in data processing from about 2 ½ years to less than 3 months for most 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. Efforts are currently underway to develop and implement such a system.

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 and Guam's data are based on voluntary reporting of major fish buyers using government-provided "trip-ticket" invoices; American Samoa's data are based on creel survey sampling of participation, interviews of fishermen, and a complex data expansion system augmented with additional data from other data systems. Each system has advantages and disadvantages, and the user should be aware of them when comparing or interpreting data. Additionally, WPacFIN staff and the island agencies are continually making improvements to the data collecting and processing systems in each area. Because the improvements usually result in updates to the estimates of total and commercial landings, the data in this volume may not match exactly with data in previous volumes of this report series.

The user should also be aware that species assemblages vary among island groups, as do cultural preferences and principal fishing techniques and gear. 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, 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. 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. In order to graphically present 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 to include 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. With the recent growth of longline fisheries in Hawaii and American Samoa, bigeye and albacore tuna have also become more important.

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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

Four types of graphs are provided with each island's data. Type I graphs present summary charts of the major species and species groups for 1999. 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.

- 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

AMERICAN SAMOA 1999 FISHERY STATISTICS

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American Samoa
Department of Marine and Wildlife Resources
and the
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AMERICAN SAMOA 1999 FISHERY STATISTICS

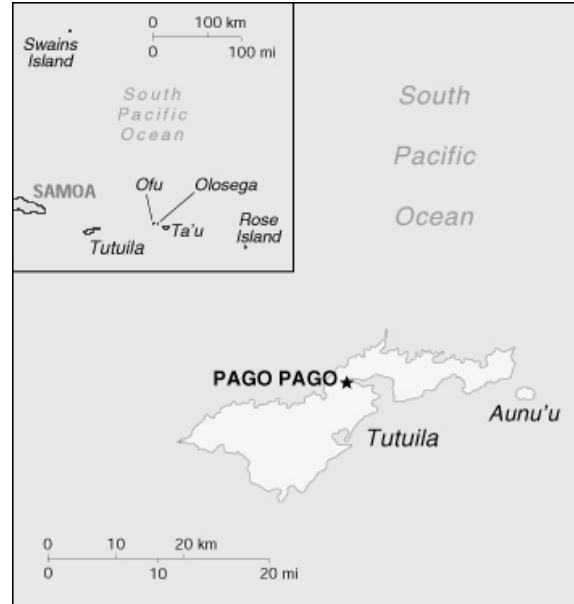
INTRODUCTION

Location: 14°S latitude, 170°W longitude

Islands: Tutuila, Aunu`u, the Manu`a Islands (Ofu, Olosega, Ta`u), Rose Atoll (uninhabited), and Swain's Island (sparsely populated)

Population: 64,000 (80% on Tutuila)

Economy: tuna industry



American Samoa

Source: <<http://www.cia.gov/cia/publications/factbook/aq.html>>;
The World Factbook 1999

The American Samoa Department of Marine and Wildlife Resources (DMWR; formerly the Office of Marine Resources) is located near Pago Pago on Tutuila and has been collecting commercial fisheries data from the Tutuila fleet since the early 1970s. In 1983 it extended its coverage to the Manu`a Islands, and in 1985 DMWR modified its data collection programs to include recreational and subsistence fisheries data.

American Samoa's domestic fisheries are typically small-boat, one-day fisheries. *Alias* (pronounced *ah-lee-ahs*), or manta cats, make up the majority of the fleet. Measuring 28 to 32 feet in length, these outboard-engine-powered catamarans traditionally did trolling and bottomfishing until mid-1995 when their conversion to longlining began.

The domestic longlining fishery became the dominant fishery by 1996 and continues to be very successful. By 1999 42 longlining vessels were active, resulting in significantly increased catches of albacore tuna (the primary target species), blue marlin, yellowfin tuna, wahoo, and mahimahi.

During 1999, 65 different boats were sampled during the weekly creel survey, 57 from Tutuila and 10 from the Manu`a Islands, with 2 boats being sampled in both areas. The majority of the catch was sold locally, and most of the longline albacore went to the two canneries on Tutuila. On average, Tutuila boat trips consisted of 3-man crews, fished 8 hours, and caught 261 pounds of fish. Manu`a boat trips also consisted of 3-man crews, but only fished for 5 hours and caught 69 pounds of fish. Over 99% of the longline fishing was based on Tutuila.

SPECIAL NOTE ON DATA REVISIONS

There were significant changes in the fisheries in the mid-1990's with the development of the longline fishery and a nighttime, boat-based SCUBA spearfishing fishery. Because of the nature of these fisheries, biases began creeping into the effort-counting and interviewing processes of the DMWR surveys. By 1997 WPacFIN staff discovered the problems, and modifications to survey techniques were implemented by DMWR staff. It became clear by early 1998 that the algorithms used to expand the survey data and estimate for the total fishery also needed to be changed. The new data processing system that better handles the more complex nature of today's fisheries in American Samoa as detailed below has been completed and was used to reprocess the historical time series. This volume includes the results of this new improved algorithm, but additional data quality control procedures and algorithm enhancements are still being made which may cause small changes in subsequent reports.

DATA COLLECTING SYSTEM

The data collecting systems used by DMWR to monitor the changing fisheries of American Samoa have evolved considerably over the past twenty years. One common factor of all systems has been that they have relied heavily on personal contacts with the fishermen and on a significant amount of dockside monitoring and interviewing.

The major systems in place today include: 1) boat-based access-point creel surveys on Tutuila and the Manu`a Islands (Offshore Creel Survey System), which are the mainstay of the monitoring program; 2) a mandatory purchase receipt "trip ticket" system for fish businesses on Tutuila (Commercial Purchase System); 3) a vessel history and tracking system for all American Samoa vessels (Vessel Classification System); 4) a Daily Effort Census System for detailed tracking of the developing longline fishery; 5) a mandatory federal Longline Logbook System; 6) a Cannery Landings System to document all landings at the two canneries made by domestic and foreign vessels; and 7) a size frequency sampling program at the canneries. Data from all these major systems are used to develop the best available data for the complex and ever changing fisheries of American Samoa. More details of these data collection systems follow.

From 1982 to 1985, DMWR obtained catch statistics by interviewing commercial fishermen at the end of their trips and kept records of as much commercial fishing activity as possible. This data collection method was accurate for trips where interviews were conducted. Yet it was very labor intensive, did not cover all trips, and did not include the small but growing recreational and subsistence fisheries. Also, beginning in the early 1980's, a vessel classification system was established to collect information on all vessels participating in any domestic fisheries. This system provides the following information on American Samoa vessels:

II.3

- Boat Name
- Registration Number
- Propulsion
- Length
- Beam
- Number of Engines
- Type of Use
- Trailered
- Number of Crew
- Depth
- Engine Type
- Fuel Type
- Material
- Horsepower
- Port
- Methods of fishing
- Federal Permit

In October 1985 a new creel survey sampling system was implemented on Tutuila to provide better coverage and statistics on all boat-based fisheries. Soon afterwards similar monitoring programs were established in the Manu`a Islands where the fishing fleets are centrally located and small enough for statistics to be collected for nearly every trip. The surveyors in the Manu`a islands send their monitoring forms to DMWR in Tutuila for processing. The Manu`a statistics are entered and compiled on a monthly basis and are adjusted by an estimated percent coverage factor that is usually 100%.

The details of the Tutuila boat-based fishery sampling program have changed over the years to accommodate changes in the fisheries; but it is still a systematic, random sampling program that stratifies sampling by type of day (either weekday or weekend/holiday) and by fishing method. For logistical and cultural reasons, Sundays are no longer sampled as effort is extremely low and not similar to other weekend/holiday-type days.

DMWR staff normally sample 2 weekdays and 1 weekend/holiday per week. During survey days, counts of total participation are collected, and as many returning vessels as possible are interviewed for catch, effort, and biological samples. Tutuila is divided into six sample areas, five of which are sampled. It is assumed that the non-sampled area is similar to the sampled areas in fishing activity and success rate. Furthermore, it is assumed that the fishermen interviewed are representative of the entire fishing population and that they give accurate information.

Unless contrary information is available from dockside questioning of knowledgeable persons, a boat is assumed to be "out fishing" if its trailer is at a boat ramp or the boat is missing from its normal berthing area during the 18 hour survey day. The following participation information is recorded for all boats determined to be "out fishing." The participation data is expanded to estimate the total number of fishing trips in Tutuila.

- Sample Date
- Boat Name
- 3 Observation Times
- Type of Day
- Fishing Method
- Sample Area

II.4

The remaining data items listed below are collected on each boat for which an interview is successfully completed.

- Interview Time *
- Area fished
- Home island
- Total hours fished (trip length) *
- Number of fishermen
- Number of gear used
- Total trip weight in pounds *
- Species caught *
- Number of pieces for each species
- Disposition of species*
- Weight in pounds for each species *
- Condition of species if not whole
- Length of fish (converted to weight)
- Price per pound for each species

It is not always possible to obtain information on all the items listed. However, the ones marked with an asterisk (*) are considered essential for data expansion purposes. Also, identification and weight of each species are often not obtainable; in this case a code for species groupings (e.g., miscellaneous bottom fish) is used. The interview data is later expanded to estimate the total catch per fishing trips and other CPUE measures in Tutuila. The catch per trip estimate is multiplied by the number of trips estimate for each strata to get an estimate of the total catch for Tutuila.

For several decades the two canneries have provided monthly summary statistics about their purchases of fish from all vessels, foreign and domestic. Then in September 1990, a Commercial Purchase (receipt book) System was instituted in which all businesses in Samoa that buy fish directly from fisherman were required by local law to submit a copy of their purchase receipts to DMWR. Receipt books are issued by DMWR to all fish markets, stores, hotels, and restaurants that re-sell fish, either whole or prepared. The following information is collected via these receipts.

- Invoice Date
- Invoice Number
- Buyer's Name
- Boat Name, Owner
- Area Fished
- Fishing Method
- Species bought
- Number of pieces for each species
- Weight in pounds for each species *
- Price per pound for each species

In January 1996, in response to the developing longline fishery, a federal longline logbook system was implemented by NMFS. All longline fishermen are required to obtain a federal permit which requires them to submit logs containing detailed data on each of their sets and the resulting catch. From 1996 to 1999, the logbooks submitted by the local longliners were edited by the NMFS fisheries monitoring agent in Samoa for any missing data and were then sent to the NMFS Honolulu Lab for further editing and data processing. To improve the quality and timeliness of the data, beginning in January 2000 logbook data collecting, editing, and processing has been done by DMWR in Samoa and is downloaded to NMFS periodically. The following information is returned for each set these longline fishermen make:

II.5

- Set Date
- Vessel
- Date of Departure
- Port of Departure
- Date of Arrival
- Port of Arrival
- Observer on Board
- Target Species
- Bait Used
- Mainline Length
- No. of Hooks
- No. of Hooks/Float
- No. of Lightsticks Used
- Bird Catch Mitigation Measures
- Wind Detection
- Wave Height
- Sea Surface Temperature
- Wind Speed
- Begin Set Time
- Begin Set Latitude and Longitude
- End Set Time
- End Set Latitude and Longitude
- Haul Date
- Begin Haul Date
- Begin Haul Latitude and Longitude
- End Haul Time
- End Haul Latitude and Longitude
- No. of Pelagic Species kept
- No. of Pelagic Species released
- No. of Sharks finned
- No. of Sharks kept
- No. of Sharks released
- No. of Protected Species released alive
- No. of Protected Species released injured
- No. of Protected Species released dead

To further improve the monitoring of the fast-growing longline fishery, in July 1999 DMWR implemented a Daily Effort Concensus (DEC) for all federally permitted longline vessels. Six days a week DMWR staff make two visits a day to ports where longline vessels move. The staff document whether each vessel on the list is “in port” or “out fishing.” The DEC data are used to track the activity of each vessel and to help ensure all fishing logsheets are submitted by the fishermen.

DATA PROCESSING SYSTEM

As the data collecting systems used by DMWR to monitor the fisheries in American Samoa have changed over the years, so have the data processing systems. Numerous versions of database and utility software and microcomputer systems have been used over the years to meet the growing demand for processing the collected data. Generally speaking, these changes, with their significant emphasis on improving data quality and their cross-validation among systems, have made the data processing systems more robust, complex, and complete.

Several important principles have remained constant over time: keep data processing close to the source of data collecting; provide all of the needed software tools to ensure the quality of data; make the systems user friendly and functional for the local staff; and maintain as many standards as possible throughout the time series of data collected.

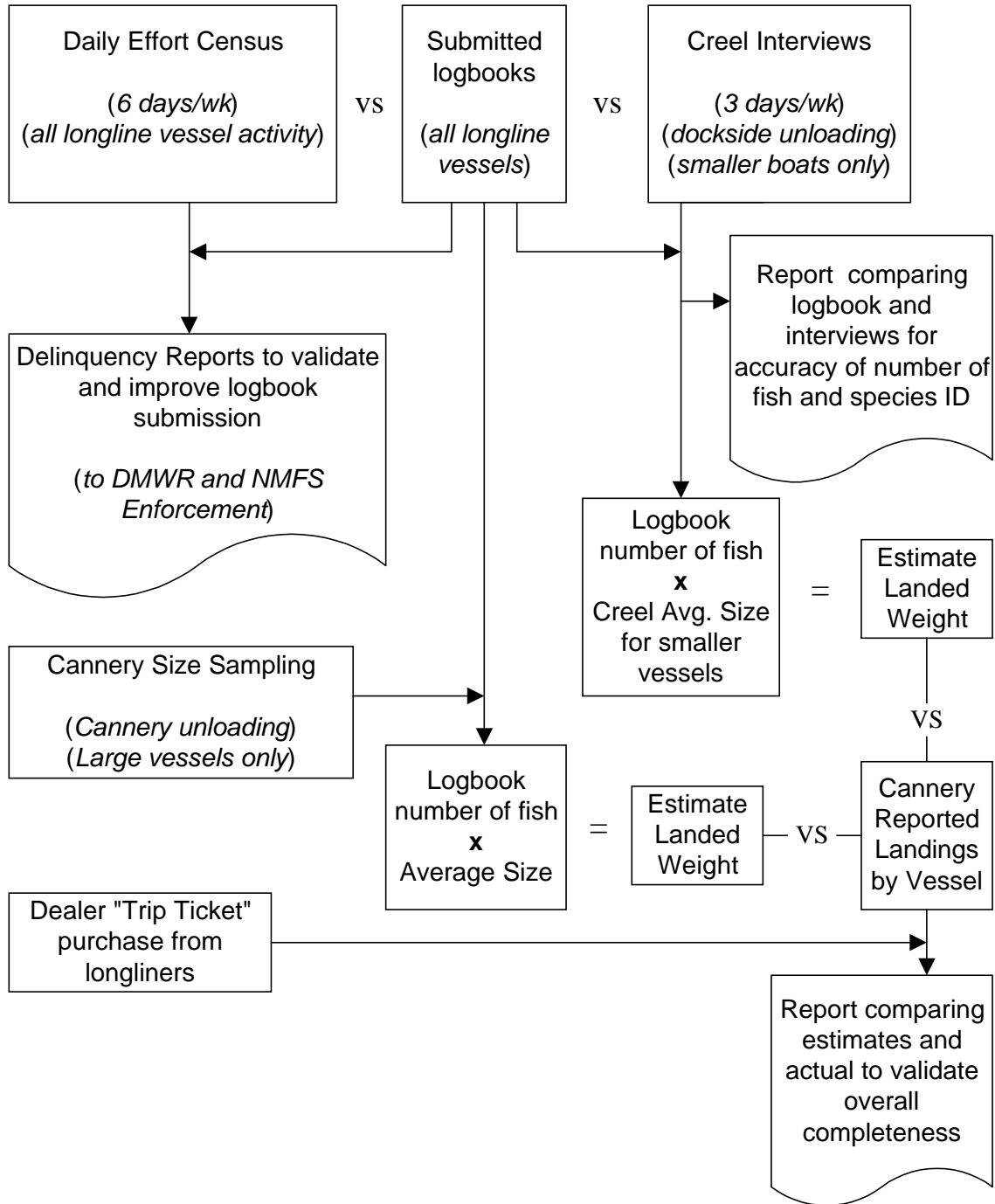
II.6

Typically, when upgrades (such as changes in expansion and reporting algorithms for the creel survey data and commercial landings data) have been made to data processing systems, the entire time series of data would be reprocessed using the same algorithms so that trends in the fisheries would remain as intact as possible. The annual and monthly estimated commercial landings data and the corresponding time series figures included in this report were produced with the versions of data processing systems in use in May 2001. To help the reader understand the origin of the data included in this report, a general description of these processes follows. It does not include the details on many minor changes that have occurred throughout the evolutionary history of these systems.

The data from 1982-85 have been imported directly from the original Commercial Catch Monitoring System used before the implementation of the offshore creel survey. Since 1986, the boat-based creel survey data expansion system has been the central system for estimating total commercial landings in American Samoa. In short, the survey data expansion process involves multiplying the average daily participation by the average catch per trip for each stratum. For the years 1986-90, commercial sales portions of the expanded creel survey data from Tutuila and the Manu`a Islands were combined to produce estimated total commercial landings. Since 1990, with the implementation of the mandatory fish dealer receipt book system on Tutuila, further adjustments have been made to these combined creel data by using receipt book data. These adjustments made significant improvements in overall totals as they helped adjust for sales not monitored through the boat-based survey (e.g. shoreline and strictly nighttime commercial fishing). Species totals modified with these types of adjustments are flagged in reports with an asterisk. Finally, in the late 1990's when larger longline vessels began landing their catches directly at the canneries, and thus out of the monitoring capabilities of the standard creel surveys, the longline logbook system and cannery size frequency sampling data entered the algorithm to fill the gap for this portion of the fishery by adding the landings of these vessels to the other data to create a more complete picture of the estimated total commercial landings for the Territory.

One of the most significant recent improvements made in the data processing systems for DMWR has been in the area of cross-system data validation and quality control. By collecting similar data from several sources, using different monitoring and reporting tools, the quality of reported data can be cross-referenced between systems to provide insight into the validity and completeness of each data set. The following schematic shows some cross-system data validation relationships and features that are utilized in the most current version of the integrated DMWR fisheries monitoring programs (see next page):

Data Quality and Cross Validation American Samoa Longline Example



DATA REPORTING SYSTEM

After all editing, quality control, and data interpretation activities are completed, monthly and annual commercial landings data tables by species are generated. Each of the commercial landings data tables contains the common name, weight in pounds, value in dollars, and the average price per pound of each species or species group and whether or not the data was modified by Commercial Purchase System data (denoted by asterisks). The monthly data tables are based on monthly expansions of the Tutuila Offshore Creel Survey Data with enhancements by monthly Longline Logbook, Commercial Purchase System and Manu`a data as explained above. Annual data tables are based on combined annual expansions of the creel data for the entire calendar year with similar annual enhancements from Longline Logbook, Commercial Purchase System and Manu`a data as explained above. Since the monthly and annual data tables are based on separate monthly and annual expansion of the creel data, the annual data tables are not the exact sum of the 12 monthly data tables but fall within the standard error. These data tables are listed as Tables II.1.1 to II.1.13 in this report.

The charts that make up the rest of the report are for groups of species as well as for some of the dominant individual species. The species in the species groups used in the charts of this report are defined below.

Note: Some charts have been modified and added in this volume: II.1.4 (Albacore and Yellowfin); II.1.5 (Yellowfin replaced by Bigeye); II.2.4 (Albacore and Yellowfin); II.2.5 (Yellowfin replaced by Bigeye); II.3.5 (Albacore and Yellowfin); II.3.6 (Yellowfin replaced by Bigeye); II.4.5 (Albacore); and II.4.8 (Bigeye). More emphasis has been put on Bigeye Tuna and Albacore because of their catch. Please refer to the table of contents.

I. Pelagic Management Unit Species (PMUS)

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

Other Sharks	Black marlin
Blacktip reef shark	Striped Marlin
Blue shark	Sailfish
Mako Shark	Spearfish
Nurse shark	Swordfish
Thresher Shark	Wahoo
White-Tip Shark	Pomfret
Mahimahi	Moonfish
Blue marlin	

II.9

II. Bottomfish Management Unit Species (BMUS)

Amberjack	Jacks (misc)
Ambon emperor	Kusakar's snapper
Bigeye emperor	Lehi (silverjaw)
Bigeye trevally	Longnose emperor
Black jack	Lunartail grouper
Black snapper	Multidens snapper
Blacktail snapper	Oilfish
Blacktip grouper	Onaga (longtail snapper)
Blood snapper	Onespot snapper
Blue lined gindai	Orangespot emperor
Blue lined snapper	Peacock grouper
Bluefin trevally	Pristipomoides/Etelis
Blueline bream	Redgill emperor
Bottom Handline Snappers	Rufous snapper
Bottomfish (Assorted)	Smalltooth grouper
Brown jobfish	Snake mackerel
Ehu (squirrelfish snap.)	Spotted grouper
Emperors (misc)	Stone's snapper
Flagtail grouper	Striped grouper
Giant grouper	Tomato grouper
Giant trevally	Trevally (C.caeruleop.)
Gindai (flower snap)	Twinspot/red snapper
Goldenline bream	Whitemouth trevally
Goldspot trevally	Yellow opakapaka
Gray jobfish	Yelloweye opakapaka(P.fl.
Groupers (misc)	Yellowspot grouper
Hawaiian opakapaka	Yellowtail snapper
Humpback snapper	

III. Billfish

Swordfish	Striped Marlin
Blue marlin	Sailfish
Black marlin	Spearfish

IV. Tunas

Tunas	Bluefin Tuna
Skipjack Tuna	Yellowfin Tuna
Dogtooth tuna	BigeyeTuna
Albacore	Kawakawa

V. Other Tuna

Tunas
Dogtooth tuna

Bluefin Tuna
Kawakawa

VI. Fisheries Categories

A. Pelagics

Albacore
Barracudas
BigeyeTuna
Black marlin
Blacktip reef shark
Blue marlin
Blue shark
Bluefin Tuna
Dogtooth tuna
Hammerhead Shark
Kawakawa
Large barracuda
Mackerel
Mahimahi
Mako Shark
Moonfish
Nurse shark
Other Pelagic Fish

Other Sharks
Other birds
Pomfret
Rainbow runner
Sailfish
Silky Shark
Skipjack Tuna
Small barracuda
Spearfish
Striped Marlin
Swordfish
Thresher Shark
Tiger Shark
Tunas
Wahoo
White-Tip Shark
Yellowfin Tuna

B. Bottom Fish

Amberjack	Jacks (misc)
Ambon emperor	Kusakar's snapper
Bigeye emperor	Lehi (silverjaw)
Bigeye trevally	Longnose emperor
Black jack	Lunartail grouper
Black snapper	Multidens snapper
Blacktail snapper	Oilfish
Blacktip grouper	Onaga (longtail snapper)
Blood snapper	Onespot snapper
Blue lined gindai	Orangespot emperor
Blue lined snapper	Peacock grouper
Bluefin trevally	Pristipomoides/Etelis
Blueline bream	Redgill emperor
Bottom Handline Snappers	Rufous snapper
Bottomfish (Assorted)	Smalltooth grouper
Brown jobfish	Snake mackerel
Ehu (squirrelfish snap.)	Spotted grouper
Emperors (misc)	Stone's snapper
Flagtail grouper	Striped grouper
Giant grouper	Tomato grouper
Giant trevally	Trevally (C.caeruleop.)
Gindai (flower snap)	Twinspot/red snapper
Goldenline bream	Whitemouth trevally
Goldspot trevally	Yellow opakapaka
Gray jobfish	Yelloweye opakapaka(P.fl.
Groupers (misc)	Yellowspot grouper
Hawaiian opakapaka	Yellowtail snapper
Humpback snapper	

C. Reef Fish

Bigeye squirrelfish	Porcupinefish
Bigeyes	Rabbitfish
Bigscale soldierfish	Red snapper, mu
Brown surgeonfish	Reef fish (Assorted)
Brwn wrasse:pataotao	Rudderfish
Butterflyfish	Saber squirrelfish
Cardinalfish	Sargent major
Convict tang	Squirrelfish
Flounders	Striped bristletooth
Goatfish	Surgeonfishes/tangs
Hawkfish	Sweepers
Inshore groupers	Sweetlips
Inshore snappers	Terapon perch
Lined surgeon	Tilefish
Mountain bass	Triggerfish
Mulletts	Unicornfishes (misc)
Naso tang	Whitespotted surgeonfish
Orangespine unicornfish	Wrasse
Parrotfishes	Yellowfin surgeonfish
Pink goatfish	

D. Other

Bigeye scad	Moray eels
Catfish	Needlefish
Conger eels	Octopus
Crabs	Rays
Eagle ray	Salmon
Eels	Sea shells
Flyingfish	Sea urchins
Giant clam	Shrimp
Halfbeaks	Slipper lobster
Invertebrates	Spiny lobster
Kona crab	Spotted eels
Leatherback	Squid
Limu, algae	Sunfish
Mackerel scad: opelu	Threadfin
Mangrove crab	Tilapia
Milkfish	Turban snail
Miscellaneous	

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 the commercial landings summaries are not based on a census of all the fishing activities, but on samples of those activities and on integration of data from four separate data systems. 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.

**Table II.1.1
American Samoa Annual 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Bigeye scad	668	\$1,180	\$1.77	*
Jacks (misc)	283	\$611	\$2.16	
Black jack	1,034	\$2,142	\$2.07	
Trevally (C.caeruleop.)	19	\$58	\$3.00	
Barracudas	1,001	\$1,829	\$1.83	
Mullet	429	\$1,704	\$3.97	*
Bottomfish (Assorted)	733	\$1,582	\$2.16	*
Groupers (misc)	514	\$1,026	\$2.00	
Peacock grouper	3	\$6	\$2.00	
Flagtail grouper	20	\$54	\$2.70	
Tomato grouper	111	\$252	\$2.27	
Blacktip grouper	119	\$266	\$2.24	
Lunartail grouper	525	\$1,083	\$2.06	
Blue lined snapper	840	\$1,691	\$2.01	
Onespot snapper	29	\$63	\$2.17	
Humpback snapper	893	\$1,945	\$2.18	
Gray jobfish	808	\$1,617	\$2.00	
Yellow opakapaka	683	\$1,814	\$2.65	
Hawaiian opakapaka	313	\$815	\$2.60	
Yelloweye opakapaka(P.fl.)	6	\$15	\$2.50	
Gindai (flower snap)	148	\$364	\$2.46	*
Yellowtail snapper	5	\$10	\$2.00	
Lehi (silverjaw)	681	\$1,820	\$2.67	
Onaga (longtail snapper)	1,800	\$5,681	\$3.16	
Ehu (squirrelfish snap.)	3,951	\$12,541	\$3.17	
Stone's snapper	425	\$851	\$2.00	
Bigeye emperor	188	\$375	\$2.00	
Emperors (misc)	889	\$1,744	\$1.96	
Orangespot emperor	96	\$192	\$2.00	
Redgill emperor	84	\$168	\$2.00	
Oilfish	33	\$50	\$1.50	*
Reef fish (Assorted)	378	\$756	\$2.00	*
Rudderfish	879	\$1,757	\$2.00	
Rabbitfish	9	\$18	\$2.00	
Sargent major	298	\$596	\$2.00	
Surgeonfishes/tangs	32,925	\$66,728	\$2.03	
Unicornfishes (misc)	3,450	\$6,971	\$2.02	
Squirrelfish	2,719	\$5,486	\$2.02	
Parrotfishes	18,069	\$34,770	\$1.92	*
Terapon perch	65	\$129	\$2.00	
Wrasse	194	\$388	\$2.00	
Inshore groupers	3,285	\$6,287	\$1.91	*
Butterflyfish	71	\$142	\$2.00	
Inshore snappers	13	\$26	\$2.00	
Mahimahi	28,611	\$43,369	\$1.52	
Swordfish	775	\$1,782	\$2.30	*
Blue marlin	31,902	\$29,337	\$0.92	
Black marlin	3,027	\$2,647	\$0.87	
Sailfish	5,136	\$7,068	\$1.38	
Spearfish	534	\$801	\$1.50	
Rainbow runner	104	\$190	\$1.83	
Wahoo	39,853	\$58,765	\$1.47	
Skipjack Tuna	45,869	\$34,599	\$0.75	

Table II.1.1 (Cont.)
American Samoa Annual 1999 Estimated Commercial Landings

Species	Pounds	Value	\$/Lb	
Dogtooth tuna	243	\$414	\$1.70	*
Albacore	711,750	\$722,949	\$1.02	
Yellowfin Tuna	138,434	\$175,873	\$1.27	
Bigeye Tuna	18,438	\$26,741	\$1.45	
Kawakawa	71	\$113	\$1.61	
Moonfish	1,776	\$3,552	\$2.00	
Crabs	59	\$142	\$2.39	
Spiny lobster	2,255	\$7,562	\$3.35	*
Slipper lobster	13	\$33	\$2.50	
Octopus	1,422	\$2,747	\$1.93	*
Squid	49	\$87	\$1.78	
Tilapia	46	\$69	\$1.50	*
TOTAL	1,110,049	\$1,286,441	\$1.16	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.2
American Samoa January 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Jacks (misc)	78	\$174	\$2.24	
Barracudas	30	\$60	\$2.00	
Mullet	111	\$333	\$3.00	*
Tomato grouper	10	\$26	\$2.60	
Blacktip grouper	16	\$41	\$2.56	
Lunartail grouper	122	\$253	\$2.07	
Blue lined snapper	1	\$2	\$2.01	
Humpback snapper	94	\$219	\$2.34	
Gray jobfish	24	\$72	\$3.00	
Yellow opakapaka	20	\$70	\$3.50	
Hawaiian opakapaka	10	\$20	\$2.00	*
Gindai (flower snap)	34	\$98	\$2.88	*
Lehi (silverjaw)	17	\$51	\$3.00	
Onaga (longtail snapper)	538	\$1,825	\$3.39	
Ehu (squirrelfish snap.)	556	\$1,715	\$3.08	*
Stone's snapper	15	\$30	\$2.00	
Bigeye emperor	11	\$22	\$2.00	
Reef fish (Assorted)	203	\$404	\$1.99	*
Sargent major	82	\$164	\$2.00	
Surgeonfishes/tangs	3,331	\$7,456	\$2.24	
Unicornfishes (misc)	380	\$699	\$1.84	*
Squirrelfish	314	\$624	\$1.99	*
Parrotfishes	2,389	\$5,195	\$2.17	
Terapon perch	53	\$106	\$2.00	
Inshore groupers	449	\$1,012	\$2.25	
Butterflyfish	4	\$8	\$2.00	
Mahimahi	763	\$1,481	\$1.94	
Swordfish	191	\$573	\$3.00	*
Blue marlin	1,432	\$1,432	\$1.00	
Wahoo	2,317	\$4,458	\$1.92	
Skipjack Tuna	2,033	\$2,077	\$1.02	
Albacore	35,983	\$29,482	\$0.82	
Yellowfin Tuna	4,984	\$8,562	\$1.72	
Bigeye Tuna	571	\$737	\$1.29	
Spiny lobster	333	\$1,226	\$3.69	*
Octopus	259	\$409	\$1.58	*
TOTAL	57,756	\$71,115	\$1.23	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.3
American Samoa February 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Bigeye scad	47	\$93	\$2.00	*
Jacks (misc)	10	\$28	\$2.84	
Tomato grouper	10	\$23	\$2.29	
Blue lined snapper	48	\$96	\$2.00	*
Yellow opakapaka	30	\$65	\$2.18	
Hawaiian opakapaka	4	\$8	\$2.00	*
Onaga (longtail snapper)	243	\$851	\$3.50	
Ehu (squirrelfish snap.)	891	\$2,795	\$3.14	
Stone's snapper	184	\$368	\$2.00	
Bigeye emperor	81	\$162	\$2.00	
Reef fish (Assorted)	556	\$1,137	\$2.05	*
Surgeonfishes/tangs	3,851	\$7,702	\$2.00	
Unicornfishes (misc)	393	\$757	\$1.93	*
Squirrelfish	387	\$774	\$2.00	
Parrotfishes	1,839	\$3,679	\$2.00	
Inshore groupers	263	\$526	\$2.00	
Butterflyfish	29	\$57	\$2.00	
Mahimahi	1,101	\$2,202	\$2.00	
Blue marlin	2,018	\$2,018	\$1.00	
Rainbow runner	63	\$119	\$1.88	
Wahoo	1,237	\$1,365	\$1.10	*
Skipjack Tuna	3,336	\$3,254	\$0.98	
Albacore	31,284	\$21,782	\$0.70	
Yellowfin Tuna	7,637	\$13,711	\$1.80	
BigeyeTuna	185	\$323	\$1.75	*
Spiny lobster	209	\$753	\$3.60	*
TOTAL	55,936	\$64,649	\$1.16	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.4
American Samoa March 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb
Jacks (misc)	46	\$95	\$2.07
Black jack	916	\$1,857	\$2.03
Barracudas	114	\$194	\$1.70
Bottomfish (Assorted)	759	\$1,518	\$2.00
Groupers (misc)	194	\$389	\$2.00
Tomato grouper	9	\$24	\$2.67
Lunartail grouper	275	\$557	\$2.03
Blue lined snapper	225	\$450	\$2.00
Onespot snapper	17	\$34	\$2.00
Humpback snapper	81	\$182	\$2.26
Gray jobfish	35	\$105	\$3.00
Yellow opakapaka	432	\$1,159	\$2.68
Hawaiian opakapaka	284	\$740	\$2.60
Gindai (flower snap)	16	\$42	\$2.63
Lehi (silverjaw)	143	\$385	\$2.69
Onaga (longtail snapper)	993	\$3,163	\$3.19
Ehu (squirrelfish snap.)	1,922	\$6,540	\$3.40
Stone's snapper	265	\$530	\$2.00
Emperors (misc)	322	\$644	\$2.00
Redgill emperor	101	\$201	\$2.00
Reef fish (Assorted)	930	\$1,873	\$2.01 *
Surgeonfishes/tangs	4,702	\$9,405	\$2.00
Unicornfishes (misc)	400	\$800	\$2.00
Squirrelfish	547	\$1,093	\$2.00
Parrotfishes	2,470	\$4,736	\$1.92 *
Wrasse	171	\$343	\$2.00
Inshore groupers	508	\$1,016	\$2.00
Butterflyfish	29	\$57	\$2.00
Mahimahi	602	\$898	\$1.49 *
Blue marlin	1,704	\$1,704	\$1.00
Black marlin	736	\$736	\$1.00
Rainbow runner	30	\$53	\$1.75
Wahoo	864	\$1,408	\$1.63
Skipjack Tuna	1,596	\$1,096	\$0.69
Dogtooth tuna	17	\$34	\$2.00
Albacore	26,179	\$19,505	\$0.75
Yellowfin Tuna	14,713	\$26,035	\$1.77
Bigeye Tuna	878	\$1,246	\$1.42
Spiny lobster	485	\$1,773	\$3.65
Octopus	15	\$25	\$1.65 *
Squid	11	\$23	\$2.00
TOTAL	64,737	\$92,666	\$1.43

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.5
American Samoa April 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb
Jacks (misc)	13	\$26	\$2.07
Black jack	241	\$483	\$2.00
Groupers (misc)	49	\$98	\$2.00
Lunartail grouper	74	\$147	\$2.00
Blue lined snapper	130	\$260	\$2.00 *
Onespot snapper	6	\$13	\$2.00
Humpback snapper	189	\$378	\$2.00 *
Gray jobfish	61	\$122	\$2.00 *
Yellow opakapaka	97	\$259	\$2.67
Hawaiian opakapaka	63	\$166	\$2.62
Lehi (silverjaw)	30	\$82	\$2.72
Onaga (longtail snapper)	319	\$1,059	\$3.32 *
Ehu (squirrelfish snap.)	564	\$1,893	\$3.36
Stone's snapper	105	\$209	\$2.00
Emperors (misc)	91	\$182	\$2.00
Redgill emperor	28	\$55	\$2.00
Rudderfish	34	\$67	\$2.00
Surgeonfishes/tangs	2,632	\$5,263	\$2.00
Unicornfishes (misc)	212	\$299	\$1.41 *
Squirrelfish	241	\$482	\$2.00
Parrotfishes	2,231	\$4,242	\$1.90 *
Wrasse	63	\$126	\$2.00
Inshore groupers	398	\$761	\$1.91 *
Butterflyfish	10	\$21	\$2.00
Mahimahi	1,069	\$1,807	\$1.69
Blue marlin	1,179	\$1,573	\$1.33 *
Black marlin	407	\$407	\$1.00
Sailfish	326	\$326	\$1.00
Rainbow runner	8	\$14	\$1.75
Wahoo	1,395	\$2,423	\$1.74
Skipjack Tuna	723	\$574	\$0.79
Albacore	49,290	\$41,178	\$0.84
Yellowfin Tuna	22,973	\$24,784	\$1.08
Bigeye Tuna	2,410	\$3,775	\$1.57
Moonfish	581	\$1,162	\$2.00
Spiny lobster	214	\$764	\$3.57
Octopus	64	\$95	\$1.50 *
Squid	4	\$8	\$2.00
Tilapia	46	\$69	\$1.50 *
TOTAL	88,569	\$95,655	\$1.08

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.6
American Samoa May 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb
Jacks (misc)	5	\$10	\$2.07
Black jack	142	\$283	\$2.00
Barracudas	9	\$18	\$2.00
Bottomfish (Assorted)	-59	\$-87	\$1.47 *
Groupers (misc)	31	\$63	\$2.00
Tomato grouper	11	\$22	\$2.00
Blacktip grouper	22	\$44	\$2.00
Lunartail grouper	39	\$77	\$2.00
Blue lined snapper	188	\$376	\$2.00 *
Humpback snapper	122	\$247	\$2.02
Gray jobfish	97	\$194	\$2.00 *
Yellow opakapaka	96	\$260	\$2.72
Hawaiian opakapaka	52	\$140	\$2.69
Gindai (flower snap)	9	\$18	\$2.00
Lehi (silverjaw)	28	\$73	\$2.61
Onaga (longtail snapper)	248	\$713	\$2.87
Ehu (squirrelfish snap.)	615	\$1,984	\$3.23
Emperors (misc)	82	\$164	\$2.00
Redgill emperor	11	\$22	\$2.00
Oilfish	33	\$50	\$1.50 *
Rudderfish	59	\$118	\$2.00
Surgeonfishes/tangs	2,315	\$4,630	\$2.00
Unicornfishes (misc)	320	\$508	\$1.59 *
Squirrelfish	223	\$437	\$1.96 *
Parrotfishes	1,668	\$3,190	\$1.91 *
Inshore groupers	372	\$704	\$1.90 *
Mahimahi	1,746	\$3,017	\$1.73
Blue marlin	661	\$661	\$1.00
Black marlin	789	\$604	\$0.77
Sailfish	290	\$435	\$1.50
Rainbow runner	10	\$17	\$1.75
Wahoo	1,406	\$1,839	\$1.31
Skipjack Tuna	3,656	\$3,092	\$0.85
Albacore	24,944	\$21,807	\$0.87
Yellowfin Tuna	26,367	\$26,730	\$1.01
BigeyeTuna	1,592	\$2,720	\$1.71
Moonfish	44	\$66	\$1.50 *
Spiny lobster	306	\$937	\$3.07 *
Octopus	383	\$685	\$1.79 *
TOTAL	68,930	\$76,869	\$1.12

* Data replaced or modified by Actual Commercial Landings Data

Table II.1.7
American Samoa June 1999 Estimated Commercial Landings

Species	Pounds	Value	Price/Lb	
Bigeye scad	143	\$250	\$1.75	*
Jacks (misc)	18	\$42	\$2.34	
Black jack	122	\$261	\$2.14	
Trevally (C.caeruleop.)	5	\$15	\$3.00	
Barracudas	118	\$292	\$2.48	
Mulletts	85	\$383	\$4.50	*
Bottomfish (Assorted)	29	\$84	\$2.96	*
Groupers (misc)	16	\$42	\$2.62	
Flagtail grouper	8	\$24	\$3.00	
Tomato grouper	42	\$91	\$2.17	
Blacktip grouper	67	\$147	\$2.19	
Lunartail grouper	104	\$217	\$2.09	
Blue lined snapper	78	\$174	\$2.22	
Onespot snapper	5	\$15	\$3.00	
Humpback snapper	54	\$138	\$2.54	
Gray jobfish	85	\$197	\$2.32	
Yellow opakapaka	39	\$86	\$2.21	
Gindai (flower snap)	48	\$112	\$2.33	
Lehi (silverjaw)	121	\$346	\$2.87	
Onaga (longtail snapper)	25	\$75	\$3.00	
Ehu (squirrelfish snap.)	197	\$450	\$2.28	*
Bigeye emperor	42	\$85	\$2.00	
Emperors (misc)	10	\$29	\$2.87	
Orangespot emperor	25	\$49	\$2.00	
Rudderfish	60	\$120	\$2.00	
Sargent major	113	\$226	\$2.00	
Surgeonfishes/tangs	2,336	\$4,363	\$1.87	*
Unicornfishes (misc)	358	\$716	\$2.00	
Squirrelfish	382	\$774	\$2.03	*
Parrotfishes	2,220	\$4,113	\$1.85	*
Inshore groupers	538	\$982	\$1.83	*
Mahimahi	2,014	\$3,387	\$1.68	
Swordfish	23	\$79	\$3.50	*
Blue marlin	2,812	\$2,036	\$0.72	
Black marlin	281	\$239	\$0.85	
Sailfish	589	\$738	\$1.25	
Wahoo	7,863	\$13,137	\$1.67	
Skipjack Tuna	6,686	\$4,797	\$0.72	
Albacore	75,359	\$81,392	\$1.08	
Yellowfin Tuna	17,500	\$21,229	\$1.21	
Bigeye Tuna	2,607	\$3,706	\$1.42	
Spiny lobster	607	\$1,903	\$3.14	*
Octopus	455	\$1,131	\$2.48	*
Squid	5	\$11	\$2.00	
TOTAL	124,292	\$148,682	\$1.20	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.8
American Samoa July 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Bigeye scad	135	\$236	\$1.75	*
Jacks (misc)	9	\$18	\$2.00	
Black jack	42	\$100	\$2.38	
Barracudas	178	\$257	\$1.44	
Mullets	113	\$509	\$4.50	*
Groupers (misc)	32	\$63	\$1.97	
Tomato grouper	10	\$23	\$2.25	
Lunartail grouper	17	\$38	\$2.20	
Blue lined snapper	64	\$131	\$2.04	*
Onespot snapper	0	\$1	\$1.97	
Humpback snapper	20	\$40	\$2.00	*
Gray jobfish	45	\$103	\$2.26	
Yellow opakapaka	8	\$15	\$1.92	
Hawaiian opakapaka	15	\$30	\$2.00	*
Yelloweye opakapaka(P.fl.)	6	\$15	\$2.50	
Gindai (flower snap)	19	\$42	\$2.21	
Yellowtail snapper	5	\$10	\$2.00	
Lehi (silverjaw)	32	\$82	\$2.56	
Onaga (longtail snapper)	39	\$83	\$2.12	
Ehu (squirrelfish snap.)	58	\$129	\$2.24	*
Emperors (misc)	32	\$60	\$1.89	
Orangespot emperor	13	\$26	\$2.00	
Rudderfish	5	\$9	\$2.00	
Rabbitfish	1	\$1	\$2.00	
Surgeonfishes/tangs	2,758	\$5,516	\$2.00	
Unicornfishes (misc)	476	\$952	\$2.00	
Squirrelfish	271	\$527	\$1.95	*
Parrotfishes	1,577	\$2,992	\$1.90	*
Terapon perch	4	\$8	\$2.00	
Inshore groupers	269	\$508	\$1.89	*
Mahimahi	3,274	\$3,661	\$1.12	
Swordfish	77	\$231	\$3.00	*
Blue marlin	3,262	\$3,025	\$0.93	
Sailfish	643	\$847	\$1.32	
Wahoo	4,488	\$5,607	\$1.25	
Skipjack Tuna	16,437	\$10,548	\$0.64	
Albacore	79,679	\$85,633	\$1.07	
Yellowfin Tuna	9,596	\$11,598	\$1.21	
BigeyeTuna	1,606	\$2,280	\$1.42	
Crabs	2	\$6	\$3.50	
Spiny lobster	154	\$513	\$3.33	*
Octopus	73	\$110	\$1.50	*
Squid	11	\$17	\$1.50	
TOTAL	125,554	\$136,596	\$1.09	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.9
American Samoa August 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Bigeye scad	173	\$303	\$1.75	*
Jacks (misc)	50	\$99	\$2.00	
Black jack	36	\$72	\$2.00	
Barracudas	451	\$830	\$1.84	
Groupers (misc)	183	\$360	\$1.97	
Peacock grouper	3	\$6	\$2.00	
Tomato grouper	13	\$26	\$2.00	
Blacktip grouper	8	\$16	\$2.00	
Lunartail grouper	27	\$54	\$2.00	
Blue lined snapper	221	\$442	\$2.00	*
Onespot snapper	0	\$1	\$2.00	
Humpback snapper	108	\$216	\$2.00	*
Gray jobfish	51	\$103	\$2.00	
Yellow opakapaka	37	\$88	\$2.36	
Hawaiian opakapaka	37	\$74	\$2.00	*
Gindai (flower snap)	14	\$28	\$2.00	
Lehi (silverjaw)	103	\$291	\$2.82	
Onaga (longtail snapper)	92	\$233	\$2.52	
Ehu (squirrelfish snap.)	246	\$712	\$2.90	
Emperors (misc)	193	\$367	\$1.90	
Orangespot emperor	73	\$147	\$2.00	
Rudderfish	32	\$64	\$2.00	
Rabbitfish	1	\$2	\$1.99	
Surgeonfishes/tangs	1,554	\$3,108	\$2.00	
Unicornfishes (misc)	281	\$561	\$2.00	
Squirrelfish	105	\$207	\$1.98	*
Parrotfishes	1,125	\$2,177	\$1.93	*
Terapon perch	2	\$4	\$2.00	
Inshore groupers	184	\$354	\$1.92	*
Inshore snappers	12	\$24	\$2.00	
Mahimahi	6,187	\$9,468	\$1.53	
Swordfish	204	\$306	\$1.50	*
Blue marlin	6,821	\$5,420	\$0.79	
Sailfish	793	\$1,590	\$2.01	
Spearfish	633	\$949	\$1.50	
Rainbow runner	4	\$7	\$1.75	
Wahoo	4,782	\$6,696	\$1.40	
Skipjack Tuna	3,970	\$3,237	\$0.82	
Dogtooth tuna	57	\$98	\$1.72	*
Albacore	74,608	\$84,730	\$1.14	
Yellowfin Tuna	4,148	\$4,981	\$1.20	
Bigeye Tuna	2,106	\$3,032	\$1.44	
Kawakawa	70	\$114	\$1.62	
Crabs	2	\$7	\$3.50	
Spiny lobster	62	\$208	\$3.37	*
Octopus	54	\$81	\$1.50	
Squid	8	\$12	\$1.50	
TOTAL	109,924	\$131,905	\$1.20	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.10
American Samoa September 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb
Jacks (misc)	9	\$23	\$2.50
Black jack	16	\$48	\$3.00
Barracudas	91	\$156	\$1.71
Groupers (misc)	10	\$25	\$2.50
Flagtail grouper	12	\$30	\$2.50
Tomato grouper	6	\$18	\$3.00
Blacktip grouper	6	\$18	\$3.00
Lunartail grouper	5	\$15	\$3.00
Blue lined snapper	18	\$45	\$2.50
Humpback snapper	9	\$23	\$2.50
Gray jobfish	12	\$30	\$2.50
Gindai (flower snap)	8	\$24	\$3.00
Onaga (longtail snapper)	17	\$51	\$3.00
Ehu (squirrelfish snap.)	70	\$209	\$3.00 *
Rudderfish	437	\$875	\$2.00
Surgeonfishes/tangs	2,045	\$4,091	\$2.00
Unicornfishes (misc)	278	\$556	\$2.00
Squirrelfish	337	\$682	\$2.02
Parrotfishes	1,212	\$2,354	\$1.94 *
Inshore groupers	392	\$784	\$2.00
Mahimahi	5,194	\$6,740	\$1.30
Blue marlin	4,059	\$3,937	\$0.97
Sailfish	355	\$355	\$1.00
Wahoo	4,235	\$5,305	\$1.25
Skipjack Tuna	2,830	\$1,989	\$0.70
Dogtooth tuna	19	\$57	\$3.00
Albacore	65,572	\$69,658	\$1.06
Yellowfin Tuna	8,779	\$7,619	\$0.87
Bigeye Tuna	529	\$706	\$1.33
Kawakawa	19	\$32	\$1.68
Moonfish	200	\$399	\$2.00
Crabs	55	\$82	\$1.50
Spiny lobster	588	\$2,057	\$3.50
Octopus	59	\$89	\$1.50
Squid	9	\$18	\$2.00
TOTAL	97,491	\$109,096	\$1.12

