

GUAM 2010 FISHERY STATISTICS

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

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GUAM 2010 FISHERY STATISTICS

INTRODUCTION

The Territory of Guam is the southernmost, largest, and most populous island in the Mariana Archipelago.

Location: 13.4°N latitude, 144.4°E longitude

Population: about 185,674 (*The World Factbook*, July 2012 est.)

Economy: U.S. military and tourism



Guam:
Source: <https://www.cia.gov/library/publications/the-world-factbook/maps/gq-map.gif>;
The World Factbook

Fishing activities on Guam are divided into two basic categories: offshore and inshore fishing. Offshore fishing typically involves small boats (12 to 48 feet in length) 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.

There are three sources of fish in Guam's commercial market: (1) full-time commercial fishers; (2) part-time commercial fishers; and (3) subsistence or recreational "expense" fishers who frequently sell portions of their catch to help defray costs. Licenses are not required to sell fish in Guam, nor are there any reporting requirements for those selling fish.

DATA COLLECTING

In 1982, WPacFIN began working with staff of the Guam Division of Aquatic and Wildlife Resources (DAWR) and with local fish dealers to obtain information on commercial landings through voluntary use of trip ticket invoices provided by WPacFIN. The tables and graphs in this section are based on data that are summarized from receipts submitted by all participating dealers on Guam and then adjusted to create the estimated total commercial landings based on an estimated annual percent coverage factor.

C.2

In July 1979, the Guam Fishermen's Cooperative was established in Agana through government funding. It subsequently became the central distribution center for fresh local fish. Prior to 1979 there was no central place to sell fish, and fishers 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 system was established whereby the co-op would use forms and coding schemes designed by WPacFIN and 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. Over time, other fish markets began to operate, and DAWR and WPacFIN staff worked with them to obtain data through the voluntary receipt book program.

Data collected on commercial receipt forms include

- Date
- Number of Fishermen
- Area Fished
- Number of Pieces Caught
- Price per Pound
- Fisherman Code
- Hours Fished
- Species Caught
- Pounds Caught

Although a proposed law has been introduced several times that would require reporting by dealers and possibly commercial fishers, it has never made it very far through the legislative process, and the commercial landings data collection system remains voluntary.

DATA PROCESSING

At first, the data were processed at the central WPacFIN office in Honolulu. Beginning in 1994, however, 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 possible, number of pieces is also recorded).

DATA REPORTING

After completing all editing, adjusting, and quality control activities for the commercial landings data, monthly and annual summary reports by species are generated. Numerous standard reports are available, but only the monthly and annual landings by species are provided in this document.

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. Annual reports contain the estimated total landings for each species and the estimated total recorded landings for all species for the calendar year. Graphs

of some of the important statistics are included with the estimated commercial landings summary reports.

Please note that the commercial landings data have been adjusted to reflect total coverage and are referenced as “Estimated Commercial Landings” in the charts and tables. To access the most up-to-date data and charts, please visit the WPacFIN web site, <http://www.pifsc.noaa.gov/wpacfin>.

SPECIES CATEGORIES

The species and species groups that are used in the tables and graphs of Guam’s data are defined in this section. Many of the species included in this report have been recategorized over the years. For example, the Magnuson Fishery Conservation and Management Act of 1976 was amended in 1992 to include tunas in the Pelagic Management Unit Species (PMUS) category. However, this report maintains the original species categorizations from previous FSWP reports for comparative purposes. As such, tunas are kept in a separate category.

I. Pelagic Management Unit Species (PMUS)

Mahimahi	Spearfish
Marlins	Swordfish
Sailfish	Wahoo
Sharks	

II. Bottomfish Management Unit Species (BMUS)

Alfonsin	Kalikali (pink snapper)
Amberjack	Lehi (silverjaw)
Black jack	Mafute (emperor)
Ehu (red snapper)	Onaga (red snapper)
Gindai (flower snapper)	Opakapaka (pink snapper)
Groupers	Snappers
Jacks	Uku (gray snapper)

III. Billfishes

Marlins	Spearfish
Sailfish	Swordfish

IV. Tunas

Dogtooth tuna	Tunas (unknown)
Kawakawa	Yellowfin tuna
Skipjack tuna	

V. Other Tunas

Dogtooth tuna
Kawakawa

Tunas (unknown)

VI. Fisheries Categories

A. *Pelagic Fishes*

Barracudas
Dogtooth tuna
Kawakawa
Mahimahi
Marlins
Monchong
Pelagic fishes (unknown)
Rainbow runner

Sailfish
Sharks
Skipjack tuna
Spearfish
Swordfish
Tunas (unknown)
Wahoo
Yellowfin tuna

B. *Bottomfishes*

Alfonsin
Amberjack
Black jack
Bottomfishes (unknown)
Deep bottomfishes
Ehu (red snapper)
Gindai (flower snapper)
Groupers

Jacks
Kalikali (pink snapper)
Lehi (silverjaw)
Mafute (emperor)
Onaga (red snapper)
Opakapaka (pink snapper)
Tagafi (red snapper)
Uku (gray snapper)

C. *Reef Fishes*

Goatfishes
Humphead parrotfish
Napoleon wrasse
Parrotfishes
Rabbitfishes
Reef fishes (unknown)
Rudderfish (guilli)

Snappers
Squirrelfishes
Surgeonfishes
Sweetlips
Unicornfishes
Wrasses

D. *Other Fishes*

Bigeye scad (atulai)
Coconut crab
Crabs
Eels (freshwater)
Invertebrates
Kona crab
Lemu
Lobsters
Milkfish

Miscellaneous
Mulletts
Octopus
Seaweeds
Shrimp (freshwater)
Shrimp (saltwater)
Squid
Turtles

C.6

Table C-1
Guam Annual 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	426	1,260	2.96
Bigeye scad (atulai)	3,891	11,170	2.87
Black jack	319	746	2.34
Jacks	2,421	6,223	2.57
Mulletts	133	370	2.79
Napoleon wrasse	1,727	4,919	2.85
Bottomfishes (unknown)	47	137	2.93
Deep bottomfishes	18	55	3.00
Ehu (red snapper)	739	2,832	3.83
Gindai (flower snapper)	311	1,243	4.00
Groupers	4,202	13,158	3.13
Kalikali (pink snapper)	450	1,721	3.82
Lehi (silverjaw)	223	830	3.72
Onaga (red snapper)	2,916	14,509	4.98
Opakapaka (pink snapper)	475	1,869	3.94
Uku (gray snapper)	331	910	2.75
Amberjack	127	347	2.73
Reef fishes (unknown)	41,516	126,207	3.04
Rudderfish (guilli)	316	948	3.00
Mafute (emperor)	1,217	3,802	3.12
Squirrelfishes	1,138	3,324	2.92
Parrotfishes	52,651	171,079	3.25
Snappers	79	222	2.81
Surgeonfishes	3,585	10,611	2.96
Unicornfishes	21,661	64,639	2.98
Goatfishes	23	106	4.58
Sweetlips	135	338	2.50
Barracudas	1,792	3,628	2.02
Mahimahi	132,515	289,714	2.19
Marlins	28,927	42,901	1.48
Spearfish	158	238	1.50
Sailfish	858	1,560	1.82
Rainbow runner	1,832	3,731	2.04
Monchong	134	305	2.28
Wahoo	28,683	62,993	2.20
Skipjack tuna	20,684	40,332	1.95
Dogtooth tuna	1,768	2,712	1.53
Yellowfin tuna	7,251	14,851	2.05
Lobsters	1,093	4,011	3.67
Octopus	3,133	9,400	3.00
TOTAL	369,906	919,949	2.49

Table C-2
Guam January 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Bigeye scad (atulai)	681	1,768	2.60
Jacks	12	35	3.00
Groupers	13	38	3.00
Uku (gray snapper)	4	13	3.00
Reef fishes (unknown)	4,177	12,513	3.00
Mafute (emperor)	5	15	3.00
Parrotfishes	3,805	12,368	3.25
Snappers	34	103	3.00
Surgeonfishes	121	363	3.00
Unicornfishes	2,424	7,273	3.00
Barracudas	71	152	2.15
Mahimahi	22,694	50,105	2.21
Marlins	337	634	1.88
Spearfish	32	48	1.50
Sailfish	79	119	1.50
Rainbow runner	38	78	2.08
Wahoo	1,412	3,176	2.25
Skipjack tuna	775	1,550	2.00
Dogtooth tuna	14	28	2.00
Yellowfin tuna	443	890	2.01
Lobsters	9	31	3.65
TOTAL	37,177	91,298	2.46