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.11
American Samoa October 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb	
Bigeye scad	170	\$298	\$1.75	*
Jacks (misc)	11	\$20	\$1.82	
Barracudas	2	\$4	\$2.00	
Mullet	120	\$480	\$4.00	*
Bottomfish (Assorted)	1	\$3	\$2.00	*
Groupers (misc)	41	\$79	\$1.94	
Lunartail grouper	4	\$7	\$1.93	
Blue lined snapper	47	\$89	\$1.87	
Humpback snapper	30	\$58	\$1.96	
Gray jobfish	77	\$139	\$1.79	
Yellow opakapaka	26	\$64	\$2.45	
Hawaiian opakapaka	12	\$24	\$2.00	*
Lehi (silverjaw)	16	\$27	\$1.75	
Onaga (longtail snapper)	26	\$91	\$3.50	
Ehu (squirrelfish snap.)	141	\$460	\$3.25	
Emperors (misc)	65	\$122	\$1.87	
Reef fish (Assorted)	205	\$411	\$2.00	
Rudderfish	310	\$619	\$2.00	
Surgeonfishes/tangs	2,196	\$4,391	\$2.00	
Unicornfishes (misc)	439	\$877	\$2.00	
Squirrelfish	558	\$1,116	\$2.00	
Parrotfishes	1,162	\$2,325	\$2.00	
Inshore groupers	291	\$583	\$2.00	
Mahimahi	2,073	\$2,798	\$1.35	
Blue marlin	1,597	\$1,888	\$1.18	
Black marlin	314	\$261	\$0.83	
Sailfish	1,043	\$1,368	\$1.31	
Rainbow runner	3	\$5	\$1.75	
Wahoo	3,284	\$4,242	\$1.29	
Skipjack Tuna	1,253	\$900	\$0.72	
Albacore	63,556	\$71,777	\$1.13	
Yellowfin Tuna	6,848	\$9,567	\$1.40	
Bigeye Tuna	1,464	\$1,981	\$1.35	
Crabs	55	\$101	\$1.83	
Spiny lobster	540	\$1,889	\$3.50	
Slipper lobster	18	\$46	\$2.50	
Octopus	105	\$188	\$1.79	*
Squid	6	\$12	\$2.00	
TOTAL	88,111	\$109,309	\$1.24	

* Data replaced or modified by Actual Commercial Landings Data

**Table II.1.12
American Samoa November 1999 Estimated Commercial Landings**

Species	Pounds	Value	Price/Lb
Jacks (misc)	7	\$15	\$2.08
Black jack	30	\$59	\$2.00
Trevally (C.caeruleop.)	1	\$2	\$2.99
Barracudas	1	\$3	\$2.41
Bottomfish (Assorted)	28	\$58	\$2.04
Groupers (misc)	18	\$36	\$1.96
Lunartail grouper	9	\$18	\$1.99
Blue lined snapper	25	\$50	\$1.98
Humpback snapper	19	\$44	\$2.26
Gray jobfish	21	\$38	\$1.80
Yellow opakapaka	17	\$45	\$2.69
Hawaiian opakapaka	8	\$20	\$2.62
Lehi (silverjaw)	22	\$60	\$2.72
Onaga (longtail snapper)	46	\$154	\$3.31
Ehu (squirrelfish snap.)	80	\$263	\$3.30
Emperors (misc)	29	\$57	\$1.95
Orangespot emperor	4	\$8	\$2.00
Redgill emperor	3	\$7	\$2.00
Reef fish (Assorted)	48	\$95	\$2.00 *
Rudderfish	19	\$38	\$2.00
Surgeonfishes/tangs	2,310	\$4,620	\$2.00
Unicornfishes (misc)	308	\$615	\$2.00
Squirrelfish	413	\$827	\$2.00
Parrotfishes	1,789	\$3,578	\$2.00
Inshore groupers	95	\$190	\$2.00 *
Mahimahi	4,150	\$7,263	\$1.75
Blue marlin	5,075	\$4,468	\$0.88
Wahoo	5,317	\$8,335	\$1.57
Skipjack Tuna	1,745	\$1,506	\$0.86
Albacore	109,200	\$120,123	\$1.10
Yellowfin Tuna	4,498	\$6,233	\$1.39
Bigeye Tuna	1,321	\$1,751	\$1.33
Moonfish	1,404	\$2,808	\$2.00
Crabs	23	\$56	\$2.50
Spiny lobster	203	\$696	\$3.44
Slipper lobster	23	\$56	\$2.50
Octopus	49	\$73	\$1.50
TOTAL	138,358	\$164,268	\$1.19

* Data replaced or modified by Actual Commercial Landings Data

Table II.1.13
American Samoa December 1999 Estimated Commercial Landings

Species	Pounds	Value	Price/Lb
Jacks (misc)	190	\$190	\$1.00
Barracudas	2	\$5	\$2.00
Groupers (misc)	3	\$7	\$2.00
Blue lined snapper	12	\$24	\$2.00
Humpback snapper	44	\$88	\$2.00
Gray jobfish	8	\$15	\$2.00
Yellow opakapaka	23	\$63	\$2.75
Hawaiian opakapaka	11	\$29	\$2.75
Onaga (longtail snapper)	32	\$113	\$3.50
Ehu (squirrelfish snap.)	170	\$560	\$3.29
Emperors (misc)	14	\$28	\$2.00
Reef fish (Assorted)	129	\$258	\$2.00
Rudderfish	7	\$14	\$2.00
Surgeonfishes/tangs	1,956	\$3,912	\$2.00
Unicornfishes (misc)	164	\$329	\$2.00
Squirrelfish	328	\$657	\$2.00
Parrotfishes	1,017	\$2,034	\$2.00
Inshore groupers	118	\$235	\$2.00
Mahimahi	3,479	\$4,451	\$1.28
Swordfish	280	\$593	\$2.12 *
Blue marlin	3,336	\$4,003	\$1.20
Rainbow runner	225	\$449	\$2.00
Wahoo	3,373	\$4,245	\$1.26
Skipjack Tuna	1,319	\$1,047	\$0.79
Dogtooth tuna	150	\$225	\$1.50 *
Albacore	89,203	\$91,757	\$1.03
Yellowfin Tuna	5,638	\$5,799	\$1.03
Bigeye Tuna	2,313	\$3,226	\$1.39
Crabs	8	\$20	\$2.50
Spiny lobster	168	\$587	\$3.50
Slipper lobster	8	\$20	\$2.50
Octopus	18	\$26	\$1.50
TOTAL	113,746	\$125,009	\$1.10

* Data replaced or modified by Actual Commercial Landings Data

Figure II.1.1

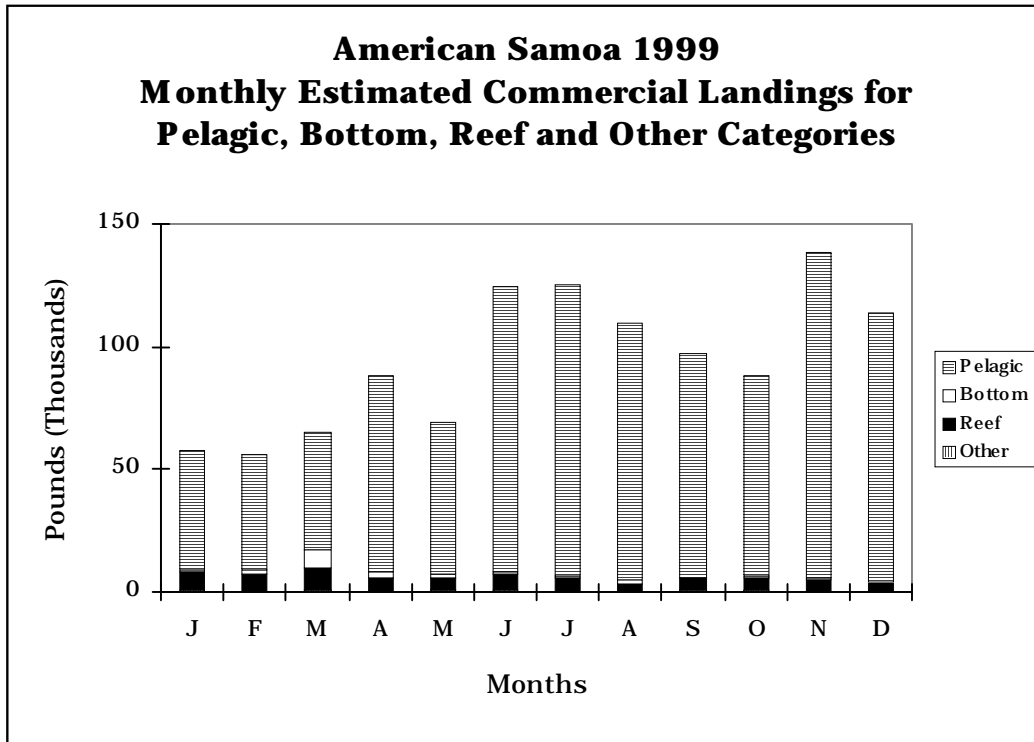


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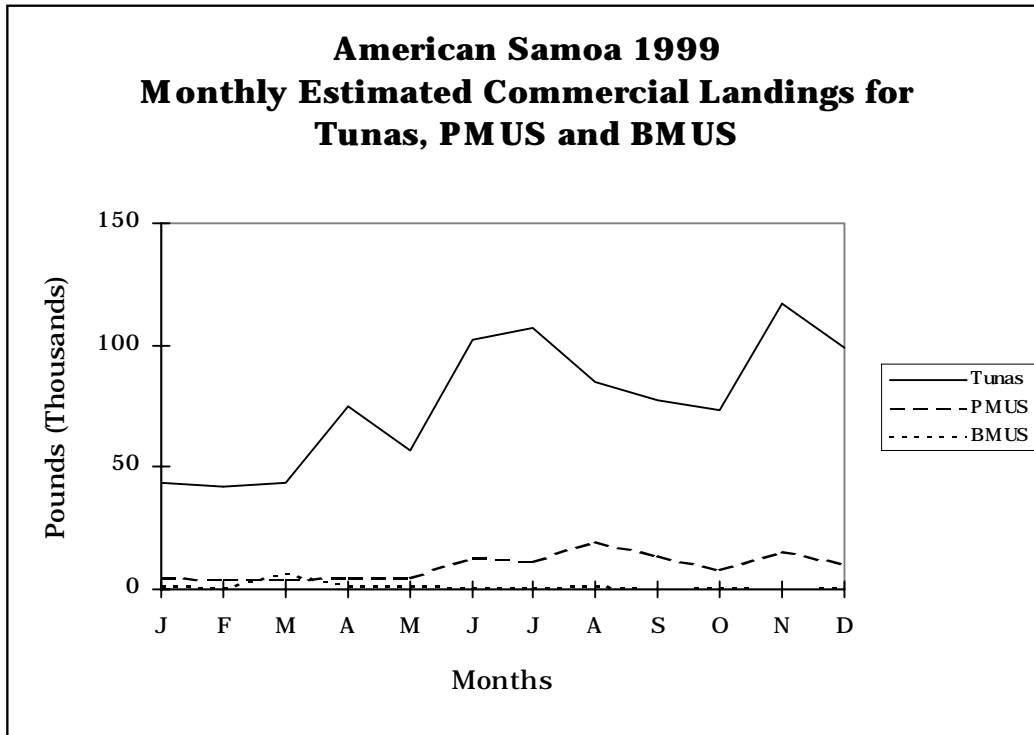


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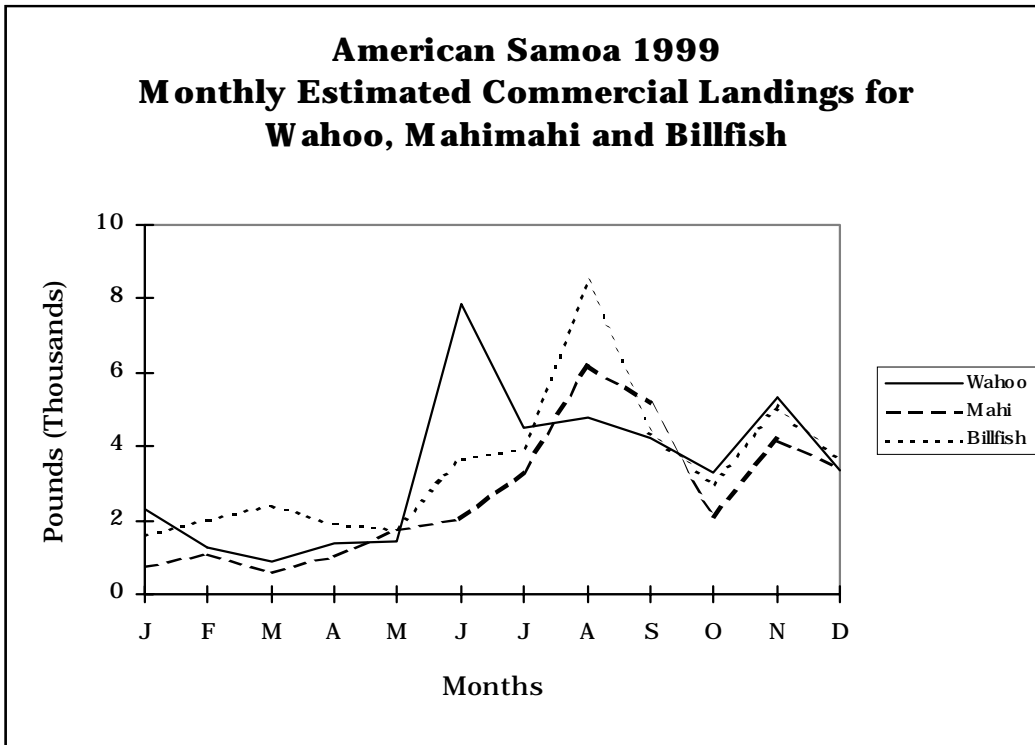


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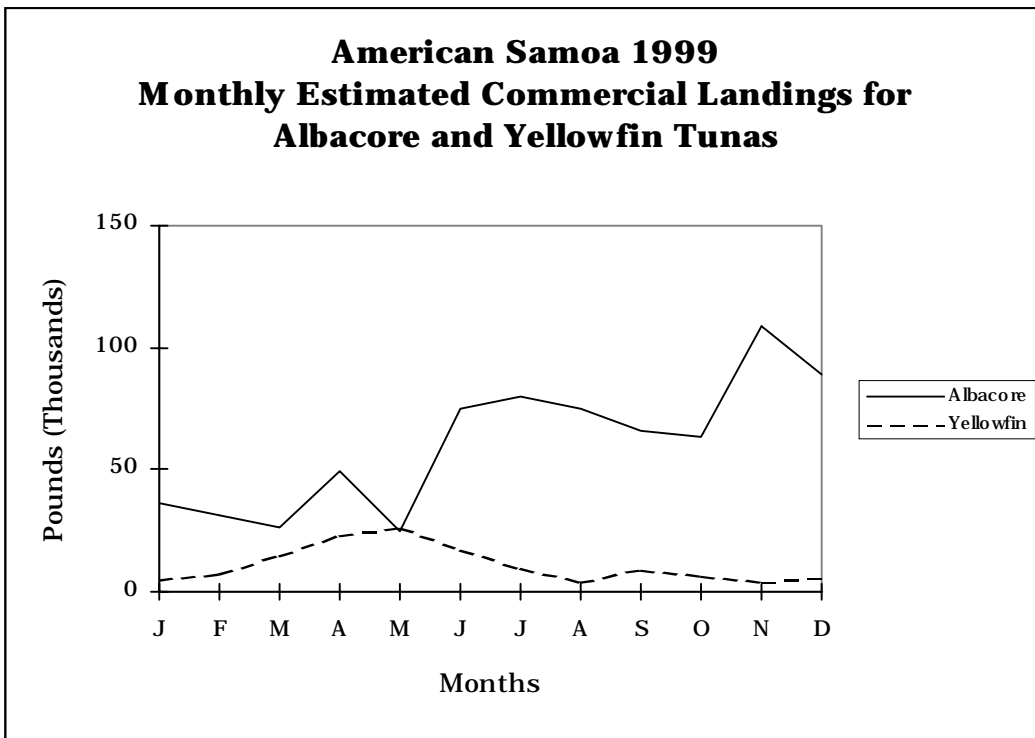


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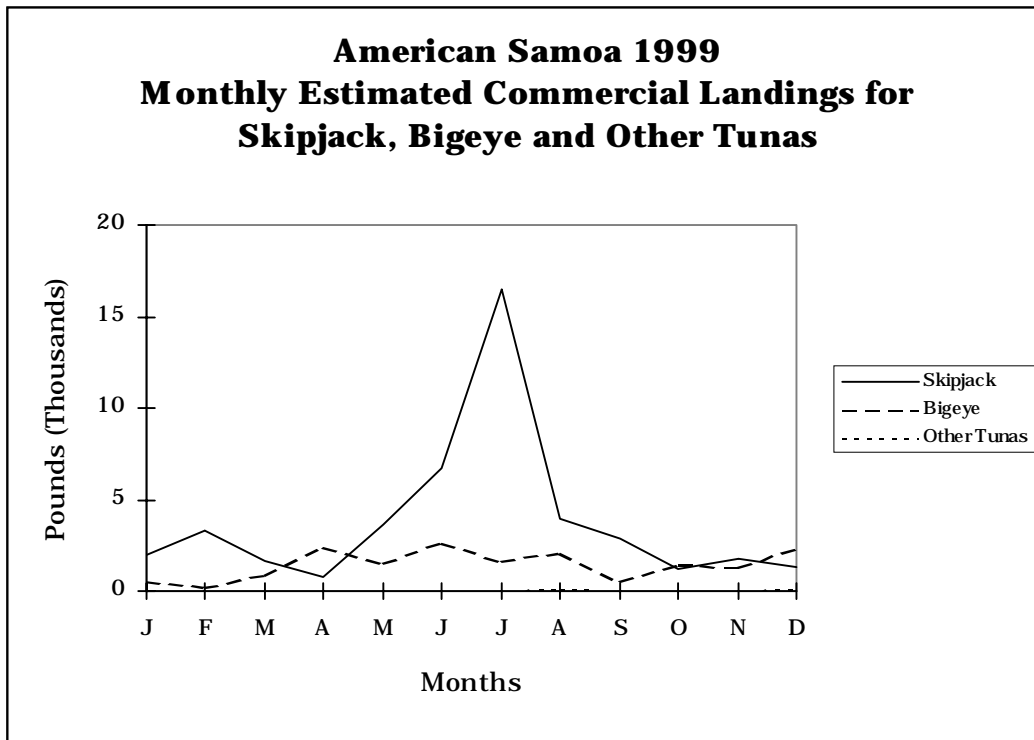


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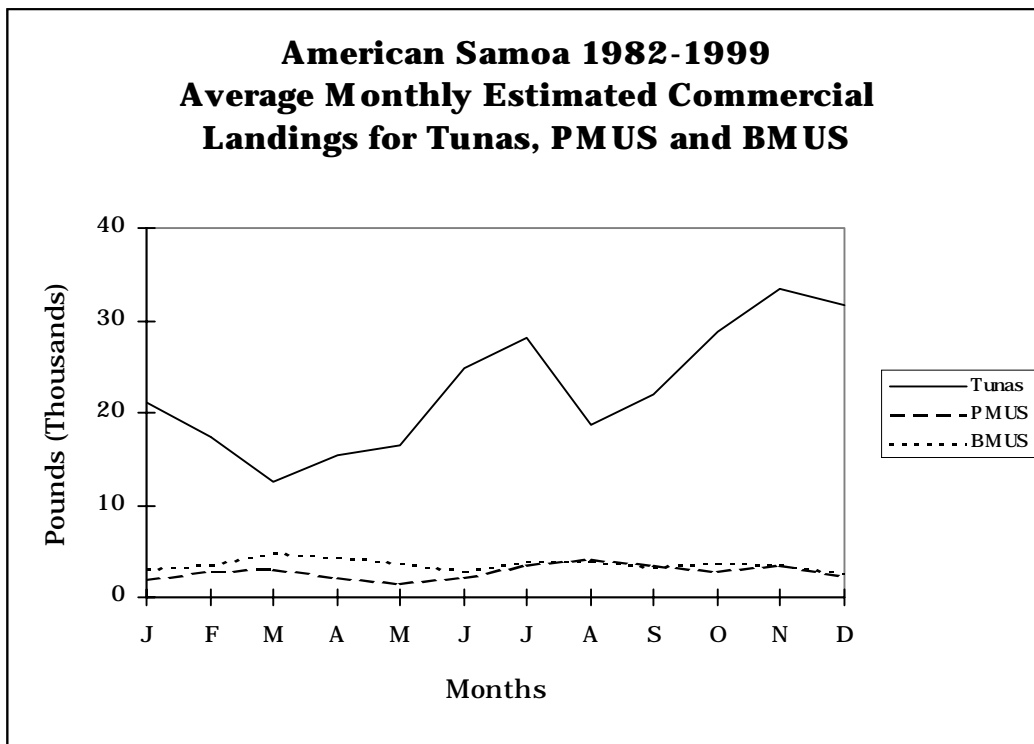


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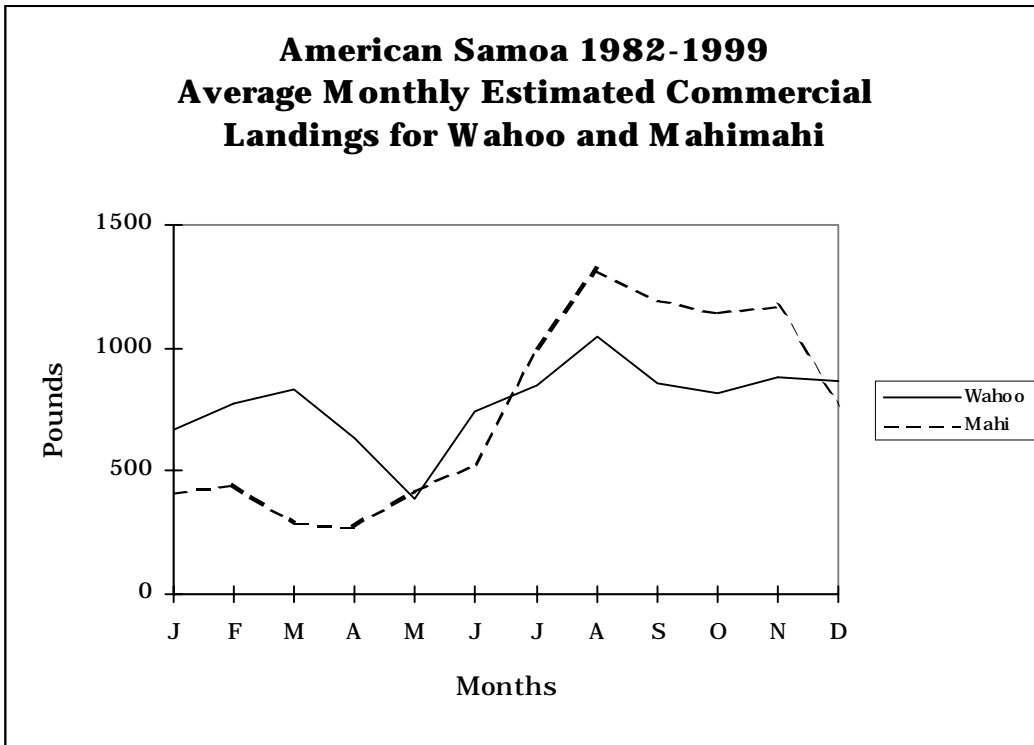


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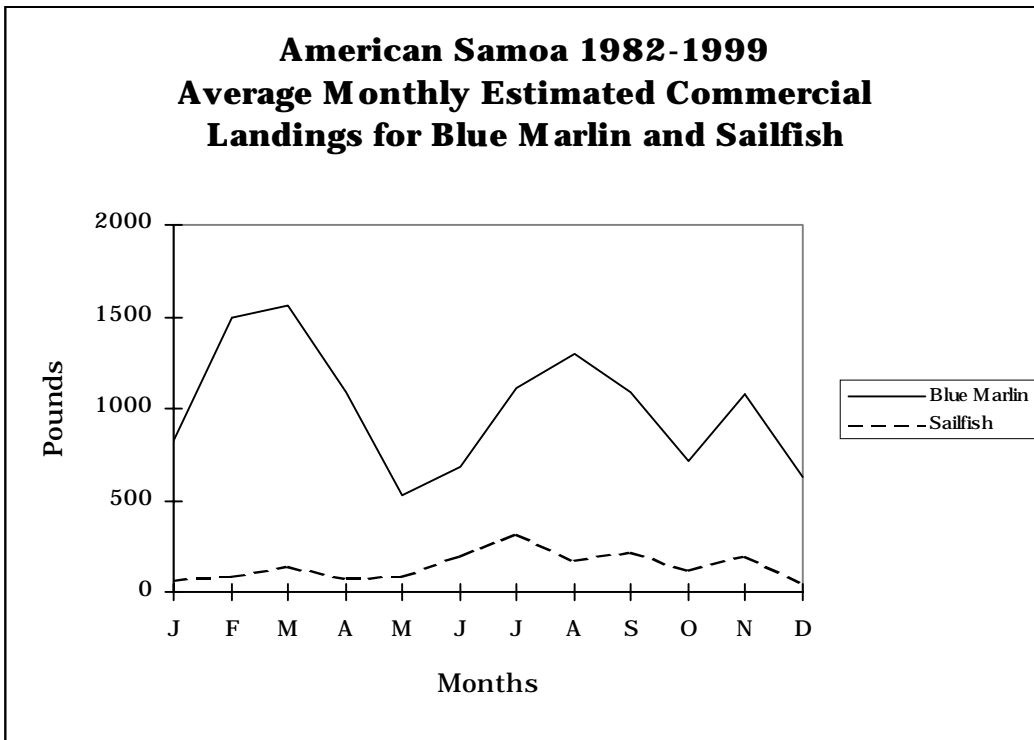


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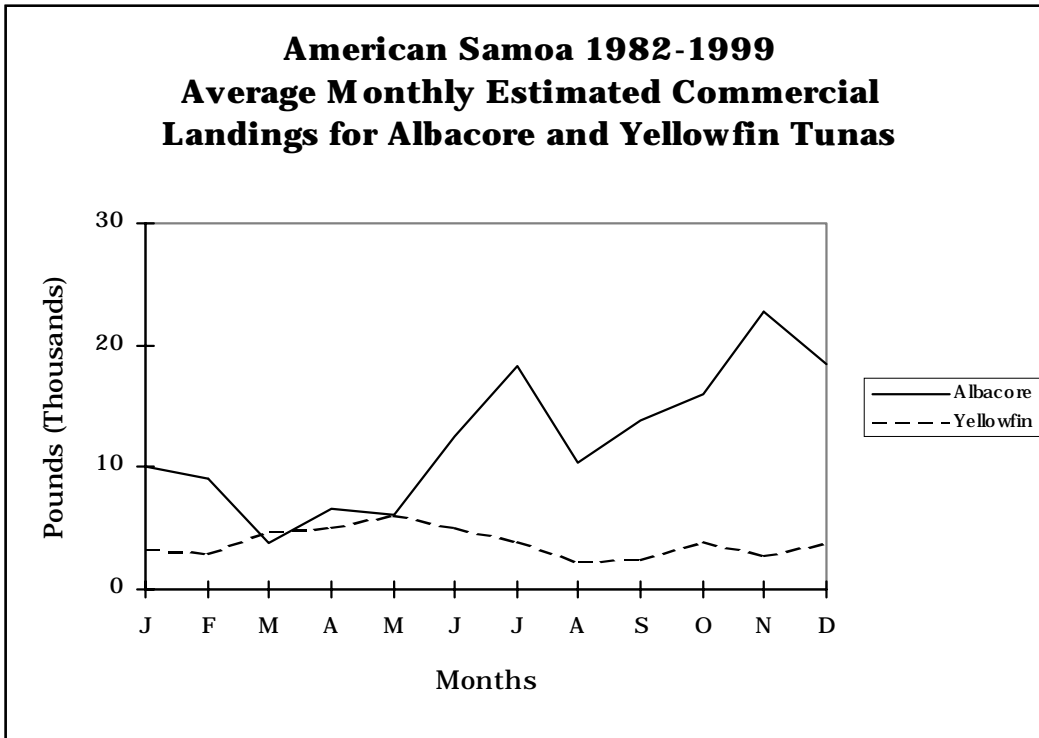


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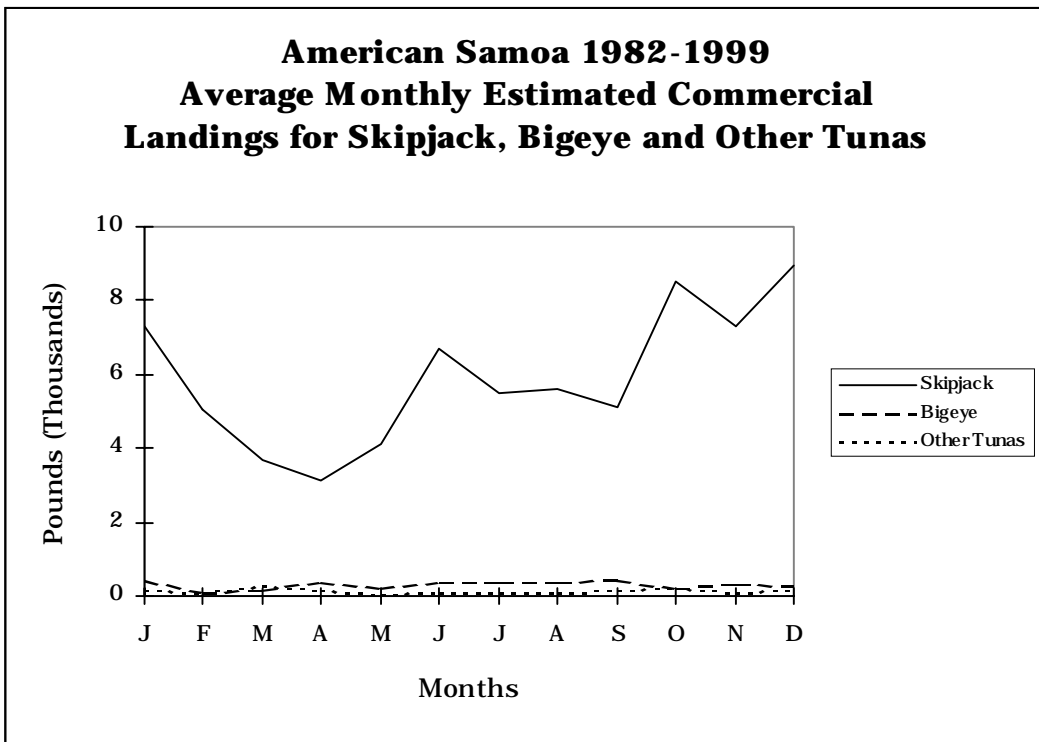


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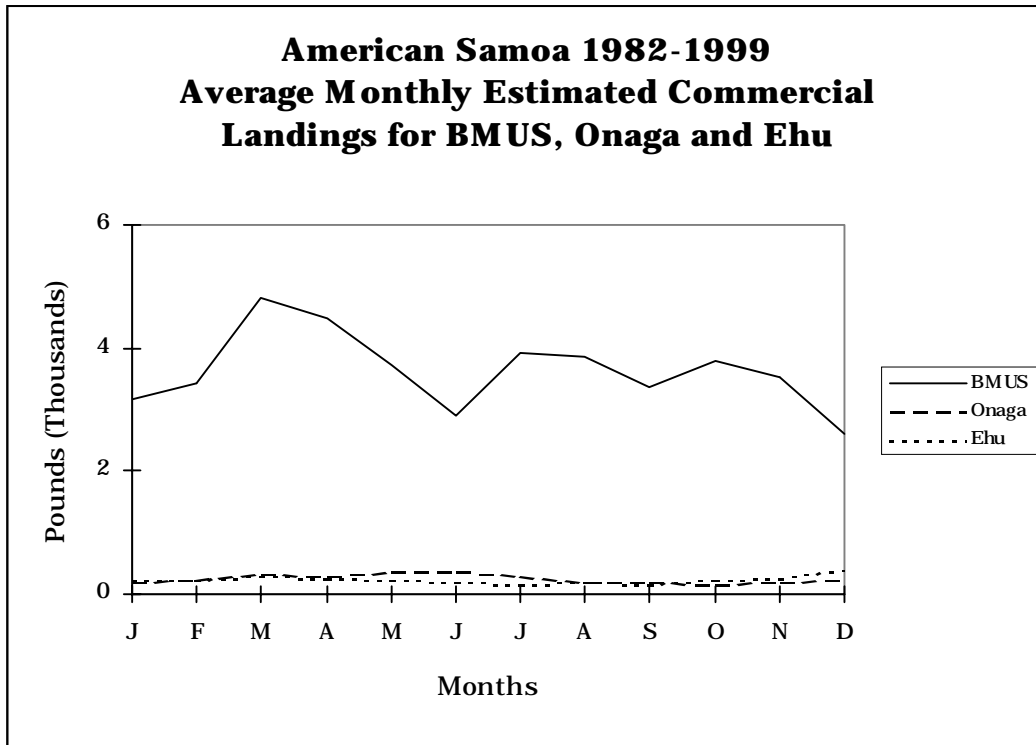


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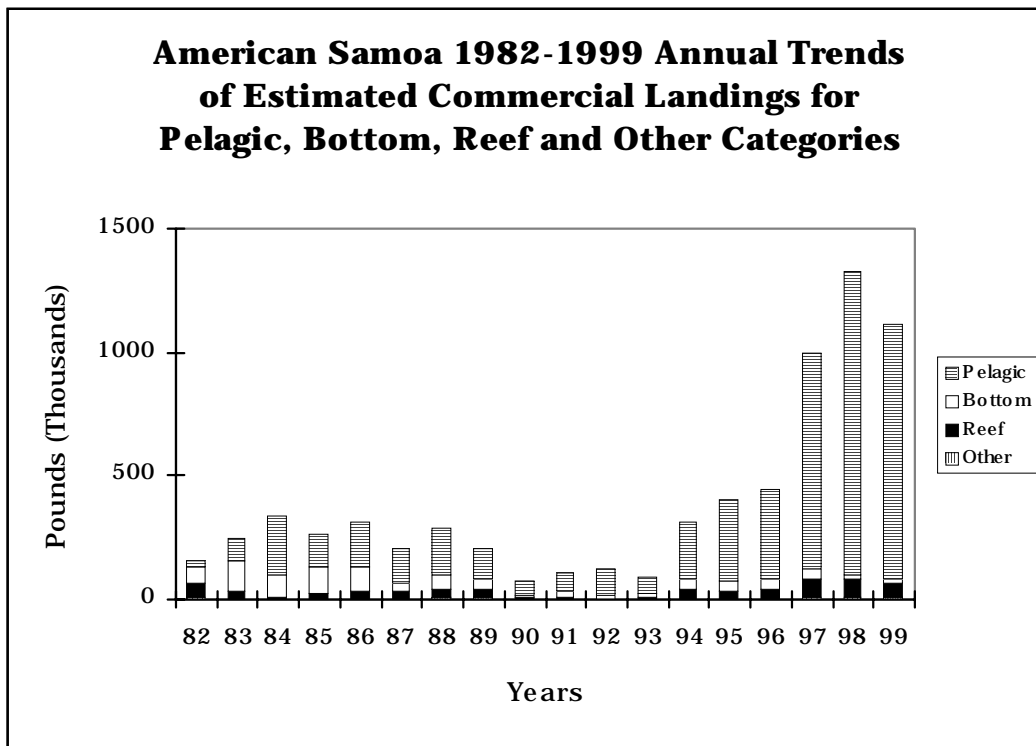


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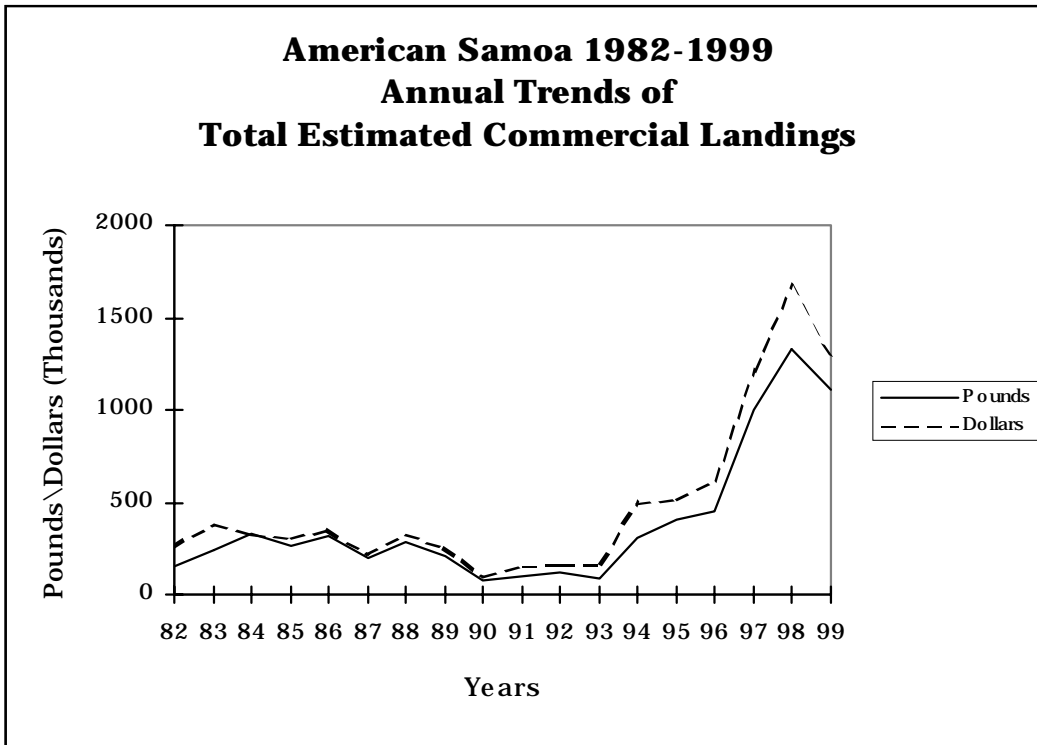


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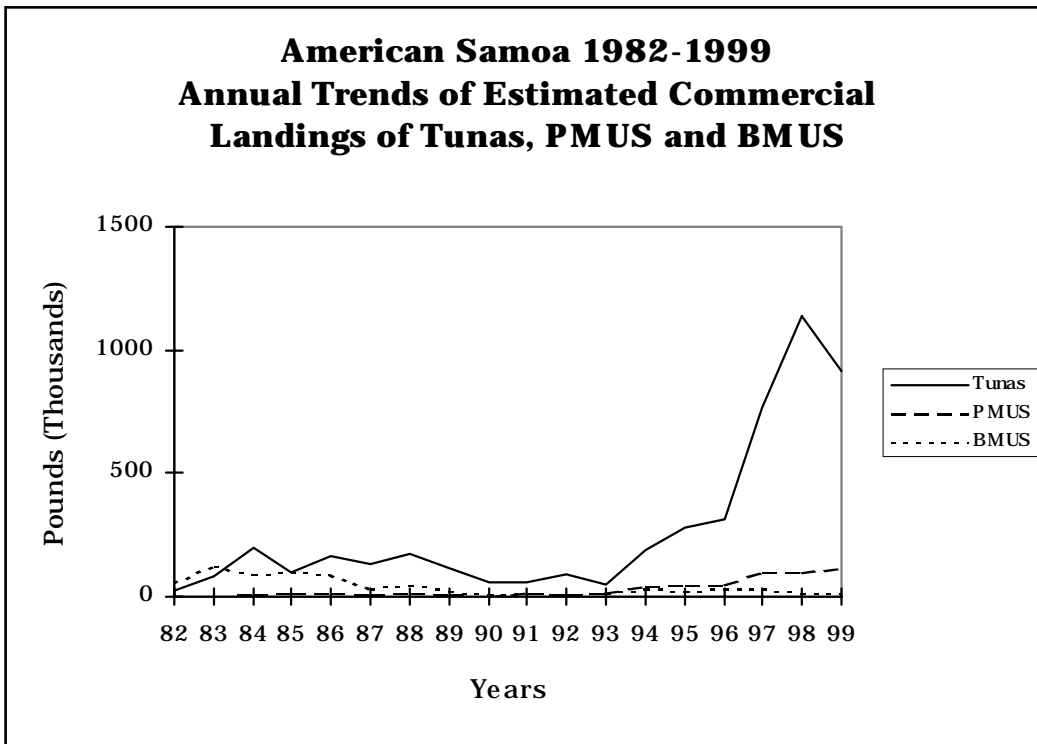


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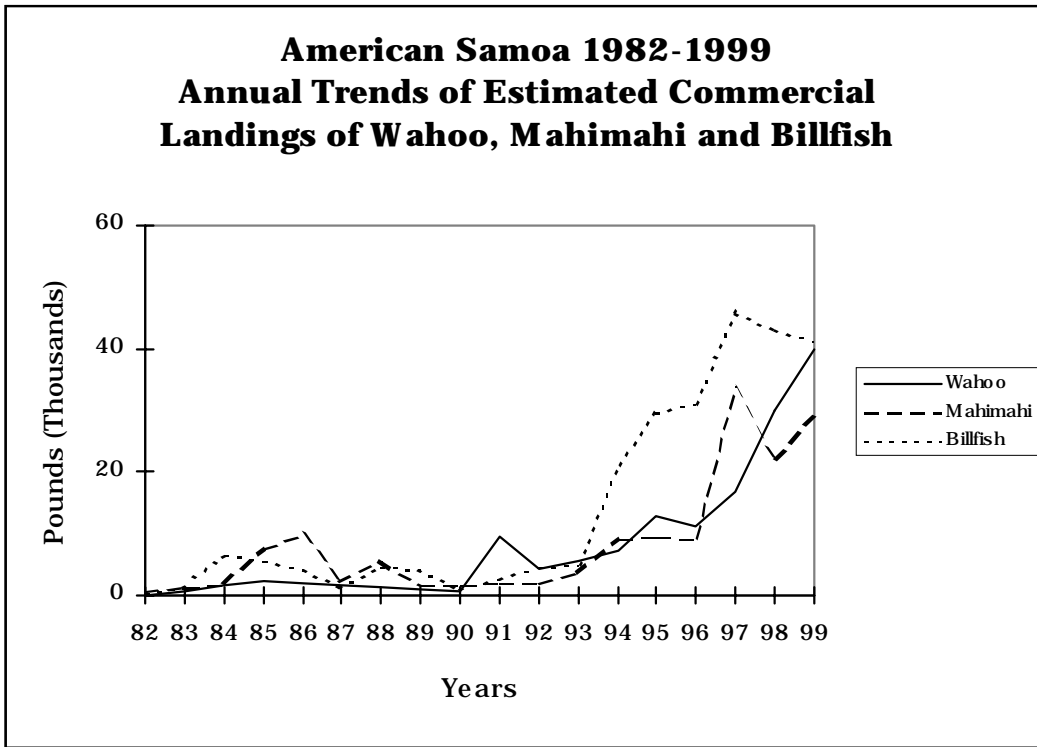


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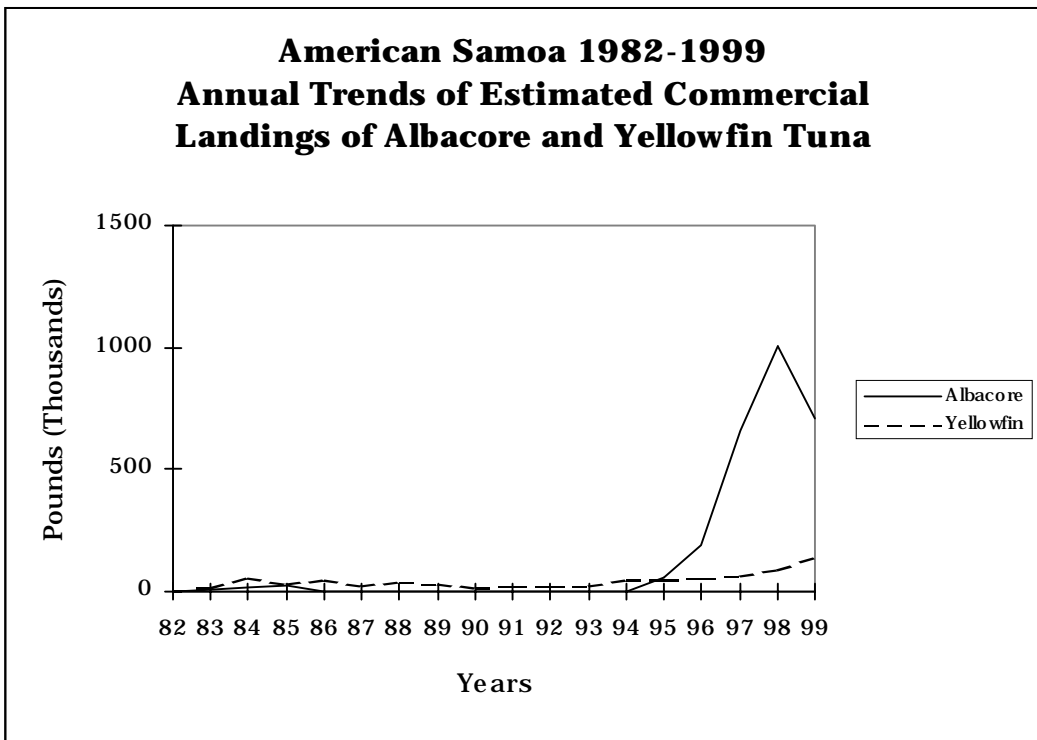


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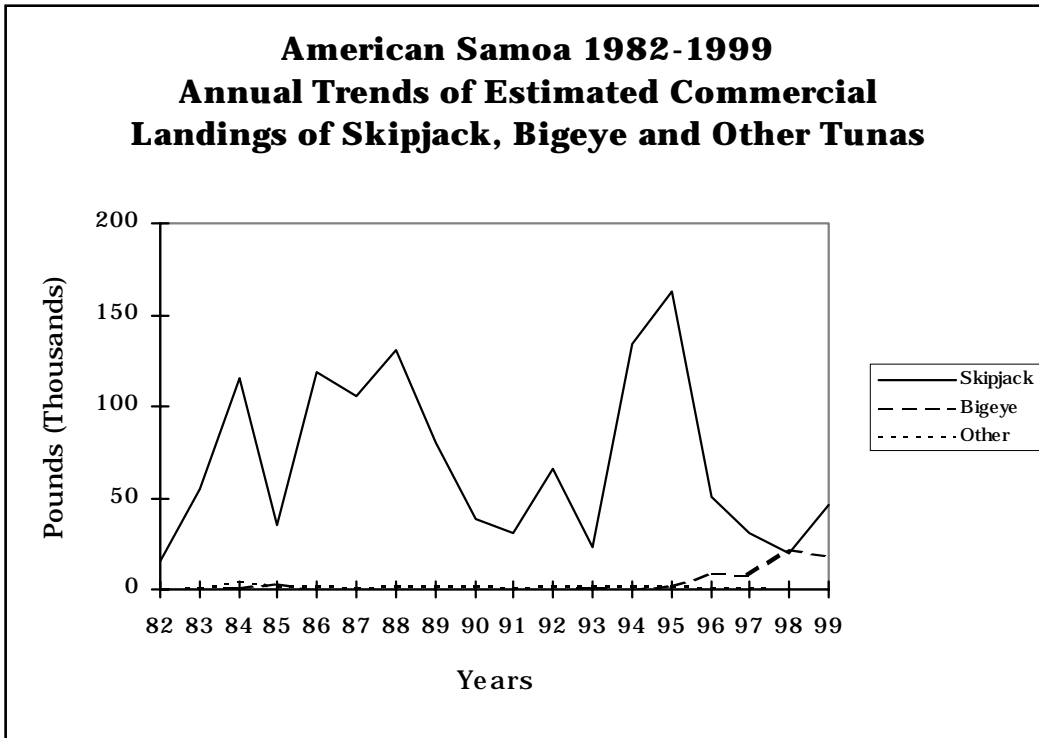


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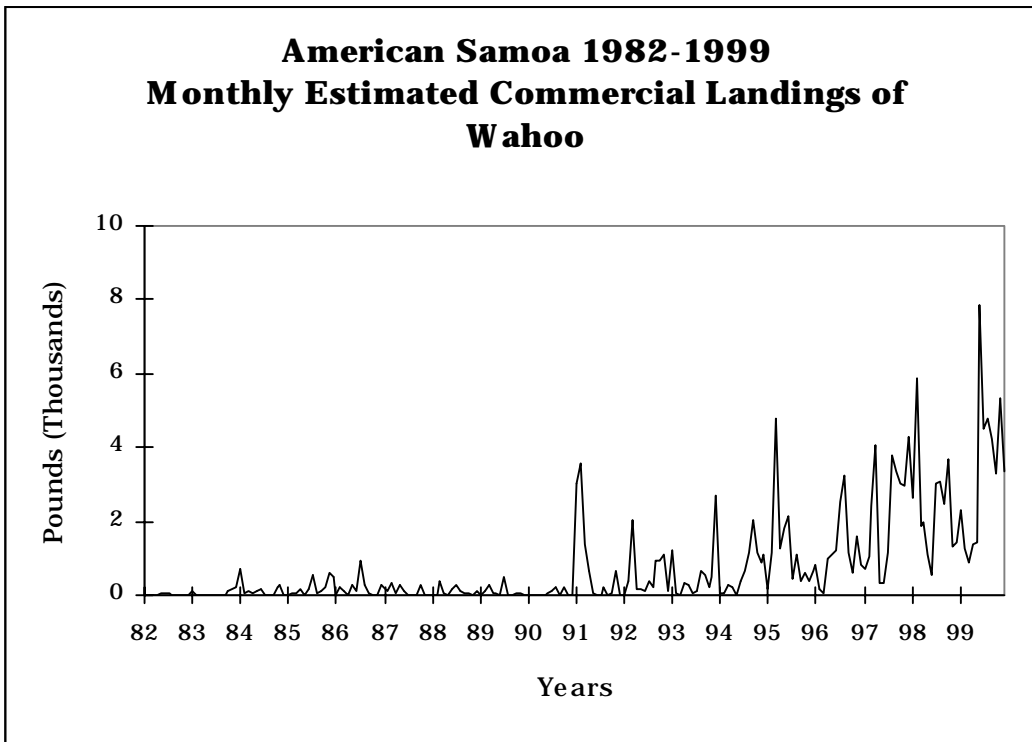


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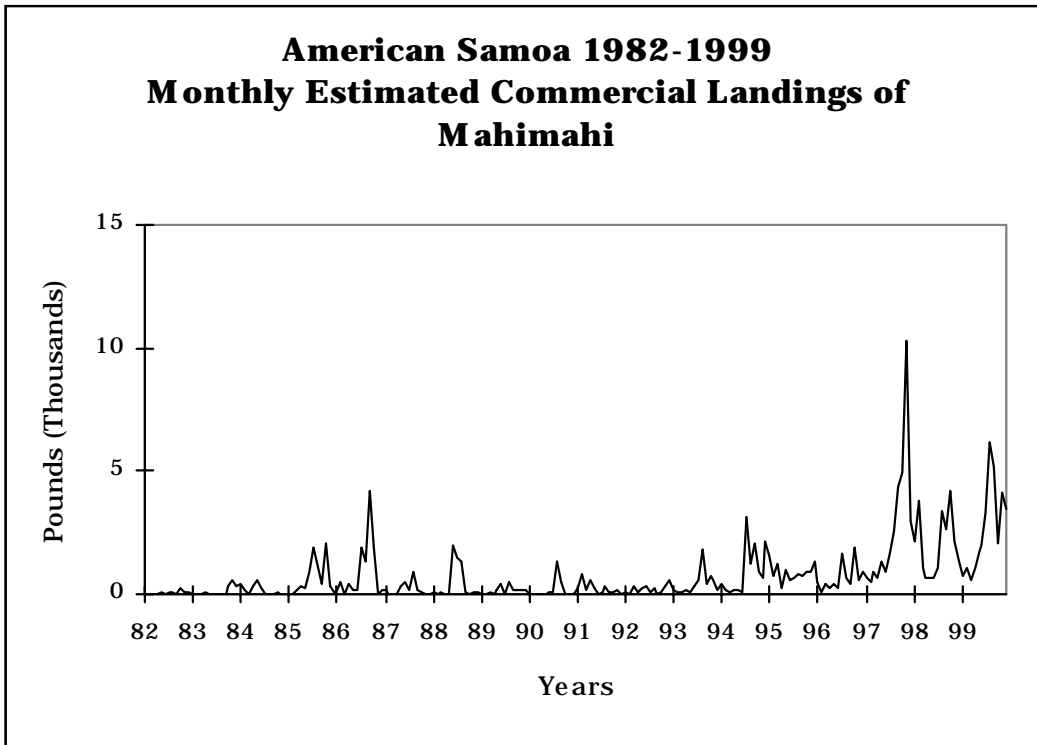


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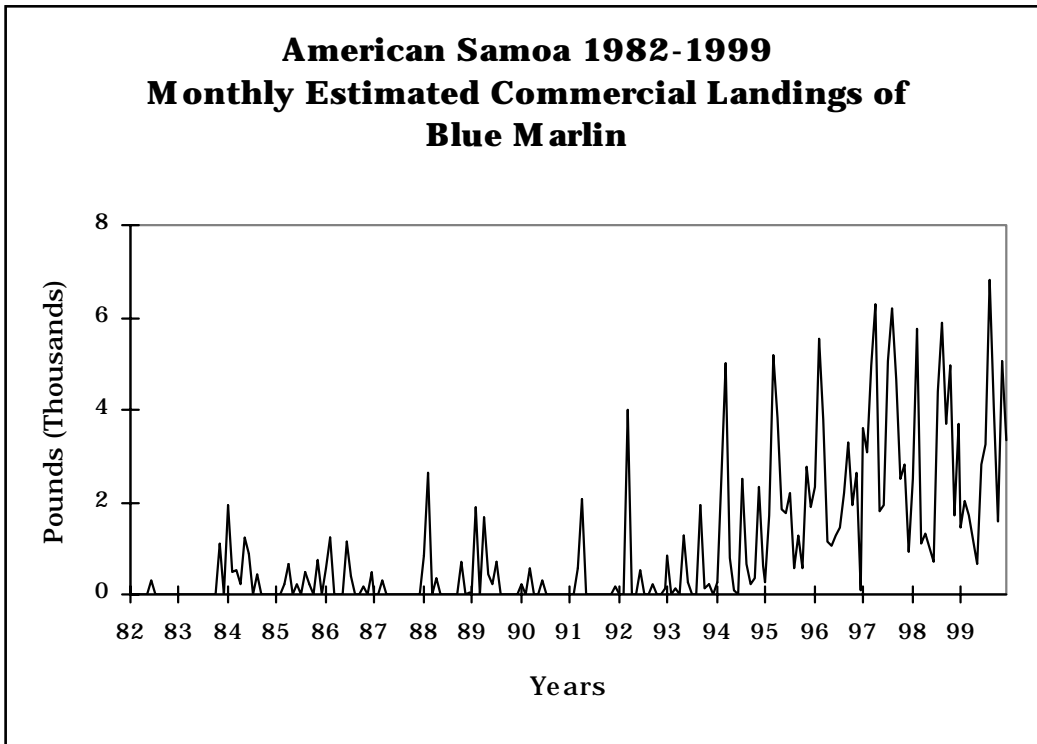


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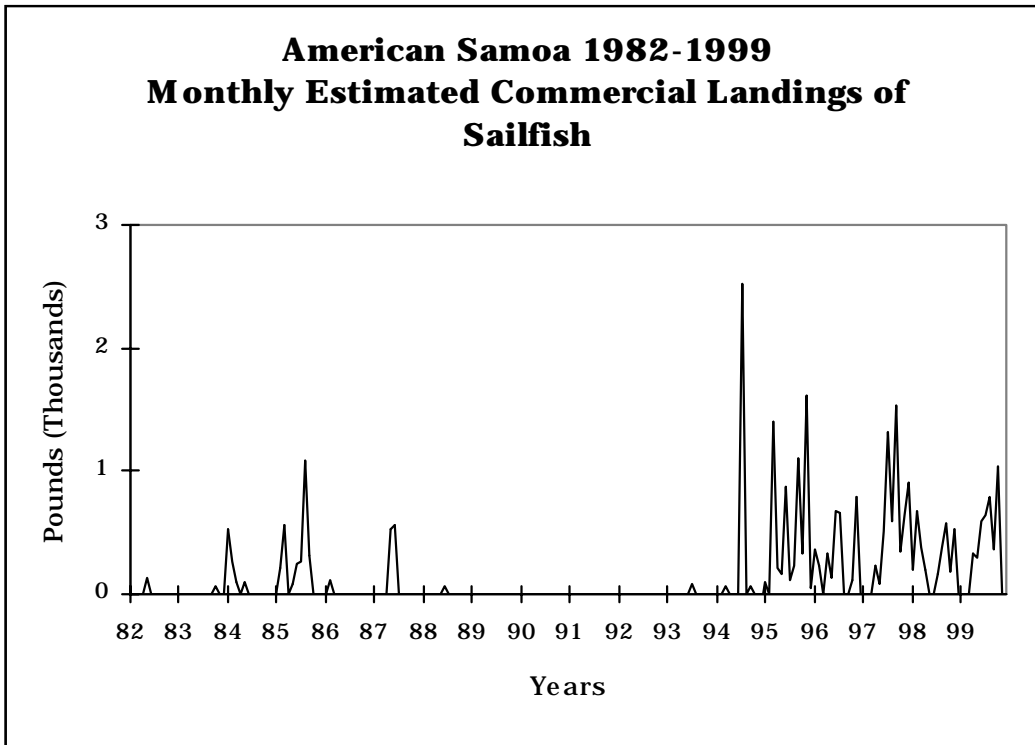


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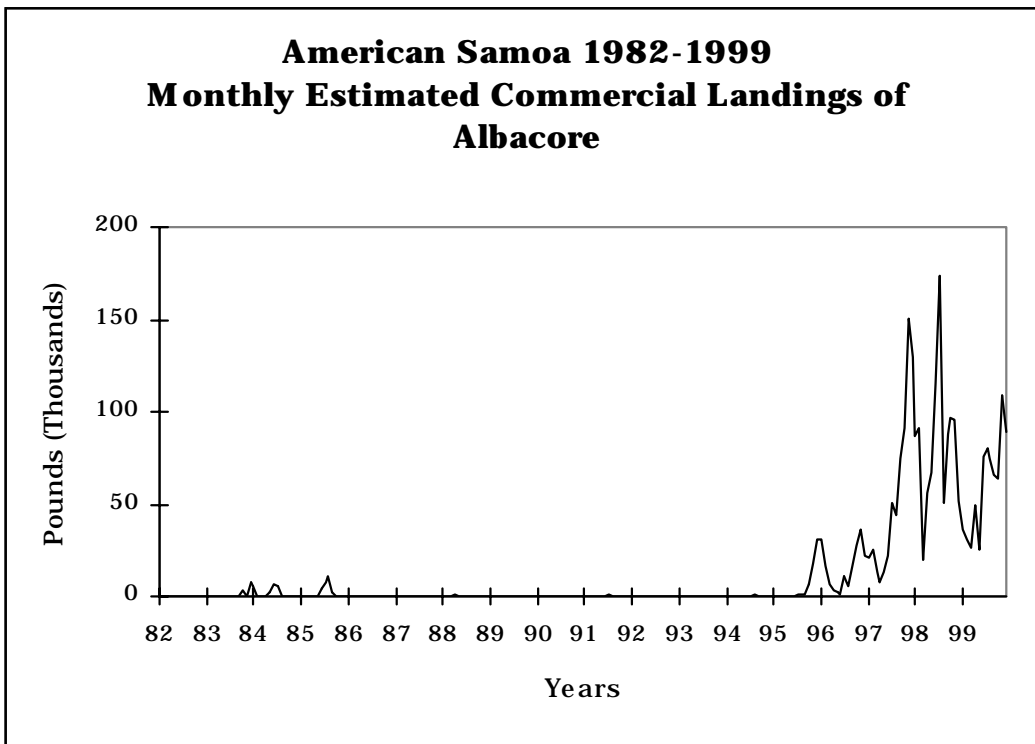


Figure II 4.6

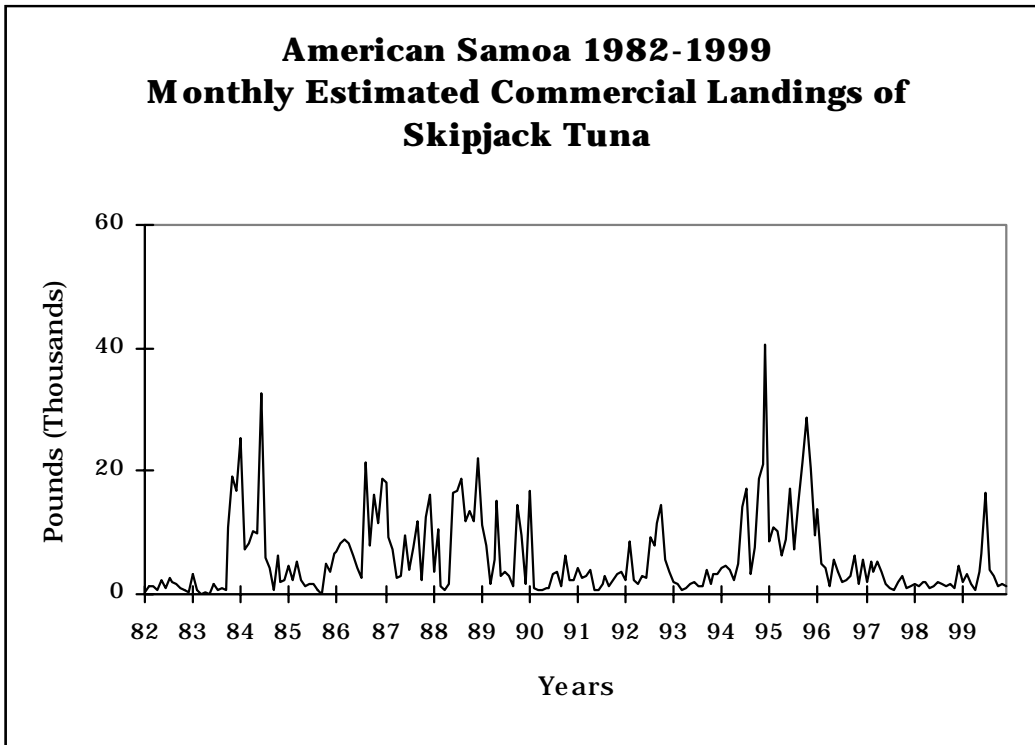


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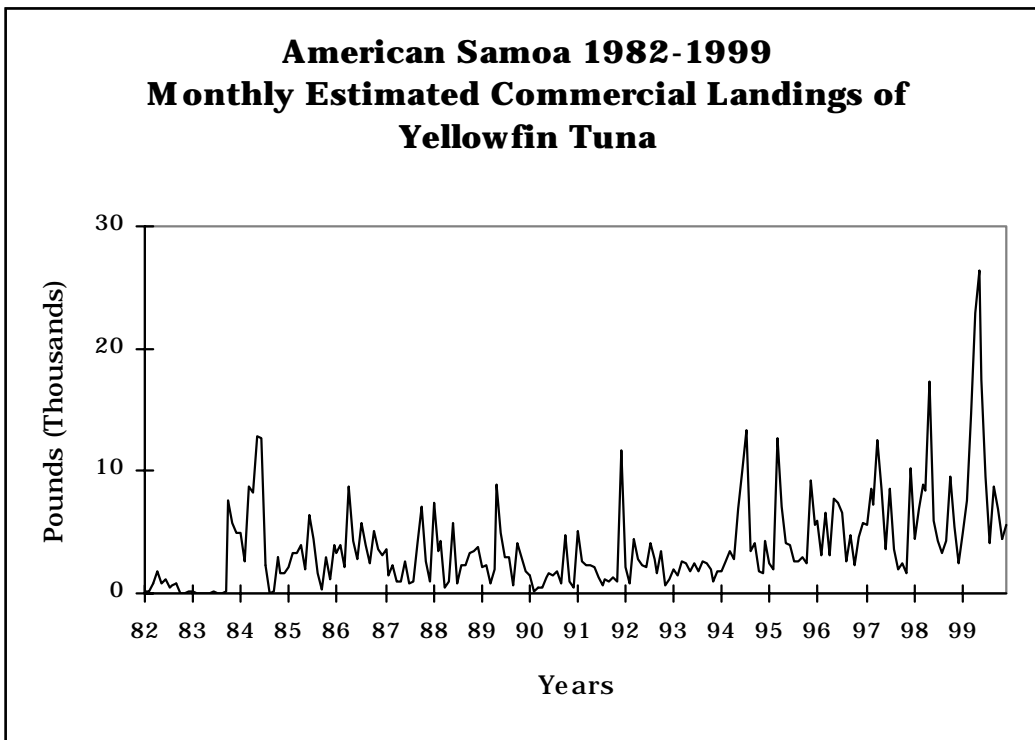


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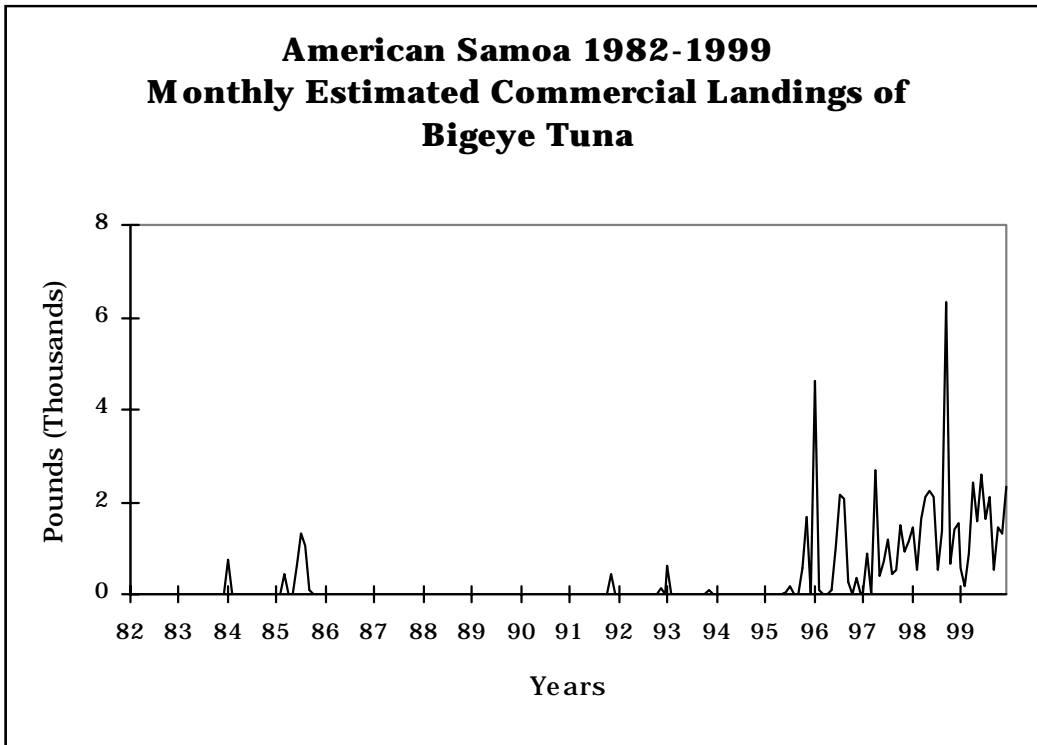


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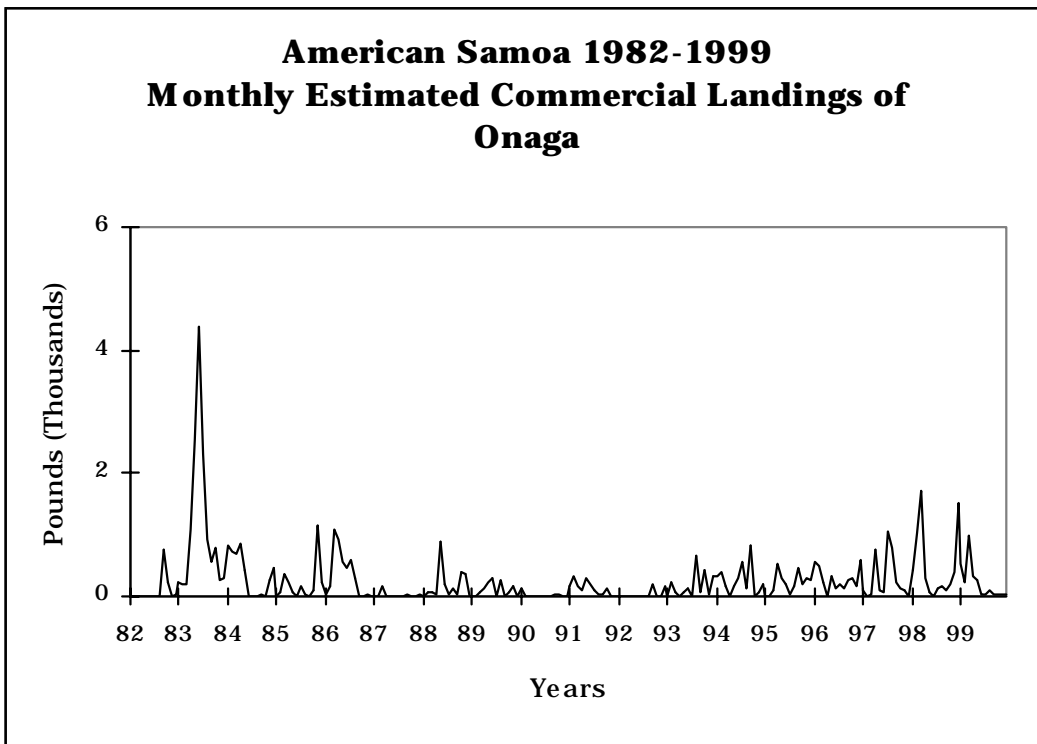
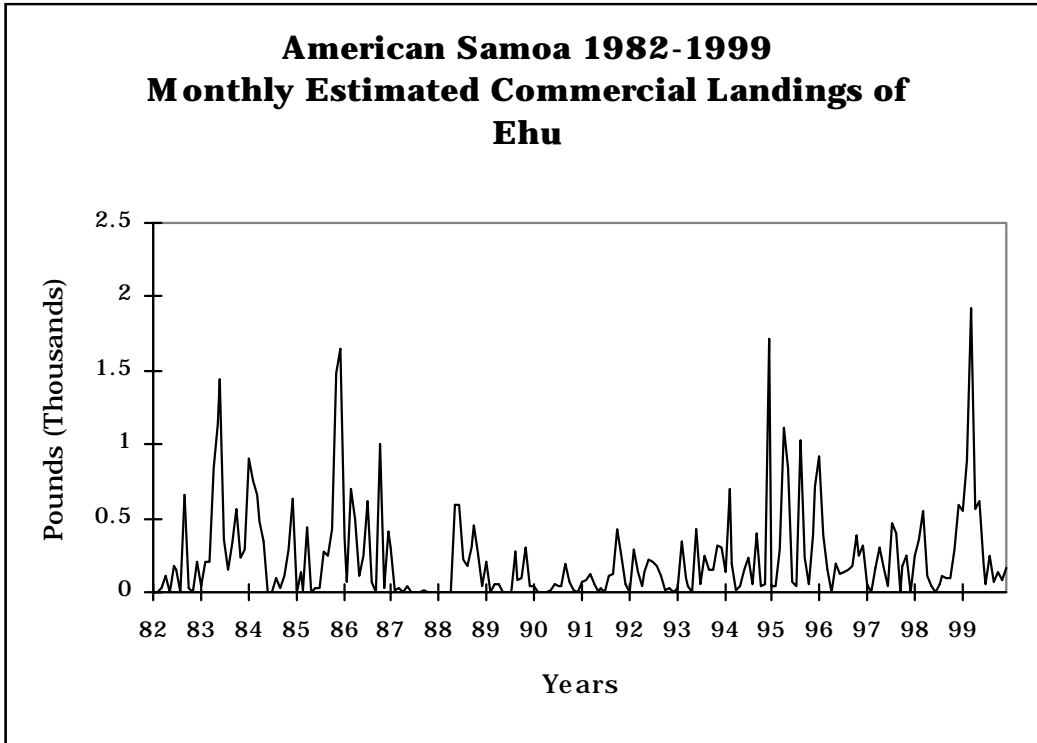


Figure II.4.10



**COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
1999 FISHERY STATISTICS**

Compiled by
Division of Fish and Wildlife
and the
Western Pacific Fishery Information Network

July 2001

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COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS 1999 FISHERY STATISTICS

INTRODUCTION

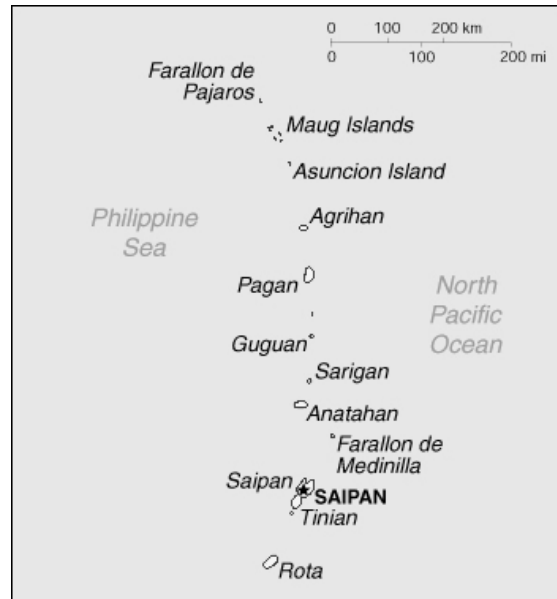
Location: 14° to 21°N latitude, 145°E
longitude

Main Islands: Saipan, Rota, Tinian

Population: 68,000

Economy: Tourism

The Division of Fish and Wildlife (DFW) has been collecting fishery statistics on the commercial fishing fleet of Saipan since the mid-1970's. It also began collecting information on vessels transshipping tuna out of Tinian in 1983.



CNMI

source: <<http://www.cia.gov/cia/publications/factbook/cq.html>>;
The World Factbook 1999

The chief 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, and a small charter fleet is also developing. During 1999, 27 vessels were registered as "charter" for their primary use. In recent years, there has been a fairly rapid increase in the number of boats in the CNMI. In 1999 142 boats were registered to fish for subsistence or recreation, and another 121 boats were registered as either part-time or full-time commercial fishing boats.

Trolling is by far the most common fishing method, but bottomfishing and reef fishing are also popular. Reef fish make up a significant portion of the total commercial catch and are an important component of the local diet. In recent years several larger boats started fishing more intensively for bottomfish around the islands north of Saipan. While the vast majority of the domestic catch is consumed locally, there have been some exports of fish to Guam, Hawaii, and most recently Japan. One exception is reef fish; an increasing amount is imported from other Pacific islands as local demand exceeds local supply.

In 1982 WPacFIN significantly improved data collecting and processing systems by providing computer hardware, software, and training. Since then numerous system upgrades and replacements have been implemented to keep up with changing

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technologies and the increasing demands for improved fisheries statistics.

DATA COLLECTING SYSTEM

DFW's principal method of collecting 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 then complete an invoice each time they purchase fish directly from fishermen; one copy goes to DFW and one copy goes to their records.

Some advantages of this data collection method are that it is relatively inexpensive to implement and maintain, it is fairly easy to get complete coverage of the commercial fisheries, and DFW can provide feedback to dealers and fishermen to ensure data accuracy and continued cooperation.

There are some disadvantages: dependency on non-DFW personnel to identify the catch and record the data, restrictions on the types of data that can be collected, education and cooperation of all fish purchasers are required, and recordings of fish actually sold to dealers are limited. Therefore, a potentially important portion of the total landings is unrecorded.

Since 1982 DFW has tried to minimize these disadvantages in several ways: 1) maintain a close working relationship with dealers; 2) add new dealers to their list and educate them; and 3) implement a creel survey to help estimate total catch, including recreational and subsistence catch.

The current system collects data from dealers in Saipan, where DFW estimates over 90% of all CNMI commercial landings are made. The DFW also estimates that the proportion of total commercial landings that have been recorded in the Saipan database since 1983 is about 90%. Therefore, the reported data summarized herein represents an estimated 80+% of the total commercial landings for CNMI. In mid-1999 this trip ticket invoice data collection program was expanded to Tinian and Rota as well, so data coming directly from those islands will be available in future volumes of this series.

Information collected from the fishermen includes the following:

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

These data elements are collected for all purchases of fishery products;

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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 collect the previous month's invoices, to resolve problems, and to answer any questions the dealers may have. The invoices are then returned to the office for an initial visual edit during the coding process and entered into the "Purchase" database. After the records are entered, reports are generated to help verify that all data were entered correctly. On a quarterly basis, copies of the database are sent to the Honolulu Laboratory, where the data are transferred to the central computer for additional verification before generating 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 completed, monthly and annual summary reports by species are generated. 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

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II. Bottomfish Management Unit Species (BMUS)

Jacks (unclassified, but excluding bigeye scad)

Amberjack

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

III.6

Table III.1.1

CNMI 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Assorted	91	182	2.00
Miscellaneous	16	56	3.50
Bigeye Scad (Atulai)	8,168	23,652	2.90
Jacks	1,616	5,409	3.35
Mullet	25	63	2.50
Bottom Fish	5,603	15,299	2.73
Sickle Pomfret	186	479	2.57
Ehu (Red Snapper)	657	2,298	3.50
Gindai (Flower Snap)	2,949	10,259	3.48
Grouper	3,121	9,303	2.98
Kalekale (Pink Snap)	5	18	3.50
Onaga (Red Snapper)	13,881	60,137	4.33
Opakapaka (Pink Snap)	1,418	4,796	3.38
Lehi (Silverjaw Snap)	7,989	34,042	4.26
Amberjack	275	953	3.47
Reef Fish	127,474	309,863	2.43
Wrasse	111	318	2.86
Rabbitfish (Hitting)	5,154	16,965	3.29
Rabbitfish (H. Feda)	105	263	2.50
Rabbitfish (Menahac)	421	962	2.29
Rudderfish (Guilli)	142	493	3.46
Emperorfish	6,717	18,016	2.68
Squirrelfish	733	2,353	3.21
Parrotfish	3,263	11,042	3.38
Snapper	546	1,494	2.73
Surgeonfish	1,293	4,196	3.24
Surgeon/Hagnon	1,405	4,538	3.23
Unicornfish	1,992	6,385	3.20
Goatfish	1,018	2,849	2.80
Troll Fish	2,146	4,042	1.88
Barracuda	37	69	1.86
Mahimahi (dolphin)	10,305	23,104	2.24
Marlin	2,833	4,751	1.68
Sailfish	40	80	2.00
Rainbow Runner	1,044	2,318	2.22
Wahoo	6,395	15,772	2.47
Tunas	4,953	8,671	1.75
Skipjack Tuna	85,187	159,834	1.88
Dogtooth Tuna	9,058	20,982	2.32
Yellowfin Tuna	19,599	41,047	2.09
Invertebrates	3	11	3.50
Lobster	2,494	13,760	5.52
Octopus	266	689	2.59
** TOTAL **	340,733	841,811	2.47

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Table III.1.2

CNMI January 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	16	56	3.50
Jacks	128	449	3.52
Mullet	25	63	2.50
Bottom Fish	623	1,849	2.97
Ehu (Red Snapper)	58	203	3.50
Gindai (Flower Snap)	78	277	3.55
Grouper	731	2,340	3.20
Kalekale (Pink Snap)	5	18	3.50
Onaga (Red Snapper)	3,777	16,941	4.49
Opakapaka (Pink Snap)	166	553	3.33
Lehi (Silverjaw Snap)	709	3,175	4.48
Reef Fish	10,235	27,463	2.68
Wrasse	45	111	2.50
Rabbitfish (Hitting)	841	2,874	3.42
Rudderfish (Guilli)	76	267	3.49
Emperorfish	457	1,214	2.66
Squirrelfish	113	367	3.25
Parrotfish	1,452	5,019	3.46
Snapper	57	200	3.50
Surgeonfish	680	2,208	3.25
Surgeon/Hagnon	647	2,101	3.25
Unicornfish	1,012	3,291	3.25
Goatfish	175	569	3.25
Troll Fish	70	123	1.75
Mahimahi (dolphin)	1,637	3,240	1.98
Marlin	165	301	1.83
Sailfish	40	80	2.00
Rainbow Runner	20	40	2.00
Wahoo	387	1,044	2.70
Tunas	35	70	2.00
Skipjack Tuna	9,158	17,492	1.91
Dogtooth Tuna	2,677	5,696	2.13
Yellowfin Tuna	1,167	2,450	2.10
Lobster	305	1,865	6.11
Octopus	50	149	2.96
** SUBTOTAL **	37,813	104,158	2.75

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Table III.1.3

CNMI February 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	6	21	3.50
Jacks	130	453	3.50
Bottom Fish	525	1,444	2.75
Sickle Pomfret	14	49	3.50
Ehu (Red Snapper)	118	411	3.50
Gindai (Flower Snap)	668	2,336	3.50
Grouper	317	951	3.00
Onaga (Red Snapper)	2,225	9,801	4.41
Opakapaka (Pink Snap)	363	1,255	3.46
Lehi (Silverjaw Snap)	2,939	13,223	4.50
Amberjack	142	497	3.50
Reef Fish	15,158	38,890	2.57
Rabbitfish (Hitting)	701	2,282	3.25
Emperorfish	714	2,236	3.13
Squirrelfish	5	16	3.25
Parrotfish	35	103	2.93
Snapper	160	440	2.75
Surgeonfish	17	55	3.25
Surgeon/Hagnon	14	46	3.25
Unicornfish	40	130	3.25
Goatfish	4	13	3.25
Mahimahi (dolphin)	2,777	6,185	2.23
Marlin	238	490	2.06
Rainbow Runner	27	74	2.72
Wahoo	1,862	5,035	2.70
Tunas	35	53	1.50
Skipjack Tuna	8,740	17,002	1.95
Dogtooth Tuna	757	1,837	2.43
Yellowfin Tuna	987	1,979	2.01
Lobster	213	1,247	5.85
Octopus	9	22	2.50
** SUBTOTAL **	39,935	108,573	2.72

III.9

Table III.1.4

CNMI March 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Jacks	222	775	3.50
Bottom Fish	148	476	3.21
Ehu (Red Snapper)	114	399	3.50
Gindai (Flower Snap)	535	1,880	3.51
Grouper	230	722	3.15
Onaga (Red Snapper)	595	2,701	4.54
Opakapaka (Pink Snap)	376	1,308	3.48
Lehi (Silverjaw Snap)	1,123	4,883	4.35
Amberjack	31	109	3.50
Reef Fish	14,858	36,866	2.48
Wrasse	29	94	3.25
Rabbitfish (Hitting)	835	2,837	3.40
Rudderfish (Guilli)	66	226	3.42
Emperorfish	660	1,871	2.84
Squirrelfish	577	1,875	3.25
Parrotfish	1,318	4,613	3.50
Snapper	55	151	2.75
Surgeonfish	588	1,911	3.25
Surgeon/Hagnon	733	2,368	3.23
Unicornfish	879	2,857	3.25
Goatfish	266	841	3.16
Troll Fish	112	224	2.00
Mahimahi (dolphin)	2,929	6,998	2.39
Rainbow Runner	169	519	3.07
Wahoo	366	970	2.65
Tunas	13	33	2.50
Skipjack Tuna	12,375	22,603	1.83
Dogtooth Tuna	1,816	4,146	2.28
Yellowfin Tuna	1,838	3,849	2.09
Lobster	472	2,974	6.31
Octopus	60	149	2.50
** SUBTOTAL **	44,385	112,226	2.53

III.10

Table III.1.5

CNMI April 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Jacks	475	1,661	3.50
Ehu (Red Snapper)	152	532	3.50
Gindai (Flower Snap)	688	2,408	3.50
Grouper	520	1,560	3.00
Onaga (Red Snapper)	589	2,651	4.50
Opakapaka (Pink Snap)	195	683	3.50
Lehi (Silverjaw Snap)	1,152	5,109	4.43
Amberjack	55	193	3.50
Reef Fish	5,839	13,515	2.31
Rabbitfish (Hitting)	374	1,214	3.25
Emperorfish	180	621	3.45
Snapper	70	196	2.79
Goatfish	58	141	2.43
Troll Fish	38	76	2.00
Mahimahi (dolphin)	1,220	2,727	2.24
Marlin	184	276	1.50
Rainbow Runner	28	81	2.93
Wahoo	461	1,132	2.45
Tunas	80	160	2.00
Skipjack Tuna	5,484	10,324	1.88
Dogtooth Tuna	1,577	3,945	2.50
Yellowfin Tuna	550	1,513	2.75
Lobster	58	339	5.84
Octopus	24	60	2.50
** SUBTOTAL **	20,049	51,115	2.55

III.11

Table III.1.6

CNMI May 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Jacks	251	879	3.50
Bottom Fish	491	1,373	2.80
Sickle Pomfret	39	137	3.50
Ehu (Red Snapper)	103	361	3.50
Gindai (Flower Snap)	641	2,281	3.56
Grouper	829	2,532	3.05
Onaga (Red Snapper)	2,659	11,759	4.42
Opakapaka (Pink Snap)	32	110	3.50
Lehi (Silverjaw Snap)	422	1,826	4.33
Amberjack	21	74	3.50
Reef Fish	9,899	23,823	2.41
Rabbitfish (Hitting)	339	1,090	3.21
Rabbitfish (Menahac)	421	962	2.29
Emperorfish	981	2,796	2.85
Squirrelfish	18	46	2.50
Parrotfish	22	55	2.50
Snapper	43	113	2.62
Surgeonfish	2	4	2.50
Unicornfish	2	4	2.50
Goatfish	159	397	2.50
Troll Fish	779	1,406	1.81
Mahimahi (dolphin)	279	686	2.46
Marlin	475	475	1.00
Rainbow Runner	44	102	2.31
Wahoo	326	842	2.58
Tunas	328	572	1.75
Skipjack Tuna	4,958	9,466	1.91
Dogtooth Tuna	699	1,748	2.50
Yellowfin Tuna	2,460	5,215	2.12
Invertebrates	3	11	3.50
Lobster	165	841	5.11
Octopus	13	33	2.50
** SUBTOTAL **	27,901	72,016	2.58

III.12

Table III.1.7

CNMI June 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	2	7	3.00
Jacks	125	438	3.50
Bottom Fish	100	275	2.75
Ehu (Red Snapper)	112	392	3.50
Gindai (Flower Snap)	244	852	3.50
Grouper	170	510	3.00
Onaga (Red Snapper)	1,292	5,806	4.50
Opakapaka (Pink Snap)	123	431	3.50
Lehi (Silverjaw Snap)	500	2,076	4.16
Amberjack	15	51	3.50
Reef Fish	11,317	27,011	2.39
Rabbitfish (Hitting)	327	1,070	3.27
Rabbitfish (H. Feda)	105	263	2.50
Emperorfish	277	692	2.50
Snapper	6	15	2.75
Troll Fish	182	304	1.67
Mahimahi (dolphin)	50	143	2.85
Marlin	611	1,069	1.75
Rainbow Runner	54	180	3.36
Wahoo	114	223	1.97
Tunas	783	1,303	1.67
Skipjack Tuna	6,713	12,959	1.93
Dogtooth Tuna	767	1,909	2.49
Yellowfin Tuna	2,274	5,087	2.24
Lobster	217	1,002	4.62
** SUBTOTAL **	26,476	64,064	2.42

III.13

Table III.1.8

CNMI July 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	22	66	3.00
Bottom Fish	944	2,598	2.75
Sickle Pomfret	54	135	2.50
Onaga (Red Snapper)	1,320	4,739	3.59
Lehi (Silverjaw Snap)	353	1,135	3.21
Reef Fish	10,797	25,530	2.36
Rabbitfish (Hitting)	144	467	3.25
Emperorfish	713	1,838	2.58
Parrotfish	111	348	3.14
Snapper	44	121	2.75
Surgeon/Hagnon	12	24	2.00
Goatfish	55	130	2.36
Troll Fish	284	516	1.82
Barracuda	17	34	2.00
Mahimahi (dolphin)	20	35	1.75
Marlin	301	527	1.75
Rainbow Runner	196	387	1.98
Wahoo	73	152	2.09
Tunas	824	1,557	1.89
Skipjack Tuna	7,820	14,965	1.91
Dogtooth Tuna	82	181	2.21
Yellowfin Tuna	1,799	3,609	2.01
Lobster	296	1,442	4.87
Octopus	23	58	2.50
** SUBTOTAL **	26,303	60,593	2.30

Table III.1.9

CNMI August 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Assorted	91	182	2.00
Bigeye Scad (Atulai)	1,074	3,439	3.20
Jacks	58	145	2.50
Bottom Fish	891	2,348	2.64
Grouper	159	318	2.00
Onaga (Red Snapper)	442	1,732	3.92
Opakapaka (Pink Snap)	33	99	3.00
Lehi (Silverjaw Snap)	147	513	3.50
Reef Fish	8,127	19,073	2.35
Rabbitfish (Hitting)	126	410	3.25
Emperorfish	472	1,057	2.24
Parrotfish	86	265	3.10
Snapper	12	35	3.00
Unicornfish	5	5	1.00
Goatfish	81	203	2.50
Troll Fish	143	227	1.59
Marlin	340	623	1.83
Rainbow Runner	351	614	1.75
Wahoo	248	512	2.07
Tunas	829	1,651	1.99
Skipjack Tuna	5,525	10,067	1.82
Dogtooth Tuna	256	601	2.35
Yellowfin Tuna	2,226	4,706	2.11
Lobster	188	995	5.30
Octopus	7	18	2.50
** SUBTOTAL **	21,916	49,837	2.27

III.15

Table III.1.10

CNMI September 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	3,011	9,039	3.00
Jacks	61	159	2.61
Bottom Fish	627	1,652	2.63
Onaga (Red Snapper)	401	1,657	4.14
Opakapaka (Pink Snap)	44	121	2.75
Lehi (Silverjaw Snap)	252	765	3.03
Reef Fish	10,248	24,000	2.34
Rabbitfish (Hitting)	242	771	3.19
Emperorfish	320	749	2.34
Parrotfish	23	68	3.00
Snapper	22	39	1.75
Surgeonfish	7	17	2.50
Unicornfish	24	45	1.88
Goatfish	27	70	2.59
Troll Fish	113	233	2.06
Barracuda	11	19	1.75
Marlin	372	611	1.64
Rainbow Runner	66	127	1.92
Wahoo	821	1,573	1.92
Tunas	782	1,108	1.42
Skipjack Tuna	5,890	10,814	1.84
Dogtooth Tuna	55	125	2.27
Yellowfin Tuna	2,863	5,800	2.03
Lobster	182	903	4.95
Octopus	22	56	2.50
** SUBTOTAL **	26,485	60,522	2.29

III.16

Table III.1.11

CNMI October 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	1,242	3,468	2.79
Jacks	42	119	2.87
Bottom Fish	639	1,678	2.63
Sickle Pomfret	40	80	2.00
Onaga (Red Snapper)	77	300	3.90
Opakapaka (Pink Snap)	39	117	3.00
Lehi (Silverjaw Snap)	346	1,184	3.43
Reef Fish	9,409	22,651	2.41
Wrasse	37	112	3.00
Rabbitfish (Hitting)	280	911	3.25
Emperorfish	143	361	2.52
Squirrelfish	6	14	2.50
Parrotfish	63	164	2.61
Snapper	67	157	2.35
Goatfish	21	52	2.50
Troll Fish	218	487	2.23
Mahimahi (dolphin)	20	50	2.50
Rainbow Runner	47	114	2.43
Wahoo	714	1,745	2.44
Tunas	474	702	1.48
Skipjack Tuna	5,524	10,103	1.83
Dogtooth Tuna	138	310	2.24
Yellowfin Tuna	1,188	2,328	1.96
Lobster	102	511	5.00
Octopus	34	85	2.50
** SUBTOTAL **	20,908	47,801	2.29

Table III.1.12

CNMI November 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	1,778	4,769	2.68
Jacks	76	207	2.72
Bottom Fish	597	1,554	2.60
Sickle Pomfret	39	78	2.00
Gindai (Flower Snap)	96	225	2.36
Grouper	35	70	2.00
Onaga (Red Snapper)	283	1,130	3.99
Opakapaka (Pink Snap)	48	120	2.50
Lehi (Silverjaw Snap)	29	91	3.20
Amberjack	11	30	2.75
Reef Fish	10,628	24,953	2.35
Rabbitfish (Hitting)	261	849	3.25
Emperorfish	1,075	2,826	2.63
Squirrelfish	14	34	2.50
Snapper	12	29	2.50
Unicornfish	16	16	1.00
Goatfish	73	182	2.50
Troll Fish	207	447	2.16
Mahimahi (dolphin)	395	851	2.16
Marlin	147	379	2.57
Rainbow Runner	24	48	2.00
Wahoo	762	1,878	2.46
Tunas	215	375	1.75
Skipjack Tuna	6,047	11,458	1.89
Dogtooth Tuna	210	431	2.06
Yellowfin Tuna	1,333	2,667	2.00
Lobster	233	1,356	5.82
Octopus	20	51	2.50
** SUBTOTAL **	24,661	57,101	2.32

III.18

Table III.1.13

CNMI December 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	1,034	2,844	2.75
Jacks	50	125	2.50
Bottom Fish	19	52	2.75
Grouper	130	300	2.31
Onaga (Red Snapper)	224	921	4.11
Lehi (Silverjaw Snap)	19	61	3.21
Reef Fish	10,958	26,090	2.38
Rabbitfish (Hitting)	684	2,190	3.20
Emperorfish	726	1,757	2.42
Parrotfish	155	408	2.64
Unicornfish	15	38	2.50
Goatfish	99	252	2.54
Barracuda	9	16	1.75
Mahimahi (dolphin)	979	2,190	2.24
Rainbow Runner	19	33	1.75
Wahoo	263	666	2.53
Tunas	556	1,088	1.96
Skipjack Tuna	6,954	12,580	1.81
Dogtooth Tuna	26	55	2.10
Yellowfin Tuna	916	1,844	2.01
Lobster	63	285	4.50
Octopus	4	10	2.50
** SUBTOTAL **	23,901	53,804	2.25
** TOTAL **	340,733	841,811	2.47

Figure III.1.1

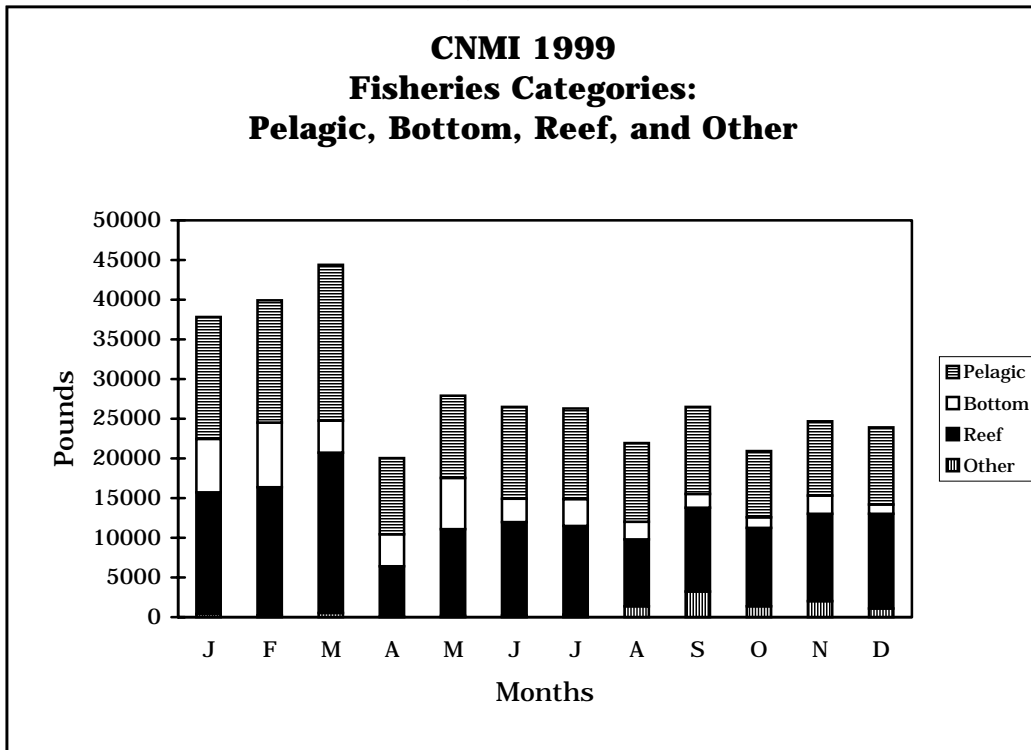


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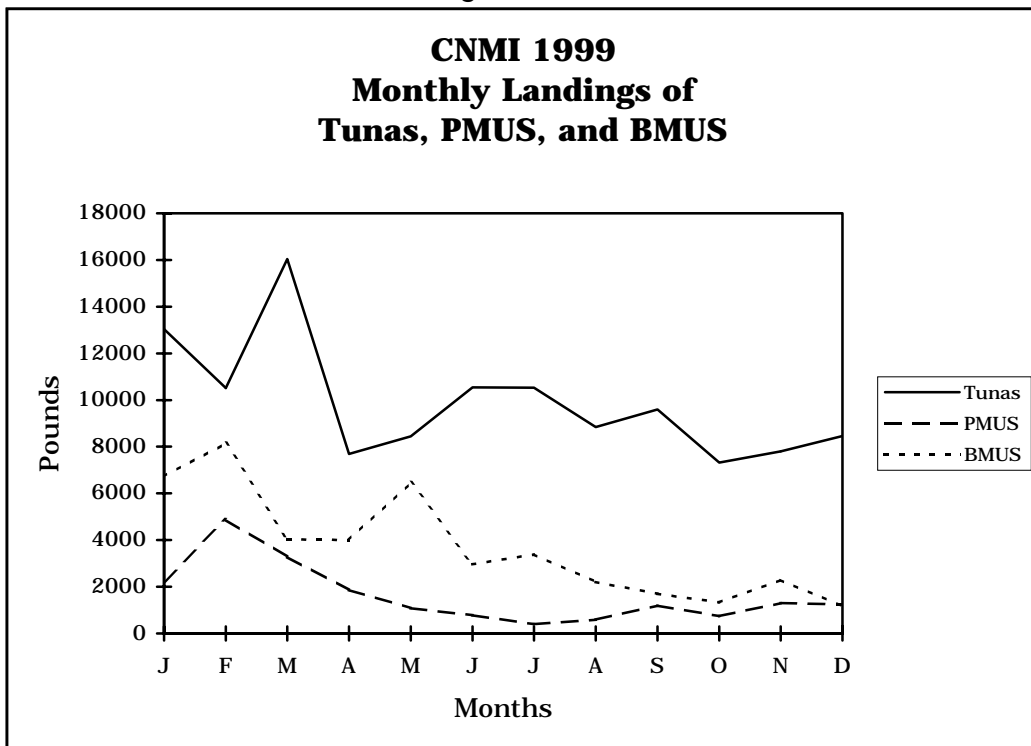