Table C-3
Guam February 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	3	10	3.00
Bigeye scad (atulai)	230	601	2.61
Jacks	5	14	2.75
Napoleon wrasse	74	204	2.75
Bottomfishes (unknown)	34	103	3.00
Groupers	12	39	3.22
Onaga (red snapper)	238	1,188	5.00
Uku (gray snapper)	8	23	3.00
Reef fishes (unknown)	2,235	6,705	3.00
Rudderfish (guilli)	74	223	3.00
Mafute (emperor)	116	261	2.25
Parrotfishes	2,364	7,685	3.25
Surgeonfishes	428	1,283	3.00
Unicornfishes	1,601	4,803	3.00
Barracudas	239	478	2.00
Mahimahi	36,683	79,127	2.16
Spearfish	51	76	1.50
Rainbow runner	109	230	2.11
Monchong	23	51	2.25
Wahoo	4,104	9,172	2.23
Skipjack tuna	234	468	2.00
Dogtooth tuna	155	249	1.60
Yellowfin tuna	224	477	2.13
Lobsters	58	215	3.74
TOTAL	49,301	113,680	2.31

Table C-4
Guam March 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	13	37	2.75
Jacks	109	292	2.67
Napoleon wrasse	234	683	2.92
Ehu (red snapper)	45	158	3.50
Onaga (red snapper)	23	117	5.00
Uku (gray snapper)	60	165	2.75
Reef fishes (unknown)	3,802	11,405	3.00
Rudderfish (guilli)	140	420	3.00
Mafute (emperor)	43	123	2.83
Squirrelfishes	120	300	2.50
Parrotfishes	2,727	8,862	3.25
Surgeonfishes	128	383	3.00
Unicornfishes	1,601	4,803	3.00
Sweetlips	58	144	2.50
Barracudas	245	491	2.00
Mahimahi	18,768	41,573	2.22
Marlins	229	424	1.85
Sailfish	118	206	1.75
Rainbow runner	57	113	2.00
Wahoo	4,523	10,083	2.23
Skipjack tuna	868	1,735	2.00
Dogtooth tuna	54	85	1.57
Yellowfin tuna	389	833	2.14
Octopus	112	335	3.00
TOTAL	34,465	83,767	2.43

Table C-5
Guam April 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Black jack	85	191	2.25
Jacks	343	905	2.64
Deep bottomfishes	18	55	3.00
Groupers	20	60	3.00
Lehi (silverjaw)	22	76	3.50
Onaga (red snapper)	79	396	5.00
Opakapaka (pink snapper)	4	15	4.00
Reef fishes (unknown)	3,203	9,608	3.00
Mafute (emperor)	23	62	2.65
Squirrelfishes	59	178	3.00
Parrotfishes	3,658	11,887	3.25
Surgeonfishes	239	718	3.00
Unicornfishes	2,896	8,342	2.88
Sweetlips	78	194	2.50
Barracudas	185	397	2.15
Mahimahi	21,159	46,464	2.20
Marlins	739	1,139	1.54
Sailfish	31	46	1.50
Rainbow runner	51	102	2.00
Wahoo	3,838	8,609	2.24
Skipjack tuna	4,325	8,229	1.90
Dogtooth tuna	295	483	1.64
Yellowfin tuna	939	2,014	2.15
Lobsters	28	106	3.75
TOTAL	42,316	100,274	2.37

Table C-6
Guam May 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Jacks	109	286	2.62
Napoleon wrasse	275	794	2.89
Ehu (red snapper)	67	267	4.00
Gindai (flower snapper)	13	51	4.00
Groupers	678	2,188	3.23
Kalikali (pink snapper)	22	88	4.00
Lehi (silverjaw)	11	43	4.00
Onaga (red snapper)	462	2,308	5.00
Opakapaka (pink snapper)	111	443	4.00
Uku (gray snapper)	24	65	2.71
Reef fishes (unknown)	3,280	9,840	3.00
Mafute (emperor)	234	1,036	4.42
Squirrelfishes	63	190	3.00
Parrotfishes	5,213	16,941	3.25
Snappers	16	40	2.50
Surgeonfishes	183	550	3.00
Unicornfishes	1,418	4,253	3.00
Barracudas	86	172	2.00
Mahimahi	9,799	21,805	2.23
Marlins	2,236	3,268	1.46
Sailfish	58	88	1.50
Rainbow runner	138	311	2.25
Wahoo	786	1,768	2.25
Skipjack tuna	4,337	8,432	1.94
Dogtooth tuna	164	260	1.58
Yellowfin tuna	591	1,256	2.13
Lobsters	113	409	3.61
Octopus	39	118	3.00
TOTAL	30,526	77,269	2.53

Table C-7
Guam June 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	65	186	2.87
Black jack	50	100	2.00
Jacks	128	310	2.42
Napoleon wrasse	247	740	3.00
Ehu (red snapper)	256	1,007	3.93
Gindai (flower snapper)	118	470	4.00
Groupers	261	803	3.07
Kalikali (pink snapper)	53	190	3.62
Lehi (silverjaw)	98	379	3.85
Onaga (red snapper)	410	2,049	5.00
Opakapaka (pink snapper)	194	777	4.00
Uku (gray snapper)	15	43	2.85
Amberjack	43	115	2.66
Reef fishes (unknown)	5,152	15,819	3.07
Mafute (emperor)	103	308	3.00
Squirrelfishes	186	523	2.81
Parrotfishes	6,324	20,523	3.25
Snappers	20	55	2.75
Surgeonfishes	129	345	2.67
Unicornfishes	1,538	4,613	3.00
Barracudas	25	52	2.07
Mahimahi	729	1,641	2.25
Marlins	999	1,470	1.47
Spearfish	37	55	1.50
Rainbow runner	151	339	2.25
Monchong	38	94	2.50
Wahoo	544	1,224	2.25
Skipjack tuna	2,828	5,639	1.99
Dogtooth tuna	80	120	1.50
Yellowfin tuna	863	1,854	2.15
Lobsters	118	444	3.75
Octopus	178	533	3.00
TOTAL	21,978	62,817	2.86

Table C-8
Guam July 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	58	173	3.00
Jacks	44	111	2.52
Napoleon wrasse	162	445	2.75
Ehu (red snapper)	211	773	3.66
Groupers	194	589	3.03
Lehi (silverjaw)	49	172	3.50
Onaga (red snapper)	664	3,321	5.00
Uku (gray snapper)	43	131	3.05
Reef fishes (unknown)	2,960	8,881	3.00
Mafute (emperor)	80	240	3.00
Squirrelfishes	92	275	3.00
Parrotfishes	5,730	18,623	3.25
Snappers	9	25	2.75
Surgeonfishes	428	1,193	2.79
Unicornfishes	782	2,345	3.00
Barracudas	54	108	2.00
Mahimahi	107	240	2.25
Marlins	4,488	7,358	1.64
Rainbow runner	111	222	2.00
Wahoo	113	255	2.25
Skipjack tuna	2,528	4,839	1.91
Dogtooth tuna	357	463	1.30
Yellowfin tuna	1,373	2,472	1.80
Lobsters	61	228	3.75
Octopus	494	1,483	3.00
TOTAL	21,191	54,963	2.59

Table C-9
Guam August 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	56	168	3.00
Jacks	367	957	2.61
Napoleon wrasse	154	428	2.78
Ehu (red snapper)	29	117	4.00
Gindai (flower snapper)	19	77	4.00
Groupers	338	1,078	3.19
Kalikali (pink snapper)	60	240	4.00
Onaga (red snapper)	259	1,296	5.00
Opakapaka (pink snapper)	21	83	4.00
Uku (gray snapper)	19	56	2.92
Reef fishes (unknown)	4,143	12,841	3.10
Mafute (emperor)	190	570	3.00
Squirrelfishes	107	320	3.00
Parrotfishes	4,679	15,204	3.25
Surgeonfishes	341	1,014	2.97
Unicornfishes	2,276	6,828	3.00
Barracudas	97	198	2.05
Mahimahi	213	266	1.25
Marlins	8,520	12,525	1.47
Sailfish	277	620	2.24
Rainbow runner	358	715	2.00
Wahoo	710	1,581	2.23
Skipjack tuna	980	1,980	2.02
Dogtooth tuna	70	105	1.50
Yellowfin tuna	801	1,420	1.77
Lobsters	215	787	3.66
Octopus	431	1,293	3.00
TOTAL	25,728	62,764	2.44