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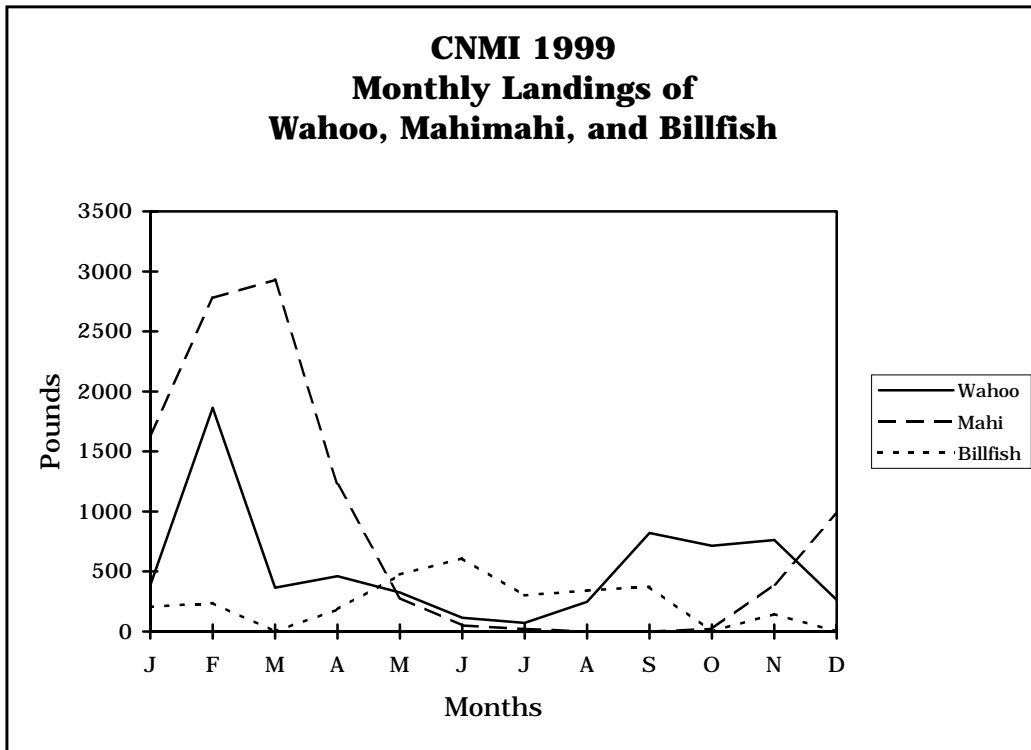


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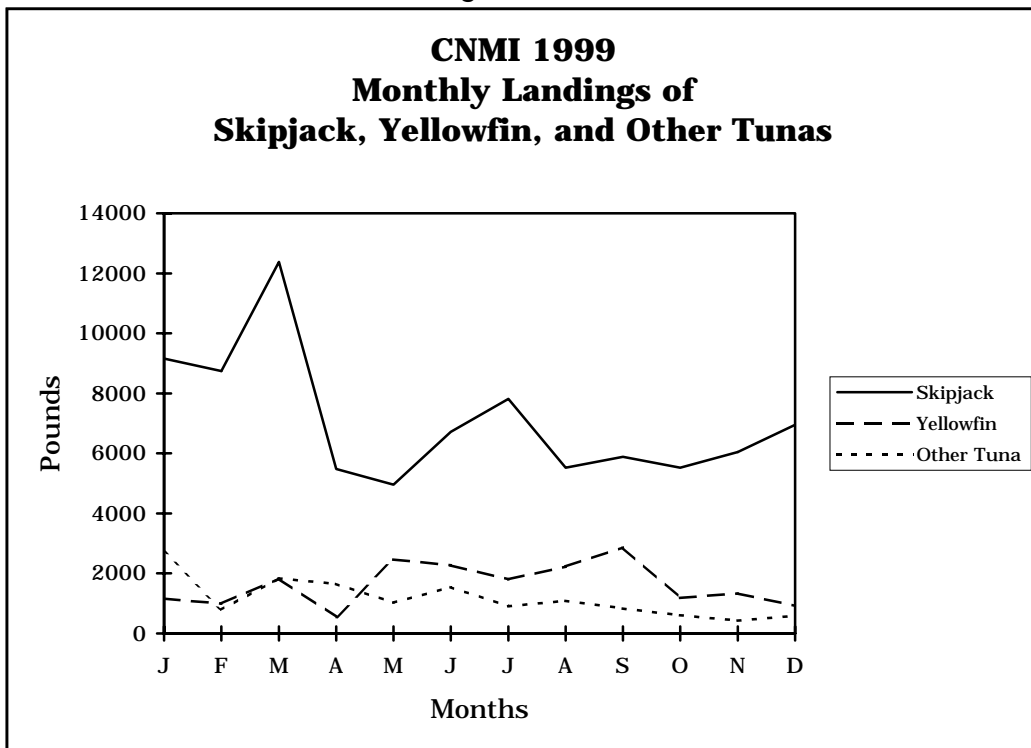


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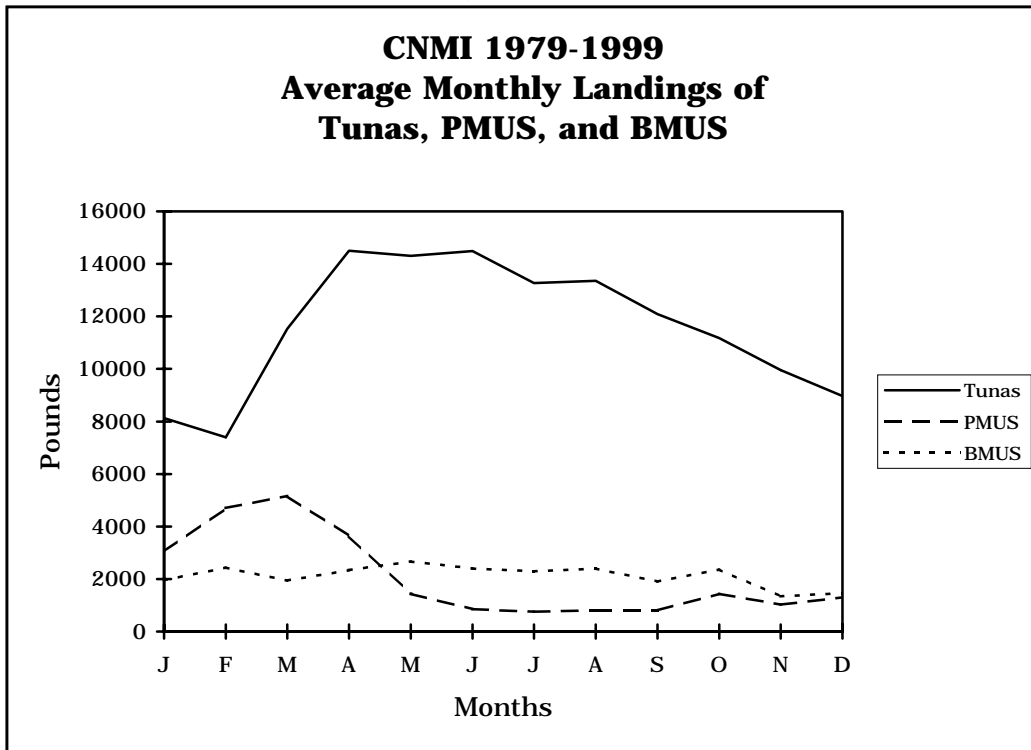


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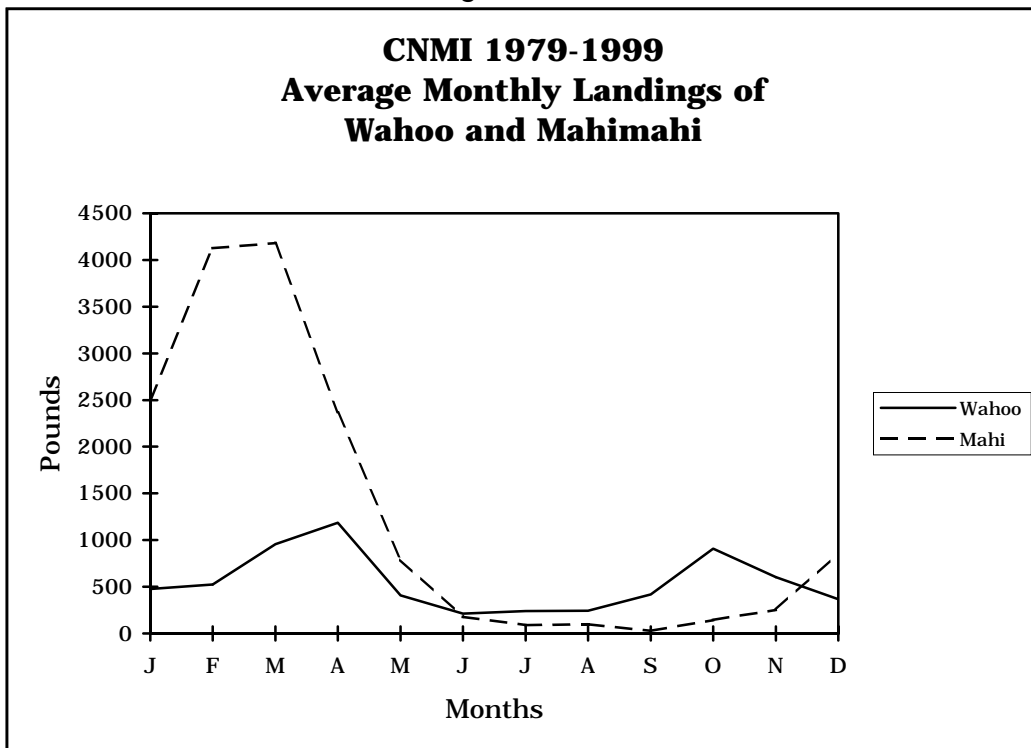


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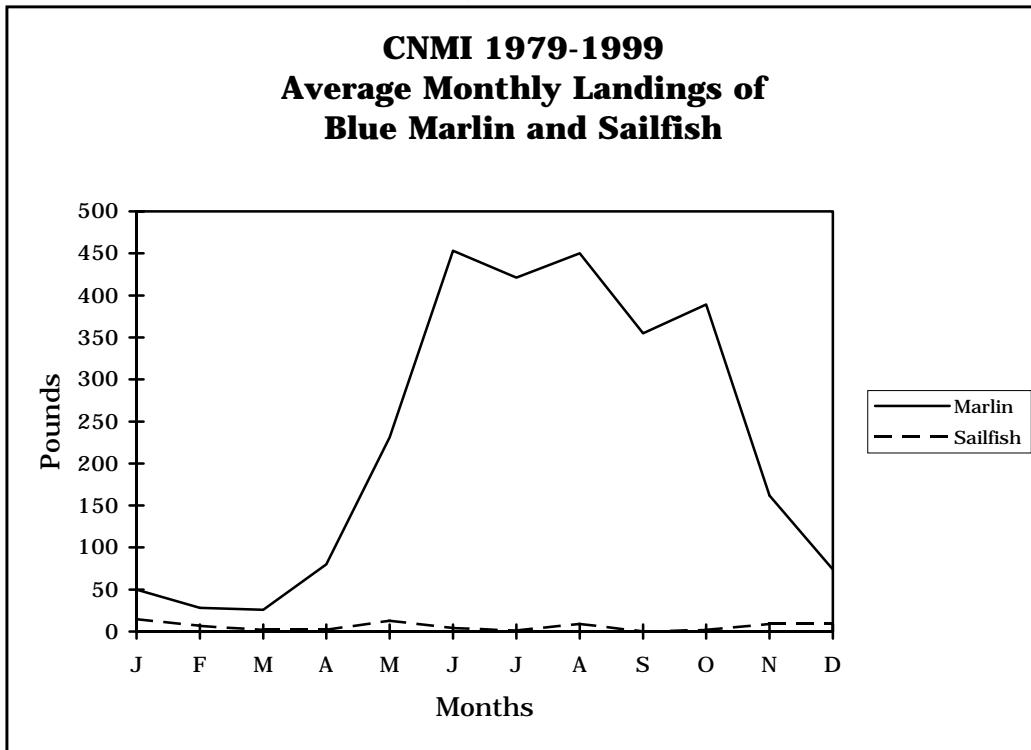


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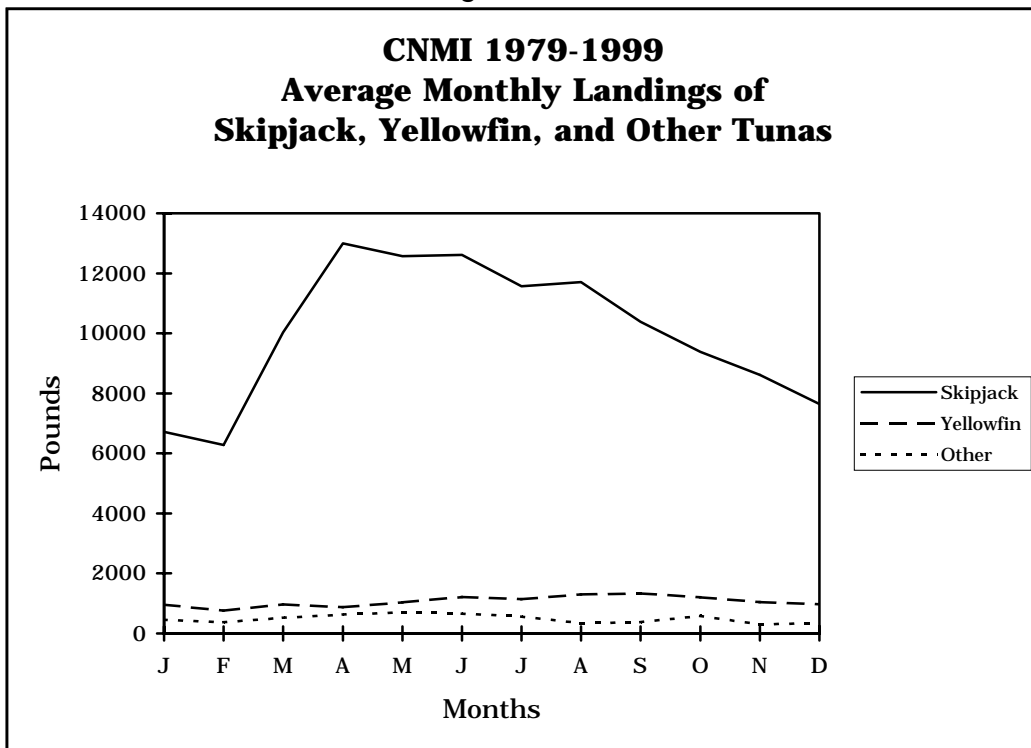


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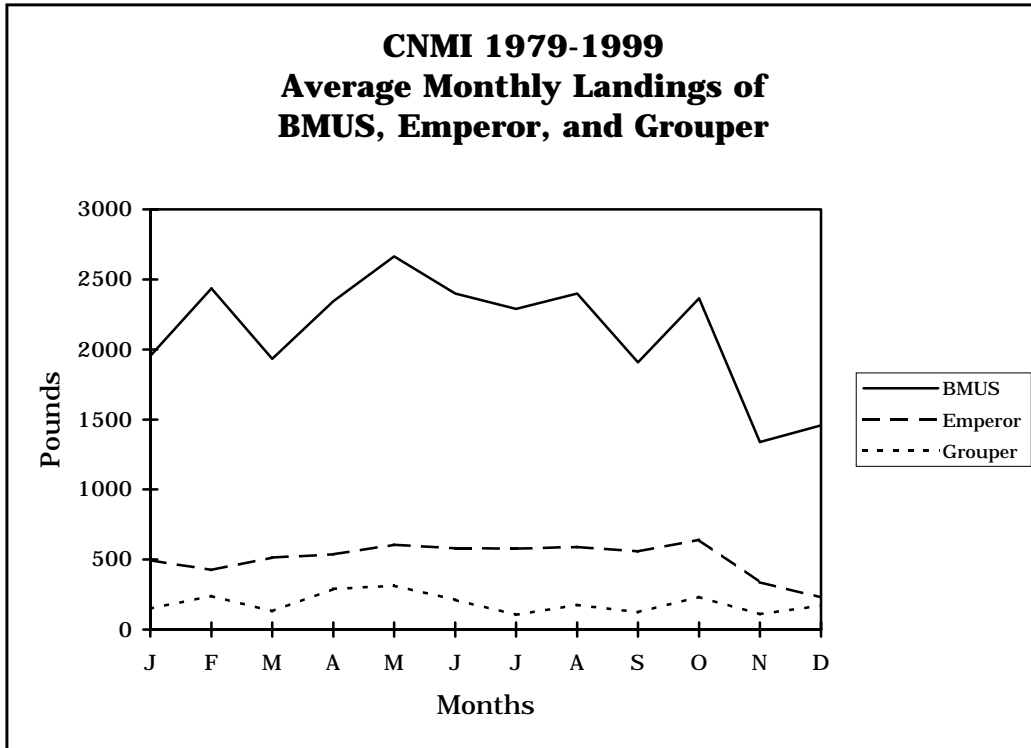


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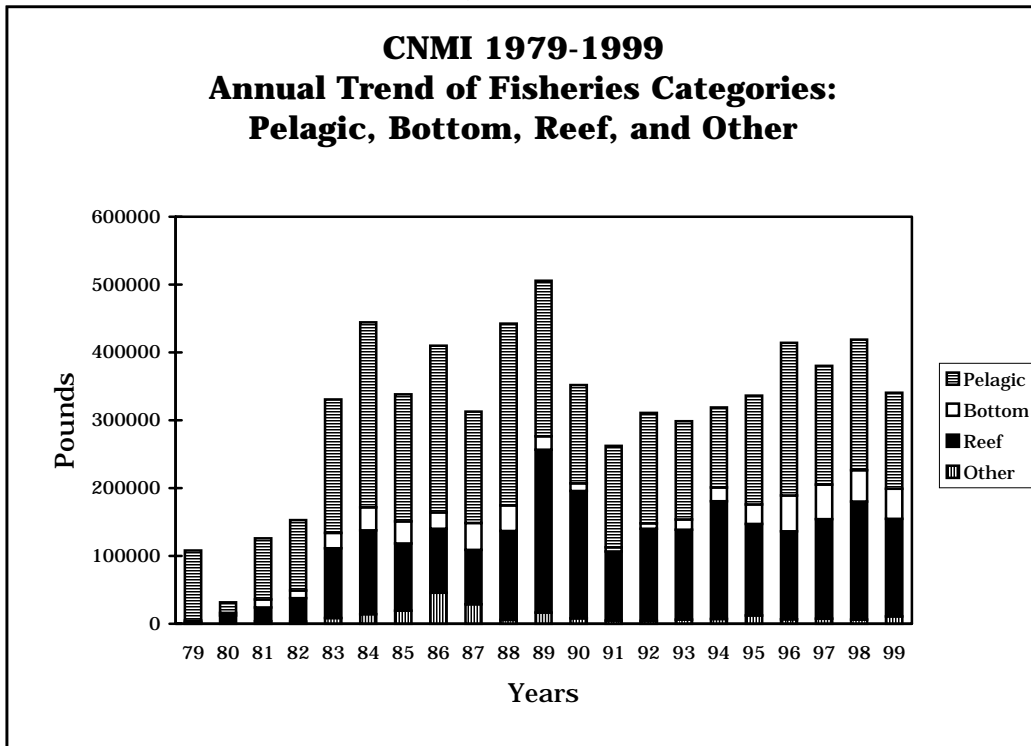


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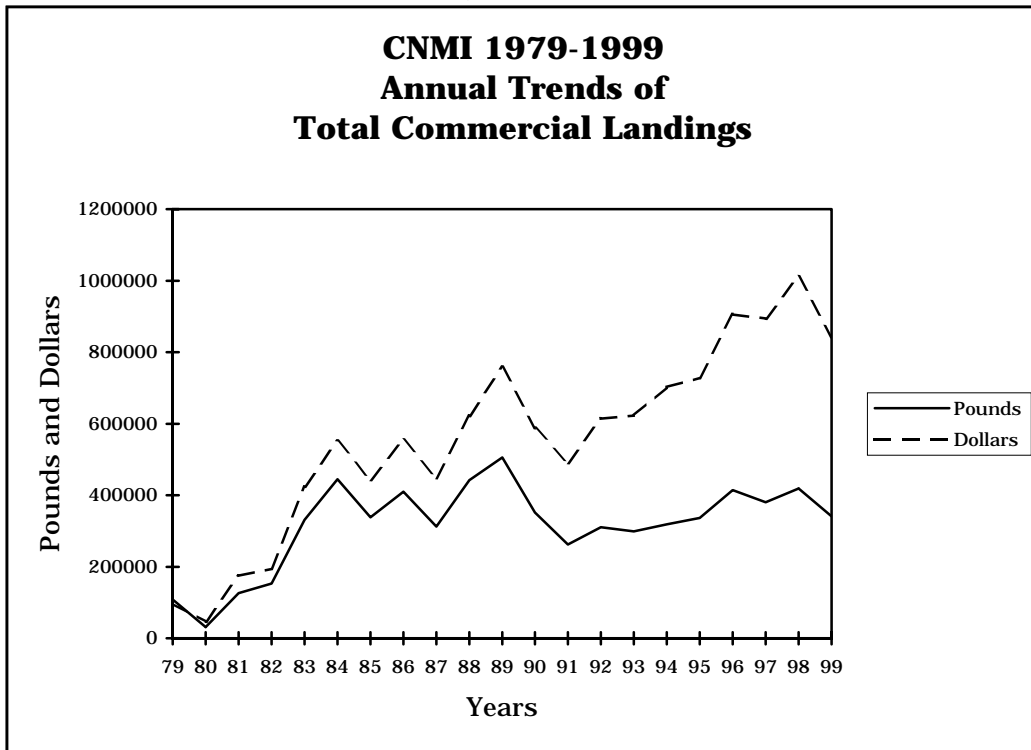


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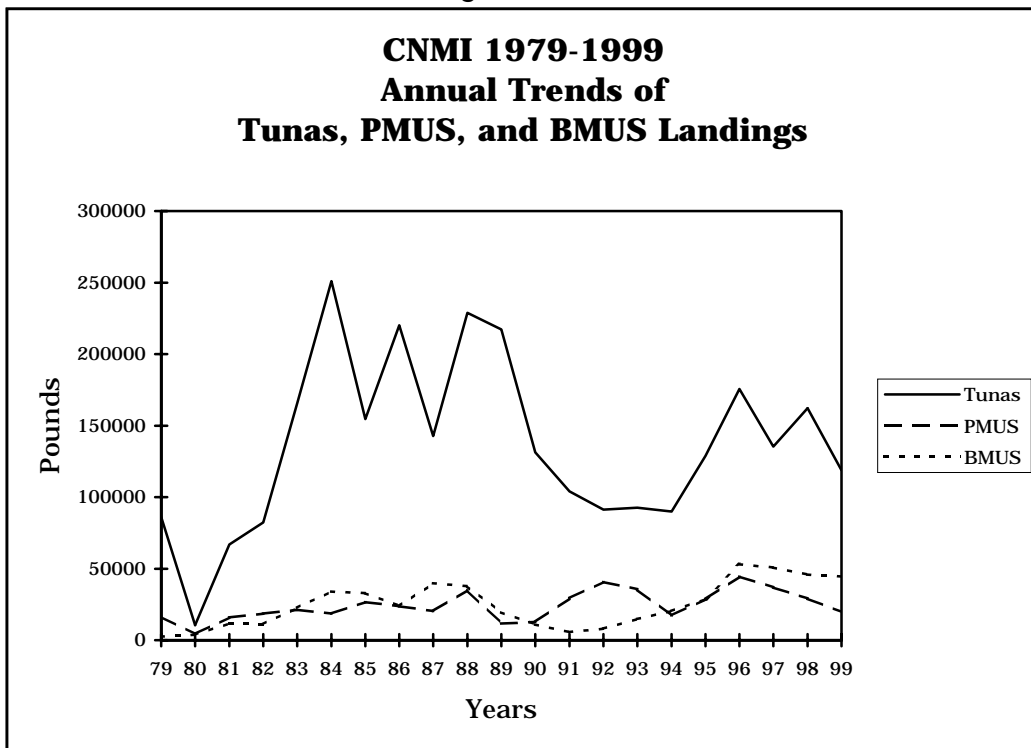


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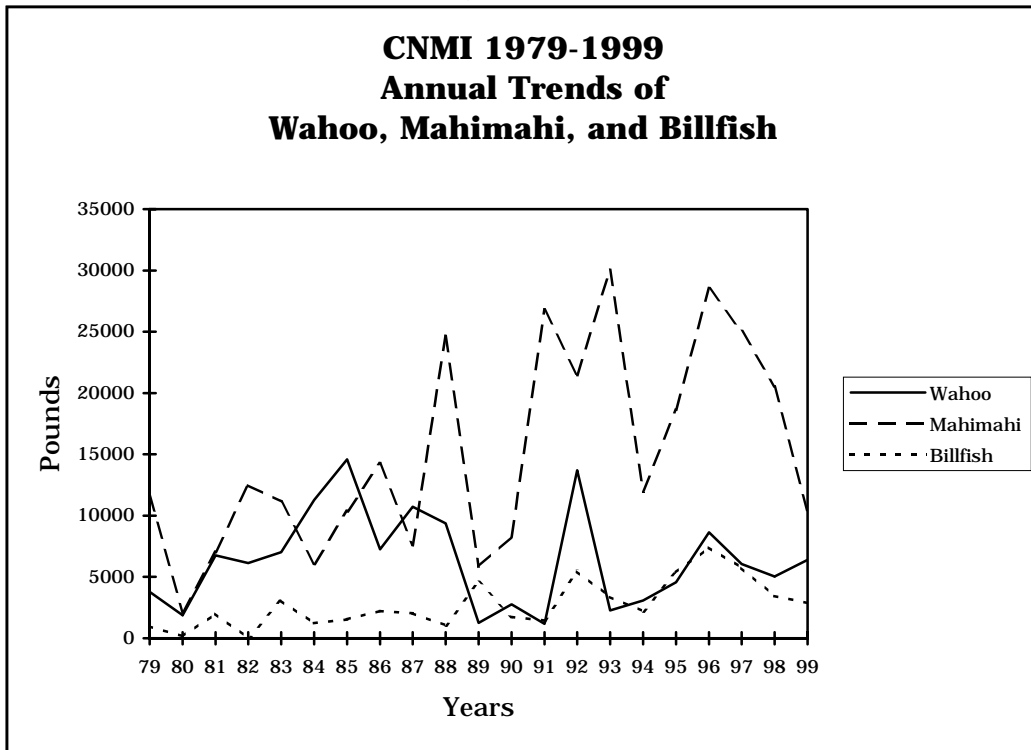


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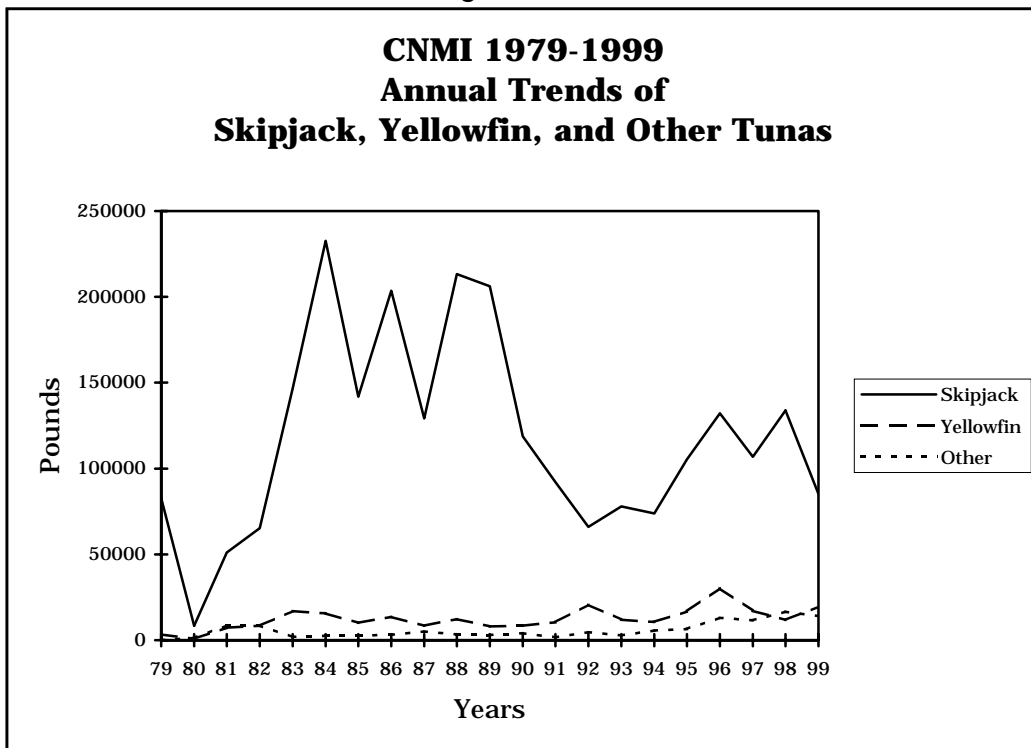


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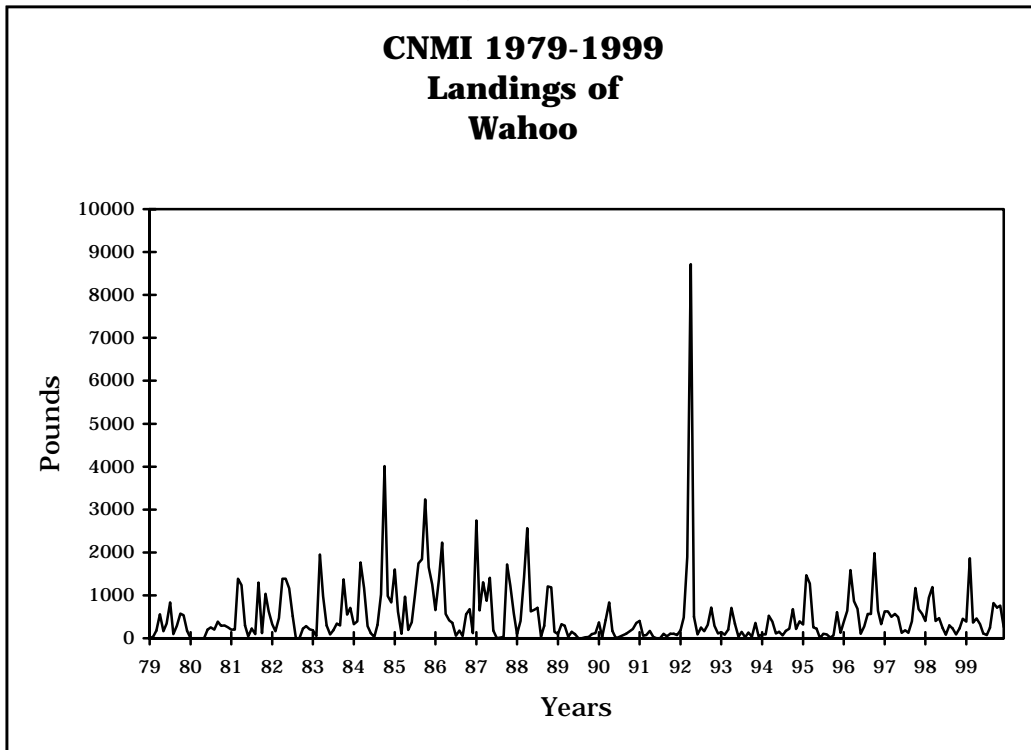


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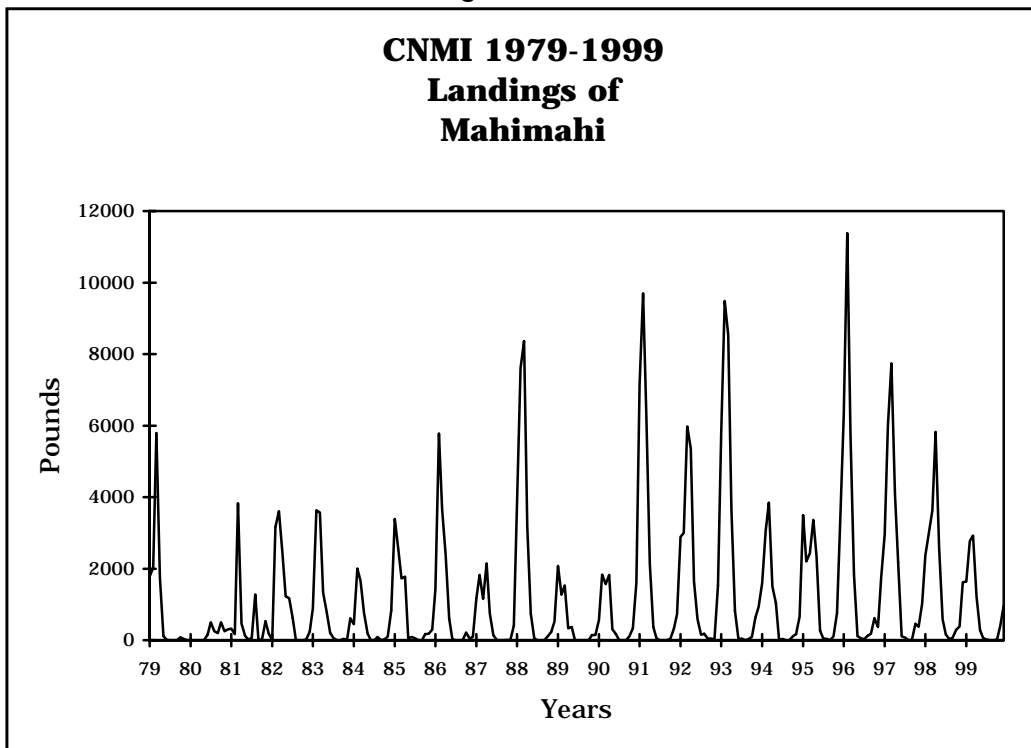


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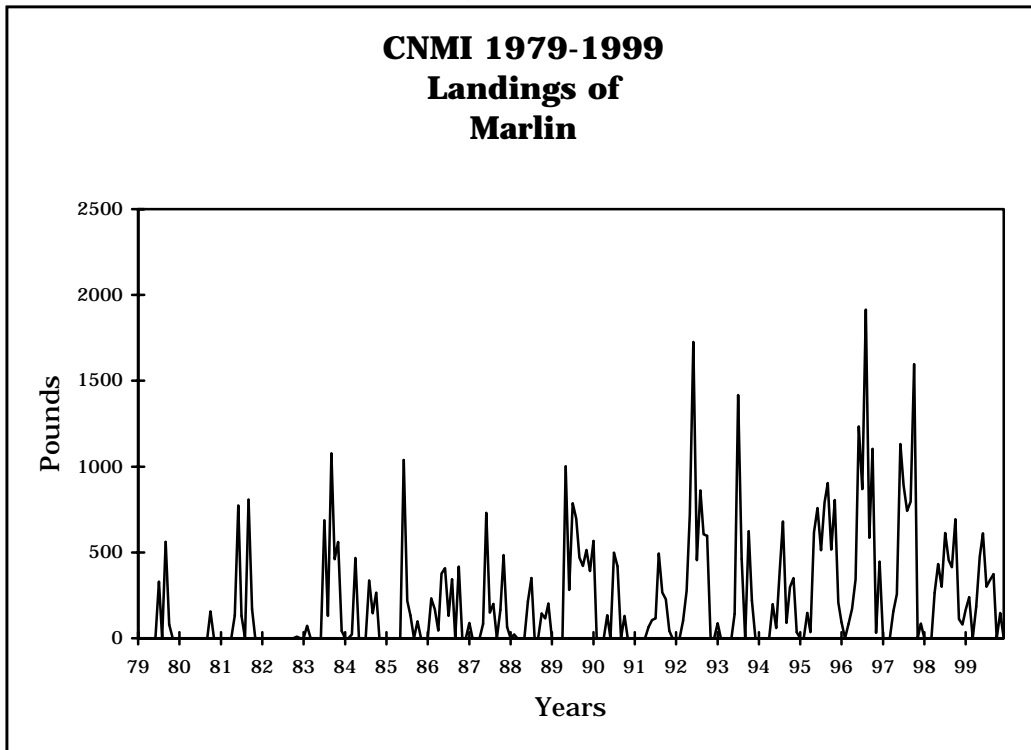


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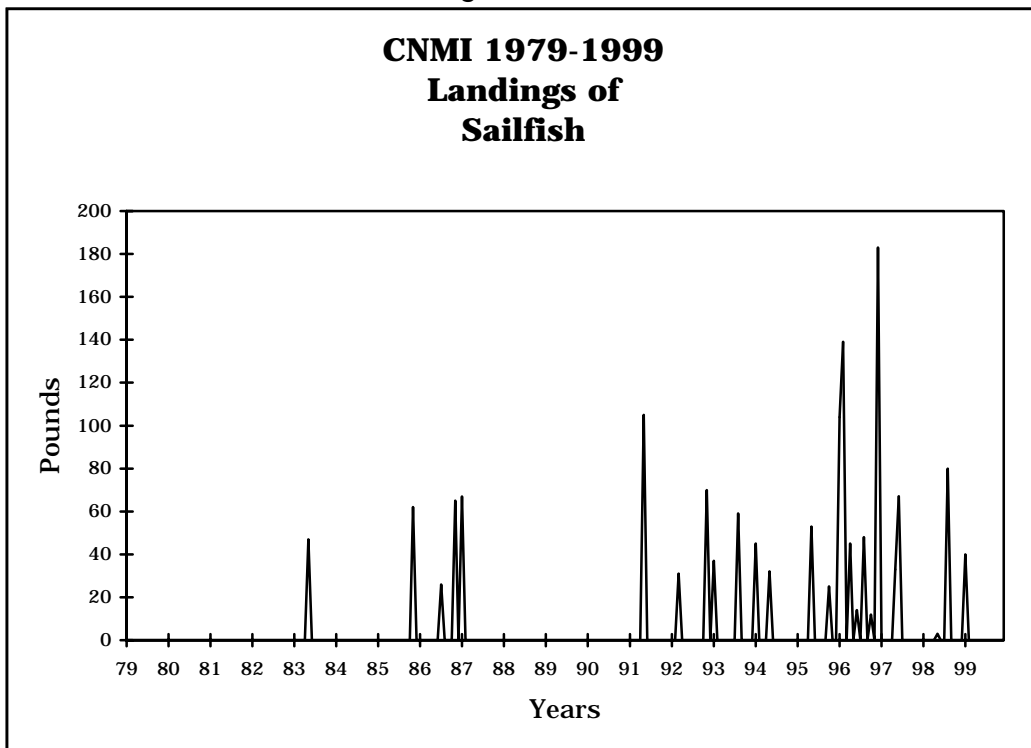


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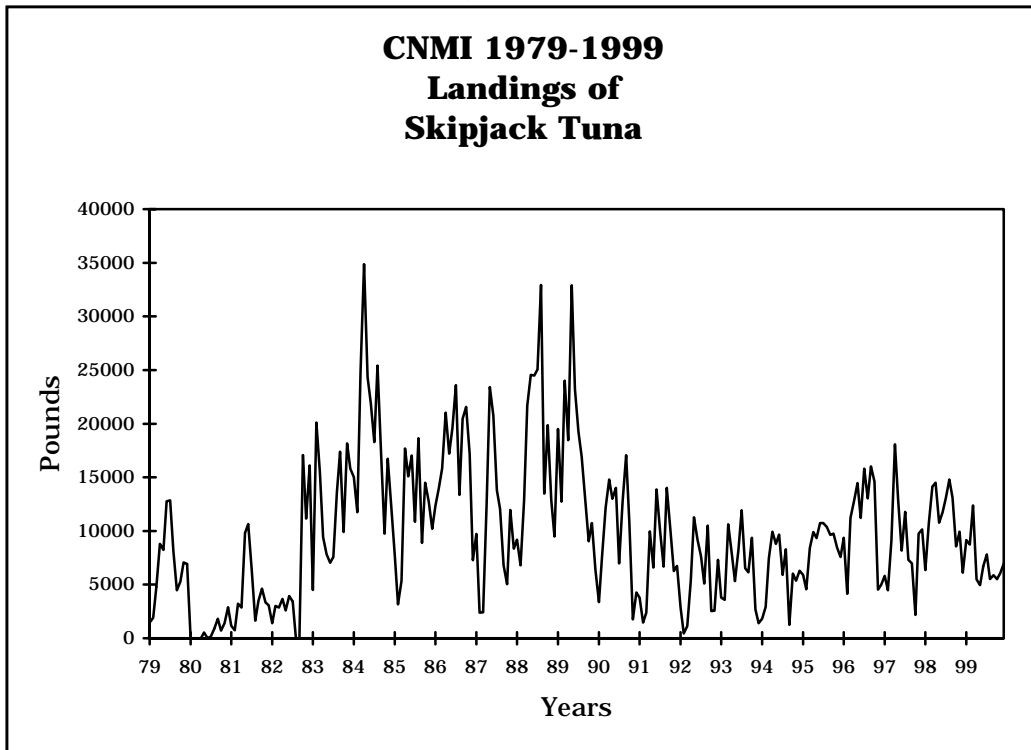


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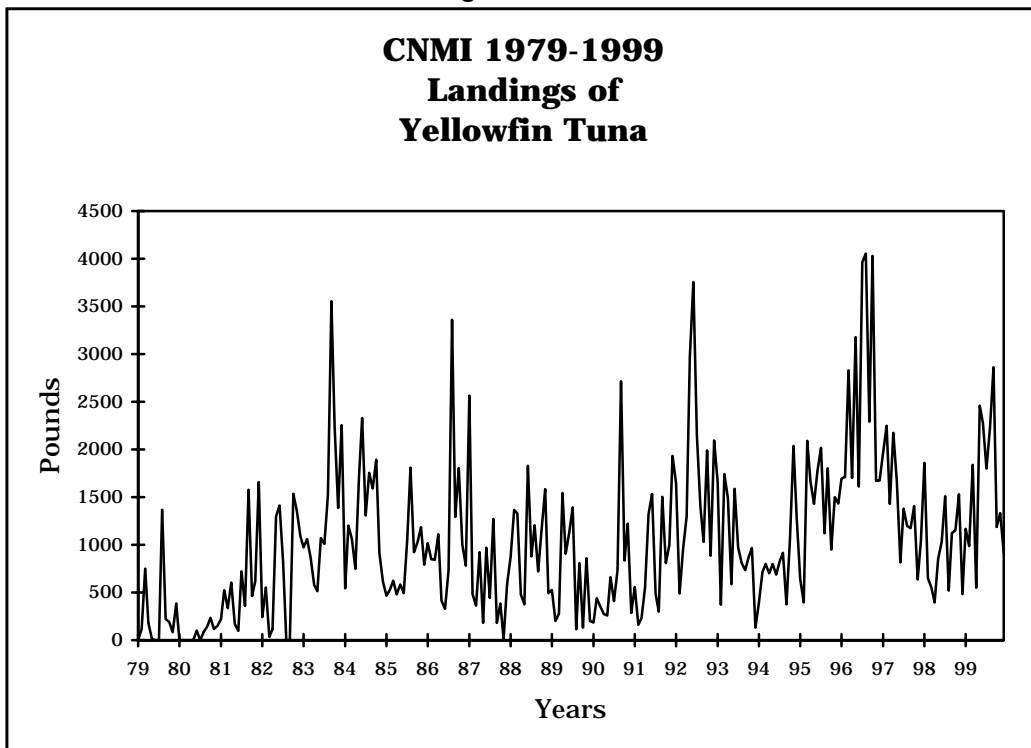


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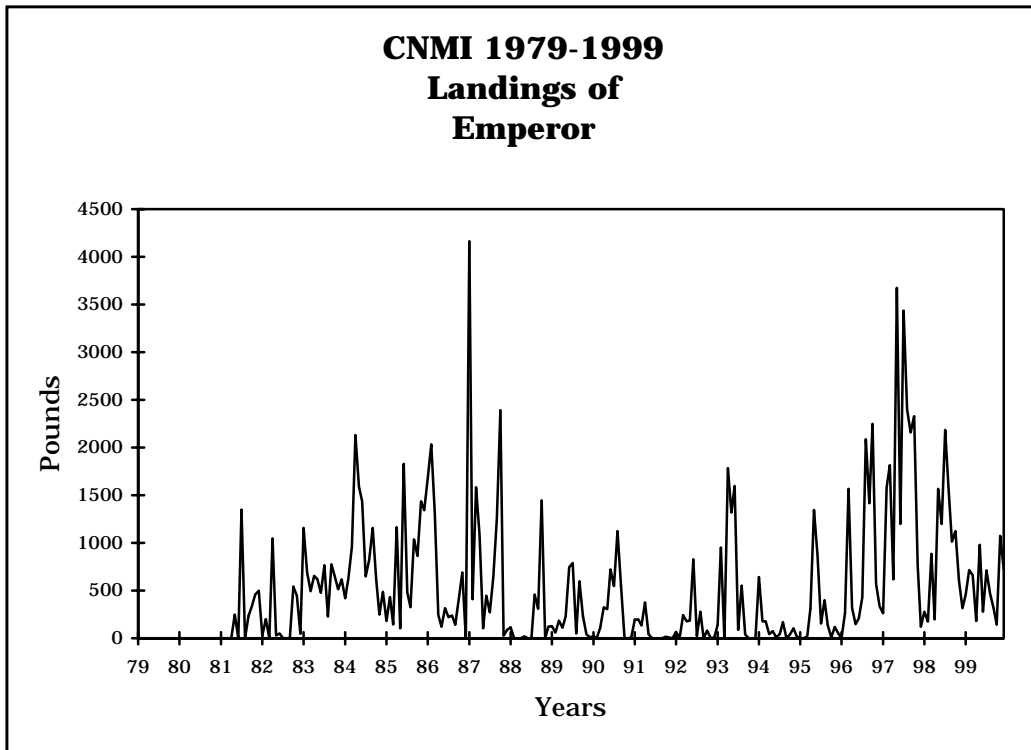
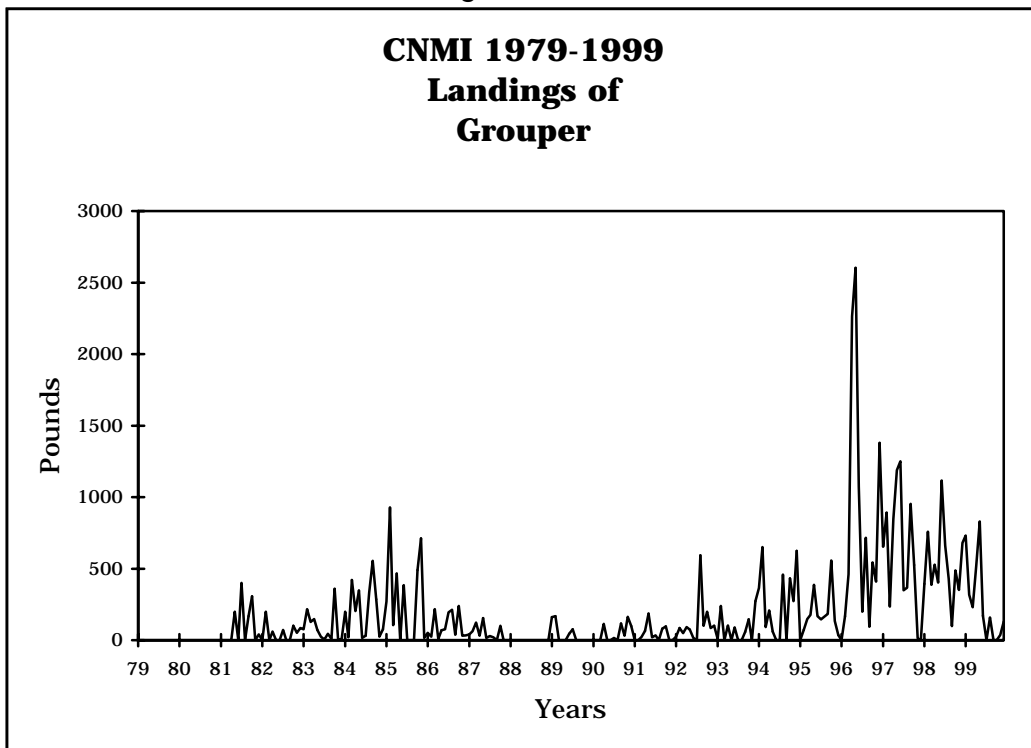


Figure III.4.8



GUAM 1999 FISHERY STATISTICS

Compiled by
Guam Division of Aquatic and Wildlife Resources
and the
Western Pacific Fishery Information Network

July 2001

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GUAM 1999 FISHERY STATISTICS

INTRODUCTION

The Territory of Guam is the southernmost, largest, and most populous island (about 151,716) in the Mariana Archipelago.

Location: 13.4°N latitude, 144.4°E longitude

Population: 151,716

Economy: tourism and US military



Guam

source: <<http://www.cia.gov/cia/publications/factbook/gg.html>>;
The World Factbook 1999

Fishing activities on Guam are divided into two basic categories: offshore and inshore fishing. Offshore fishing typically involves small boats (12 to 48 feet) going on 1 to 2-day trolling and bottomfishing trips. They usually originate from one of the three principal harbors located on the west coast and southern tip of the island. Inshore fishing is usually conducted without the use of a boat and consists mostly of nearshore casting, netting, and spearfishing. In recent years the sportfishing charter boat industry has grown significantly, and it contributes considerably to the commercial landings on Guam since much of its catch is sold.

In 1982, WPacFIN began working with staff of the Division of Aquatic and Wildlife Resources (DAWR) and with local fish wholesalers to obtain information on commercial landings through volunteer use of “trip ticket” invoices provided by WPacFIN. The tables and graphs in this section are summarized from receipts submitted by all the participating wholesalers on Guam, and this coverage is estimated to include 80% of the total commercial landings.

COMMERCIAL LANDINGS DATA COLLECTION SYSTEM

There are three sources for fish in Guam’s commercial market: 1) full-time commercial fishermen; 2) part-time commercial fishermen; and 3) subsistence or recreational fishermen who frequently sell portions of their catch to help defray costs.

IV.2

Licenses are not required to sell fish in Guam, nor are there any reporting requirements for those selling fish.

In July 1979 the Guam Fishermen's Co-op was established in Agana via government funding, and it subsequently became the central distribution center for fresh local fish. Prior to 1979 there was no central place to sell fish, and fishermen had to develop their own markets and peddle fish after each trip.

In 1982, WPacFIN began working with the Co-op to improve their invoicing system and to obtain data on all fish purchases. A cooperative system was established whereby the Co-op would use forms and coding schemes designed by WPacFIN and would supply copies of all invoices to WPacFIN for computer data entry. In return, WPacFIN would provide the Co-op with document quality control and computer generated summary statistics. All purchase-data back to July 1979 were also coded and computerized. As time progressed other fish markets began to operate, and DAWR and WPacFIN staff worked with them to obtain their data via the voluntary receipt book program as well.

Although a proposed law has been introduced several times that would require reporting by dealers and possibly commercial fishermen, it has never made it very far through the legislative process. Therefore, the commercial landings data collection system still remains a voluntary system and does not reflect the true total commercial landings. The receipt book program in 1999 is estimated to have covered 80% of the total commercial landings on Guam.

Data collected on commercial receipts forms include:

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

COMMERCIAL LANDINGS DATA PROCESSING SYSTEM

In earlier years data processing was done at the central WPacFIN office in Honolulu, but beginning in 1994 DAWR staff took over this task using a computer and software provided by WPacFIN. The processing system for the commercial landings data collected from the fish dealers is fairly straightforward. Dealers complete a purchase form every time they purchase fish from a fisherman. On this form, catches are divided into categories for weighing by species or species group (where practicable, number of pieces is also recorded). Once all the edits, verifications, and corrections are made, summary reports are generated. Numerous standard reports are available, but only the monthly and annual landings by species are provided in this document.

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. 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. Bottomfish Management Unit Species (BMUS)

Jacks (unclassified but excluding bigeye scad)
 Amberjack
 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)

IV.4

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)	Parrotfish
Giant wrasse	Snapper
Rabbitfish	Surgeonfish
Rudderfish	Unicornfish
Squirrelfish	Goatfish

D. Other

Miscellaneous (unclassified)	Coconut crab
Bigeye scad	Lobster
Mullet	Shrimp
Eels	Octopus
Milkfish	Squid
Invertebrates (unclassified)	Seaweeds
Crabs (unclassified)	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 1999 are believed to include approximately 80% of the actual commercial landings made on Guam during that year.

IV.6

Table IV.1.1

Guam 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	1,061	2,101	1.98
Miscellaneous	67	211	3.15
Bigeye Scad (Atulai)	9,232	23,422	2.54
Black Jack	427	1,013	2.37
Jacks	1,649	4,157	2.52
Bottom Fish	1,677	5,136	3.06
Ehu (Red Snapper)	668	2,657	3.98
Gindai (Flower Snap)	799	3,195	4.00
Grouper	2,314	5,880	2.54
Kalekale (Pink Snap)	1,098	3,864	3.52
Lehi (Silverjaw)	1,129	4,487	3.97
Onaga (Red Snapper)	11,766	48,098	4.09
Opakapaka (Pink Snp)	865	3,443	3.98
Uku (Gray Snapper)	357	967	2.71
Amberjack	512	1,316	2.57
Reef Fish	153,298	450,636	2.94
Wrasse	2,947	7,684	2.61
Rabbitfish (Hitting)	555	1,665	3.00
Rabbitfish (Menahac)	942	3,231	3.43
Rabbitfish (Sesjun)	2,760	8,452	3.06
Emperor (Mafute)	1,130	3,332	2.95
Squirrelfish	57	170	3.00
Parrotfish	2,514	7,169	2.85
Snapper	215	508	2.37
Surgeonfish	48	143	3.00
Unicornfish	195	586	3.00
Troll Fish	91	167	1.83
Barracuda	2,278	4,733	2.08
Mahimahi (Dolphin)	71,433	148,745	2.08
Marlin	24,569	29,150	1.19
Spearfish	22	28	1.25
Sailfish	780	1,036	1.33
Rainbow Runner	2,772	5,921	2.14
Wahoo	33,402	74,415	2.23
Tunas	13	36	2.70
Skipjack Tuna	33,272	43,967	1.32
Dogtooth Tuna	2,094	2,997	1.43
Yellowfin Tuna	26,780	53,332	1.99
Kawakawa	211	283	1.34
Invertebrates	45	160	3.54
Crabs (Misc)	12	43	3.75
Coconut Crab	76	760	10.00
Lobster	2,644	10,114	3.82
Octopus	3,787	10,776	2.85

IV.7

Table IV.1.1 (Cont.)

Species	Pounds	Value	\$/lb
Shrimp (Saltwater)	726	4,893	6.74
Squid	1	2	3.00
Tilapia (Misc)	2,639	6,794	2.57
Tilapia (Red)	358	894	2.50
Tilapia (Grn/Black)	2,865	6,530	2.28
** TOTAL **	409,148	999,296	2.44

IV.8

Table IV.1.2

Guam January 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Black Jack	30	81	2.75
Jacks	33	98	2.94
Bottom Fish	71	214	3.00
Ehu (Red Snapper)	11	45	4.00
Gindai (Flower Snap)	20	81	4.00
Grouper	151	490	3.25
Kalekale (Pink Snap)	33	116	3.50
Lehi (Silverjaw)	7	30	4.00
Onaga (Red Snapper)	39	196	5.00
Opakapaka (Pink Snp)	21	82	4.00
Uku (Gray Snapper)	28	71	2.54
Amberjack	54	138	2.59
Reef Fish	11,952	35,222	2.95
Wrasse	189	472	2.50
Emperor (Mafute)	14	35	2.50
Parrotfish	768	2,479	3.23
Snapper	44	117	2.68
Surgeonfish	42	126	3.00
Unicornfish	176	527	3.00
Barracuda	80	177	2.21
Mahimahi (Dolphin)	19,145	36,601	1.91
Marlin	1,346	1,776	1.32
Spearfish	22	28	1.25
Sailfish	35	44	1.25
Rainbow Runner	54	122	2.25
Wahoo	724	1,798	2.48
Skipjack Tuna	2,221	3,099	1.40
Dogtooth Tuna	119	150	1.26
Yellowfin Tuna	714	1,422	1.99
Lobster	137	526	3.84
Octopus	872	2,447	2.80
Shrimp (Saltwater)	192	1,336	6.95
Tilapia (Misc)	512	1,407	2.75
Tilapia (Grn/Black)	290	651	2.25
** SUBTOTAL **	40,146	92,203	2.30

IV.9

Table IV.1.3

Guam February 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Jacks	58	145	2.50
Bottom Fish	56	168	3.01
Ehu (Red Snapper)	65	260	4.00
Grouper	219	557	2.54
Kalekale (Pink Snap)	8	27	3.50
Onaga (Red Snapper)	724	3,256	4.50
Opakapaka (Pink Snp)	15	60	4.00
Amberjack	27	61	2.25
Reef Fish	12,671	37,014	2.92
Wrasse	52	135	2.63
Emperor (Mafute)	5	15	3.00
Parrotfish	113	368	3.25
Barracuda	184	378	2.06
Mahimahi (Dolphin)	12,879	26,134	2.03
Marlin	717	971	1.35
Sailfish	165	206	1.25
Rainbow Runner	247	556	2.25
Wahoo	1,483	3,613	2.44
Skipjack Tuna	1,225	1,603	1.31
Dogtooth Tuna	132	206	1.56
Yellowfin Tuna	2,175	4,306	1.98
Coconut Crab	19	190	10.00
Lobster	34	134	3.91
Octopus	216	653	3.02
Shrimp (Saltwater)	79	540	6.83
Tilapia (Misc)	532	1,411	2.65
Tilapia (Grn/Black)	250	563	2.25
** SUBTOTAL **	34,347	83,528	2.43

IV.10

Table IV.1.4

Guam March 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	106	212	2.00
Jacks	64	156	2.43
Ehu (Red Snapper)	73	294	4.00
Gindai (Flower Snap)	31	124	4.00
Grouper	212	531	2.51
Kalekale (Pink Snap)	49	171	3.50
Lehi (Silverjaw)	128	510	4.00
Onaga (Red Snapper)	906	4,075	4.50
Opakapaka (Pink Snp)	11	42	4.00
Uku (Gray Snapper)	4	11	2.75
Amberjack	46	104	2.25
Reef Fish	15,076	44,064	2.92
Wrasse	31	85	2.75
Emperor (Mafute)	10	28	2.75
Parrotfish	107	347	3.25
Barracuda	185	380	2.05
Mahimahi (Dolphin)	15,230	32,277	2.12
Marlin	625	1,114	1.78
Sailfish	81	122	1.50
Rainbow Runner	218	481	2.20
Wahoo	1,666	4,129	2.48
Skipjack Tuna	1,175	1,582	1.35
Dogtooth Tuna	286	394	1.38
Yellowfin Tuna	2,271	4,463	1.97
Invertebrates	9	38	4.00
Coconut Crab	45	445	10.00
Lobster	120	470	3.91
Octopus	163	488	3.00
Shrimp (Saltwater)	49	322	6.60
Tilapia (Misc)	206	514	2.50
Tilapia (Grn/Black)	150	338	2.25
** SUBTOTAL **	39,330	98,308	2.50

IV.11

Table IV.1.5

Guam April 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	348	695	2.00
Jacks	6	17	2.75
Bottom Fish	1	3	3.00
Ehu (Red Snapper)	86	344	4.00
Gindai (Flower Snap)	17	66	4.00
Grouper	41	114	2.78
Kalekale (Pink Snap)	10	35	3.50
Lehi (Silverjaw)	150	598	4.00
Onaga (Red Snapper)	2,064	8,435	4.09
Uku (Gray Snapper)	47	136	2.90
Amberjack	99	277	2.80
Reef Fish	14,882	42,907	2.88
Wrasse	116	289	2.50
Rabbitfish (Menahac)	725	2,425	3.34
Emperor (Mafute)	5	15	3.00
Parrotfish	69	217	3.13
Barracuda	114	224	1.96
Mahimahi (Dolphin)	7,571	15,323	2.02
Marlin	3,237	3,616	1.12
Sailfish	205	278	1.36
Rainbow Runner	310	647	2.09
Wahoo	2,275	5,578	2.45
Skipjack Tuna	1,993	2,510	1.26
Dogtooth Tuna	144	192	1.34
Yellowfin Tuna	2,244	4,776	2.13
Coconut Crab	5	45	10.00
Lobster	199	772	3.87
Octopus	543	1,563	2.88
Shrimp (Saltwater)	110	747	6.79
Tilapia (Misc)	361	935	2.59
Tilapia (Grn/Black)	300	675	2.25
** SUBTOTAL **	38,274	94,452	2.47

IV.12

Table IV.1.6

Guam May 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	24	47	2.00
Bigeye Scad (Atulai)	21	42	2.00
Jacks	230	573	2.49
Bottom Fish	146	527	3.61
Ehu (Red Snapper)	167	667	4.00
Gindai (Flower Snap)	236	945	4.00
Grouper	385	895	2.33
Kalekale (Pink Snap)	62	225	3.63
Lehi (Silverjaw)	153	592	3.87
Onaga (Red Snapper)	1,326	5,356	4.04
Opakapaka (Pink Snp)	26	104	4.00
Uku (Gray Snapper)	19	53	2.84
Reef Fish	13,480	39,924	2.96
Wrasse	27	61	2.25
Rabbitfish (Hitting)	403	1,209	3.00
Rabbitfish (Menahac)	217	806	3.71
Rabbitfish (Sesjun)	2,752	8,428	3.06
Emperor (Mafute)	241	697	2.90
Parrotfish	283	731	2.58
Snapper	104	234	2.26
Unicornfish	12	35	3.00
Troll Fish	39	64	1.61
Barracuda	116	236	2.04
Mahimahi (Dolphin)	1,036	1,987	1.92
Marlin	3,805	4,262	1.12
Sailfish	161	201	1.25
Rainbow Runner	337	671	1.99
Wahoo	809	1,918	2.37
Skipjack Tuna	2,069	2,787	1.35
Dogtooth Tuna	263	352	1.34
Yellowfin Tuna	3,381	6,959	2.06
Crabs (Misc)	9	34	3.75
Lobster	131	504	3.86
Octopus	205	617	3.01
Shrimp (Saltwater)	102	680	6.67
Tilapia (Misc)	585	1,461	2.50
Tilapia (Red)	358	894	2.50
Tilapia (Grn/Black)	350	788	2.25
** SUBTOTAL **	34,065	86,563	2.54

IV.13

Table IV.1.7

Guam June 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	8	24	3.00
Bigeye Scad (Atulai)	396	1,205	3.04
Black Jack	16	43	2.75
Jacks	274	673	2.46
Bottom Fish	553	1,660	3.00
Ehu (Red Snapper)	16	65	4.00
Gindai (Flower Snap)	45	182	4.00
Grouper	173	413	2.40
Kalekale (Pink Snap)	117	420	3.58
Lehi (Silverjaw)	256	1,024	4.00
Onaga (Red Snapper)	2,177	8,359	3.84
Opakapaka (Pink Snp)	87	348	4.00
Uku (Gray Snapper)	45	112	2.52
Amberjack	53	121	2.28
Reef Fish	14,333	41,571	2.90
Wrasse	134	337	2.52
Emperor (Mafute)	205	615	3.00
Parrotfish	674	1,732	2.57
Snapper	5	14	3.00
Barracuda	122	251	2.06
Mahimahi (Dolphin)	380	810	2.14
Marlin	4,007	4,623	1.15
Rainbow Runner	341	748	2.19
Wahoo	361	1,037	2.87
Tunas	10	30	3.00
Skipjack Tuna	2,235	2,813	1.26
Dogtooth Tuna	92	124	1.34
Yellowfin Tuna	2,095	4,295	2.05
Kawakawa	10	10	1.00
Invertebrates	17	62	3.75
Lobster	252	935	3.72
Octopus	255	749	2.94
Shrimp (Saltwater)	100	657	6.56
Tilapia (Grn/Black)	644	1,449	2.25
** SUBTOTAL **	30,486	77,510	2.54

IV.14

Table IV.1.8

Guam July 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	63	126	2.00
Miscellaneous	59	187	3.17
Bigeye Scad (Atulai)	4,702	12,963	2.76
Black Jack	75	184	2.47
Jacks	249	672	2.70
Bottom Fish	183	548	3.00
Ehu (Red Snapper)	45	180	4.00
Gindai (Flower Snap)	207	826	4.00
Grouper	155	488	3.15
Kalekale (Pink Snap)	428	1,530	3.57
Lehi (Silverjaw)	200	800	4.00
Onaga (Red Snapper)	1,659	6,695	4.04
Opakapaka (Pink Snp)	222	886	4.00
Uku (Gray Snapper)	19	56	2.95
Amberjack	86	217	2.54
Reef Fish	12,132	35,482	2.92
Wrasse	181	485	2.68
Rabbitfish (Hitting)	152	456	3.00
Emperor (Mafute)	176	528	3.00
Squirrelfish	57	170	3.00
Parrotfish	75	225	3.00
Snapper	55	123	2.26
Barracuda	191	421	2.21
Mahimahi (Dolphin)	90	172	1.92
Marlin	3,625	3,982	1.10
Rainbow Runner	140	313	2.23
Wahoo	1,559	3,565	2.29
Tunas	1	4	3.00
Skipjack Tuna	3,586	4,506	1.26
Dogtooth Tuna	177	243	1.37
Yellowfin Tuna	2,215	4,517	2.04
Kawakawa	170	230	1.36
Crabs (Misc)	2	9	3.75
Lobster	429	1,651	3.84
Octopus	272	786	2.89
Shrimp (Saltwater)	35	228	6.61
Squid	1	2	3.00
Tilapia (Grn/Black)	390	963	2.47
** SUBTOTAL **	34,059	85,417	2.51

IV.15

Table IV.1.9

Guam August 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	349	697	2.00
Bigeye Scad (Atulai)	3,112	8,008	2.57
Black Jack	265	595	2.25
Jacks	132	323	2.45
Bottom Fish	200	608	3.04
Ehu (Red Snapper)	62	248	4.00
Gindai (Flower Snap)	67	266	4.00
Grouper	589	1,405	2.38
Kalekale (Pink Snap)	139	483	3.47
Lehi (Silverjaw)	63	251	4.00
Onaga (Red Snapper)	1,113	4,491	4.03
Opakapaka (Pink Snp)	188	752	4.00
Uku (Gray Snapper)	74	203	2.75
Amberjack	68	167	2.47
Reef Fish	13,649	40,188	2.94
Wrasse	1,207	3,255	2.70
Rabbitfish (Sesjun)	8	24	3.00
Emperor (Mafute)	132	390	2.95
Parrotfish	144	391	2.71
Snapper	9	21	2.50
Unicornfish	8	24	3.00
Barracuda	304	621	2.04
Mahimahi (Dolphin)	171	408	2.38
Marlin	1,704	1,879	1.10
Sailfish	33	41	1.25
Rainbow Runner	494	1,057	2.14
Wahoo	1,893	4,546	2.40
Tunas	2	2	1.00
Skipjack Tuna	3,116	4,087	1.31
Dogtooth Tuna	305	508	1.67
Yellowfin Tuna	2,092	3,896	1.86
Kawakawa	12	17	1.50
Lobster	349	1,322	3.79
Octopus	345	953	2.76
Shrimp (Saltwater)	30	195	6.50
Tilapia (Misc)	131	328	2.50
Tilapia (Grn/Black)	200	450	2.25
** SUBTOTAL **	32,754	83,100	2.54

Table IV.1.10

Guam September 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	53	105	2.00
Bigeye Scad (Atulai)	993	1,180	1.19
Black Jack	16	38	2.44
Jacks	222	537	2.42
Bottom Fish	374	1,123	3.00
Ehu (Red Snapper)	52	193	3.69
Gindai (Flower Snap)	69	275	4.00
Grouper	280	698	2.50
Kalekale (Pink Snap)	149	512	3.43
Lehi (Silverjaw)	71	272	3.86
Onaga (Red Snapper)	814	3,282	4.03
Opakapaka (Pink Snp)	238	933	3.92
Uku (Gray Snapper)	88	228	2.59
Amberjack	57	171	3.00
Reef Fish	10,711	31,224	2.92
Wrasse	550	1,375	2.50
Emperor (Mafute)	168	504	3.00
Troll Fish	36	73	2.00
Barracuda	190	411	2.16
Mahimahi (Dolphin)	1,406	3,429	2.44
Marlin	1,390	1,684	1.21
Rainbow Runner	160	346	2.16
Wahoo	5,248	11,979	2.28
Skipjack Tuna	6,393	8,141	1.27
Dogtooth Tuna	197	318	1.62
Yellowfin Tuna	4,155	7,645	1.84
Kawakawa	20	25	1.25
Invertebrates	16	48	3.00
Lobster	285	1,094	3.84
Octopus	216	557	2.58
Shrimp (Saltwater)	29	189	6.50
Tilapia (Grn/Black)	291	655	2.25
** SUBTOTAL **	34,935	79,241	2.27

IV.17

Table IV.1.11

Guam October 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Unknown	120	219	1.83
Black Jack	19	46	2.50
Jacks	254	644	2.53
Bottom Fish	42	127	3.00
Ehu (Red Snapper)	81	324	4.00
Gindai (Flower Snap)	36	144	4.00
Grouper	50	124	2.50
Kalekale (Pink Snap)	57	186	3.25
Lehi (Silverjaw)	46	182	4.00
Onaga (Red Snapper)	430	1,710	3.98
Opakapaka (Pink Snp)	7	26	4.00
Uku (Gray Snapper)	18	49	2.80
Reef Fish	11,113	33,304	3.00
Wrasse	261	651	2.50
Emperor (Mafute)	70	202	2.90
Parrotfish	189	473	2.50
Surgeonfish	6	17	3.00
Barracuda	308	645	2.10
Mahimahi (Dolphin)	2,217	5,127	2.31
Marlin	2,540	2,939	1.16
Sailfish	11	14	1.25
Rainbow Runner	104	215	2.06
Wahoo	4,105	9,228	2.25
Skipjack Tuna	3,446	4,405	1.28
Dogtooth Tuna	192	275	1.43
Yellowfin Tuna	3,030	6,531	2.16
Lobster	307	1,186	3.86
Octopus	189	522	2.76
Tilapia (Misc)	122	275	2.25
** SUBTOTAL **	29,365	69,787	2.38

IV.18

Table IV.1.12

Guam November 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Black Jack	9	26	3.00
Jacks	81	189	2.32
Bottom Fish	50	158	3.14
Gindai (Flower Snap)	72	286	4.00
Grouper	40	108	2.70
Kalekale (Pink Snap)	16	56	3.50
Onaga (Red Snapper)	265	1,111	4.20
Opakapaka (Pink Snp)	53	210	4.00
Uku (Gray Snapper)	16	48	3.00
Amberjack	24	61	2.60
Reef Fish	12,236	36,607	2.99
Wrasse	133	355	2.67
Emperor (Mafute)	92	273	2.96
Parrotfish	92	208	2.27
Barracuda	269	557	2.07
Mahimahi (Dolphin)	2,322	5,556	2.39
Marlin	1,445	1,977	1.37
Sailfish	34	42	1.25
Rainbow Runner	146	292	2.01
Wahoo	10,165	20,159	1.98
Skipjack Tuna	2,276	3,361	1.48
Dogtooth Tuna	72	99	1.39
Yellowfin Tuna	1,482	2,839	1.92
Invertebrates	3	12	3.75
Lobster	360	1,358	3.77
Octopus	232	660	2.85
Tilapia (Misc)	137	343	2.50
** SUBTOTAL **	32,120	76,951	2.40

IV.19

Table IV.1.13

Guam December 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Bigeye Scad (Atulai)	8	23	3.00
Jacks	46	132	2.89
Ehu (Red Snapper)	10	38	4.00
Grouper	21	58	2.75
Kalekale (Pink Snap)	30	105	3.50
Lehi (Silverjaw)	57	228	4.00
Onaga (Red Snapper)	252	1,134	4.50
Reef Fish	11,064	33,129	2.99
Wrasse	69	184	2.67
Emperor (Mafute)	12	30	2.50
Troll Fish	15	30	2.00
Barracuda	214	432	2.02
Mahimahi (Dolphin)	8,986	20,921	2.33
Marlin	131	328	2.50
Sailfish	56	89	1.58
Rainbow Runner	221	474	2.15
Wahoo	3,114	6,865	2.20
Skipjack Tuna	3,538	5,073	1.43
Dogtooth Tuna	117	135	1.15
Yellowfin Tuna	927	1,684	1.82
Coconut Crab	8	80	10.00
Lobster	41	160	3.92
Octopus	279	782	2.80
Tilapia (Misc)	54	122	2.25
** SUBTOTAL **	29,267	72,234	2.47
** TOTAL **	409,148	999,296	2.44

Figure IV.1.1

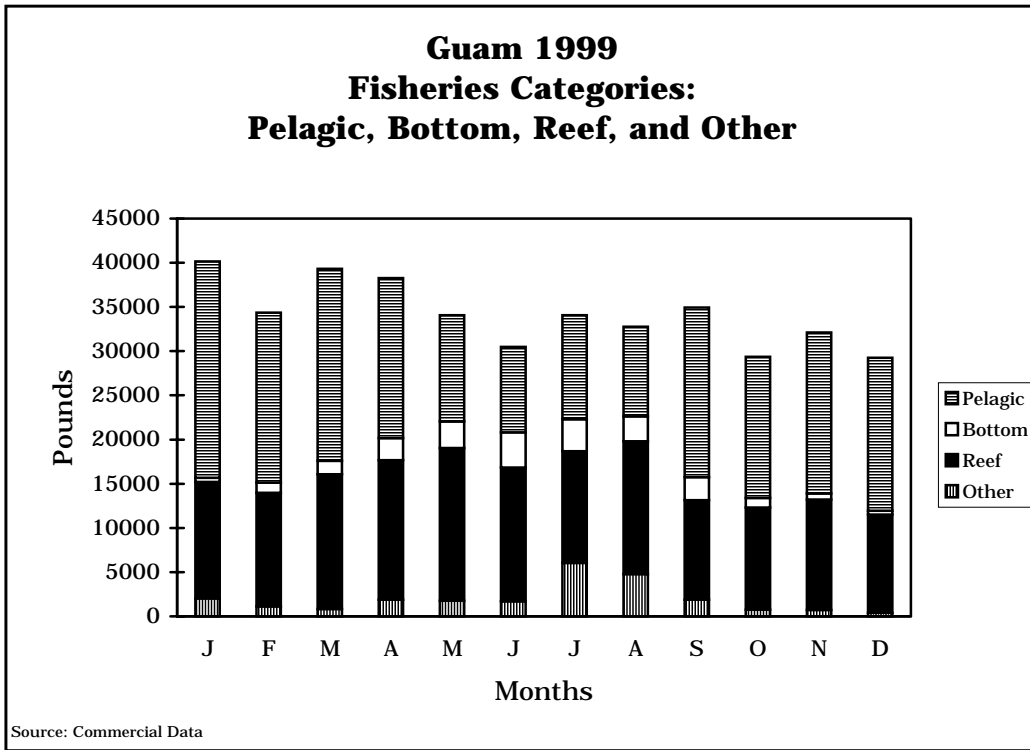


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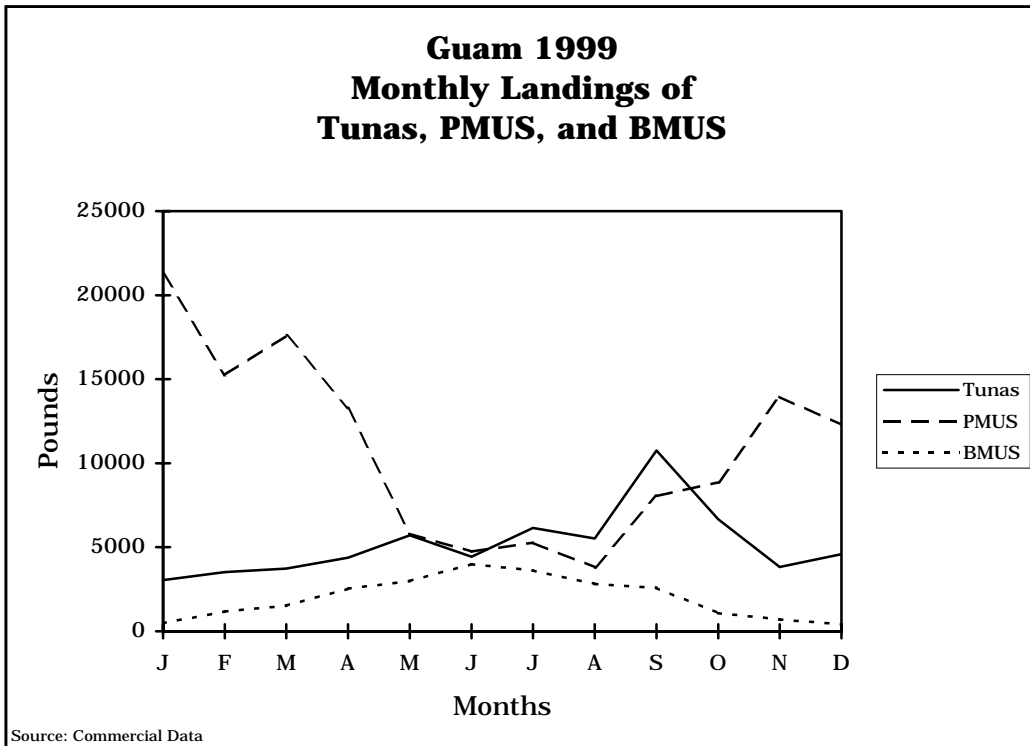


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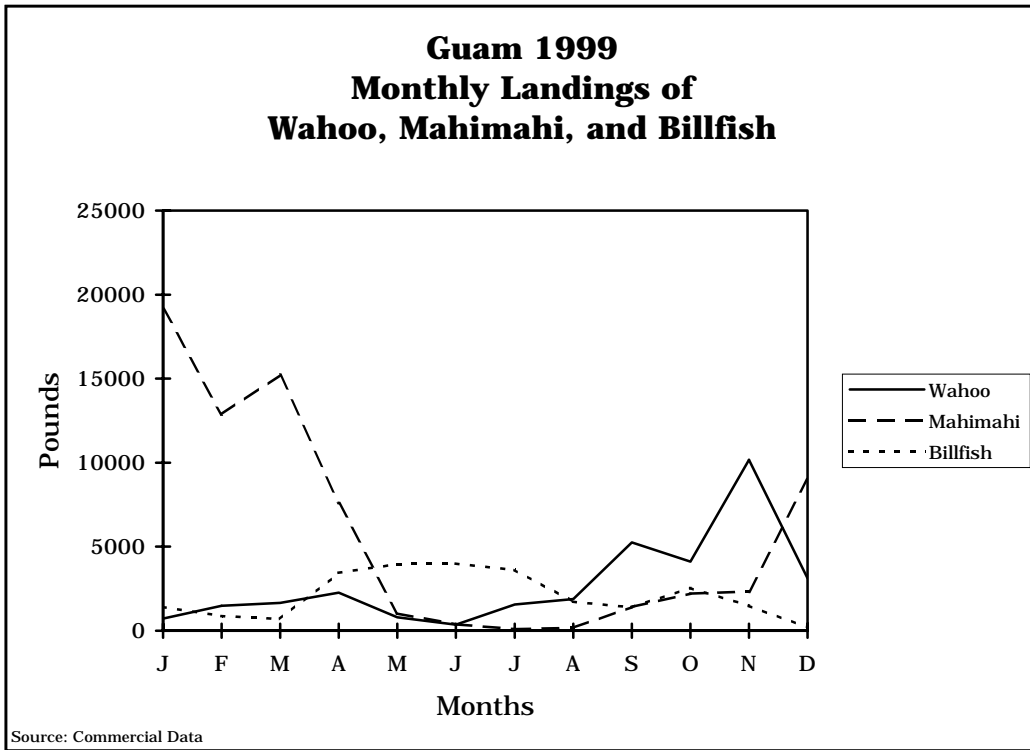


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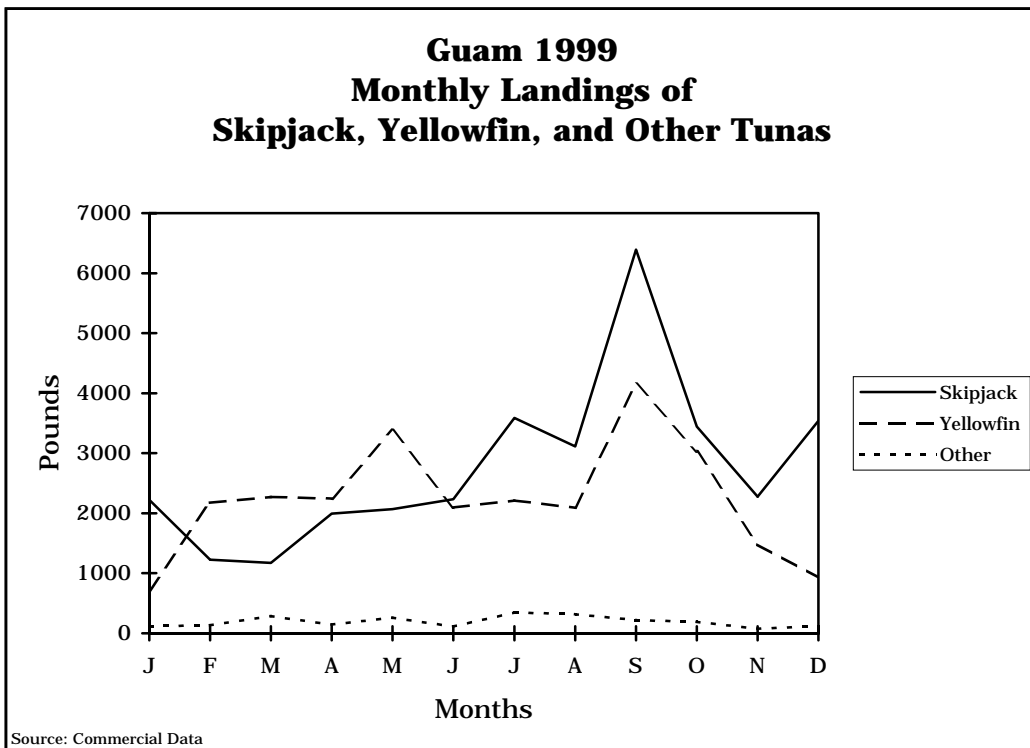


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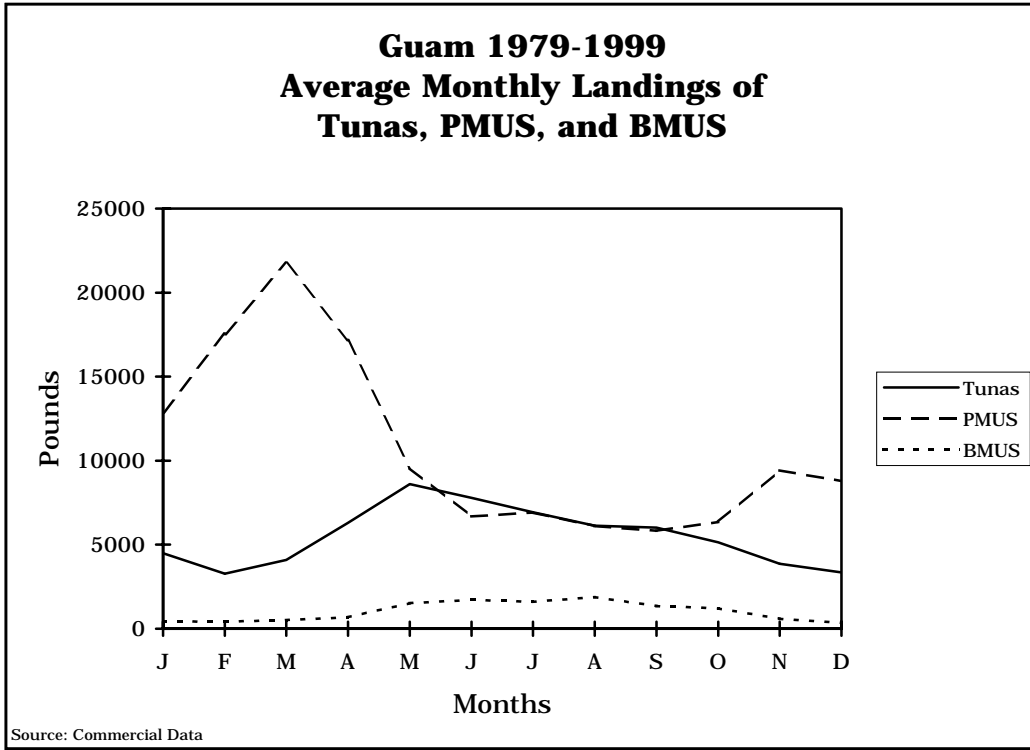


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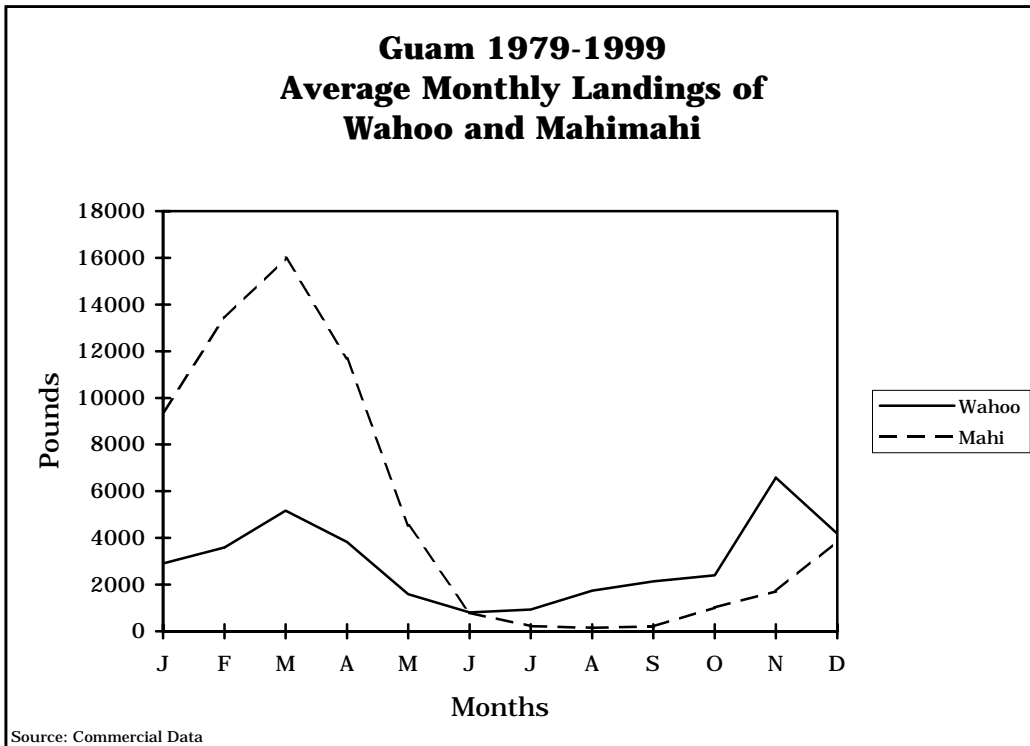


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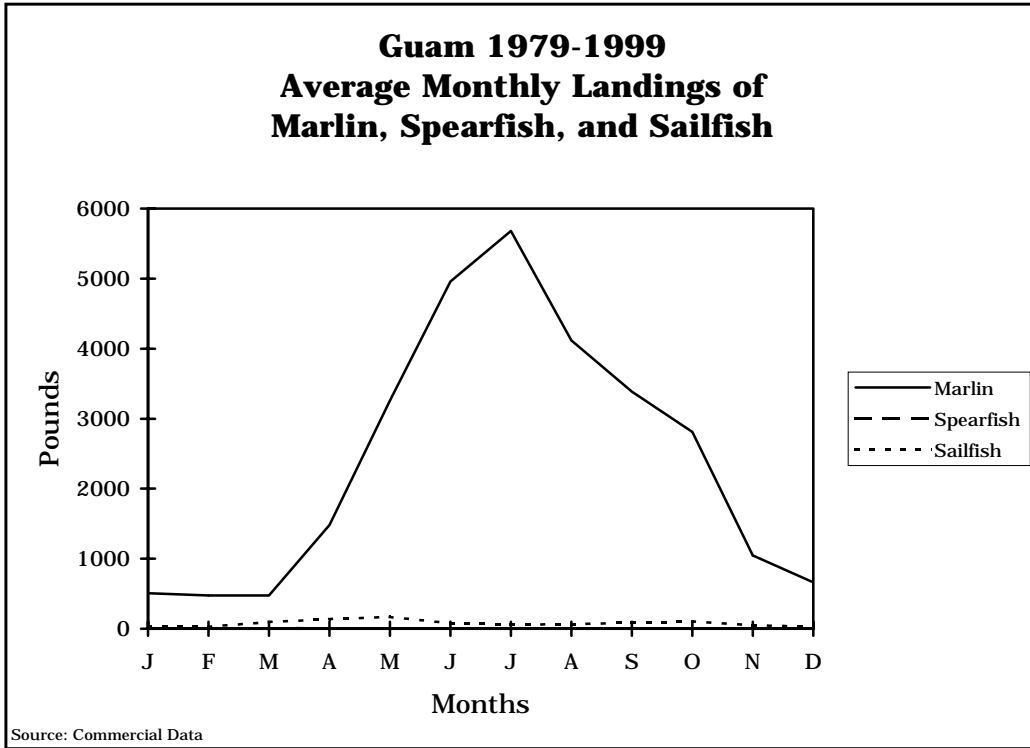


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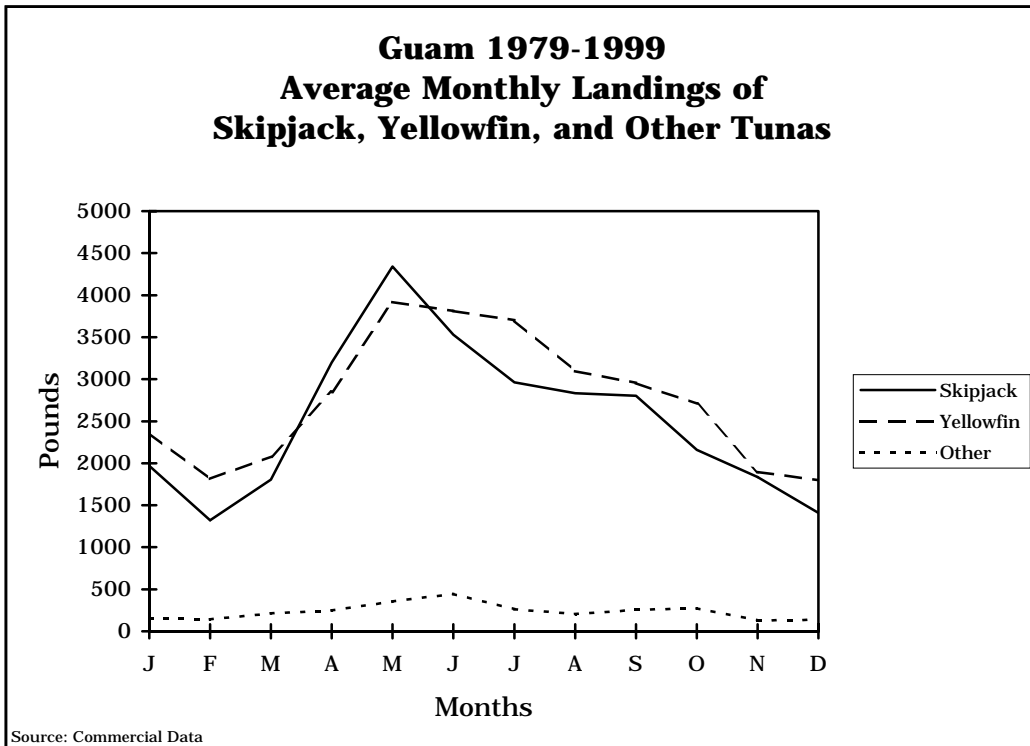


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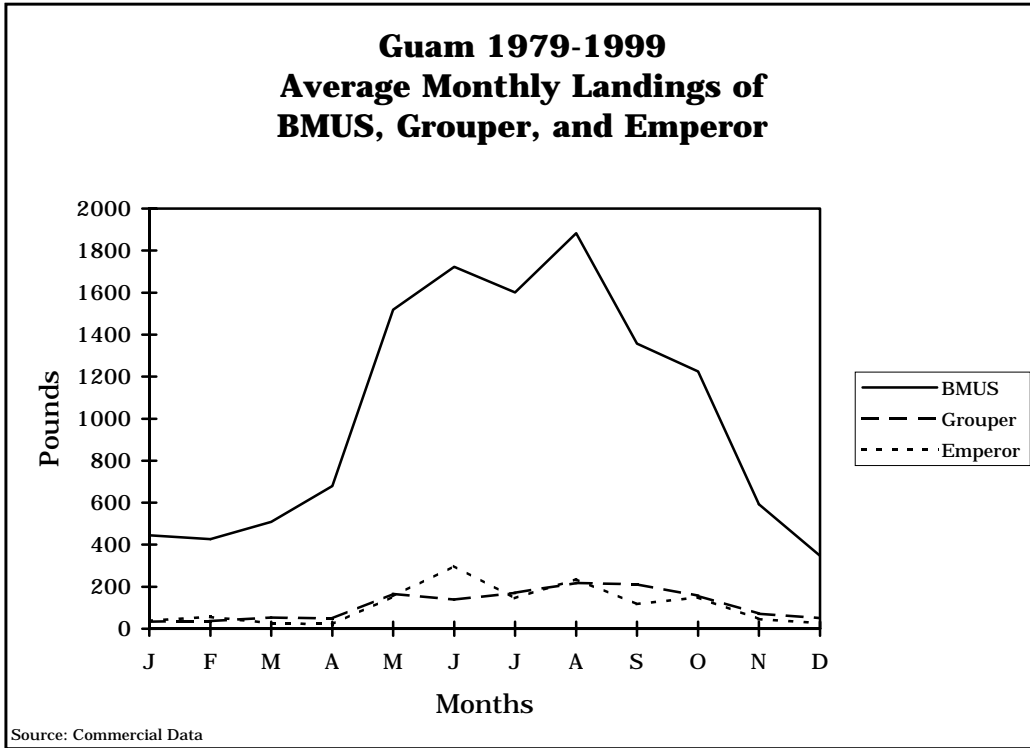


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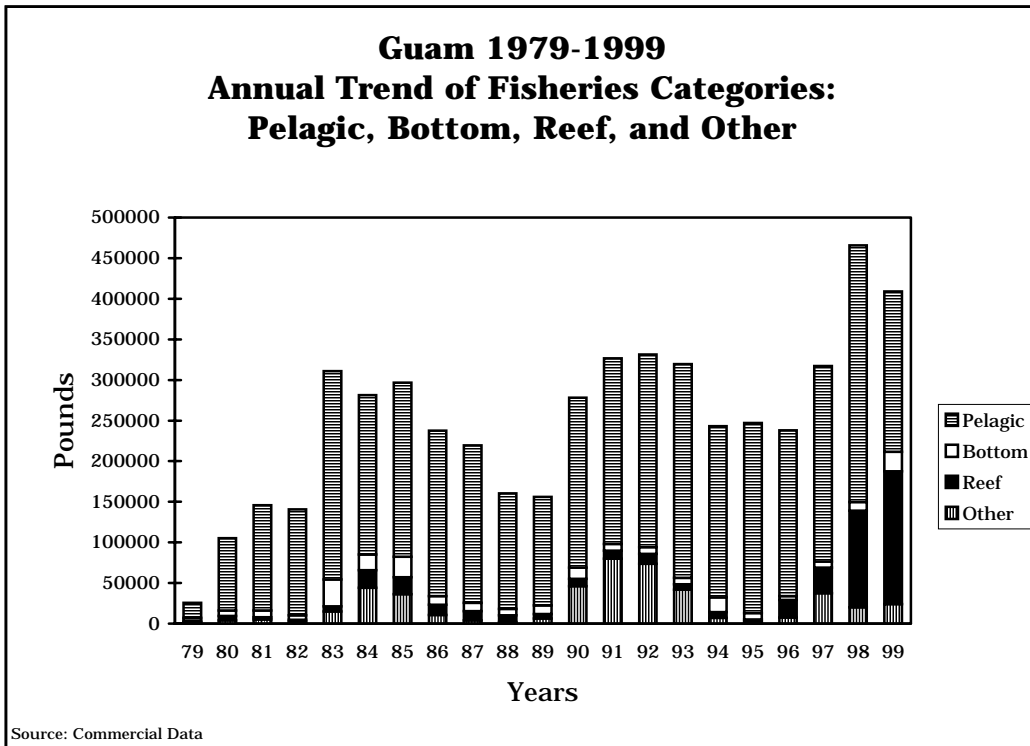


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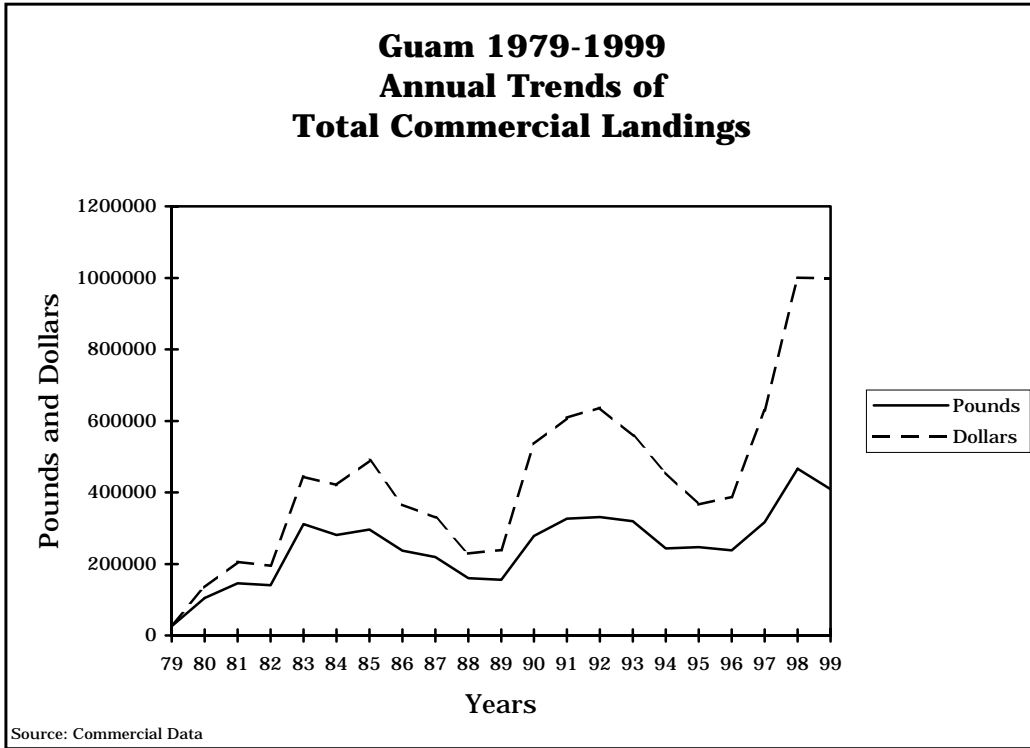


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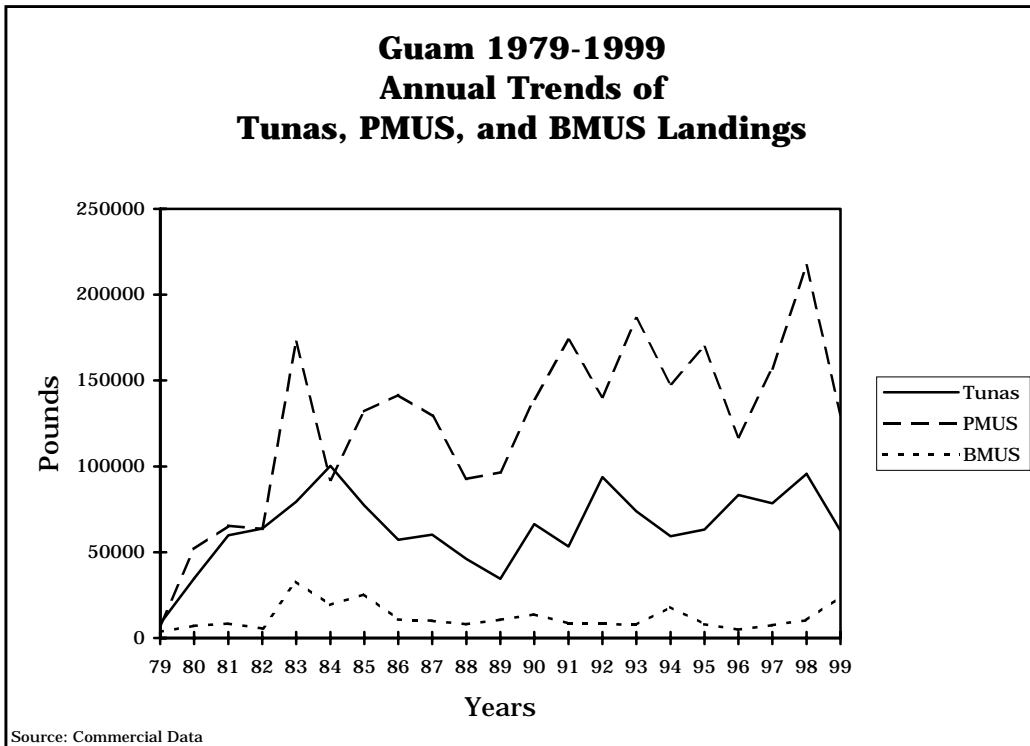