Table C-10
Guam September 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	13	40	3.00
Bigeye scad (atulai)	653	1,960	3.00
Black jack	13	34	2.70
Jacks	278	714	2.57
Mulletts	22	65	3.00
Napoleon wrasse	150	413	2.75
Ehu (red snapper)	28	113	4.00
Gindai (flower snapper)	124	497	4.00
Groupers	672	2,159	3.21
Kalikali (pink snapper)	245	930	3.80
Lehi (silverjaw)	11	44	4.00
Onaga (red snapper)	388	1,938	5.00
Opakapaka (pink snapper)	77	307	4.00
Uku (gray snapper)	33	76	2.35
Amberjack	35	105	3.00
Reef fishes (unknown)	3,324	10,229	3.08
Mafute (emperor)	221	610	2.76
Squirrelfishes	73	220	3.00
Parrotfishes	3,883	12,621	3.25
Surgeonfishes	498	1,493	3.00
Unicornfishes	1,648	4,943	3.00
Goatfishes	18	92	5.00
Barracudas	46	92	2.00
Mahimahi	28	64	2.25
Marlins	5,098	7,438	1.46
Sailfish	33	62	1.85
Rainbow runner	187	374	2.00
Monchong	16	36	2.25
Wahoo	518	1,166	2.25
Skipjack tuna	459	929	2.02
Dogtooth tuna	98	148	1.50
Yellowfin tuna	407	830	2.04
Lobsters	210	772	3.68
Octopus	432	1,295	3.00
TOTAL	19,937	52,805	2.65

Table C-11
Guam October 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	38	115	3.00
Bigeye scad (atulai)	1,683	5,048	3.00
Black jack	169	415	2.45
Jacks	674	1,624	2.41
Napoleon wrasse	334	947	2.83
Ehu (red snapper)	66	252	3.82
Gindai (flower snapper)	22	89	4.00
Groupers	650	2,085	3.21
Kalikali (pink snapper)	60	230	3.83
Onaga (red snapper)	109	546	5.00
Opakapaka (pink snapper)	3	10	4.00
Uku (gray snapper)	112	300	2.69
Reef fishes (unknown)	3,643	11,286	3.10
Mafute (emperor)	120	333	2.77
Squirrelfishes	34	107	3.12
Parrotfishes	4,497	14,614	3.25
Surgeonfishes	438	1,315	3.00
Unicornfishes	1,695	5,085	3.00
Barracudas	260	520	2.00
Mahimahi	382	855	2.24
Marlins	3,553	4,681	1.32
Rainbow runner	234	450	1.92
Wahoo	1,394	3,116	2.23
Skipjack tuna	1,022	1,965	1.92
Dogtooth tuna	138	222	1.62
Yellowfin tuna	590	1,383	2.34
Lobsters	104	387	3.73
Octopus	568	1,703	3.00
TOTAL	22,590	59,682	2.64

Table C-12
Guam November 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	10	25	2.50
Bigeye scad (atulai)	366	1,098	3.00
Jacks	217	615	2.83
Mulletts	111	305	2.75
Napoleon wrasse	97	266	2.75
Bottomfishes (unknown)	13	34	2.75
Ehu (red snapper)	8	30	4.00
Gindai (flower snapper)	4	17	4.00
Groupers	642	1,774	2.76
Onaga (red snapper)	113	563	5.00
Uku (gray snapper)	14	39	2.75
Amberjack	17	46	2.75
Reef fishes (unknown)	2,515	7,625	3.03
Rudderfish (guilli)	73	220	3.00
Mafute (emperor)	10	30	3.00
Squirrelfishes	62	185	3.00
Parrotfishes	4,448	14,457	3.25
Surgeonfishes	235	705	3.00
Unicornfishes	1,769	5,308	3.00
Goatfishes	5	15	3.00
Barracudas	215	429	2.00
Mahimahi	7,028	15,272	2.17
Marlins	1,098	1,724	1.57
Spearfish	39	59	1.50
Sailfish	78	145	1.85
Rainbow runner	277	556	2.01
Monchong	18	44	2.50
Wahoo	1,682	3,674	2.19
Skipjack tuna	959	1,918	2.00
Dogtooth tuna	174	282	1.62
Yellowfin tuna	268	576	2.15
Lobsters	102	364	3.57
Octopus	360	1,080	3.00
TOTAL	23,025	59,479	2.58

Table C-13
Guam December 2010 Estimated Commercial Landings

Species	Pounds	Value (\$)	Price/Lb (\$)
Miscellaneous	169	508	3.00
Bigeye scad (atulai)	278	696	2.50
Black jack	3	6	2.50
Jacks	135	360	2.67
Ehu (red snapper)	29	117	4.00
Gindai (flower snapper)	11	43	4.00
Groupers	722	2,345	3.25
Kalikali (pink snapper)	11	43	4.00
Lehi (silverjaw)	32	117	3.64
Onaga (red snapper)	172	790	4.60
Opakapaka (pink snapper)	66	234	3.54
Amberjack	32	81	2.53
Reef fishes (unknown)	3,084	9,454	3.07
Rudderfish (guilli)	28	85	3.00
Mafute (emperor)	72	215	3.00
Squirrelfishes	343	1,028	3.00
Parrotfishes	5,323	17,294	3.25
Surgeonfishes	418	1,251	3.00
Unicornfishes	2,016	6,047	3.00
Barracudas	269	539	2.00
Mahimahi	14,923	32,302	2.16
Marlins	1,632	2,239	1.37
Sailfish	183	275	1.50
Rainbow runner	123	240	1.96
Monchong	41	82	2.00
Wahoo	9,059	19,167	2.12
Skipjack tuna	1,371	2,649	1.93
Dogtooth tuna	169	267	1.58
Yellowfin tuna	364	848	2.33
Lobsters	75	267	3.54
Octopus	521	1,563	3.00
TOTAL	41,672	101,150	2.43

The following are summary charts of the major species and species groups by month:

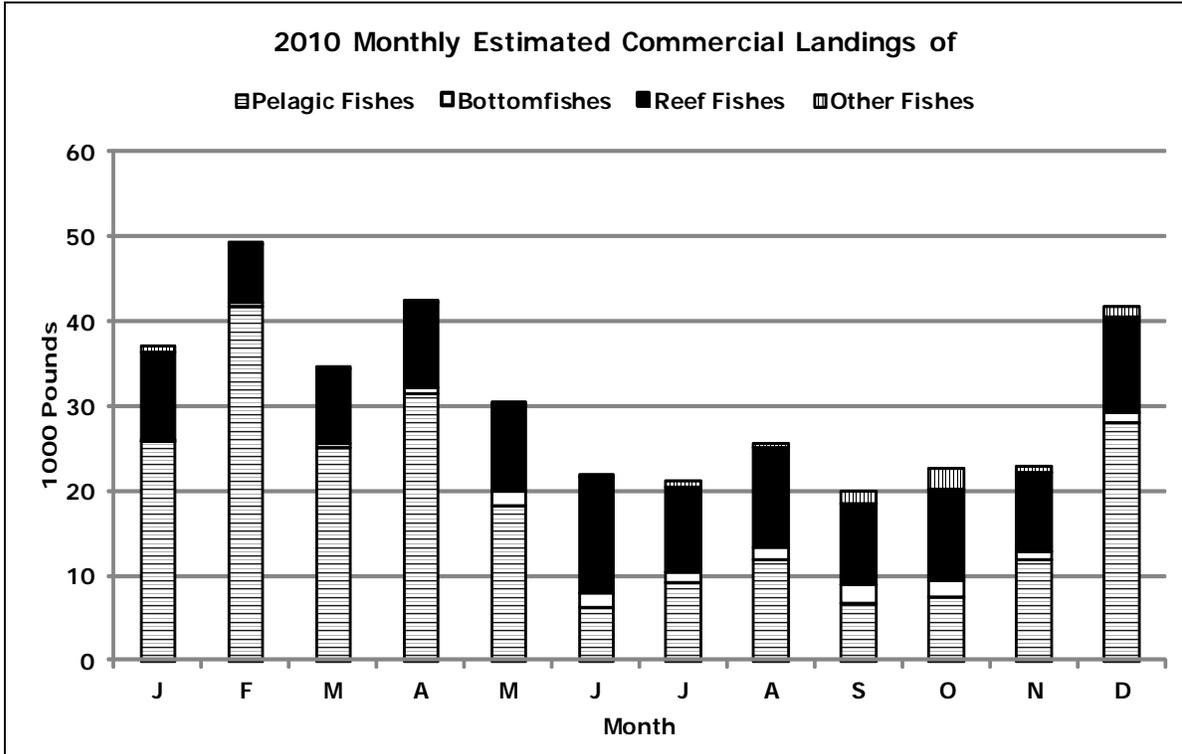


Figure C-1-1

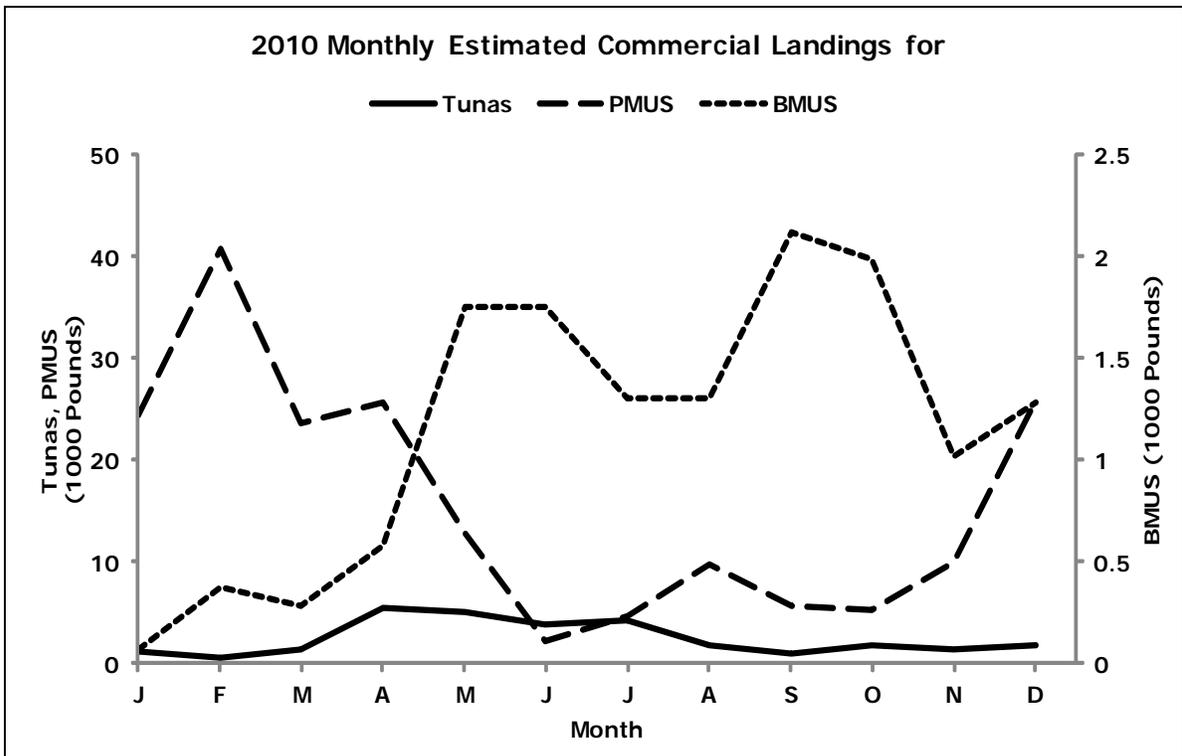


Figure C-1-2

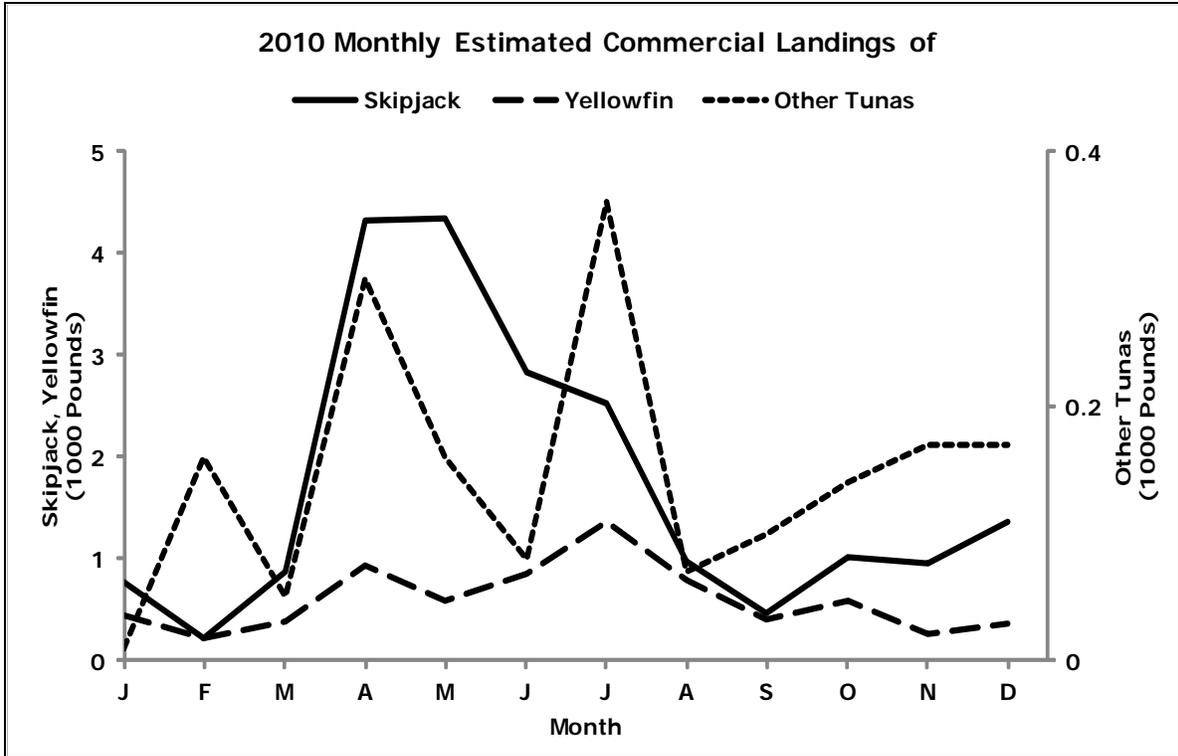


Figure C-1-3

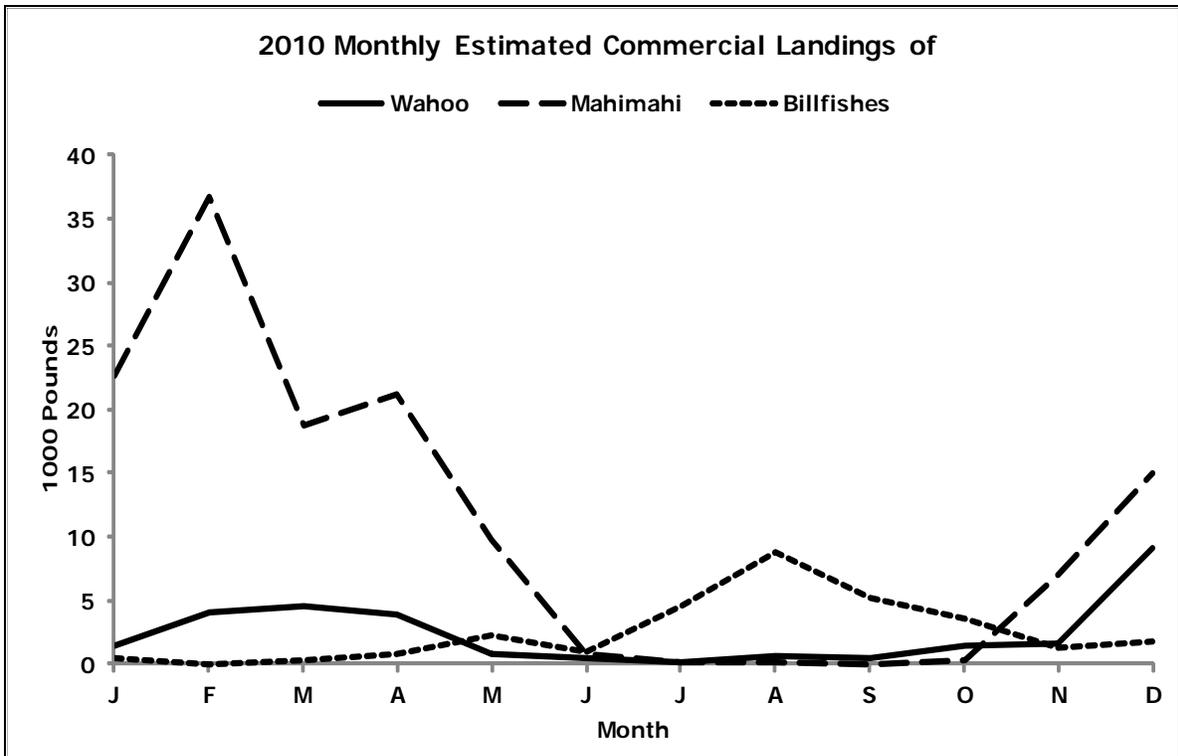