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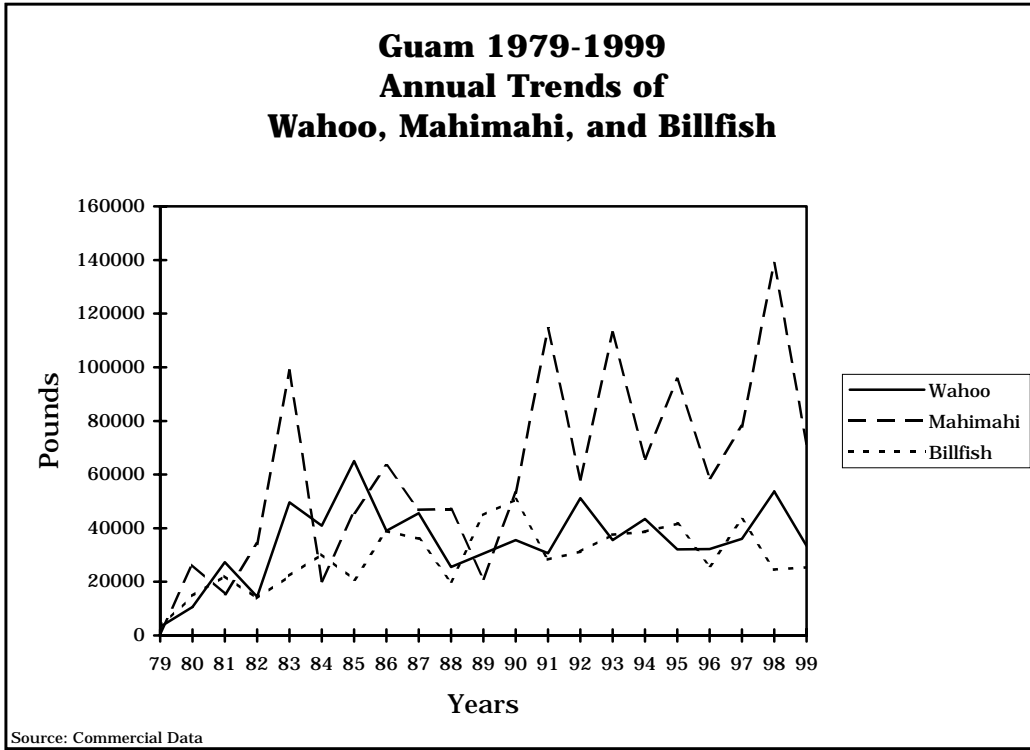


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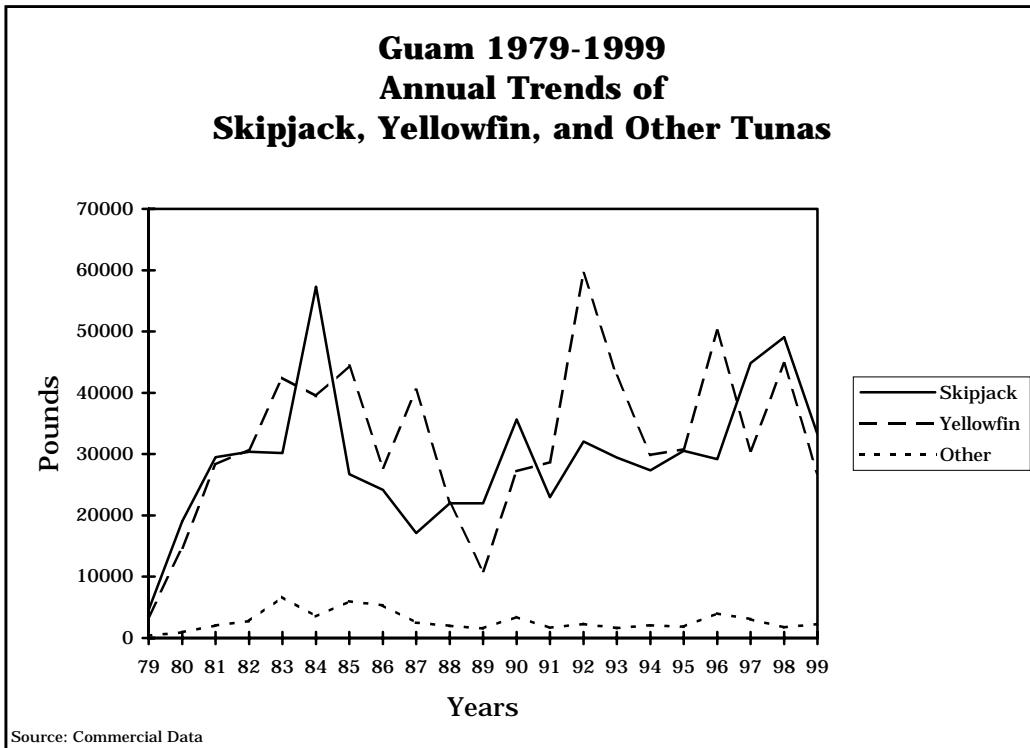


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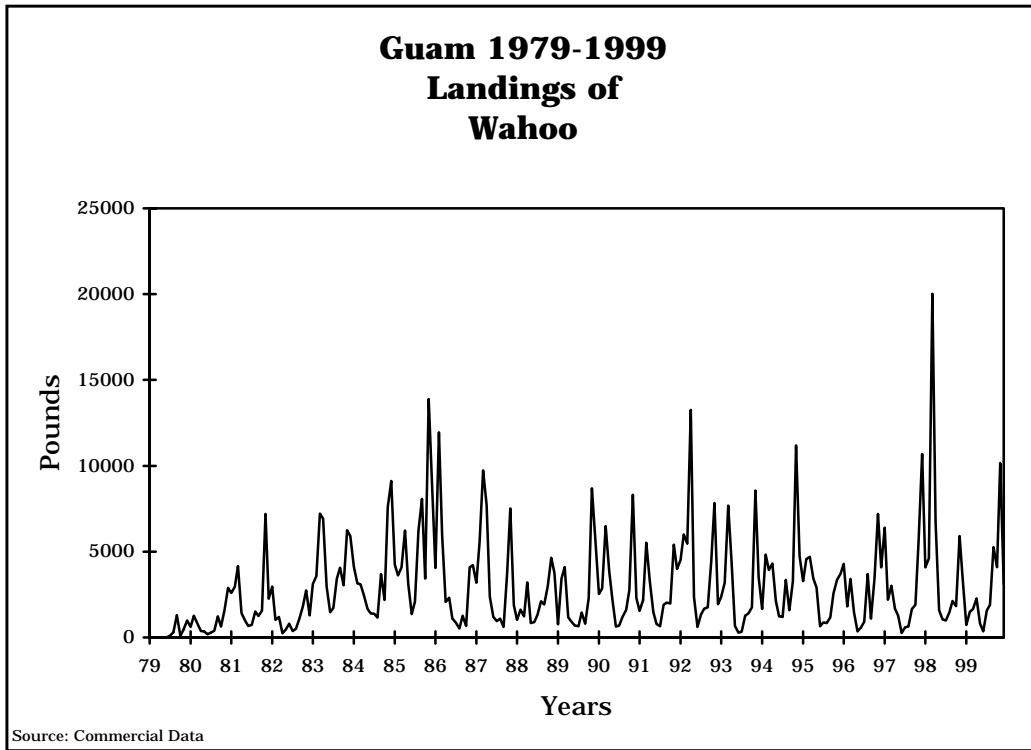


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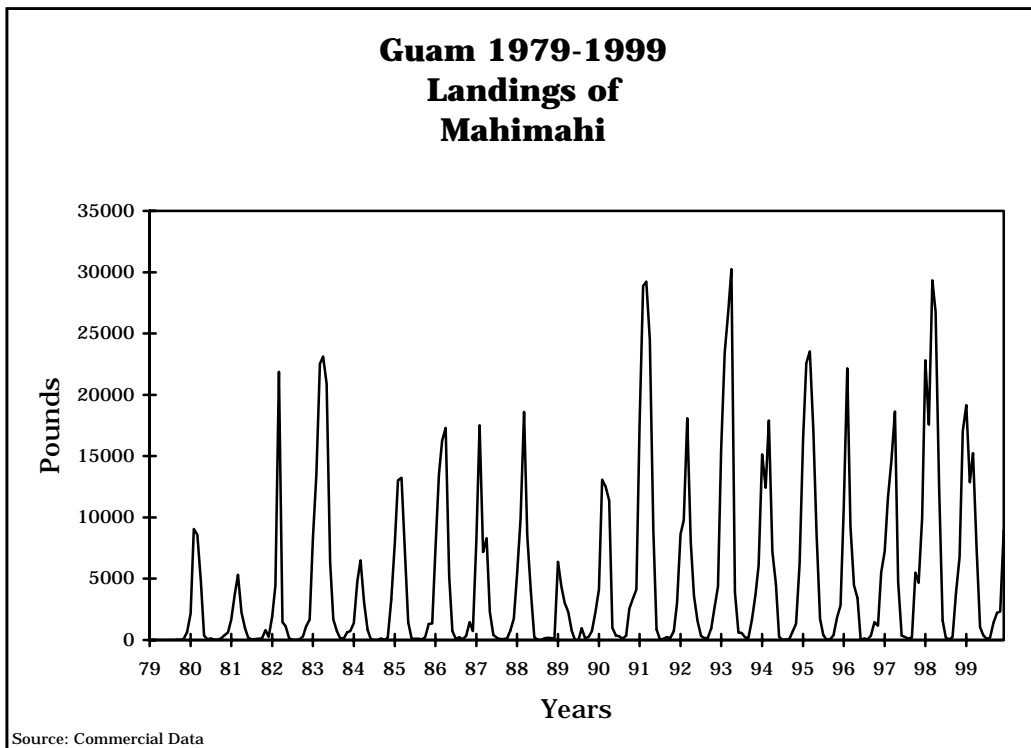


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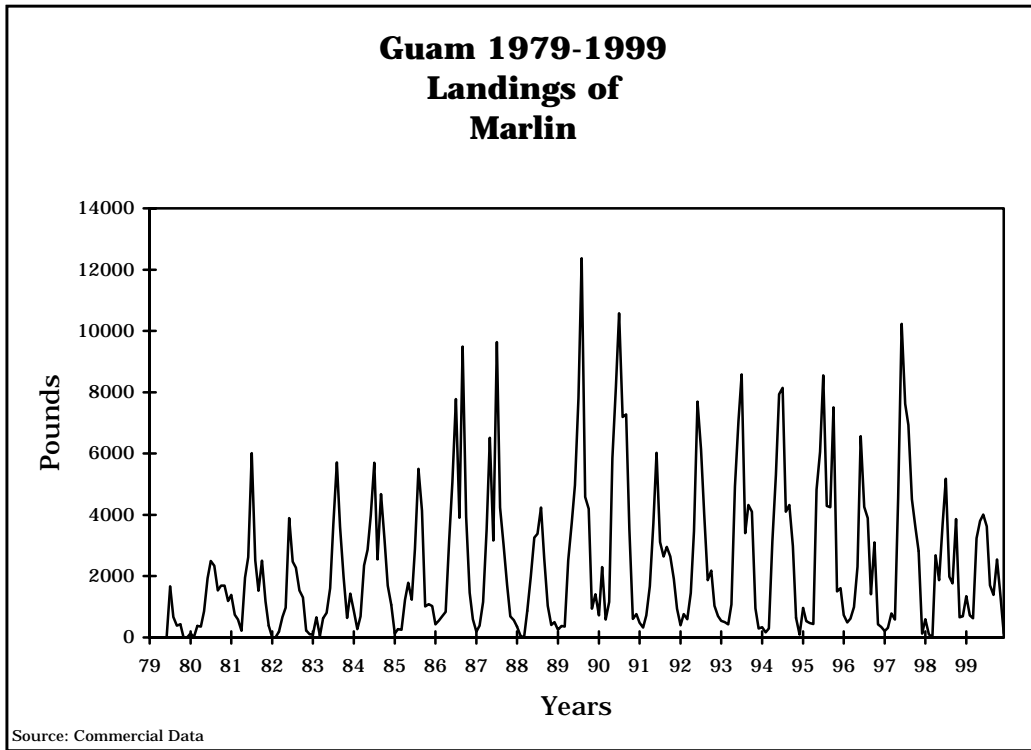


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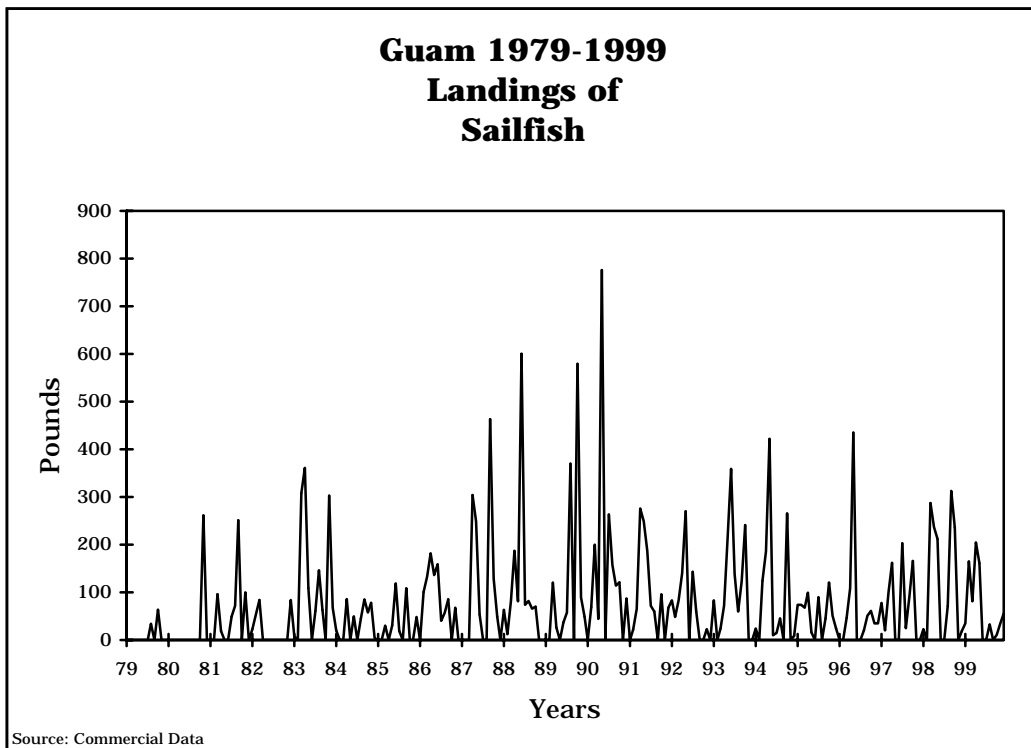


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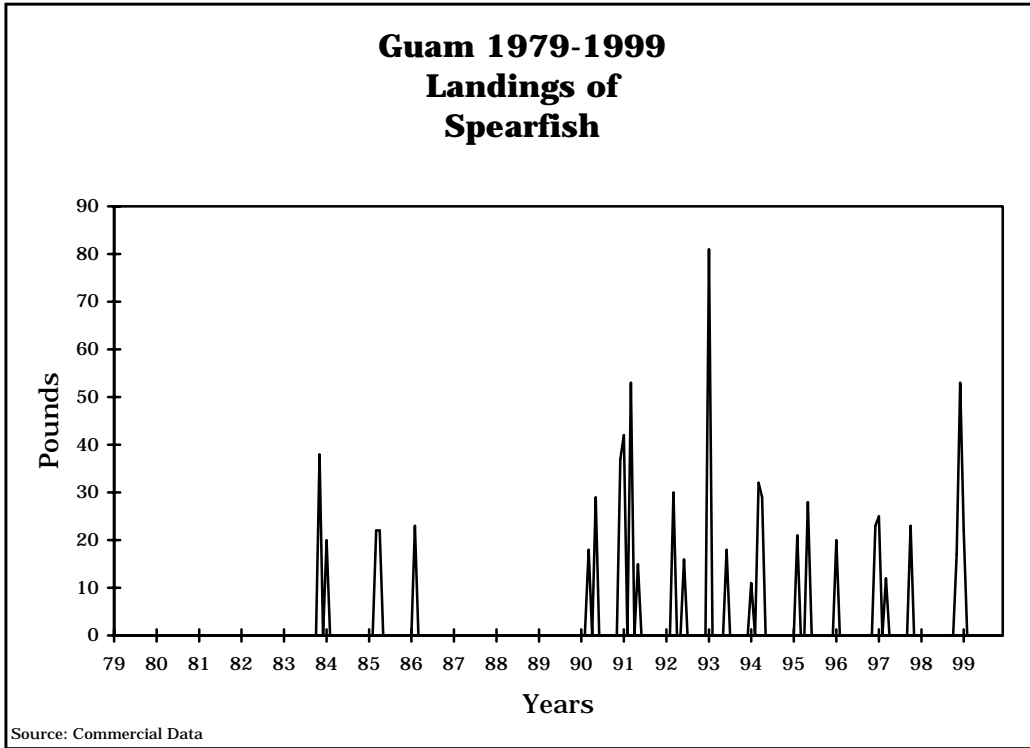


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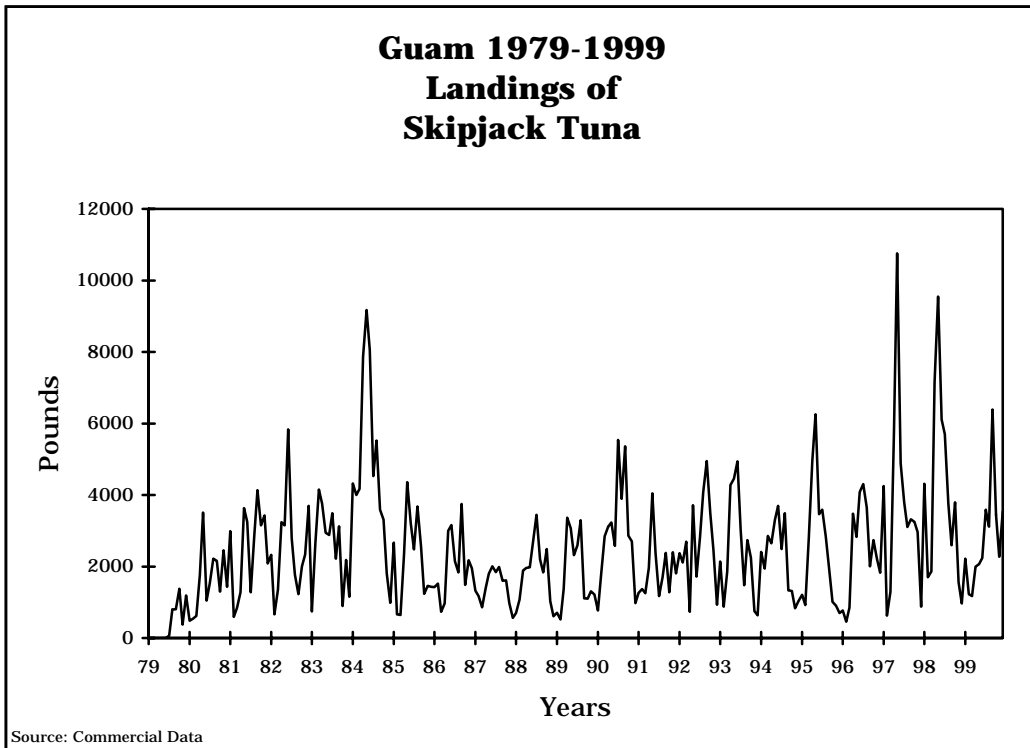


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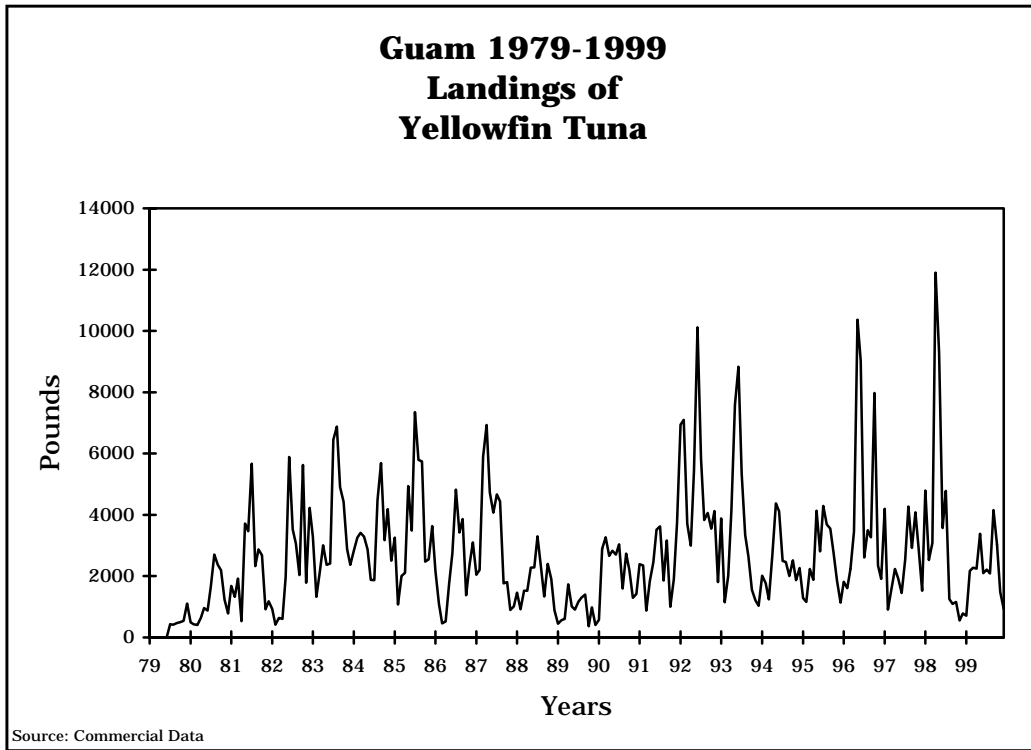


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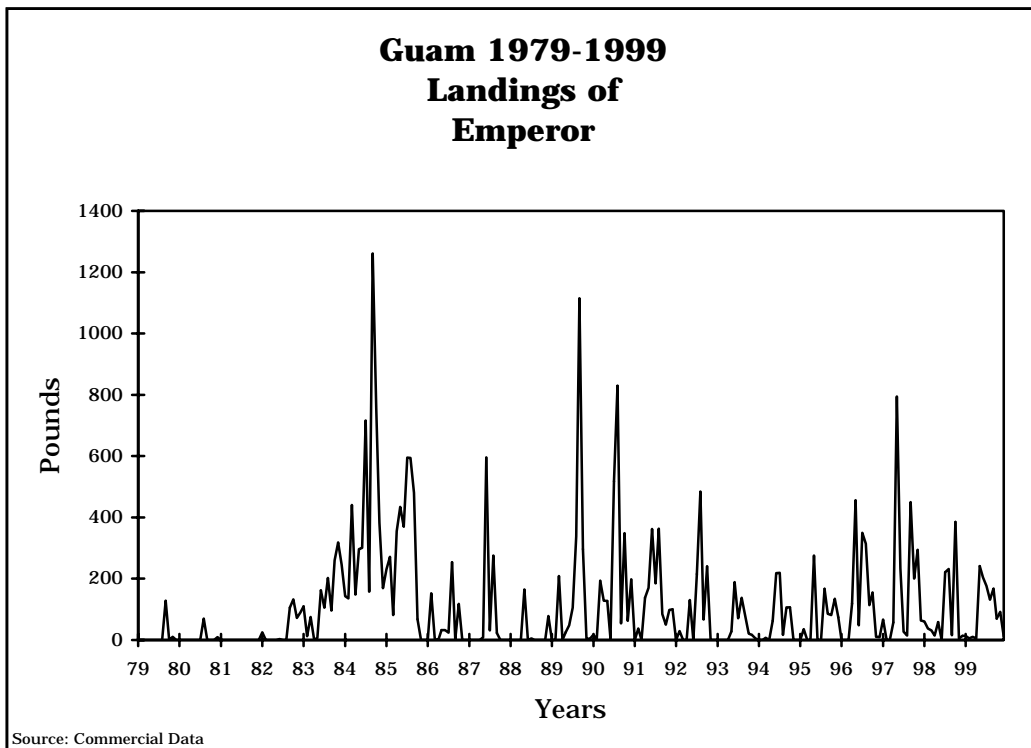
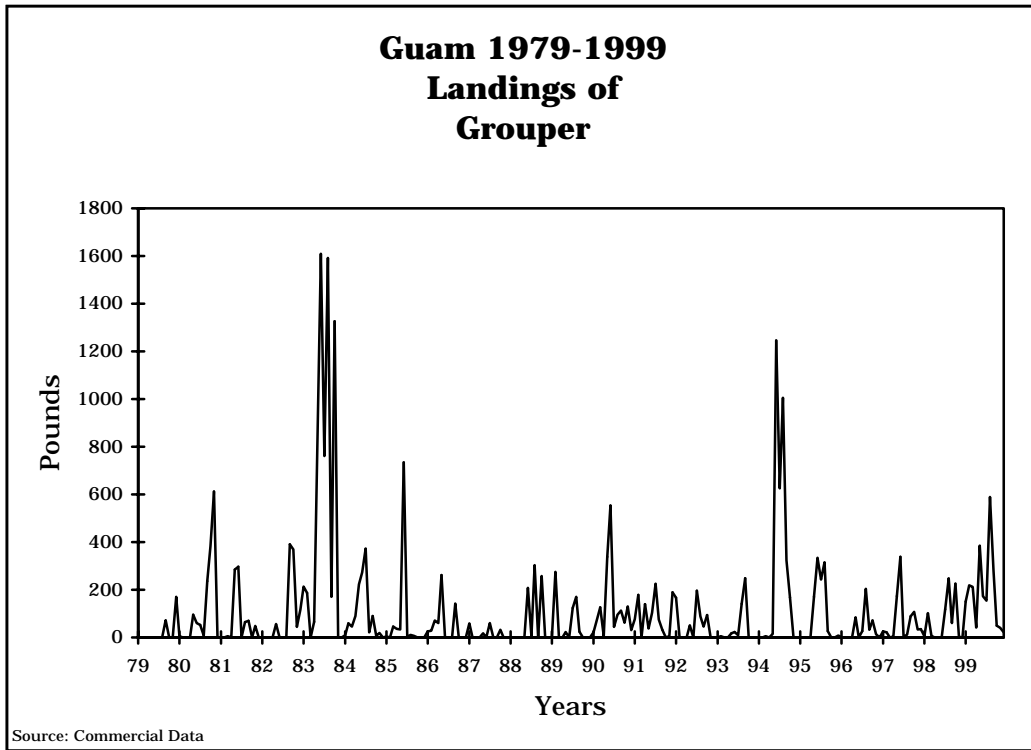


Figure IV.4.9



STATE OF HAWAII 1999 FISHERY STATISTICS

Compiled by
Division of Aquatic Resources
and the
Western Pacific Fishery Information Network

July 2001

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STATE OF HAWAII 1999 FISHERY STATISTICS

INTRODUCTION

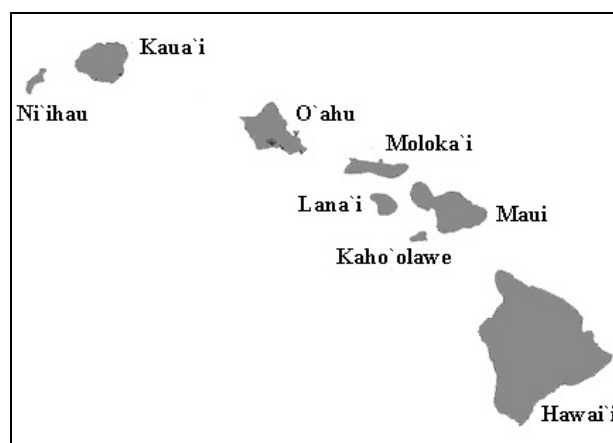
The Hawaiian Archipelago stretches northwestward over 1,500 miles.

Location: 19° N latitude, 155° W longitude to about 28° N latitude and 178° W longitude.

Islands: Hawaii, Maui, Lanai, Molokai, Oahu, Kauai, and Niihau (comprise over 99% of the total land area)

Population: over 1.3 million

Commercial Catch Breakdown:
over 80% on Oahu, about 13% on Hawaii, 4% on Kauai, 2% on Maui, and less than 1% on other islands.



Hawaiian Islands; copied and modified from:
http://satftp.soest.hawaii.edu/space/hawaii/maps/All_Islands_map.710x509.gif;
SOEST Satlab Server

The Department of Land and Natural Resources' Division of Aquatic Resources (DAR) has been collecting statistics on Hawaii's commercial fisheries for over 50 years.

The fisheries of the State of Hawaii are quite diverse; they vary from shore-based algae harvesting by hand to large-vessel fisheries such as longlining and lobster fishing. There are several major fisheries: tuna fishing through various 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.

Commercial fishing (i.e., selling catches or providing charter fishing services) in Hawaii requires purchasing a commercial marine fishing license. In 1999, there were about 4,000 licensed commercial fishermen required to submit monthly reports to DAR, and of these approximately 2,700 vessels were used in their activities. The summary 1999 data provided in this document were created from licensed commercial fishermen reports processed by DAR as of April 2001; it is believed to represent about 99% of what may eventually be submitted and processed.

DATA COLLECTING SYSTEM

DAR's primary data collecting system 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 the need 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. These include 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, the Albacore Trolling Trip Report, 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. The aquarium fish catch, however, 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 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 continually attempts 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 1999.

DATA PROCESSING SYSTEM

When DAR receives various data reporting forms, it codes and edits the data before sending it out for keypunching. Forms that fail the initial DAR staff editing are returned to the fishermen for correction and resubmission, or minor problems may be cleared up with fishermen over the telephone. Notices are sent to fishermen who fall more than a few months behind in their reporting. Once the data are keypunched, DAR staff use computer-generated reports to verify and correct errors in the database. When the database is considered to be reasonably complete and error free, it is ready for use in production of various summary catch reports.

DATA REPORTING SYSTEM

More than 150 marine species and species groups are recorded in DAR's monthly landings reports, many of which are insignificant in the total catch. To help reduce this document's size 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 make up 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 is a separate annual report 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 1999, and 26 trend and seasonality graphs, based on 1979-99 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)	Snappers

III. Billfish

Billfish	Blue Marlin
Black Marlin	Striped Marlin
Shortnose spearfish	Sailfish
Broadbill 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. Pelagic Species

All PMUS and tuna species including 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
Paapaa ulua	Blue spot grouper
Porgy	

C. Reef Fish

Reef jacks (misc.)	Squirrelfish
Trumpetfish	Scorpionfish
Mountain bass	Bigeyes
Cardinalfish	Goatfish
Rudderfish	Butterflyfish
Damselfish	Hawkfish
Tipapia	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

V.6

Shrimp (freshwater)
Octopus
Limpets (saltwater)
Clams
Precious Corals
Sea cucumbers
Algae

Shrimp (saltwater)
Squid
Limpets (freshwater)
Stoney corals
Sea urchins
Sea turtles

V.7

Table V.1.1

Hawaii 1999 Annual Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	10,381	12,028	1.16
Sharks	166,316	183,524	1.10
Shark fins	175	3,781	21.61
Eels	351	570	1.62
Bigeye scad (akule)	1,010,863	1,536,555	1.52
Mackerel scad	247,103	435,208	1.76
Leatherback	483	856	1.77
Ten pounder	530	483	0.91
Bonfish	6,983	7,596	1.09
Milkfish	1,113	1,510	1.36
Needlefish	423	568	1.34
Threadfin	520	2,272	4.37
Mullet	3,685	11,282	3.06
Pomfret	287,579	389,745	1.36
Snake mackerel	2,789	3,935	1.41
Jacks (misc)	20,171	42,796	2.12
Amberjack	807	1,293	1.60
Blue crevally	967	2,042	2.11
Pig-lipped ulua	29,484	48,041	1.63
Dobe ulua	1,809	3,264	1.80
Paapaa ulua	3,212	6,574	2.05
White ulua	4,874	7,348	1.51
Black ulua	260	612	2.35
Giant sea bass	68,363	201,953	2.95
Blue spot grouper	569	1,273	2.24
Snappers	2,244	6,356	2.83
Blue lined snapper	62,440	61,360	0.98
Ehu (red snapper)	34,036	127,057	3.73
Gindai (flower snapper)	5,623	17,501	3.11
Kalekale (pink snapper)	13,704	44,336	3.24
Lehi (silverjaw)	9,120	28,873	3.17
Onaga (red snapper)	149,474	712,132	4.76
Opakapaka (pink snapper)	197,725	872,583	4.41
Uku (gray snapper)	124,849	310,215	2.48
Porgy	2,858	7,382	2.58
Reef jacks	189	576	3.05
Squirrelfish	37,640	117,979	3.13
Trumpetfish	256	374	1.46
Scorpionfish	2,291	8,558	3.74
Mountain bass	3,926	10,968	2.79
Bigeyes	4,314	11,030	2.56
Cardinalfish	12	2	0.17
Goatfish	56,846	163,352	2.87
Rudderfish	15,578	19,750	1.27
Damsel fish	1,097	2,062	1.88
Hawkfish	586	1,063	1.81

Table V.1.1 (Cont.)

Species	Pounds	Value	\$/lb
Tilapia	93	110	1.18
Wrasse	6,640	22,743	3.43
Parrotfish	33,061	77,391	2.34
Surgeon/tangs	95,128	126,762	1.33
Flounders	26	23	0.88
Triggerfish	26	17	0.66
Filefish	12,712	14,793	1.16
Rainbow runner	2,447	3,641	1.49
Mahimahi (dolphin)	1,103,236	2,501,464	2.27
Barracudas	18,197	20,565	1.13
Wahoo	821,638	1,651,457	2.01
Japanese mackerel	18	13	0.73
Tunas	18,800	94,782	5.04
Skipjack tuna	1,729,130	2,204,305	1.27
Yellowfin tuna	3,798,414	8,039,618	2.12
Albacore	3,336,689	3,799,690	1.14
Bigeye tuna	5,105,270	16,809,125	3.29
Kawakawa	5,279	6,333	1.20
Frigate tuna	34	29	0.86
Billfish	4,689	6,537	1.39
Broadbill swordfish	3,833,862	9,679,563	2.52
Blue marlin	986,781	1,077,369	1.09
Black marlin	10,576	12,559	1.19
Striped marlin	830,386	1,135,602	1.37
Shortnose spearfish	516,123	562,049	1.09
Sailfish	16,336	17,157	1.05
Ocean sunfish	4,239	6,224	1.47
Ocean moonfish	1,000,665	1,184,331	1.18
Spiny lobster	31,903	462,854	14.51
Slipper lobster	40,630	372,350	9.16
Crabs	30,542	122,229	4.00
Shrimp (freshwater)	44	305	6.93
Shrimp (saltwater)	48,440	240,242	4.96
Octopus	16,782	49,225	2.93
Squid	3,265	6,184	1.89
Limpets (saltwater)	9,897	44,565	4.50
Limpets (freshwater)	4	16	4.00
Precious corals	5,471	136,986	25.04
Sea cucumbers	108	867	8.02
Algae	4,047	23,183	5.73
** TOTAL **	26,076,246	55,941,877	2.15

Hawaii 1999 Annual Reported Commercial Landings (not sold)

Species	Pounds
Miscellaneous	1,979
Sharks	90,939
Rays	200
Eels	14
Armorhead	11
Bigeye scad (akule)	112,344
Mackerel scad	12,379
Leatherback	74
Ten pounder	39
Bonfish	373
Herring/sardine	1
Silversides	10
Milkfish	193
Needlefish	27
Halfbeaks	2
Threadfin	393
Mullet	798
Pomfret	986
Snake mackerel	2,144
Jacks (misc)	5,708
Amberjack	18,098
Blue crevally	619
Pig-lipped ulua	2,267
Dobe ulua	23
Paapaa ulua	283
White ulua	979
Giant sea bass	3,499
Blue spot grouper	350
Snappers	92
Blue lined snapper	7,638
Ehu (red snapper)	3,525
Gindai (flower snapper)	739
Kalekale (pink snapper)	1,810
Lehi (silverjaw)	775
Onaga (red snapper)	8,697
Opakapaka (pink snapper)	11,195
Uku (gray snapper)	5,883
Porgy	189
Reef jacks	57
Squirrelfish	2,306
Trumpetfish	5
Scorpionfish	359
Mountain bass	218
Bigeyes	281
Cardinalfish	9
Goatfish	6,714

Table V.1.2 (Cont.)

Species	Pounds
Rudderfish	464
Damselfish	4
Hawkfish	60
Tilapia	20
Wrasse	1,502
Parrotfish	2,062
Surgeon/tangs	3,399
Triggerfish	96
Filefish	13
Rainbow runner	540
Mahimahi (dolphin)	76,485
Barracudas	1,063
Wahoo	80,999
Japanese mackerel	40
Tunas	1,195
Skipjack tuna	110,922
Yellowfin tuna	146,220
Albacore	22,150
Bigeye tuna	34,072
Kawakawa	4,028
Frigate tuna	54
Billfish	325
Broadbill swordfish	900
Blue marlin	105,835
Black marlin	842
Striped marlin	18,836
Shortnose spearfish	29,265
Sailfish	547
Ocean moonfish	179
Spiny lobster	1,369
Slipper lobster	52
Crabs	4,771
Shrimp (freshwater)	5
Shrimp (saltwater)	19,158
Octopus	6,588
Squid	324
Limpets (saltwater)	877
Limpets (freshwater)	4
Precious corals	135
Sea cucumbers	5
Algae	1,001
** TOTAL **	981,630

Table V.1.3

Hawaii January 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	2,807	5,422	1.93
Sharks	18,309	16,707	0.91
Eels	8	5	0.63
Bigeye scad (akule)	64,245	97,941	1.52
Mackerel scad	21,086	33,687	1.60
Leatherback	30	47	1.55
Ten pounder	7	9	1.25
Bonefish	2,527	2,651	1.05
Milkfish	21	39	1.83
Needlefish	70	70	1.00
Threadfin	78	388	4.97
Mullet	24	52	2.17
Pomfret	17,355	29,183	1.68
Jacks (misc)	2,709	5,782	2.13
Amberjack	26	31	1.19
Blue crevally	20	31	1.55
Pig-lipped ulua	3,892	5,168	1.33
Dobe ulua	6	9	1.50
Paapaa ulua	138	292	2.12
White ulua	386	592	1.53
Giant sea bass	7,135	19,298	2.70
Blue spot grouper	93	191	2.06
Snappers	136	394	2.90
Blue lined snapper	4,308	4,569	1.06
Ehu (red snapper)	3,135	11,432	3.65
Gindai (flower snapper)	548	1,564	2.85
Kalekale (pink snapper)	1,354	4,085	3.02
Lehi (silverjaw)	1,224	4,069	3.32
Onaga (red snapper)	18,070	83,902	4.64
Opakapaka (pink snapper)	20,760	89,613	4.32
Uku (gray snapper)	3,711	11,887	3.20
Porgy	81	194	2.40
Squirrelfish	2,969	9,734	3.28
Trumpetfish	3	5	1.50
Scorpionfish	212	827	3.90
Mountain bass	196	531	2.71
Bigeyes	299	858	2.87
Goatfish	6,339	18,031	2.84
Rudderfish	831	1,033	1.24
Damsel fish	113	215	1.91
Hawkfish	24	38	1.58
Wrasse	747	2,853	3.82

Table V.1.3 (Cont.)

Species	Pounds	Value	\$/lb
Parrotfish	2,560	5,556	2.17
Surgeon/tangs	9,144	13,474	1.47
Filefish	43	86	2.00
Rainbow runner	318	448	1.41
Mahimahi (dolphin)	27,524	78,790	2.86
Barracudas	332	444	1.34
Wahoo	27,391	74,572	2.72
Tunas	2,702	23,134	8.56
Skipjack tuna	63,255	85,648	1.35
Yellowfin tuna	340,897	712,872	2.09
Albacore	151,061	216,869	1.44
Bigeye tuna	568,512	1,880,399	3.31
Kawakawa	443	512	1.16
Broadbill swordfish	363,924	796,156	2.19
Blue marlin	56,736	58,063	1.02
Black marlin	175	175	1.00
Striped marlin	129,045	132,097	1.02
Shortnose spearfish	57,826	29,420	0.51
Sailfish	868	652	0.75
Ocean moonfish	63,821	105,884	1.66
Spiny lobster	753	7,797	10.35
Slipper lobster	6	38	6.25
Crabs	2,432	9,791	4.03
Shrimp (freshwater)	44	305	6.93
Shrimp (saltwater)	3,910	16,300	4.17
Octopus	518	1,496	2.89
Limpets (saltwater)	1,232	5,703	4.63
Precious corals	470	11,756	25.01
Algae	508	3,476	6.84
** SUBTOTAL **	2,082,482	4,735,341	2.27

Table V.1.4

Hawaii February 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	629	554	0.88
Sharks	18,450	21,103	1.14
Eels	31	62	1.99
Bigeye scad (akule)	66,460	103,492	1.56
Mackerel scad	23,077	41,225	1.79
Leatherback	42	77	1.84
Ten pounder	64	66	1.03
Bonfish	1,477	1,708	1.16
Milkfish	115	151	1.32
Needlefish	11	22	2.00
Threadfin	13	33	2.54
Mullet	149	394	2.64
Pomfret	29,271	40,277	1.38
Snake mackerel	170	170	1.00
Jacks (misc)	2,493	5,292	2.12
Amberjack	8	12	1.50
Blue crevally	77	161	2.09
Pig-lipped ulua	2,144	4,104	1.91
Dobe ulua	2	5	2.50
Paapaa ulua	159	462	2.90
White ulua	763	930	1.22
Black ulua	57	137	2.40
Giant sea bass	8,860	23,365	2.64
Blue spot grouper	17	43	2.53
Snappers	120	184	1.53
Blue lined snapper	6,269	6,327	1.01
Ehu (red snapper)	2,461	8,576	3.48
Gindai (flower snapper)	487	1,301	2.67
Kalekale (pink snapper)	992	3,199	3.22
Lehi (silverjaw)	1,030	3,511	3.41
Onaga (red snapper)	9,387	49,276	5.25
Opakapaka (pink snapper)	17,835	81,844	4.59
Uku (gray snapper)	4,176	14,937	3.58
Porgy	104	260	2.50
Squirrelfish	1,238	3,821	3.09
Trumpetfish	2	3	1.50
Scorpionfish	108	472	4.37
Mountain bass	1,069	2,375	2.22
Bigeyes	197	573	2.91
Goatfish	4,059	11,381	2.80
Rudderfish	1,107	1,492	1.35
Damsel fish	64	92	1.44

Table V.1.4 (Cont.)

Species	Pounds	Value	\$/lb
Hawkfish	14	17	1.22
Tilapia	43	60	1.39
Wrasse	449	1,879	4.18
Parrotfish	3,383	8,135	2.40
Surgeon/tangs	6,216	8,812	1.42
Filefish	567	1,012	1.78
Rainbow runner	44	52	1.18
Mahimahi (dolphin)	29,669	79,697	2.69
Barracudas	556	1,137	2.05
Wahoo	37,717	94,743	2.51
Tunas	1,208	8,867	7.34
Skipjack tuna	52,823	74,463	1.41
Yellowfin tuna	339,850	684,009	2.01
Albacore	298,027	357,050	1.20
Bigeye tuna	714,655	2,216,226	3.10
Kawakawa	205	235	1.15
Frigate tuna	12	11	0.92
Broadbill swordfish	306,865	712,633	2.32
Blue marlin	53,191	64,172	1.21
Black marlin	628	972	1.55
Striped marlin	73,203	111,034	1.52
Shortnose spearfish	67,938	143,965	2.12
Sailfish	2,447	3,208	1.31
Ocean moonfish	81,850	109,553	1.34
Spiny lobster	400	3,659	9.15
Slipper lobster	9	94	10.40
Crabs	2,799	11,812	4.22
Shrimp (saltwater)	465	4,050	8.71
Octopus	874	2,564	2.93
Limpets (saltwater)	420	1,792	4.27
Precious corals	245	6,149	25.10
Sea cucumbers	9	72	8.00
Algae	259	1,185	4.58
** SUBTOTAL **	2,282,284	5,146,785	2.26

Table V.1.5

Hawaii March 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	35	9	0.27
Sharks	14,869	15,127	1.02
Eels	14	35	2.51
Bigeye scad (akule)	96,951	151,865	1.57
Mackerel scad	15,946	27,486	1.72
Leatherback	60	94	1.56
Ten pounder	36	38	1.06
Bonfish	1,192	1,143	0.96
Milkfish	573	698	1.22
Needlefish	29	41	1.41
Threadfin	54	198	3.66
Mullet	1,081	3,031	2.80
Pomfret	27,045	43,748	1.62
Snake mackerel	442	663	1.50
Jacks (misc)	1,965	4,298	2.19
Amberjack	60	81	1.34
Blue crevally	73	112	1.54
Pig-lipped ulua	4,970	5,995	1.21
Dobe ulua	787	1,231	1.56
Paapaa ulua	353	374	1.06
White ulua	559	714	1.28
Giant sea bass	6,482	16,552	2.55
Blue spot grouper	62	129	2.08
Snappers	81	271	3.35
Blue lined snapper	4,699	4,125	0.88
Ehu (red snapper)	2,078	7,769	3.74
Gindai (flower snapper)	293	961	3.28
Kalekale (pink snapper)	1,072	3,294	3.07
Lehi (silverjaw)	468	1,866	3.99
Onaga (red snapper)	12,212	47,628	3.90
Opakapaka (pink snapper)	13,411	61,373	4.58
Uku (gray snapper)	4,672	14,389	3.08
Porgy	215	628	2.92
Reef jacks	85	296	3.48
Squirrelfish	1,980	6,298	3.18
Trumpetfish	3	1	0.42
Scorpionfish	175	705	4.03
Mountain bass	98	278	2.84
Bigeyes	390	1,007	2.58
Goatfish	5,890	15,771	2.68
Rudderfish	1,104	1,625	1.47
Damsel fish	29	60	2.07

Table V.1.5 (Cont.)

Species	Pounds	Value	\$/lb
Hawkfish	8	8	1.05
Tilapia	50	50	1.00
Wrasse	229	627	2.74
Parrotfish	2,084	4,636	2.22
Surgeon/tangs	9,266	12,054	1.30
Triggerfish	22	11	0.49
Filefish	1,073	1,749	1.63
Rainbow runner	186	274	1.47
Mahimahi (dolphin)	59,330	173,917	2.93
Barracudas	828	1,119	1.35
Wahoo	44,442	133,136	3.00
Tunas	1,475	10,235	6.94
Skipjack tuna	63,010	94,128	1.49
Yellowfin tuna	252,441	621,312	2.46
Albacore	211,070	331,782	1.57
Bigeye tuna	394,192	1,478,029	3.75
Kawakawa	240	340	1.42
Frigate tuna	14	14	1.00
Broadbill swordfish	552,758	1,563,663	2.83
Blue marlin	54,380	82,922	1.52
Black marlin	1,337	1,804	1.35
Striped marlin	43,995	100,856	2.29
Shortnose spearfish	54,217	80,586	1.49
Sailfish	426	535	1.26
Ocean sunfish	4,089	6,104	1.49
Ocean moonfish	74,873	111,485	1.49
Spiny lobster	325	3,406	10.48
Slipper lobster	9	59	6.61
Crabs	2,179	9,240	4.24
Shrimp (saltwater)	24,144	97,468	4.04
Octopus	484	1,417	2.93
Squid	32	128	4.00
Limpets (saltwater)	678	3,547	5.23
Precious corals	480	12,047	25.10
Sea cucumbers	17	132	7.76
Algae	564	4,180	7.41
** SUBTOTAL **	2,077,540	5,385,008	2.59

Table V.1.6

Hawaii April 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	457	650	1.42
Sharks	15,050	18,915	1.26
Eels	26	16	0.62
Bigeye scad (akule)	116,744	188,803	1.62
Mackerel scad	19,557	35,585	1.82
Leatherback	28	47	1.67
Ten pounder	142	117	0.82
Bonfish	78	168	2.15
Milkfish	158	201	1.27
Needlefish	6	8	1.38
Threadfin	40	159	3.97
Mullet	200	602	3.01
Pomfret	53,793	42,881	0.80
Snake mackerel	298	298	1.00
Jacks (misc)	2,113	4,263	2.02
Amberjack	26	60	2.30
Blue crevally	11	25	2.27
Pig-lipped ulua	1,469	2,038	1.39
Dobe ulua	27	52	1.93
Paapaa ulua	217	557	2.57
White ulua	219	365	1.67
Giant sea bass	3,845	12,560	3.27
Blue spot grouper	80	181	2.26
Snappers	306	899	2.94
Blue lined snapper	5,887	5,187	0.88
Ehu (red snapper)	2,194	8,309	3.79
Gindai (flower snapper)	404	1,228	3.04
Kalekale (pink snapper)	895	3,240	3.62
Lehi (silverjaw)	551	1,816	3.30
Onaga (red snapper)	8,151	42,205	5.18
Opakapaka (pink snapper)	12,157	57,798	4.75
Uku (gray snapper)	5,367	12,841	2.39
Porgy	383	1,025	2.68
Reef jacks	14	44	3.11
Squirrelfish	3,420	10,248	3.00
Trumpetfish	5	6	1.20
Scorpionfish	203	768	3.78
Mountain bass	203	604	2.97
Bigeyes	443	1,129	2.55
Cardinalfish	12	2	0.17
Goatfish	5,162	14,990	2.90
Rudderfish	1,908	1,715	0.90

Table V.1.6 (Cont.)