Figure C-1-4

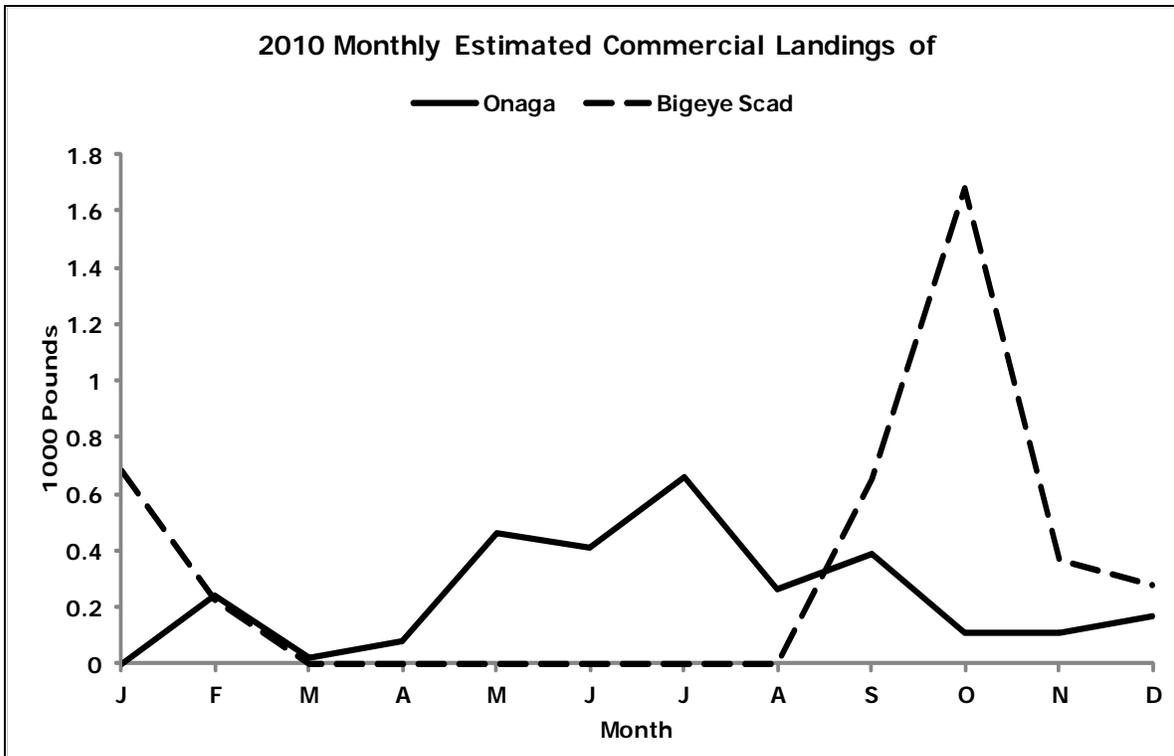


Figure C-1-5

The following are seasonality plots for the major species or species groups, showing the average weight landed during each month for all years combined:

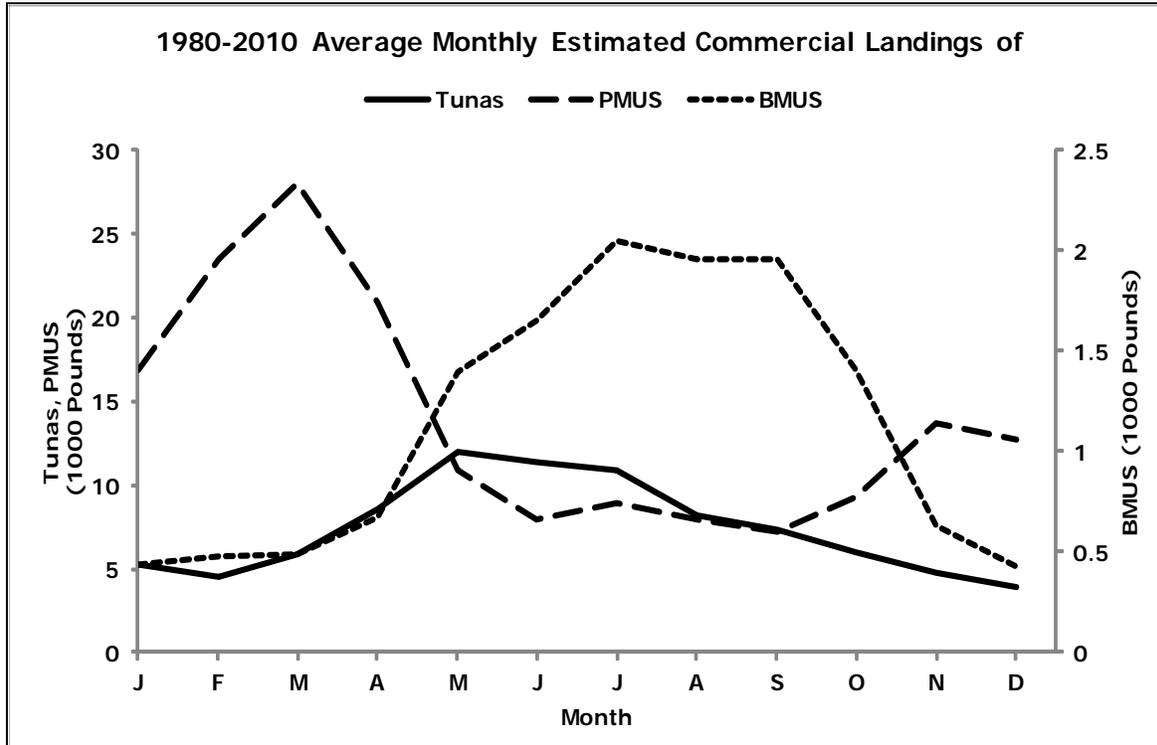


Figure C-2-1

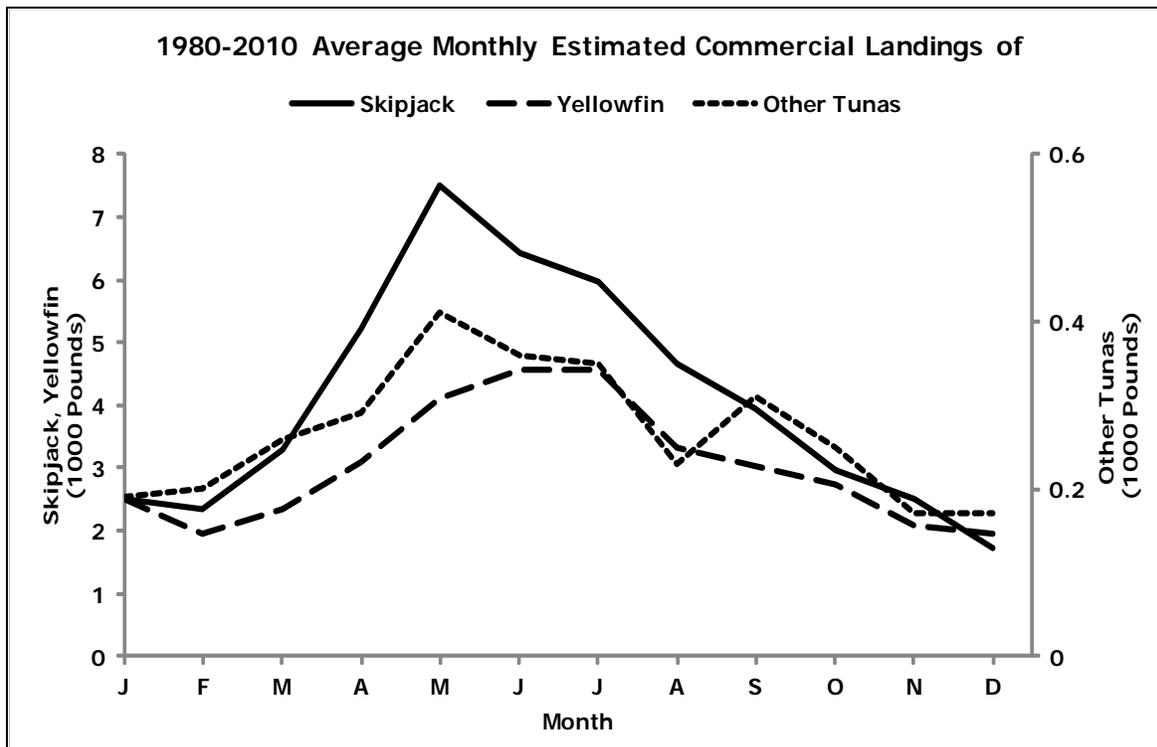


Figure C-2-2

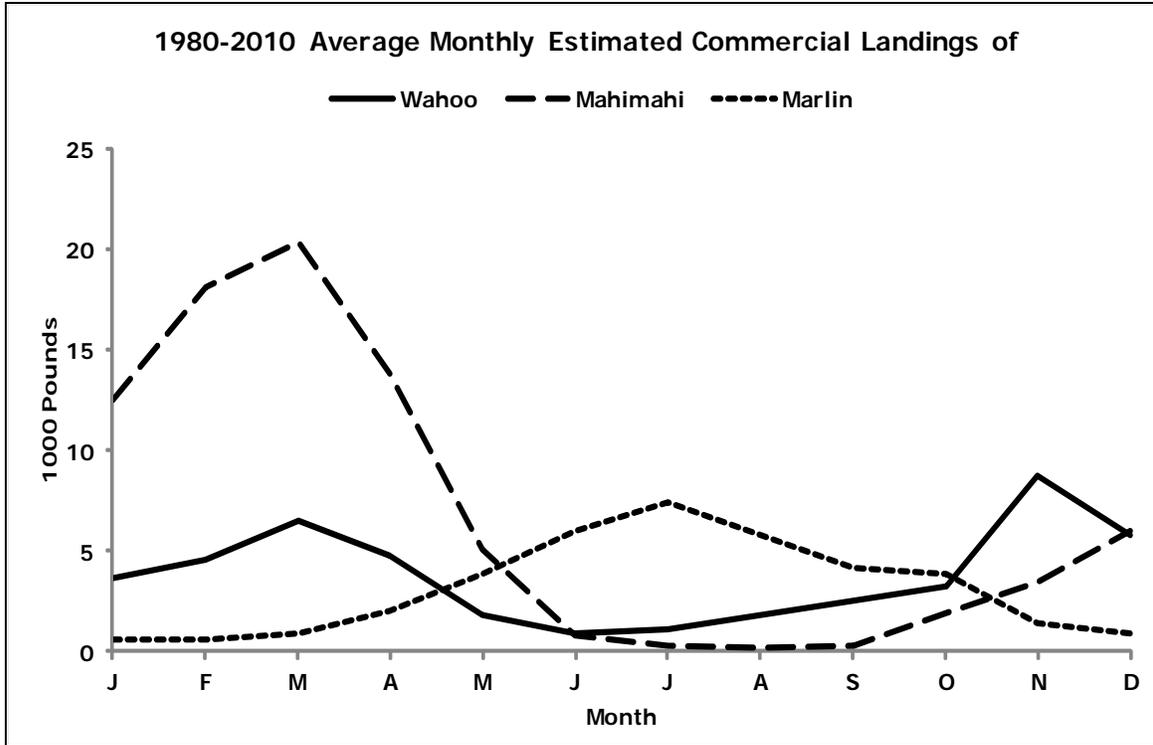


Figure C-2-3

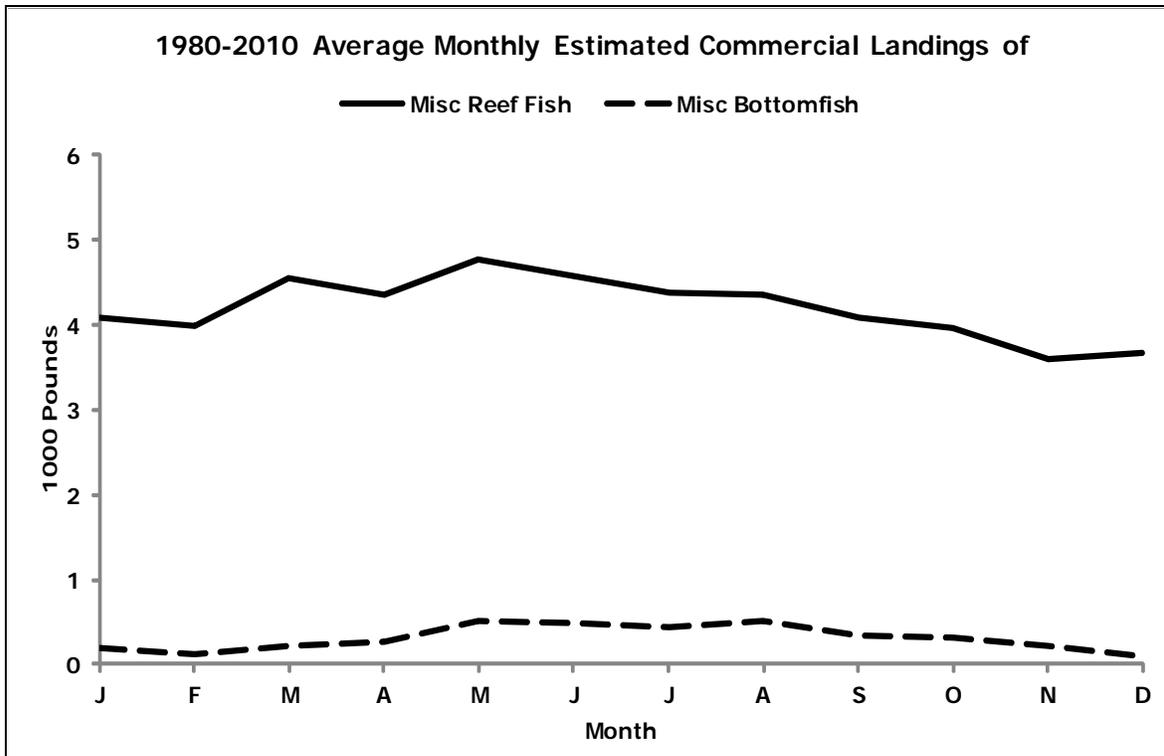


Figure C-2-4

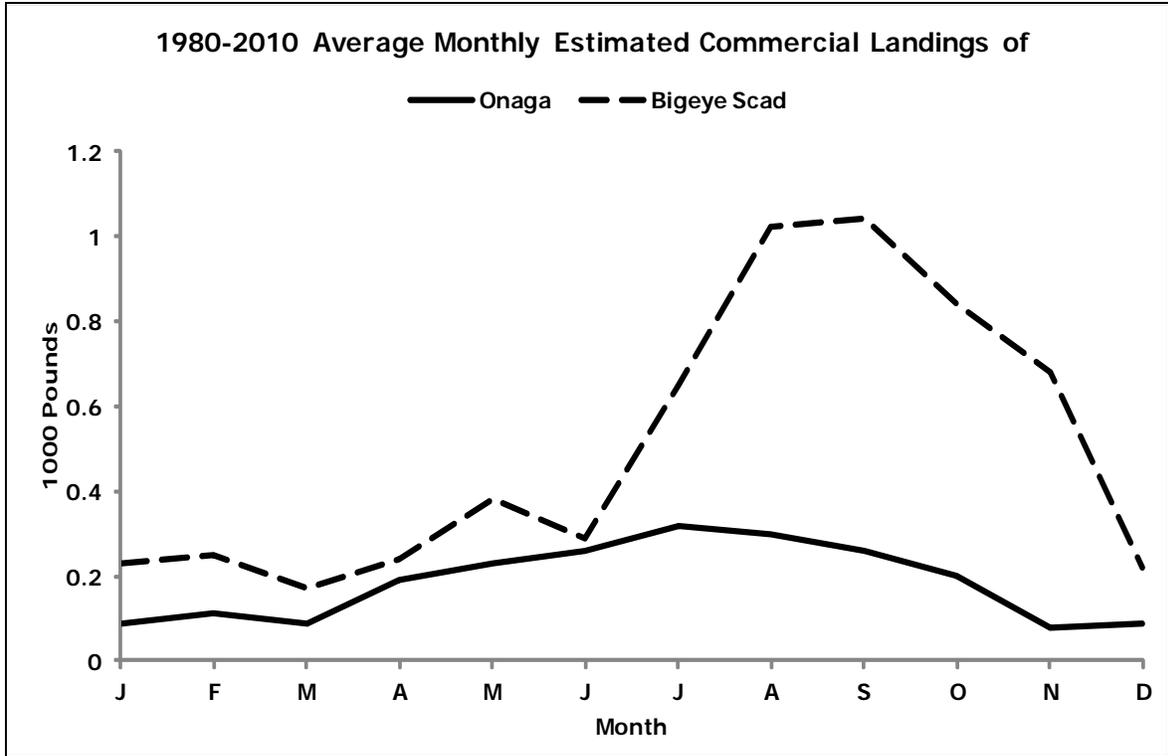


Figure C-2-5

The following graphs plot annual summary statistics to illustrate the variability among years:

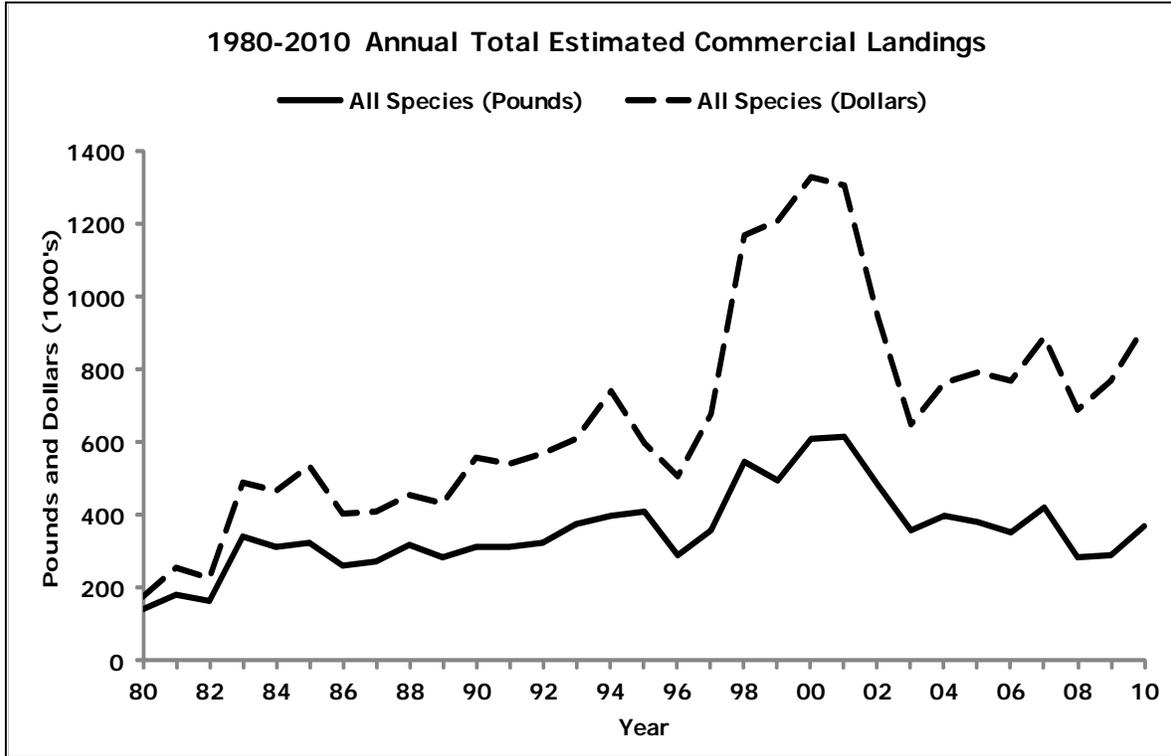


Figure C-3-1

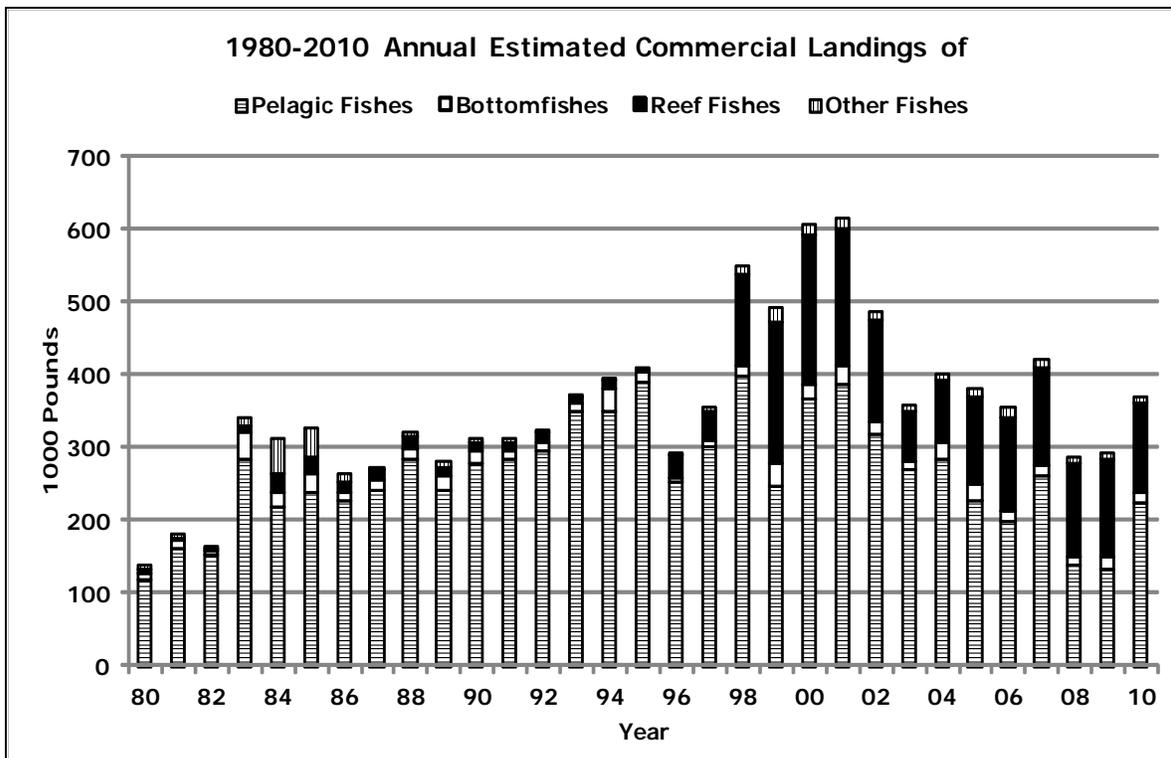


Figure C-3-2

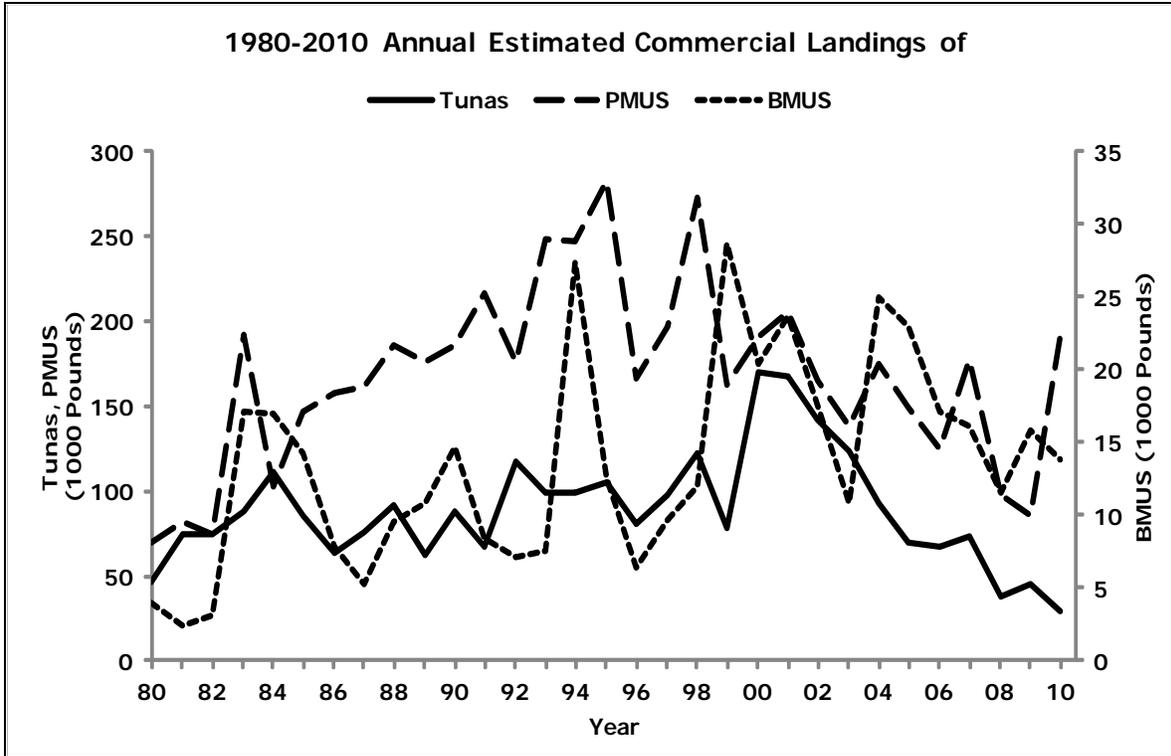