Species	Pounds	Value	\$/lb
Damselfish	200	384	1.92
Hawkfish	75	107	1.43
Wrasse	356	1,164	3.27
Parrotfish	2,908	6,832	2.35
Surgeon/tangs	8,771	11,427	1.30
Filefish	2,610	2,892	1.11
Rainbow runner	112	167	1.49
Mahimahi (dolphin)	123,730	286,173	2.31
Barracudas	3,561	4,029	1.13
Wahoo	94,773	191,977	2.03
Tunas	371	2,191	5.91
Skipjack tuna	131,789	171,909	1.30
Yellowfin tuna	239,922	471,101	1.96
Albacore	113,183	223,882	1.98
Bigeye tuna	411,949	1,482,596	3.60
Kawakawa	580	749	1.29
Billfish	124	223	1.80
Broadbill swordfish	846,963	1,979,877	2.34
Blue marlin	38,058	65,475	1.72
Black marlin	596	1,056	1.77
Striped marlin	47,052	103,880	2.21
Shortnose spearfish	63,716	52,171	0.82
Sailfish	1,834	2,232	1.22
Ocean moonfish	40,659	72,922	1.79
Spiny lobster	1,623	18,155	11.19
Slipper lobster	16	155	9.71
Crabs	5,368	24,024	4.48
Shrimp (saltwater)	2,548	22,127	8.68
Octopus	458	1,343	2.93
Limpets (saltwater)	589	2,315	3.93
Precious corals	340	8,533	25.10
Sea cucumbers	2	16	8.00
Algae	392	2,267	5.78
** SUBTOTAL **	2,447,477	5,686,953	2.32

Table V.1.7

Hawaii May 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	164	201	1.23
Sharks	15,300	12,946	0.85
Eels	48	50	1.04
Bigeye scad (akule)	87,926	137,602	1.56
Mackerel scad	15,766	28,351	1.80
Leatherback	11	22	1.98
Bonfish	29	45	1.56
Milkfish	42	45	1.08
Needlefish	23	29	1.28
Threadfin	23	83	3.61
Mullet	161	440	2.73
Pomfret	36,227	35,220	0.97
Snake mackerel	198	285	1.44
Jacks (misc)	1,729	3,762	2.18
Amberjack	38	39	1.01
Blue crevally	80	97	1.22
Pig-lipped ulua	1,097	2,244	2.05
Dobe ulua	380	731	1.92
Paapaa ulua	278	657	2.36
White ulua	582	879	1.51
Giant sea bass	6,043	16,650	2.76
Blue spot grouper	62	138	2.23
Snappers	337	1,052	3.12
Blue lined snapper	5,303	5,032	0.95
Ehu (red snapper)	3,583	11,449	3.20
Gindai (flower snapper)	462	1,169	2.53
Kalekale (pink snapper)	1,346	4,276	3.18
Lehi (silverjaw)	459	1,310	2.85
Onaga (red snapper)	8,280	41,126	4.97
Opakapaka (pink snapper)	11,997	50,592	4.22
Uku (gray snapper)	21,654	46,736	2.16
Porgy	297	814	2.74
Reef jacks	10	35	3.50
Squirrelfish	4,130	13,165	3.19
Scorpionfish	301	1,099	3.65
Mountain bass	479	1,308	2.73
Bigeyes	355	943	2.66
Goatfish	6,235	16,497	2.65
Rudderfish	1,298	1,531	1.18
Damsel fish	40	80	2.01
Hawkfish	126	218	1.73
Wrasse	517	1,468	2.84

Table V.1.7 (Cont.)

Species	Pounds	Value	\$/lb
Parrotfish	2,990	6,585	2.20
Surgeon/tangs	7,290	9,380	1.29
Filefish	1,255	1,416	1.13
Rainbow runner	252	379	1.50
Mahimahi (dolphin)	112,378	244,777	2.18
Barracudas	4,002	3,305	0.83
Wahoo	141,403	194,029	1.37
Tunas	380	439	1.16
Skipjack tuna	164,011	167,244	1.02
Yellowfin tuna	258,854	466,239	1.80
Albacore	168,753	226,086	1.34
Bigeye tuna	318,475	1,096,840	3.44
Kawakawa	1,052	1,282	1.22
Billfish	1,768	1,267	0.72
Broadbill swordfish	578,496	1,538,290	2.66
Blue marlin	49,507	53,224	1.08
Black marlin	2,123	2,755	1.30
Striped marlin	79,256	94,986	1.20
Shortnose spearfish	63,333	40,607	0.64
Sailfish	2,697	1,981	0.73
Ocean moonfish	89,438	93,948	1.05
Crabs	744	2,836	3.81
Shrimp (saltwater)	10,026	50,618	5.05
Octopus	324	959	2.96
Squid	78	347	4.45
Limpets (saltwater)	989	4,365	4.41
Limpets (freshwater)	4	16	4.00
Precious corals	1,080	27,101	25.09
Sea cucumbers	13	102	7.82
Algae	298	1,329	4.46
** SUBTOTAL **	2,294,685	4,773,149	2.08

Table V.1.8

Hawaii June 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	46	72	1.57
Sharks	17,644	28,423	1.61
Eels	47	44	0.94
Bigeye scad (akule)	117,251	165,282	1.41
Mackerel scad	17,181	31,450	1.83
Leatherback	3	4	1.28
Milkfish	10	15	1.50
Needlefish	2	2	1.00
Mullet	114	313	2.75
Pomfret	36,325	32,982	0.91
Snake mackerel	182	273	1.50
Jacks (misc)	1,866	3,841	2.06
Amberjack	48	60	1.24
Blue crevally	53	108	2.04
Pig-lipped ulua	4,330	5,439	1.26
Paapaa ulua	244	518	2.12
White ulua	504	734	1.46
Black ulua	12	23	1.92
Giant sea bass	7,204	18,910	2.62
Blue spot grouper	65	119	1.83
Snappers	221	761	3.44
Blue lined snapper	5,923	5,282	0.89
Ehu (red snapper)	3,157	11,792	3.74
Gindai (flower snapper)	406	1,238	3.05
Kalekale (pink snapper)	633	2,382	3.76
Lehi (silverjaw)	549	1,589	2.89
Onaga (red snapper)	11,718	50,941	4.35
Opakapaka (pink snapper)	8,464	43,577	5.15
Uku (gray snapper)	22,592	39,638	1.75
Porgy	331	850	2.57
Squirrelfish	2,249	6,942	3.09
Trumpetfish	59	88	1.48
Scorpionfish	196	594	3.03
Mountain bass	219	755	3.45
Bigeyes	253	645	2.55
Goatfish	4,323	12,812	2.96
Rudderfish	480	728	1.52
Damsel fish	35	60	1.72
Hawkfish	75	134	1.78
Wrasse	300	938	3.13
Parrotfish	2,456	5,677	2.31
Surgeon/tangs	8,714	11,335	1.30

Table V.1.8 (Cont.)

Species	Pounds	Value	\$/lb
Flounders	2	2	0.75
Filefish	2,528	2,531	1.00
Rainbow runner	329	326	0.99
Mahimahi (dolphin)	93,741	203,803	2.17
Barracudas	2,949	2,748	0.93
Wahoo	124,593	194,253	1.56
Skipjack tuna	111,117	114,944	1.03
Yellowfin tuna	329,358	750,598	2.28
Albacore	369,684	344,181	0.93
Bigeye tuna	314,208	971,760	3.09
Kawakawa	822	1,013	1.23
Frigate tuna	3	3	0.92
Broadbill swordfish	408,961	1,180,652	2.89
Blue marlin	86,262	86,129	1.00
Black marlin	348	313	0.90
Striped marlin	110,072	109,507	0.99
Shortnose spearfish	47,183	47,116	1.00
Sailfish	780	601	0.77
Ocean moonfish	65,089	88,798	1.36
Crabs	1,019	3,608	3.54
Shrimp (saltwater)	167	1,323	7.92
Octopus	279	823	2.95
Squid	45	126	2.80
Limpets (saltwater)	1,019	4,440	4.36
Precious corals	410	10,250	25.00
Algae	529	2,579	4.88
** SUBTOTAL **	2,347,981	4,609,796	1.96

Table V.1.9

Hawaii July 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	242	148	0.61
Sharks	22,442	28,488	1.27
Shark fins	7	99	14.13
Eels	44	83	1.89
Bigeye scad (akule)	126,285	187,993	1.49
Mackerel scad	12,529	24,603	1.96
Leatherback	34	66	1.95
Bonfish	79	181	2.29
Milkfish	40	70	1.76
Needlefish	9	10	1.06
Threadfin	3	7	2.31
Mullet	193	543	2.81
Pomfret	20,489	35,081	1.71
Jacks (misc)	1,039	2,685	2.58
Amberjack	34	49	1.44
Blue crevally	69	119	1.72
Pig-lipped ulua	3,385	6,286	1.86
Dobe ulua	460	1,033	2.25
Paapaa ulua	197	382	1.94
White ulua	117	151	1.29
Giant sea bass	6,138	18,151	2.96
Blue spot grouper	21	64	3.05
Snappers	390	739	1.90
Blue lined snapper	6,775	6,707	0.99
Ehu (red snapper)	2,935	10,848	3.70
Gindai (flower snapper)	606	1,886	3.11
Kalekale (pink snapper)	766	2,757	3.60
Lehi (silverjaw)	168	509	3.03
Onaga (red snapper)	8,047	44,910	5.58
Opakapaka (pink snapper)	6,036	33,141	5.49
Uku (gray snapper)	16,438	36,066	2.19
Porgy	186	417	2.24
Reef jacks	3	8	2.50
Squirrelfish	2,299	6,957	3.03
Trumpetfish	61	92	1.51
Scorpionfish	123	462	3.76
Mountain bass	234	770	3.29
Bigeyes	244	576	2.36
Goatfish	3,829	10,171	2.66
Rudderfish	784	1,200	1.53
Damsel fish	59	119	2.01
Hawkfish	26	32	1.25

Table V.1.9 (Cont.)

Species	Pounds	Value	\$/lb
Wrasse	310	701	2.26
Parrotfish	1,759	4,278	2.43
Surgeon/tangs	7,072	9,346	1.32
Flounders	3	3	1.00
Filefish	908	986	1.09
Rainbow runner	125	177	1.42
Mahimahi (dolphin)	73,724	195,562	2.65
Barracudas	1,809	1,972	1.09
Wahoo	124,639	206,439	1.66
Tunas	1,491	2,445	1.64
Skipjack tuna	247,388	289,188	1.17
Yellowfin tuna	579,001	1,148,988	1.98
Albacore	507,623	398,164	0.78
Bigeye tuna	230,278	748,723	3.25
Kawakawa	243	366	1.50
Frigate tuna	5	2	0.30
Broadbill swordfish	284,274	731,429	2.57
Blue marlin	152,699	134,259	0.88
Black marlin	1,530	712	0.47
Striped marlin	67,012	71,557	1.07
Shortnose spearfish	30,475	29,196	0.96
Sailfish	1,540	1,489	0.97
Ocean moonfish	59,493	94,223	1.58
Spiny lobster	6,505	84,069	12.92
Slipper lobster	11,863	80,854	6.82
Crabs	1,623	5,324	3.28
Shrimp (saltwater)	143	1,275	8.92
Octopus	1,068	3,246	3.04
Squid	39	206	5.28
Limpets (saltwater)	837	3,666	4.38
Sea cucumbers	9	72	8.00
Algae	339	2,366	6.98
** SUBTOTAL **	2,639,692	4,715,945	1.79

Table V.1.10

Hawaii August 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	317	263	0.83
Sharks	5,060	7,117	1.41
Eels	17	43	2.52
Bigeye scad (akule)	81,087	124,472	1.54
Mackerel scad	15,482	30,124	1.95
Leatherback	40	77	1.93
Ten pounder	14	10	0.72
Bonefish	941	930	0.99
Milkfish	4	6	1.50
Needlefish	55	75	1.36
Mullet	144	542	3.77
Pomfret	9,407	23,523	2.50
Snake mackerel	271	407	1.50
Jacks (misc)	857	1,642	1.92
Amberjack	15	12	0.80
Blue crevally	240	634	2.64
Pig-lipped ulua	1,620	3,276	2.02
Paapaa ulua	328	631	1.92
White ulua	334	630	1.89
Black ulua	30	57	1.91
Giant sea bass	5,204	16,969	3.26
Blue spot grouper	26	72	2.79
Snappers	271	837	3.09
Blue lined snapper	4,509	4,362	0.97
Ehu (red snapper)	3,343	12,853	3.84
Gindai (flower snapper)	515	1,754	3.41
Kalekale (pink snapper)	682	2,737	4.01
Lehi (silverjaw)	235	847	3.60
Onaga (red snapper)	14,991	77,974	5.20
Opakapaka (pink snapper)	7,964	43,011	5.40
Uku (gray snapper)	11,853	36,934	3.12
Porgy	354	941	2.66
Squirrelfish	4,724	15,292	3.24
Trumpetfish	3	4	1.17
Scorpionfish	254	995	3.92
Mountain bass	196	754	3.85
Bigeyes	802	1,576	1.96
Goatfish	3,865	10,577	2.74
Rudderfish	2,437	3,881	1.59
Damsel fish	16	27	1.70
Hawkfish	64	125	1.96
Wrasse	354	1,139	3.22

Table V.1.10 (Cont.)

Species	Pounds	Value	\$/lb
Parrotfish	4,140	9,468	2.29
Surgeon/tangs	8,424	10,532	1.25
Flounders	4	4	0.88
Filefish	857	872	1.02
Rainbow runner	142	220	1.55
Mahimahi (dolphin)	99,343	255,047	2.57
Barracudas	931	1,343	1.44
Wahoo	91,630	200,666	2.19
Tunas	8,101	22,468	2.77
Skipjack tuna	316,753	409,747	1.29
Yellowfin tuna	487,352	1,135,955	2.33
Albacore	311,683	367,890	1.18
Bigeye tuna	261,471	867,218	3.32
Kawakawa	332	365	1.10
Billfish	519	1,768	3.41
Broadbill swordfish	141,825	349,429	2.46
Blue marlin	200,509	185,333	0.92
Black marlin	1,283	1,061	0.83
Striped marlin	26,209	41,569	1.59
Shortnose spearfish	16,252	23,827	1.47
Sailfish	1,467	1,601	1.09
Ocean moonfish	58,338	97,038	1.66
Spiny lobster	8,211	138,618	16.88
Slipper lobster	12,073	122,190	10.12
Crabs	2,135	7,495	3.51
Shrimp (saltwater)	6,468	42,624	6.59
Octopus	1,895	5,707	3.01
Squid	379	731	1.93
Limpets (saltwater)	964	3,977	4.13
Precious corals	90	2,250	25.00
Sea cucumbers	12	98	8.17
Algae	337	2,073	6.15
** SUBTOTAL **	2,249,054	4,737,315	2.11

Table V.1.11

Hawaii September 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	4,798	3,848	0.80
Sharks	6,705	7,297	1.09
Eels	28	61	2.19
Bigeye scad (akule)	33,354	60,354	1.81
Mackerel scad	23,244	42,038	1.81
Leatherback	134	257	1.92
Bonfish	110	177	1.61
Milkfish	61	81	1.33
Needlefish	8	13	1.56
Threadfin	209	936	4.48
Mullet	371	1,147	3.09
Pomfret	8,537	19,834	2.32
Snake mackerel	106	159	1.50
Jacks (misc)	1,467	2,752	1.88
Amberjack	79	111	1.41
Blue crevally	182	378	2.07
Pig-lipped ulua	1,877	2,990	1.59
Paapaa ulua	257	483	1.88
White ulua	110	230	2.09
Giant sea bass	4,823	16,922	3.51
Blue spot grouper	52	135	2.59
Snappers	87	247	2.83
Blue lined snapper	4,023	4,317	1.07
Ehu (red snapper)	2,523	9,157	3.63
Gindai (flower snapper)	618	1,914	3.10
Kalekale (pink snapper)	1,529	5,419	3.54
Lehi (silverjaw)	860	2,544	2.96
Onaga (red snapper)	12,768	62,854	4.92
Opakapaka (pink snapper)	21,095	94,832	4.50
Uku (gray snapper)	10,071	32,628	3.24
Porgy	352	759	2.16
Squirrelfish	4,683	14,361	3.07
Trumpetfish	49	65	1.33
Scorpionfish	137	464	3.38
Mountain bass	498	1,152	2.31
Bigeyes	348	951	2.73
Goatfish	4,479	13,232	2.95
Rudderfish	3,218	3,309	1.03
Damsel fish	128	224	1.75
Hawkfish	61	128	2.11
Wrasse	1,000	3,293	3.29
Parrotfish	4,533	10,970	2.42

Table V.1.11 (Cont.)

Species	Pounds	Value	\$/lb
Surgeon/tangs	9,532	12,232	1.28
Filefish	1,648	1,682	1.02
Rainbow runner	255	453	1.78
Mahimahi (dolphin)	148,864	296,988	2.00
Barracudas	340	487	1.43
Wahoo	62,894	154,193	2.45
Tunas	808	4,102	5.08
Skipjack tuna	225,257	308,090	1.37
Yellowfin tuna	283,840	624,623	2.20
Albacore	285,939	305,808	1.07
Bigeye tuna	413,356	1,202,041	2.91
Kawakawa	494	527	1.07
Broadbill swordfish	50,786	161,431	3.18
Blue marlin	100,289	123,049	1.23
Black marlin	813	1,280	1.57
Striped marlin	24,533	51,021	2.08
Shortnose spearfish	20,492	24,697	1.21
Sailfish	1,449	1,870	1.29
Ocean sunfish	150	120	0.80
Ocean moonfish	113,967	107,914	0.95
Spiny lobster	10,793	170,494	15.80
Slipper lobster	16,556	168,107	10.15
Crabs	1,091	4,712	4.32
Shrimp (saltwater)	217	1,890	8.71
Octopus	4,004	11,777	2.94
Squid	1,478	2,265	1.53
Limpets (saltwater)	864	4,122	4.77
Precious corals	657	16,425	25.00
Algae	269	1,190	4.42
** SUBTOTAL **	1,941,207	4,186,612	2.16

Table V.1.12

Hawaii October 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	345	543	1.57
Sharks	9,909	7,423	0.75
Shark fins	23	492	21.39
Eels	22	33	1.52
Bigeye scad (akule)	39,592	71,861	1.82
Mackerel scad	37,242	63,254	1.70
Leatherback	45	71	1.58
Bonfish	138	101	0.73
Milkfish	11	16	1.45
Needlefish	86	138	1.61
Threadfin	41	193	4.70
Mullet	515	1,593	3.09
Pomfret	14,646	28,056	1.92
Snake mackerel	176	264	1.50
Jacks (misc)	1,910	4,270	2.24
Amberjack	15	23	1.50
Blue crevally	34	72	2.11
Pig-lipped ulua	1,950	3,665	1.88
Dobe ulua	49	87	1.77
Paapaa ulua	441	961	2.18
White ulua	552	822	1.49
Black ulua	36	84	2.33
Giant sea bass	3,974	13,686	3.44
Blue spot grouper	9	21	2.35
Snappers	107	328	3.06
Blue lined snapper	5,852	6,016	1.03
Ehu (red snapper)	2,484	9,594	3.86
Gindai (flower snapper)	364	1,139	3.13
Kalekale (pink snapper)	875	2,588	2.96
Lehi (silverjaw)	882	3,492	3.96
Onaga (red snapper)	9,812	47,870	4.88
Opakapaka (pink snapper)	24,908	102,266	4.11
Uku (gray snapper)	7,122	20,261	2.84
Porgy	315	855	2.71
Reef jacks	68	170	2.50
Squirrelfish	4,868	14,811	3.04
Trumpetfish	28	37	1.32
Scorpionfish	231	923	4.00
Mountain bass	177	650	3.67
Bigeyes	465	1,376	2.96
Goatfish	4,832	15,750	3.26
Rudderfish	1,009	1,415	1.40

Table V.1.12 (Cont.)

Species	Pounds	Value	\$/lb
Damselfish	259	508	1.96
Hawkfish	43	76	1.77
Wrasse	1,193	3,899	3.27
Parrotfish	2,500	6,124	2.45
Surgeon/tangs	7,252	10,022	1.38
Flounders	11	9	0.85
Filefish	395	462	1.17
Rainbow runner	225	332	1.48
Mahimahi (dolphin)	171,526	317,755	1.85
Barracudas	1,392	1,943	1.40
Wahoo	31,875	88,590	2.78
Tunas	1,173	11,017	9.39
Skipjack tuna	236,681	270,373	1.14
Yellowfin tuna	254,846	495,004	1.94
Albacore	350,075	325,914	0.93
Bigeye tuna	487,249	1,496,758	3.07
Kawakawa	204	348	1.71
Billfish	191	287	1.50
Broadbill swordfish	132,810	301,285	2.27
Blue marlin	99,452	97,764	0.98
Black marlin	1,001	1,542	1.54
Striped marlin	81,277	87,673	1.08
Shortnose spearfish	33,325	27,356	0.82
Sailfish	2,177	2,105	0.97
Ocean moonfish	139,642	106,295	0.76
Spiny lobster	986	10,958	11.11
Slipper lobster	27	181	6.72
Crabs	5,199	21,082	4.06
Shrimp (saltwater)	134	1,197	8.93
Octopus	3,492	10,177	2.91
Squid	788	1,593	2.02
Limpets (saltwater)	644	3,114	4.84
Precious corals	1,055	26,375	25.00
Sea cucumbers	33	262	7.95
Algae	61	217	3.55
** SUBTOTAL **	2,225,353	4,155,865	1.87

Table V.1.13

Hawaii November 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	237	97	0.41
Sharks	10,451	10,250	0.98
Shark fins	81	1,782	22.00
Eels	49	96	1.95
Bigeye scad (akule)	107,790	141,986	1.32
Mackerel scad	26,916	44,754	1.66
Leatherback	20	35	1.74
Ten pounder	267	243	0.91
Bonfish	395	456	1.15
Milkfish	22	19	0.88
Needlefish	14	14	0.99
Threadfin	40	172	4.30
Mullet	503	1,601	3.18
Pomfret	15,179	27,543	1.81
Snake mackerel	356	535	1.50
Jacks (misc)	564	1,262	2.24
Amberjack	178	183	1.03
Blue crevally	50	115	2.29
Pig-lipped ulua	1,164	2,850	2.45
Dobe ulua	98	117	1.19
Paapaa ulua	291	511	1.76
White ulua	593	1,009	1.70
Black ulua	125	311	2.49
Giant sea bass	3,942	13,276	3.37
Blue spot grouper	30	60	2.00
Snappers	51	156	3.06
Blue lined snapper	3,841	3,754	0.98
Ehu (red snapper)	1,917	6,931	3.62
Gindai (flower snapper)	244	828	3.39
Kalekale (pink snapper)	1,463	4,109	2.81
Lehi (silverjaw)	1,247	3,384	2.71
Onaga (red snapper)	11,127	48,702	4.38
Opakapaka (pink snapper)	23,491	89,632	3.82
Uku (gray snapper)	9,018	23,052	2.56
Porgy	185	518	2.80
Reef jacks	9	24	2.67
Squirrelfish	2,882	8,642	3.00
Trumpetfish	2	4	1.88
Scorpionfish	55	188	3.42
Mountain bass	164	529	3.23
Bigeyes	312	838	2.69
Goatfish	3,382	10,005	2.96

Table V.1.13 (Cont.)

Species	Pounds	Value	\$/lb
Rudderfish	346	503	1.45
Damselfish	90	175	1.94
Hawkfish	19	38	2.01
Wrasse	641	2,555	3.99
Parrotfish	1,664	3,956	2.38
Surgeon/tangs	6,757	8,581	1.27
Flounders	2	2	0.75
Filefish	300	401	1.34
Rainbow runner	239	325	1.36
Mahimahi (dolphin)	115,341	249,405	2.16
Barracudas	1,270	1,674	1.32
Wahoo	22,191	66,345	2.99
Skipjack tuna	64,260	116,465	1.81
Yellowfin tuna	189,955	397,371	2.09
Albacore	287,602	339,457	1.18
Bigeye tuna	455,067	1,466,976	3.22
Kawakawa	483	343	0.71
Billfish	266	374	1.41
Broadbill swordfish	61,067	139,355	2.28
Blue marlin	60,537	71,909	1.19
Black marlin	368	431	1.17
Striped marlin	77,027	106,456	1.38
Shortnose spearfish	34,162	33,988	0.99
Sailfish	231	186	0.80
Ocean moonfish	116,767	107,390	0.92
Spiny lobster	874	9,595	10.98
Slipper lobster	54	477	8.84
Crabs	4,368	17,205	3.94
Shrimp (saltwater)	150	939	6.26
Octopus	2,059	5,908	2.87
Squid	415	746	1.80
Limpets (saltwater)	846	3,976	4.70
Precious corals	644	16,100	25.00
Algae	180	969	5.38
** SUBTOTAL **	1,734,987	3,621,145	2.09

Table V.1.14

Hawaii December 1999 Reported Commercial Landings

Species	Pounds	Value	\$/lb
Miscellaneous	304	222	0.73
Sharks	12,127	9,728	0.80
Shark fins	64	1,408	22.00
Eels	17	41	2.41
Bigeye scad (akule)	73,178	104,903	1.43
Mackerel scad	19,077	32,652	1.71
Leatherback	36	60	1.66
Bonfish	17	36	2.10
Milkfish	56	168	3.00
Needlefish	110	146	1.33
Threadfin	19	103	5.44
Mullet	230	1,024	4.45
Pomfret	19,305	31,417	1.63
Snake mackerel	590	881	1.49
Jacks (misc)	1,459	2,947	2.02
Amberjack	280	635	2.27
Blue crevally	78	191	2.45
Pig-lipped ulua	1,586	3,986	2.51
Paapaa ulua	309	747	2.42
White ulua	155	293	1.89
Giant sea bass	4,713	15,614	3.31
Blue spot grouper	52	120	2.30
Snappers	137	489	3.57
Blue lined snapper	5,051	5,682	1.13
Ehu (red snapper)	4,226	18,347	4.34
Gindai (flower snapper)	676	2,519	3.73
Kalekale (pink snapper)	2,097	6,250	2.98
Lehi (silverjaw)	1,447	3,937	2.72
Onaga (red snapper)	24,911	114,744	4.61
Opakapaka (pink snapper)	29,607	124,904	4.22
Uku (gray snapper)	8,175	20,847	2.55
Porgy	55	119	2.17
Squirrelfish	2,198	7,709	3.51
Trumpetfish	41	70	1.71
Scorpionfish	296	1,061	3.58
Mountain bass	393	1,262	3.21
Bigeyes	206	557	2.70
Goatfish	4,451	14,136	3.18
Rudderfish	1,056	1,317	1.25
Damsel fish	64	116	1.81
Hawkfish	51	140	2.75
Wrasse	544	2,228	4.09

Table V.1.14 (Cont.)

Species	Pounds	Value	\$/lb
Parrotfish	2,084	5,175	2.48
Surgeon/tangs	6,690	9,566	1.43
Flounders	4	4	1.00
Triggerfish	4	6	1.60
Filefish	528	706	1.34
Rainbow runner	220	489	2.22
Mahimahi (dolphin)	48,066	119,550	2.49
Barracudas	227	365	1.61
Wahoo	18,090	52,514	2.90
Japanese mackerel	18	13	0.73
Tunas	1,091	9,885	9.06
Skipjack tuna	52,786	102,103	1.93
Yellowfin tuna	242,098	531,547	2.20
Albacore	281,989	362,608	1.29
Bigeye tuna	535,858	1,901,558	3.55
Kawakawa	181	254	1.40
Billfish	1,821	2,619	1.44
Broadbill swordfish	105,133	225,361	2.14
Blue marlin	35,161	55,070	1.57
Black marlin	374	459	1.23
Striped marlin	71,705	124,966	1.74
Shortnose spearfish	27,204	29,119	1.07
Sailfish	420	698	1.66
Ocean moonfish	96,728	88,882	0.92
Spiny lobster	1,433	16,103	11.24
Slipper lobster	17	194	11.43
Crabs	1,585	5,099	3.22
Shrimp (saltwater)	68	431	6.34
Octopus	1,327	3,808	2.87
Squid	11	42	3.82
Limpets (saltwater)	815	3,550	4.36
Sea cucumbers	13	113	8.65
Algae	311	1,353	4.35
** SUBTOTAL **	1,753,504	4,187,962	2.39
** TOTAL **	26,076,246	55,941,877	2.15

Figure V.1.1

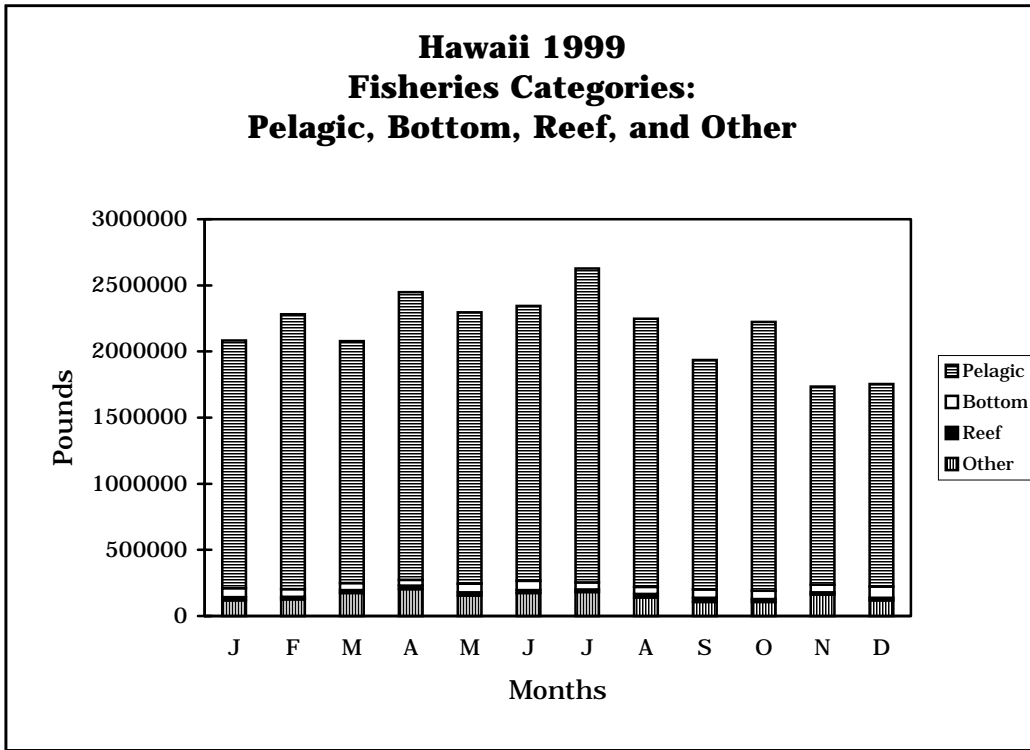


Figure V.1.2

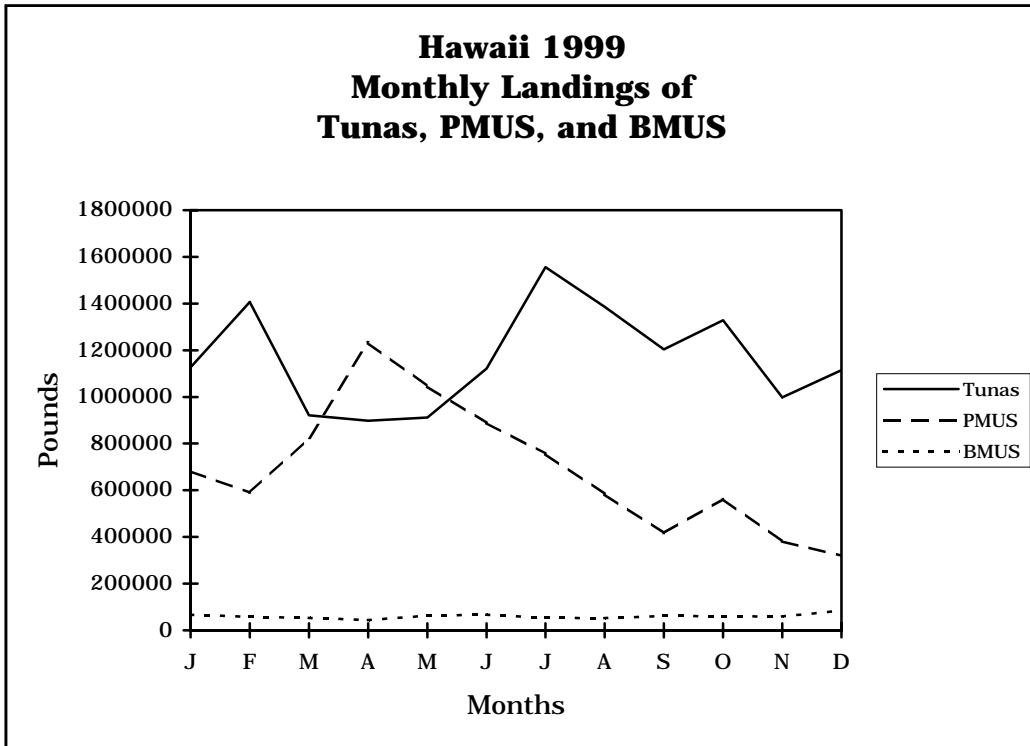


Figure V.1.3

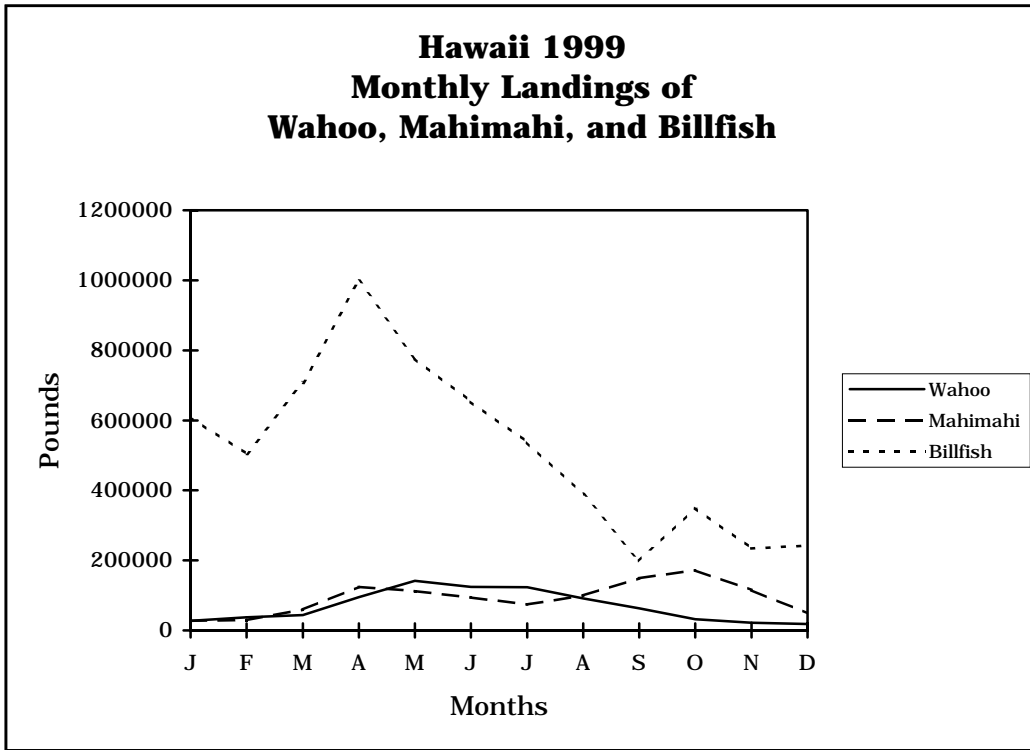


Figure V.1.4

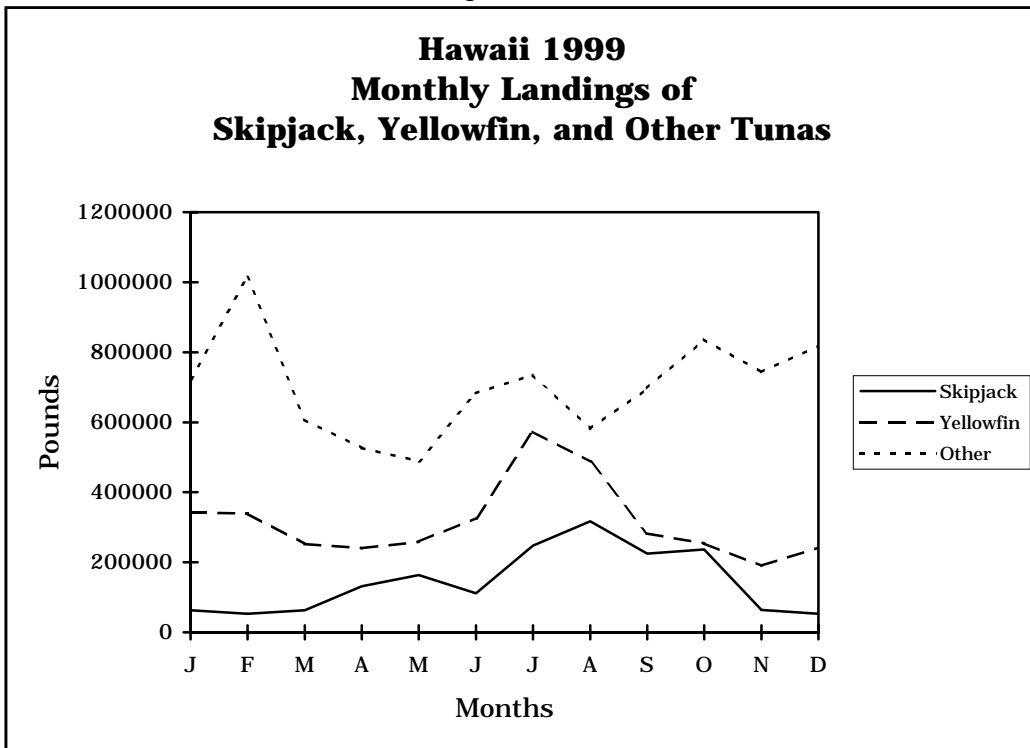


Figure V.2.1

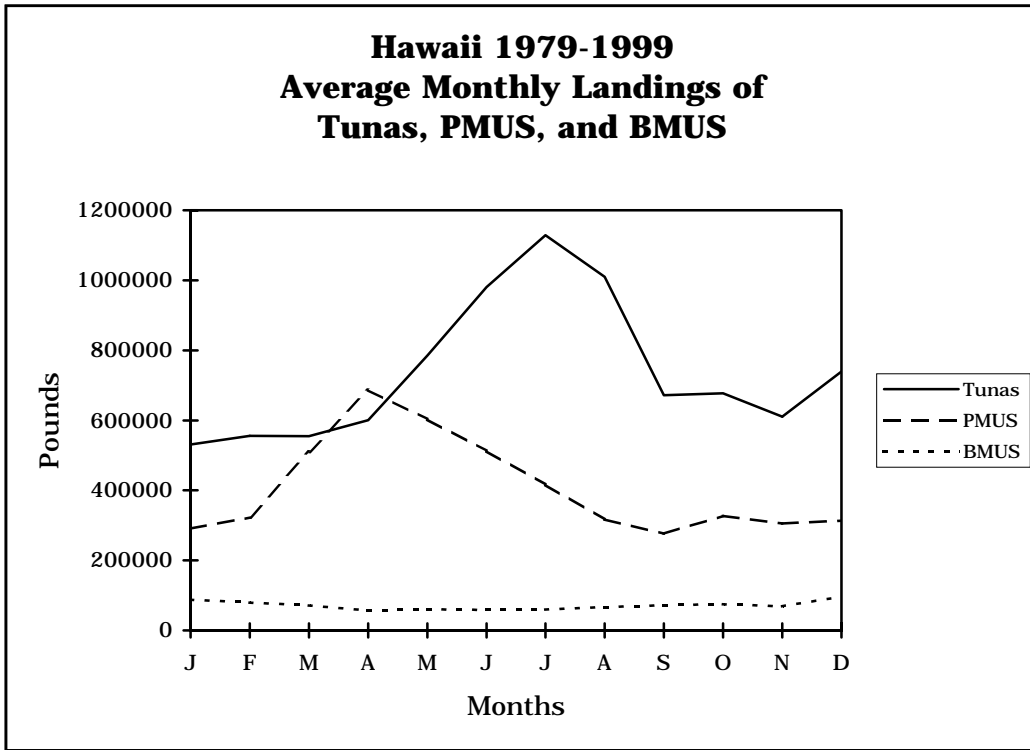


Figure V.2.2

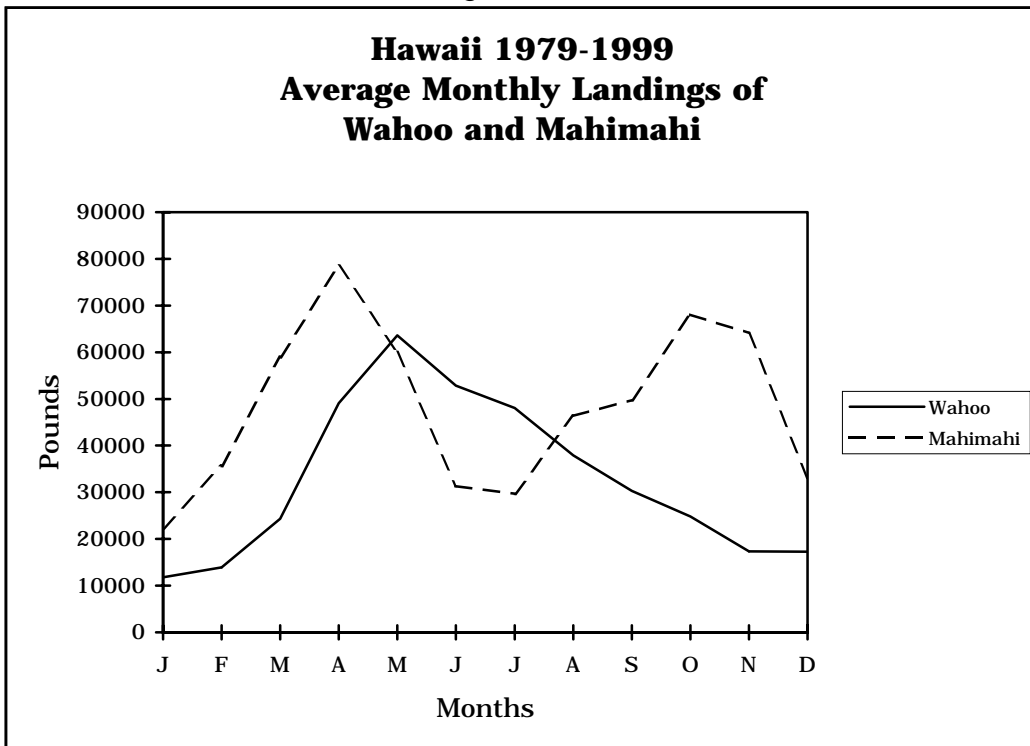


Figure V.2.3

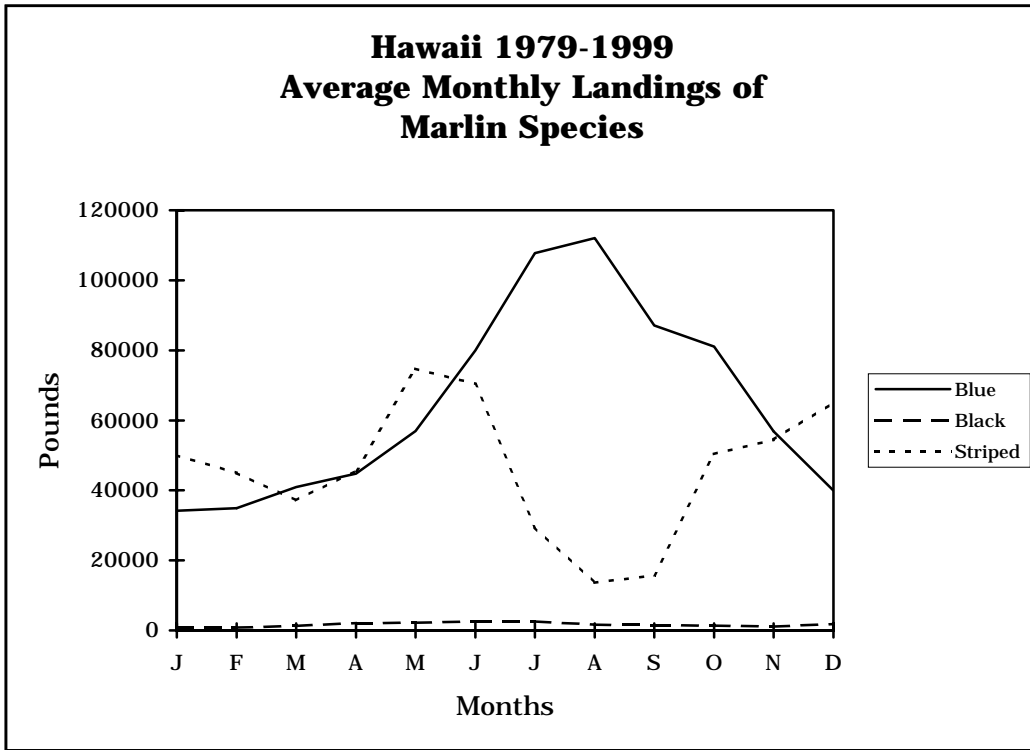


Figure V.2.4

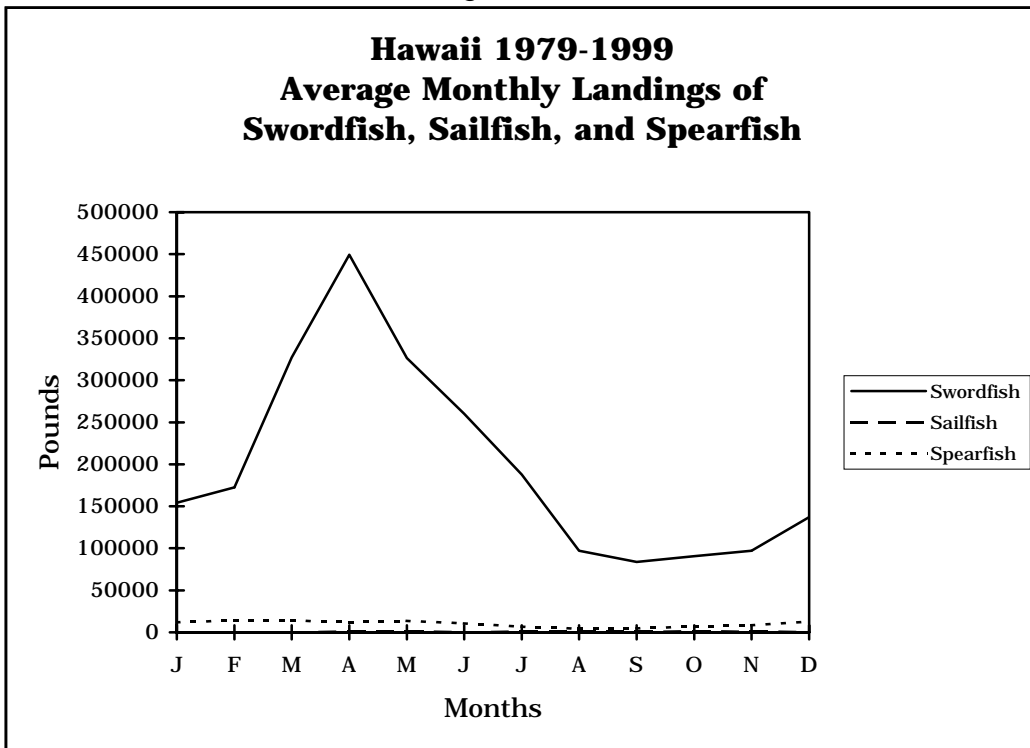


Figure V.2.5

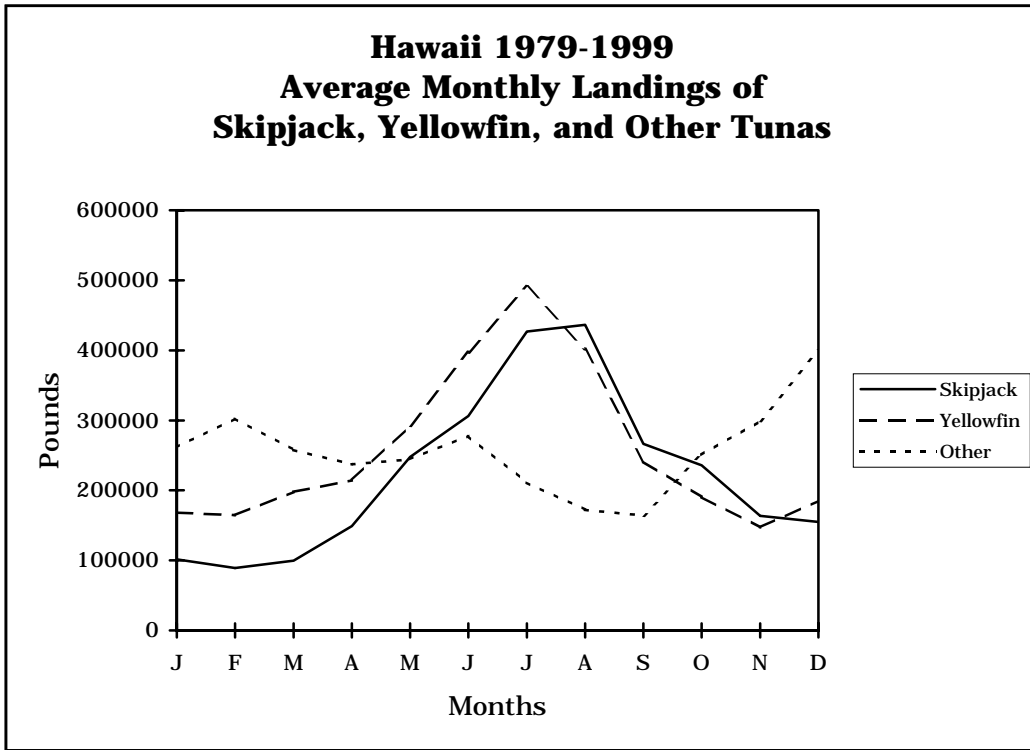


Figure V.2.6

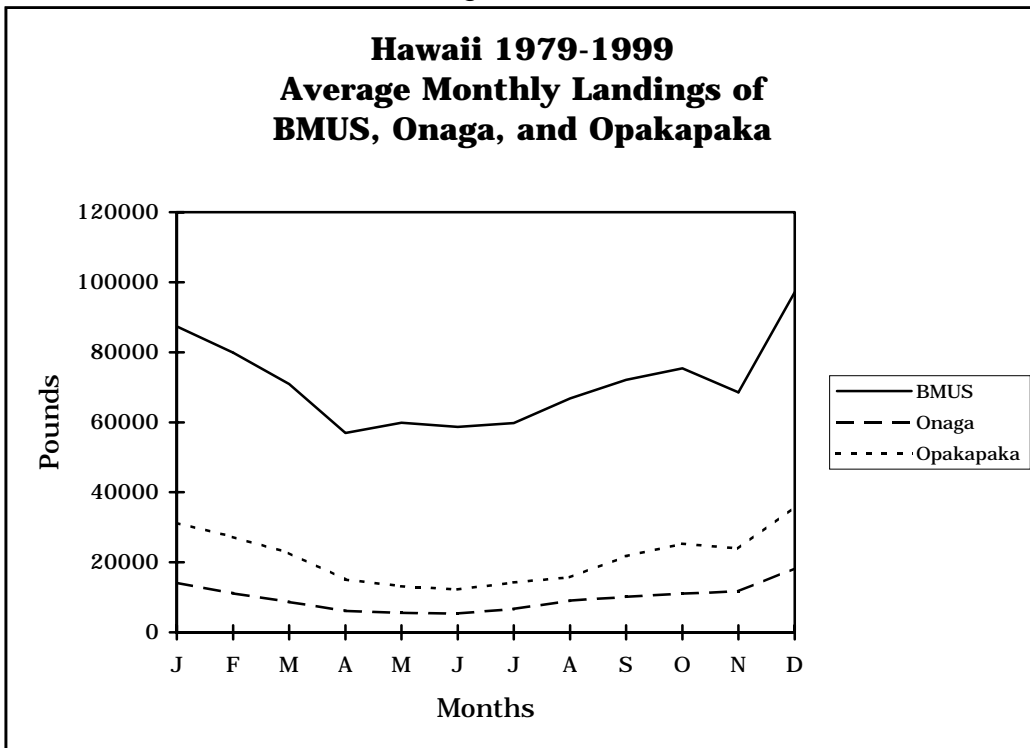


Figure V.2.7

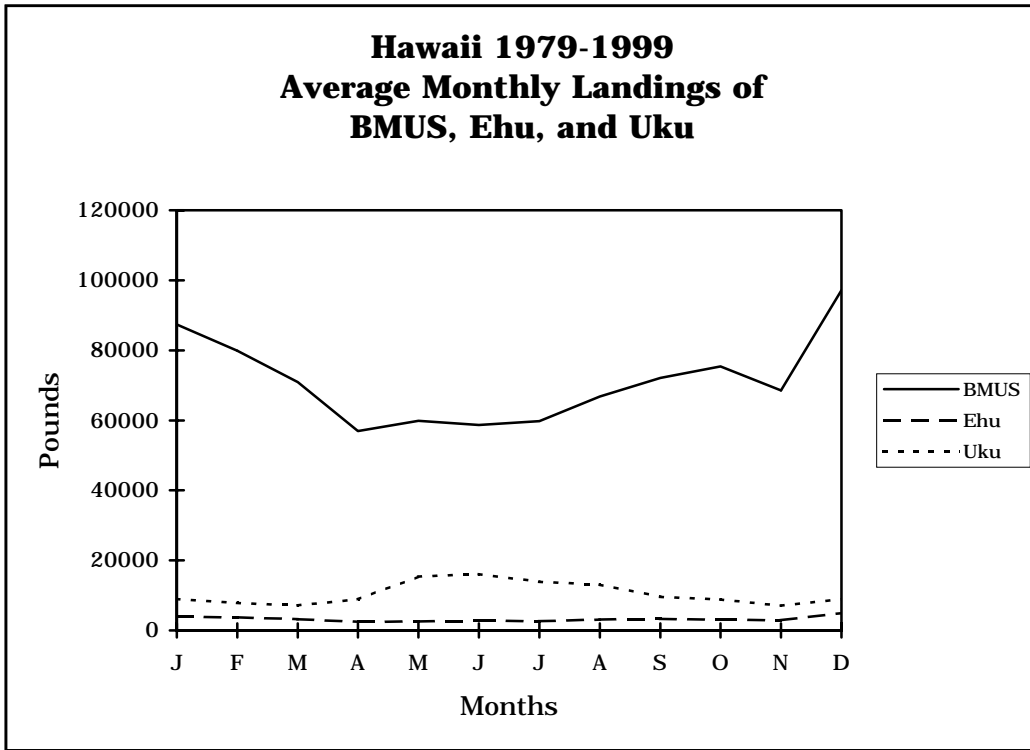


Figure V.3.1

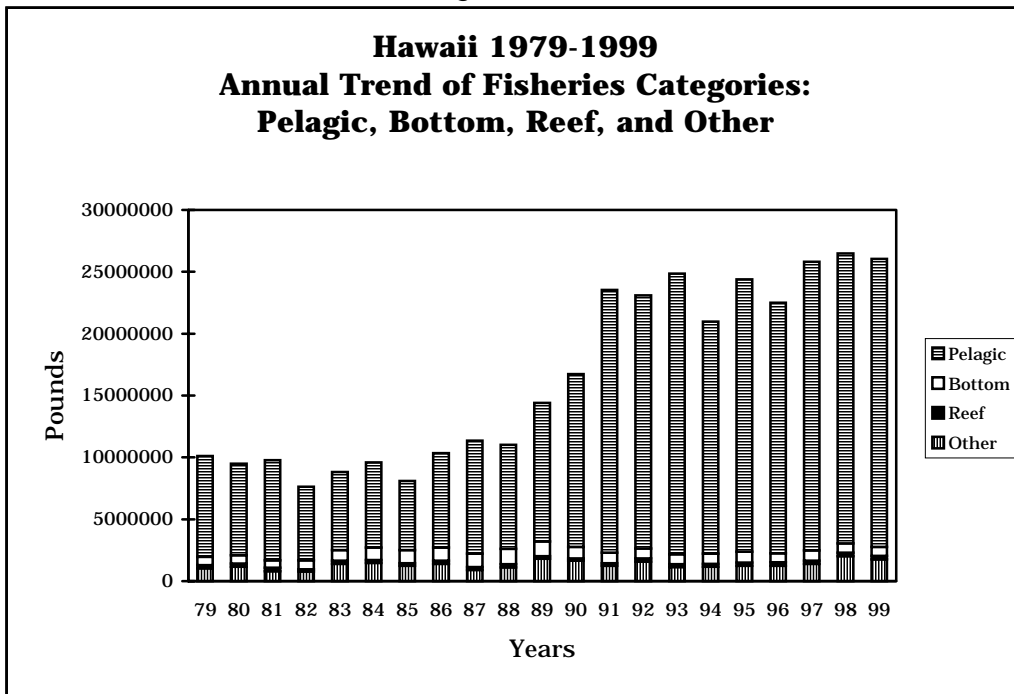


Figure V.3.2

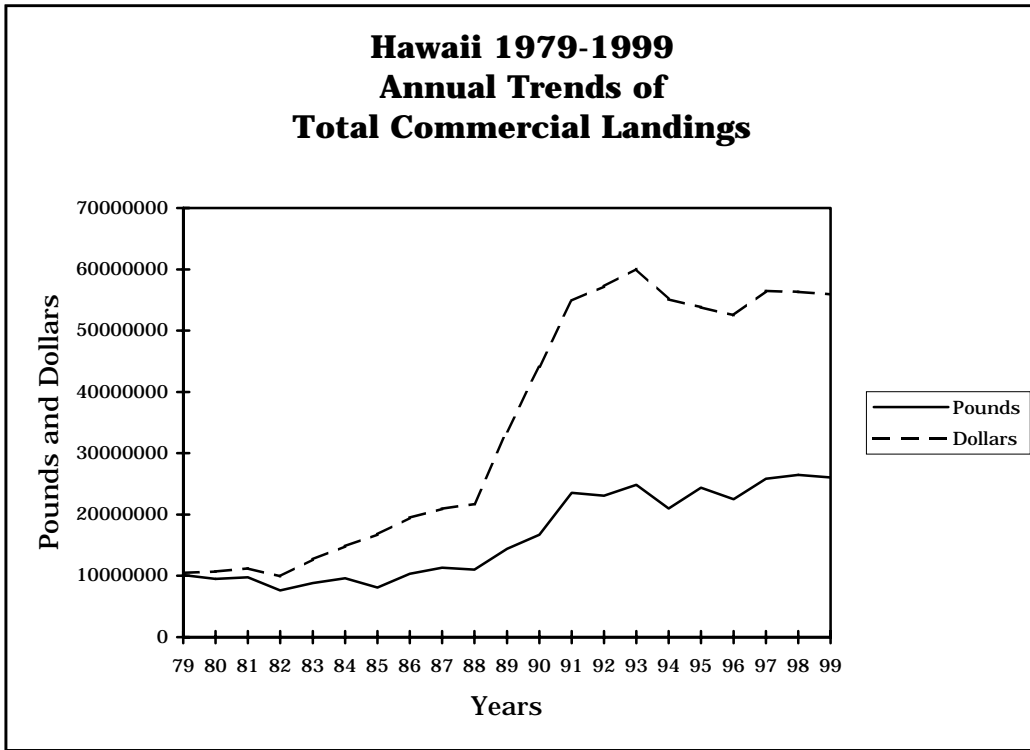


Figure V.3.3

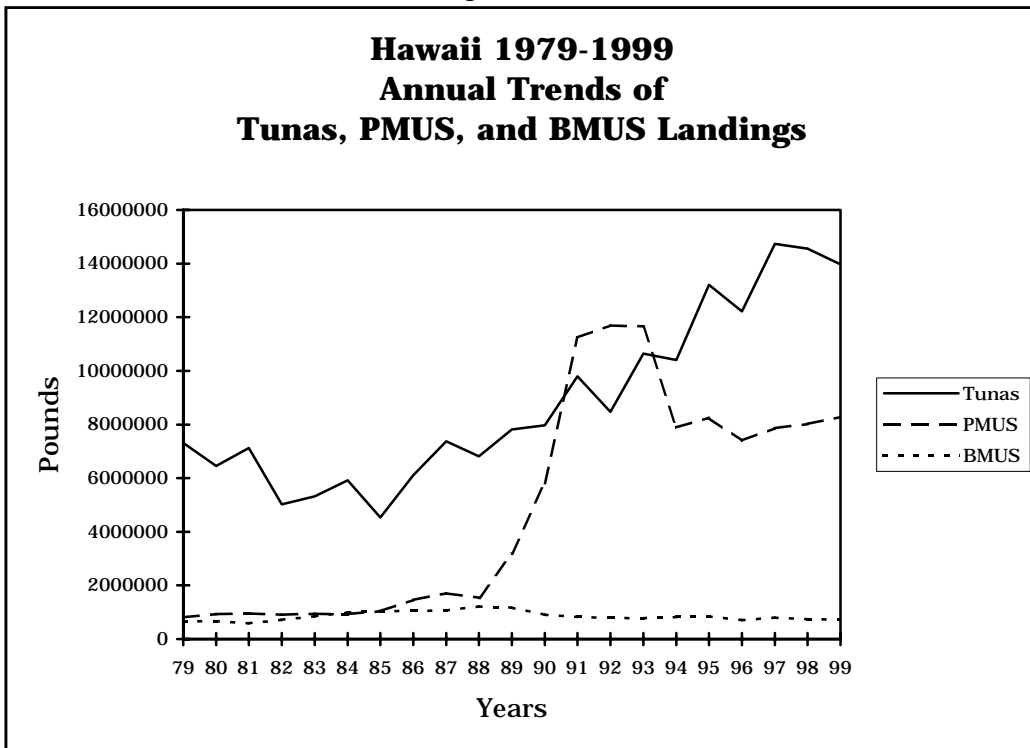


Figure V.3.4

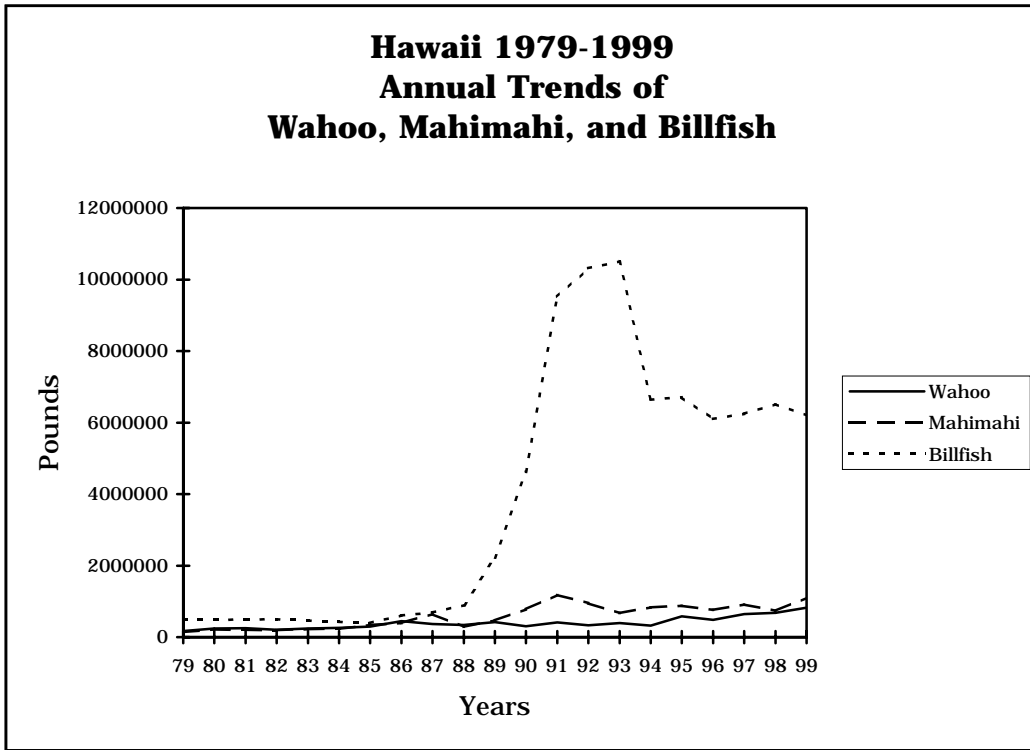


Figure V.3.5

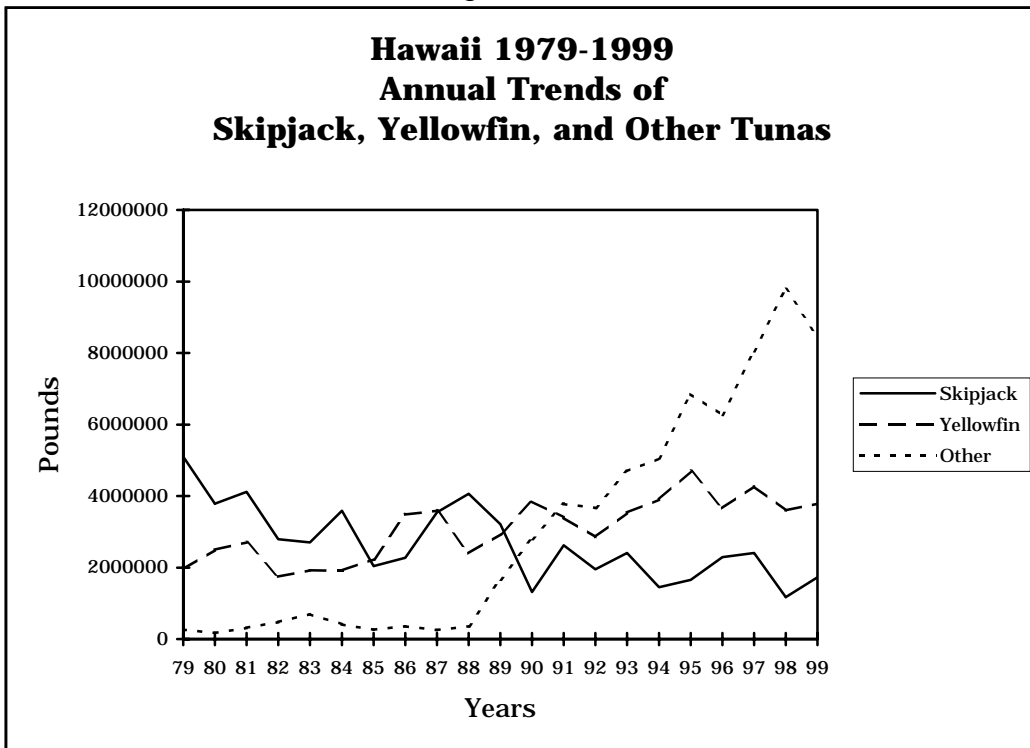


Figure V.4.1

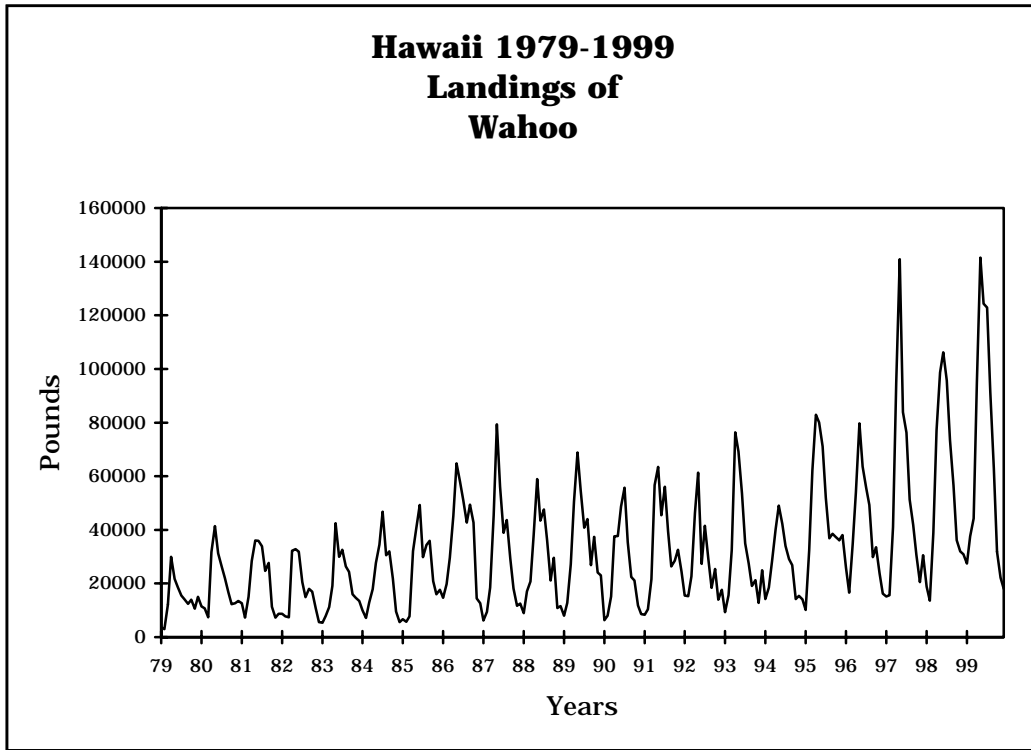


Figure V.4.2

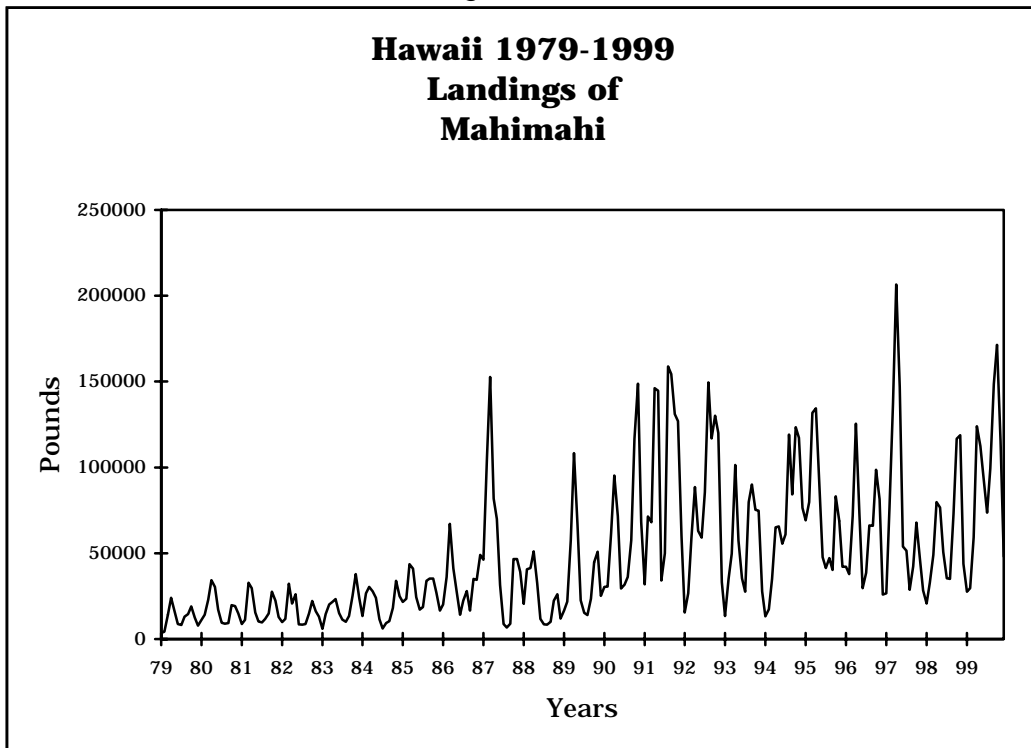


Figure V.4.3

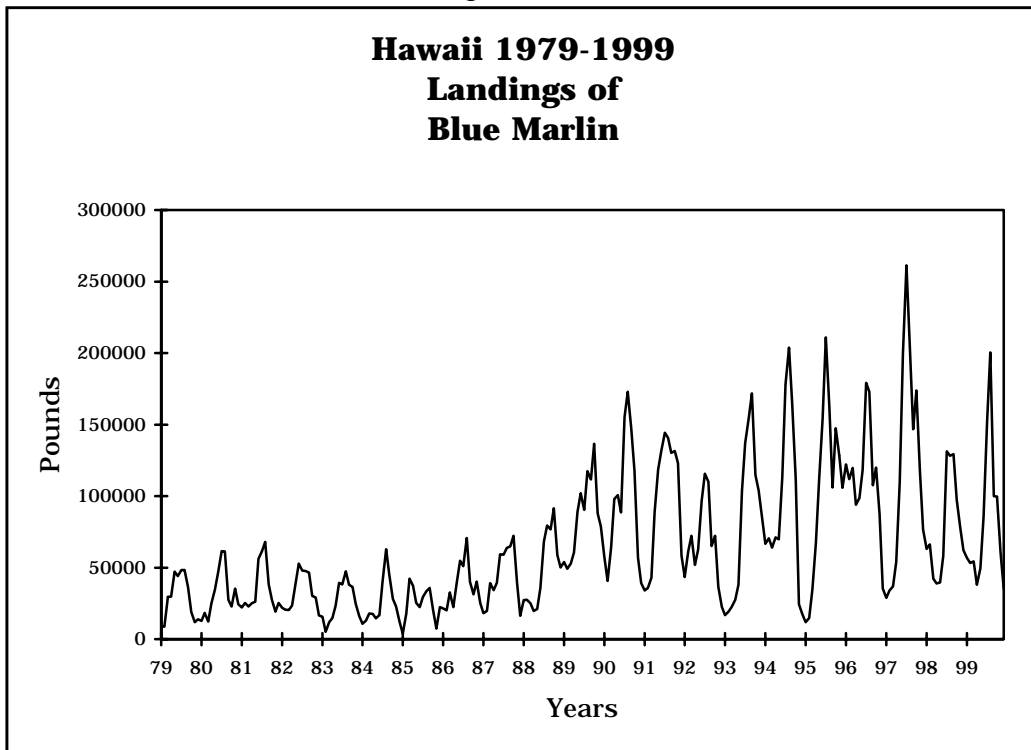


Figure V.4.4

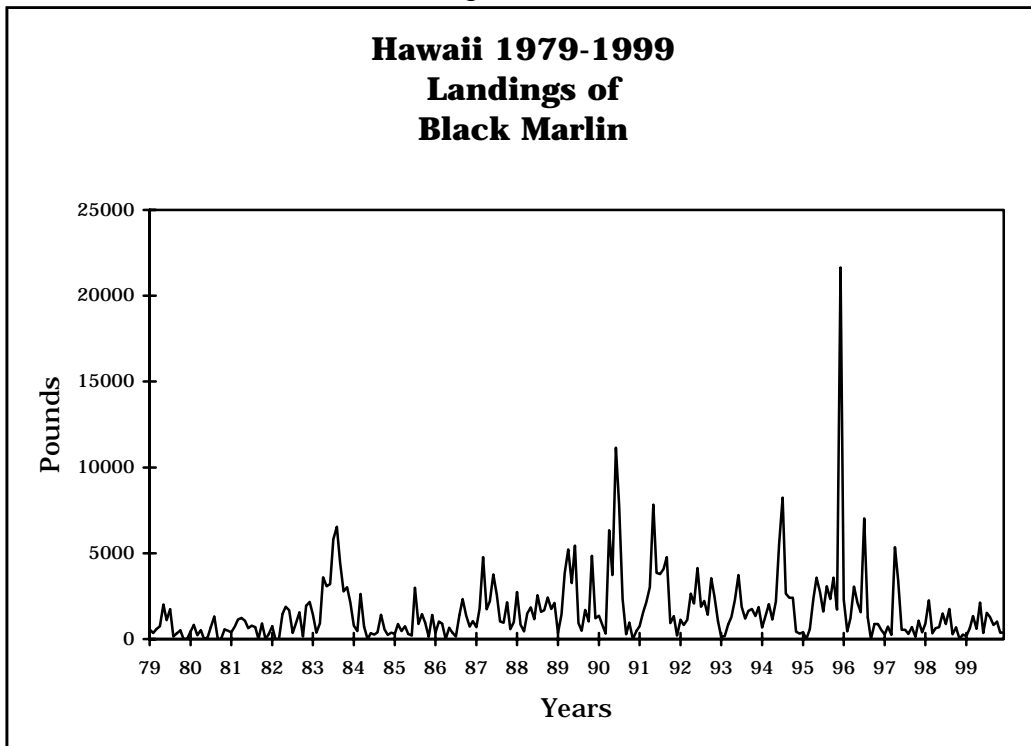


Figure V.4.5

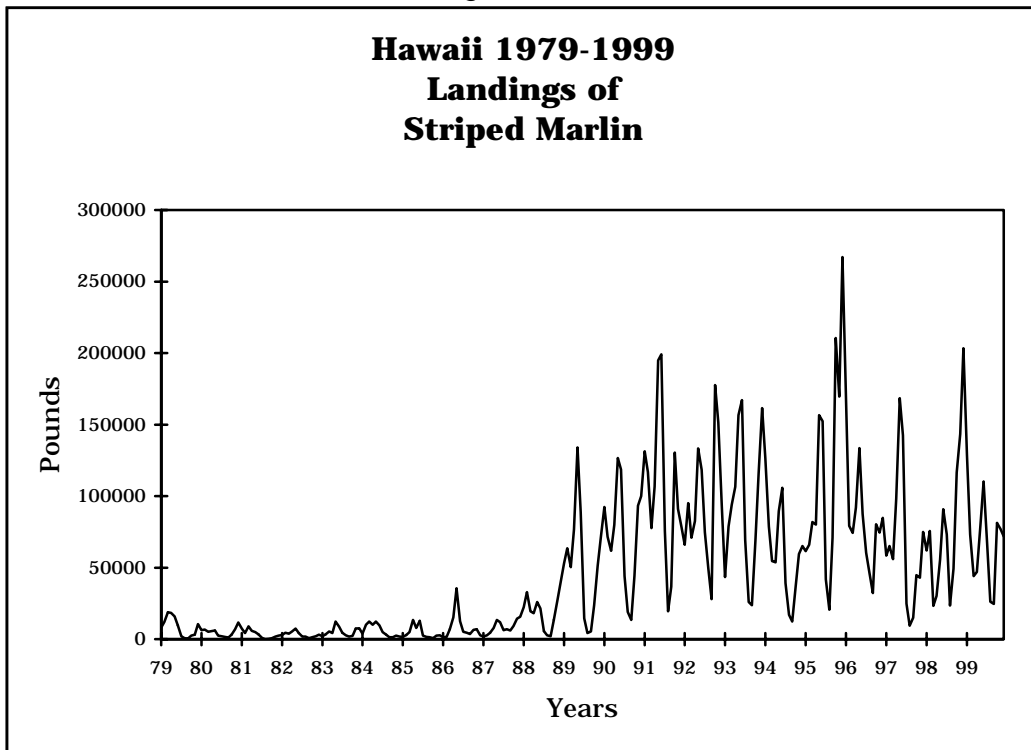


Figure V.4.6

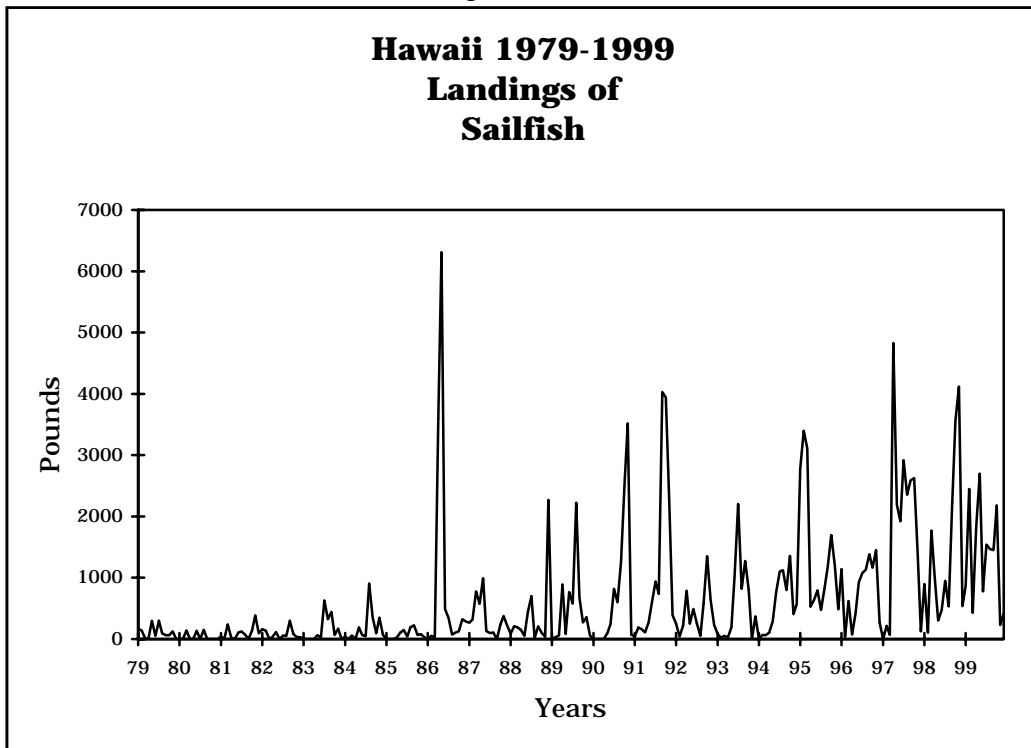


Figure V.4.7

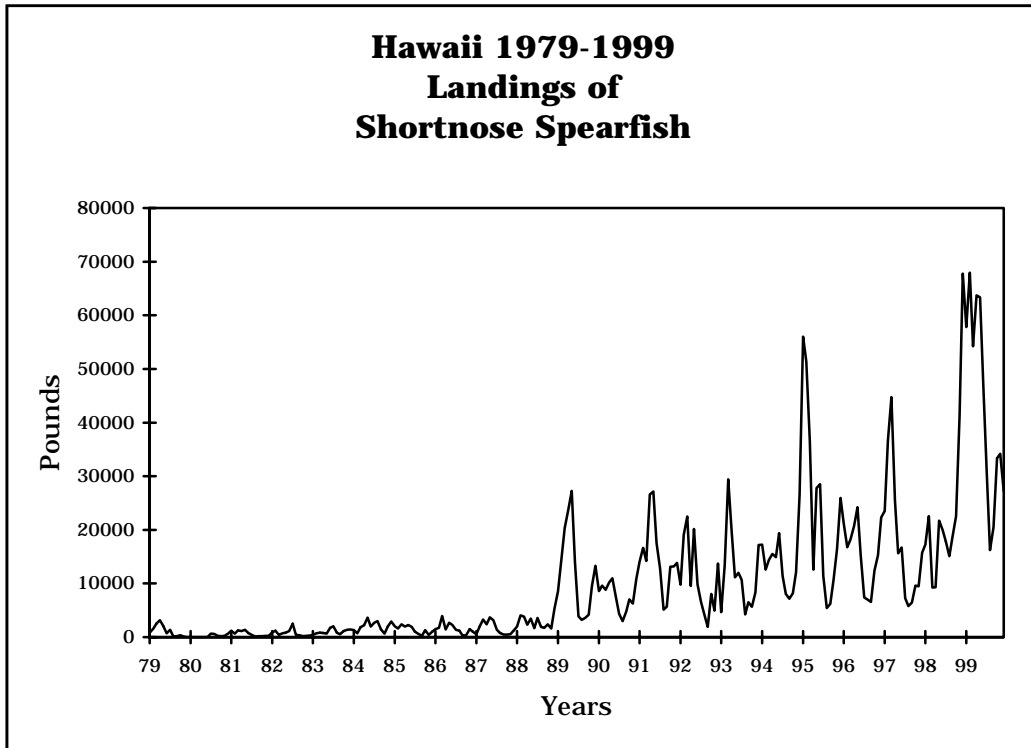


Figure V.4.8

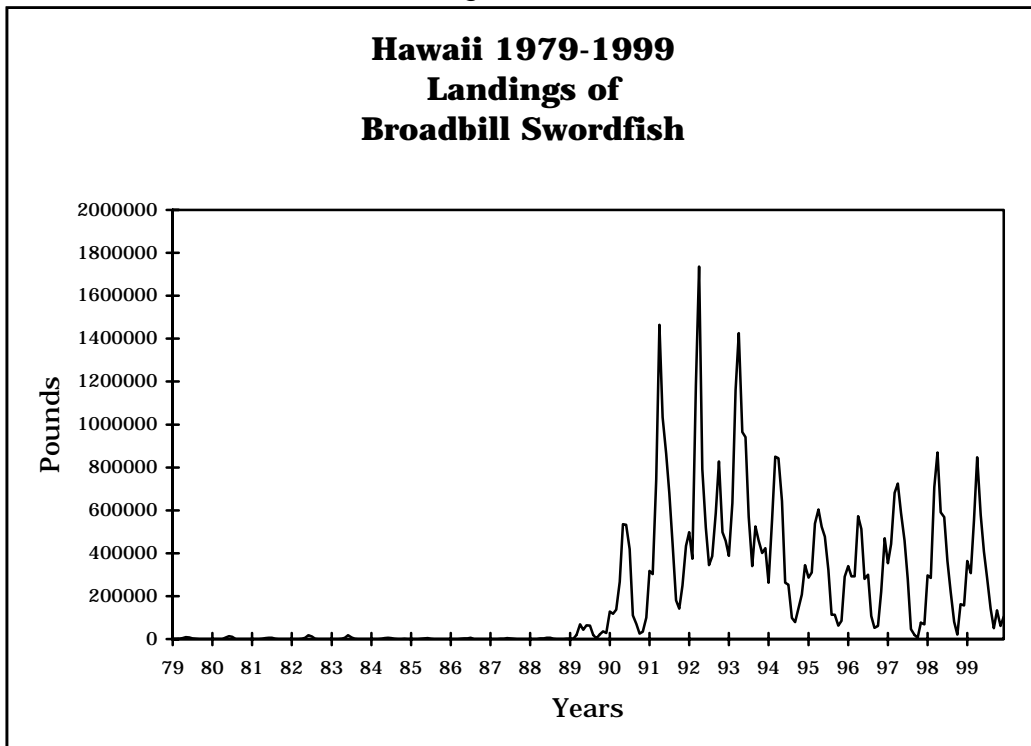


Figure V.4.9

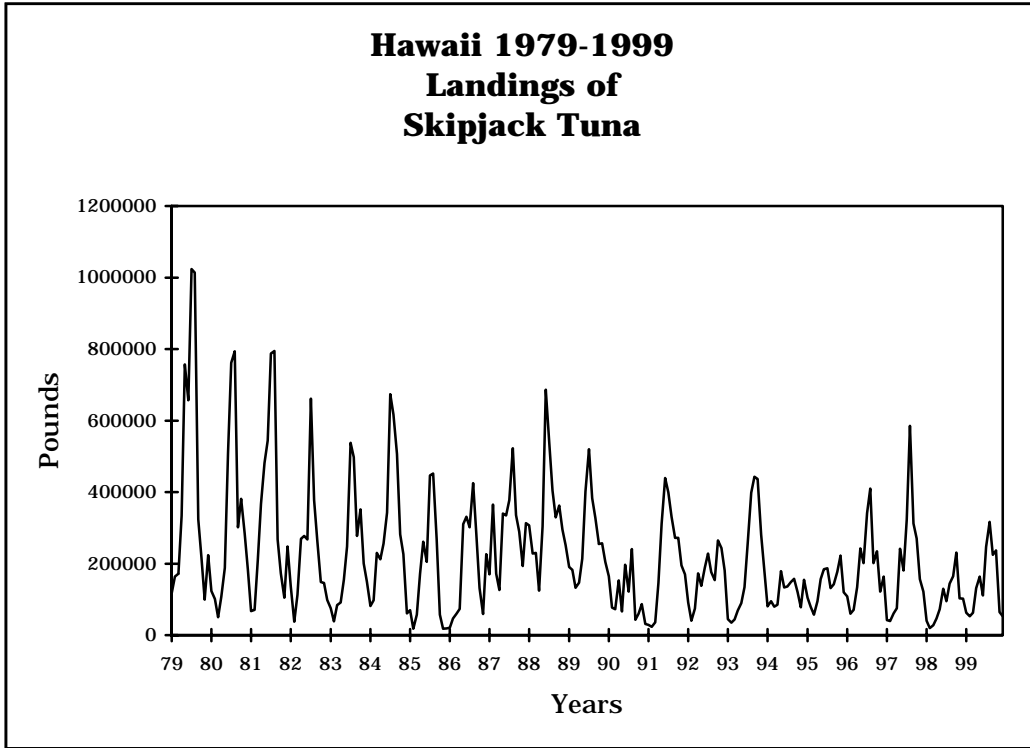


Figure V.4.10

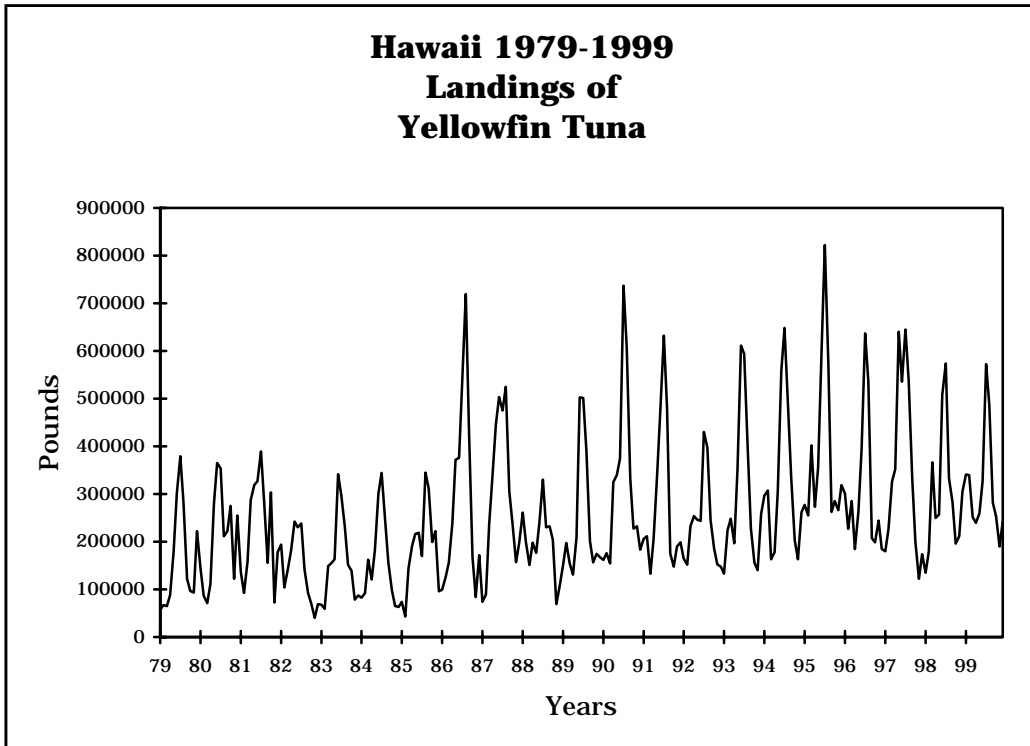


Figure V.4.11

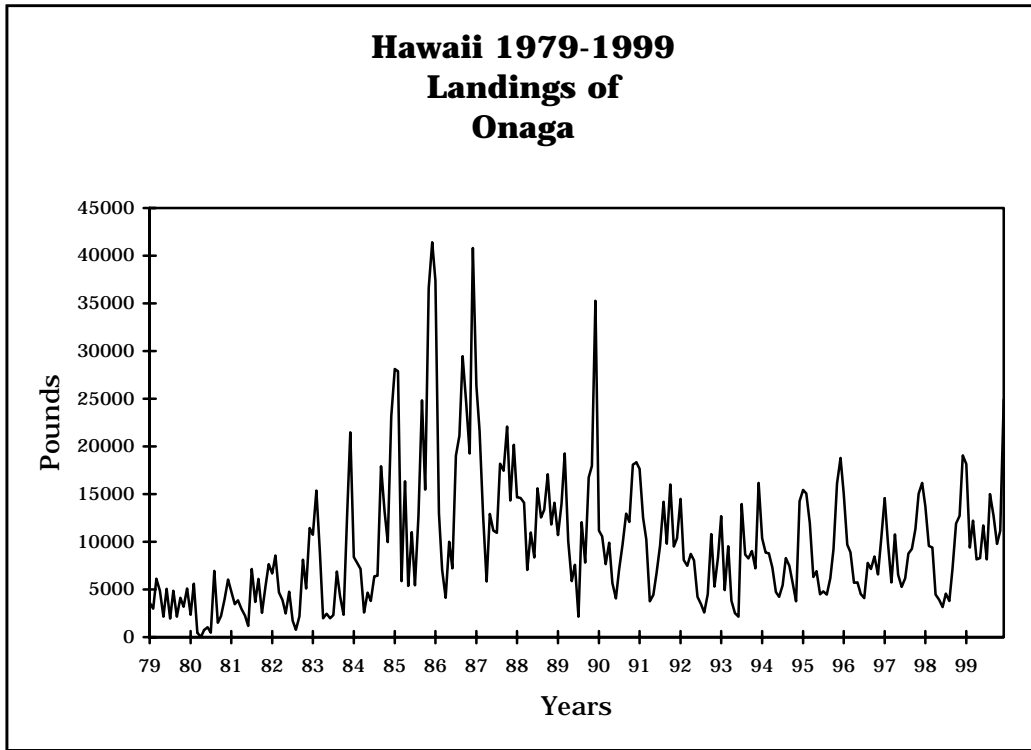


Figure V.4.12

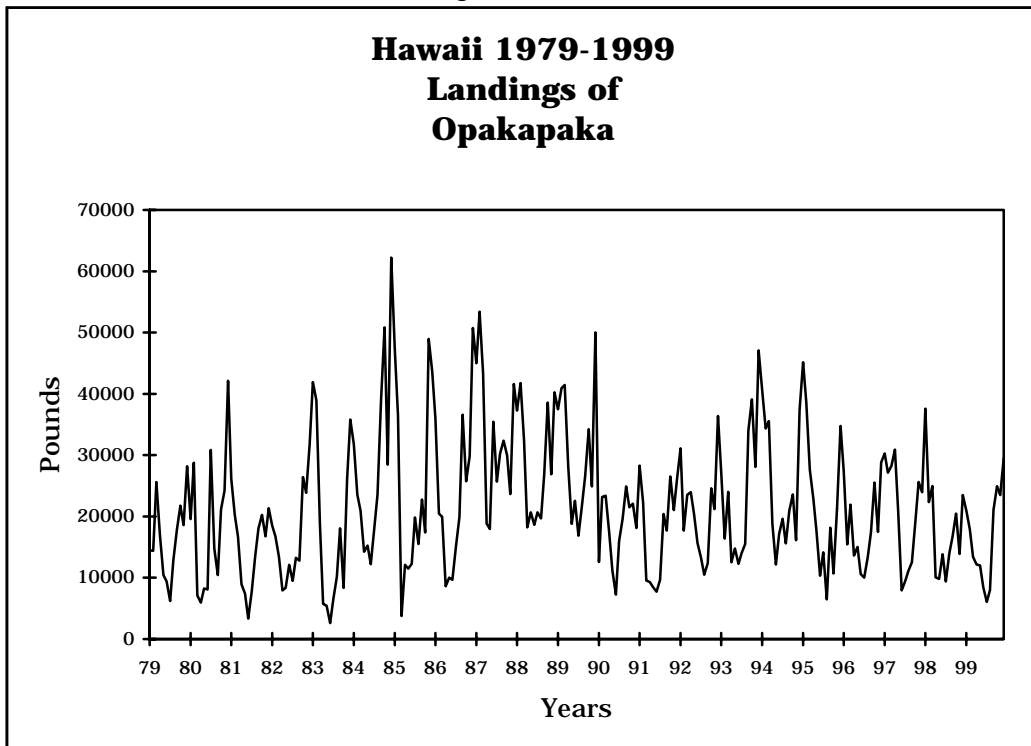


Figure V.4.13

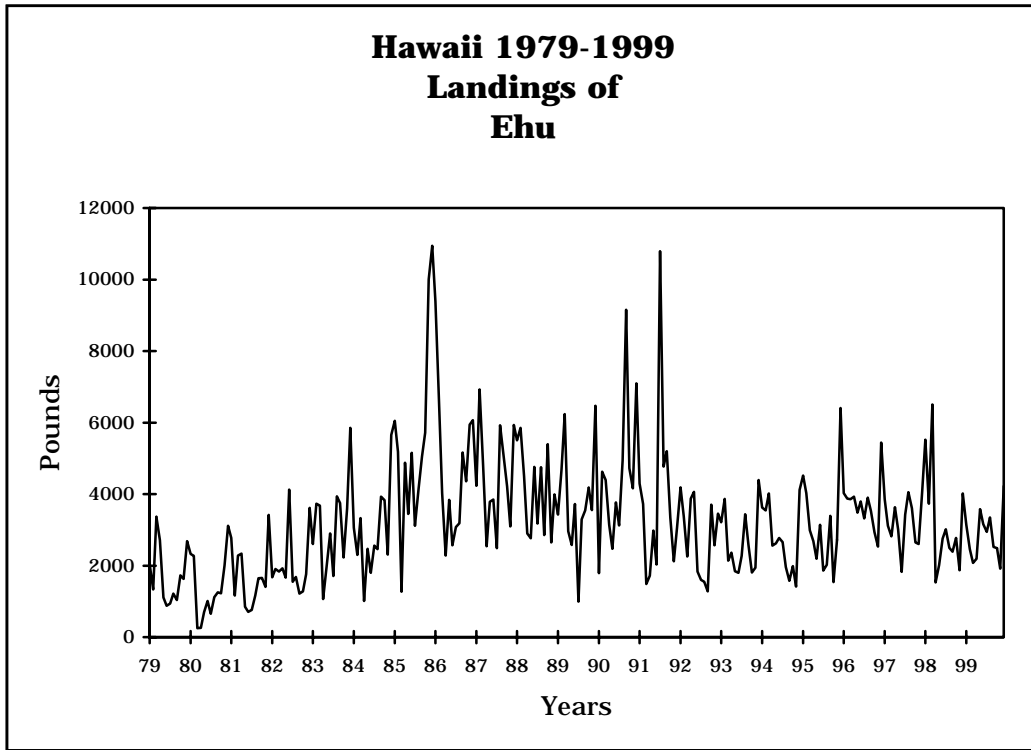


Figure V.4.14