Figure C-3-3

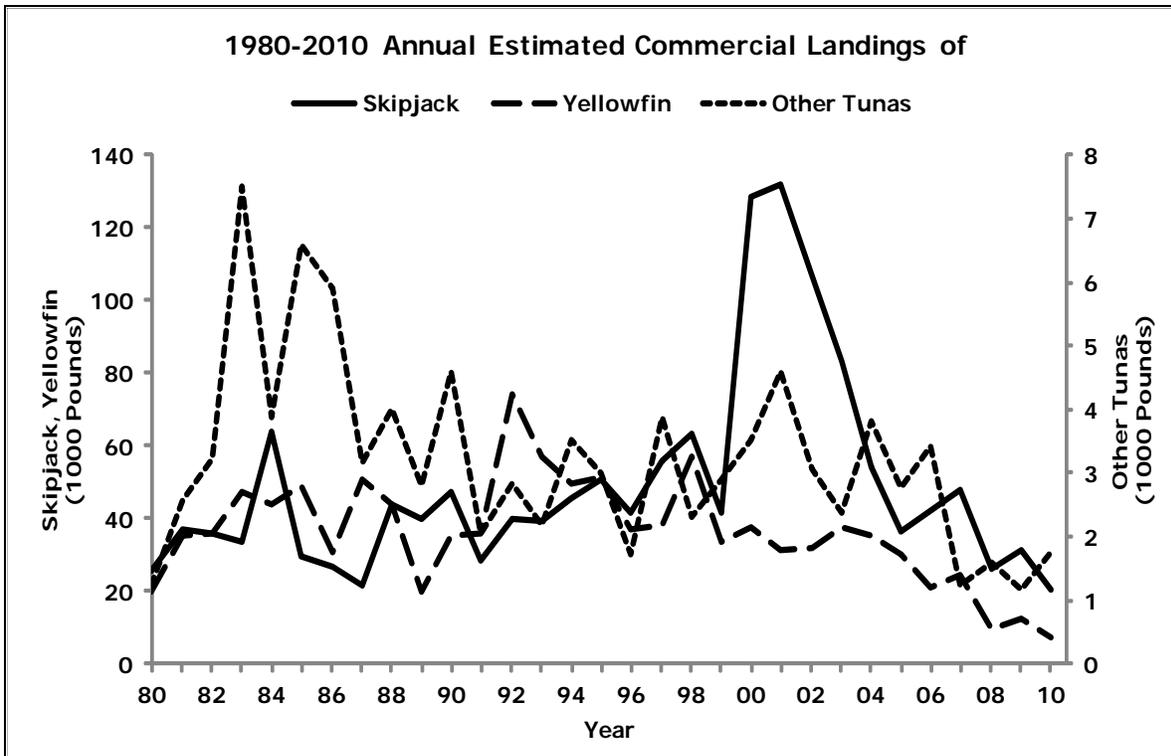


Figure C-3-4

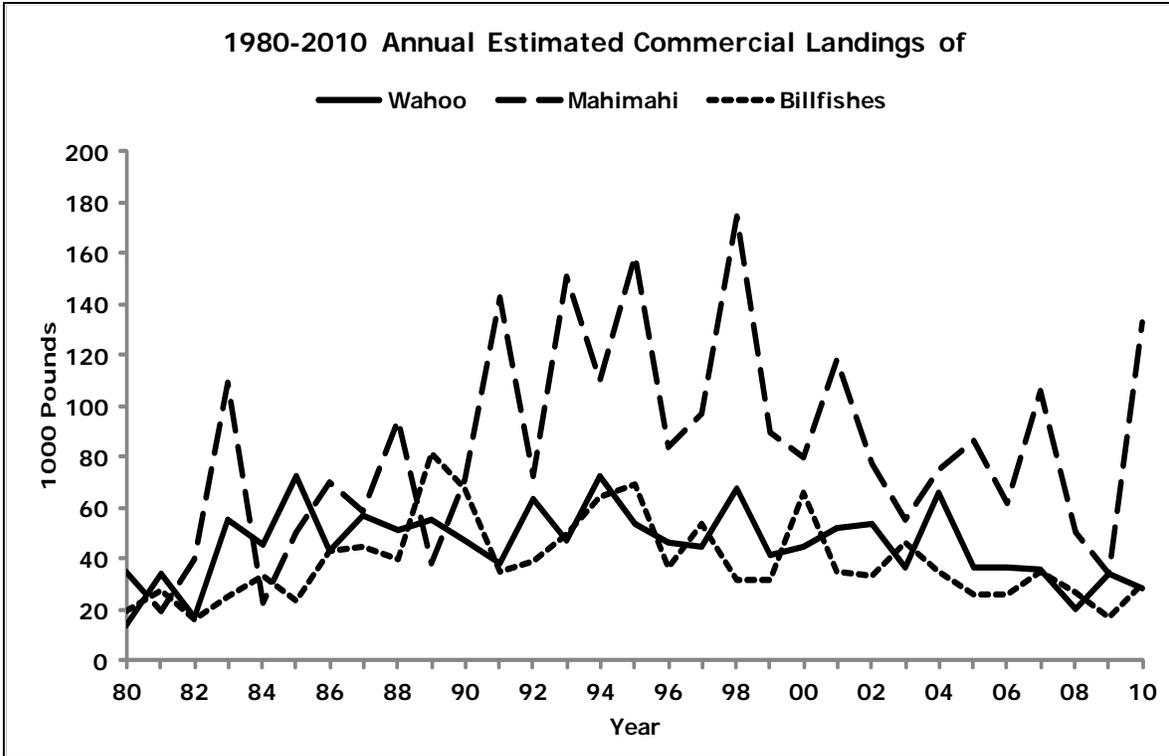


Figure C-3-5

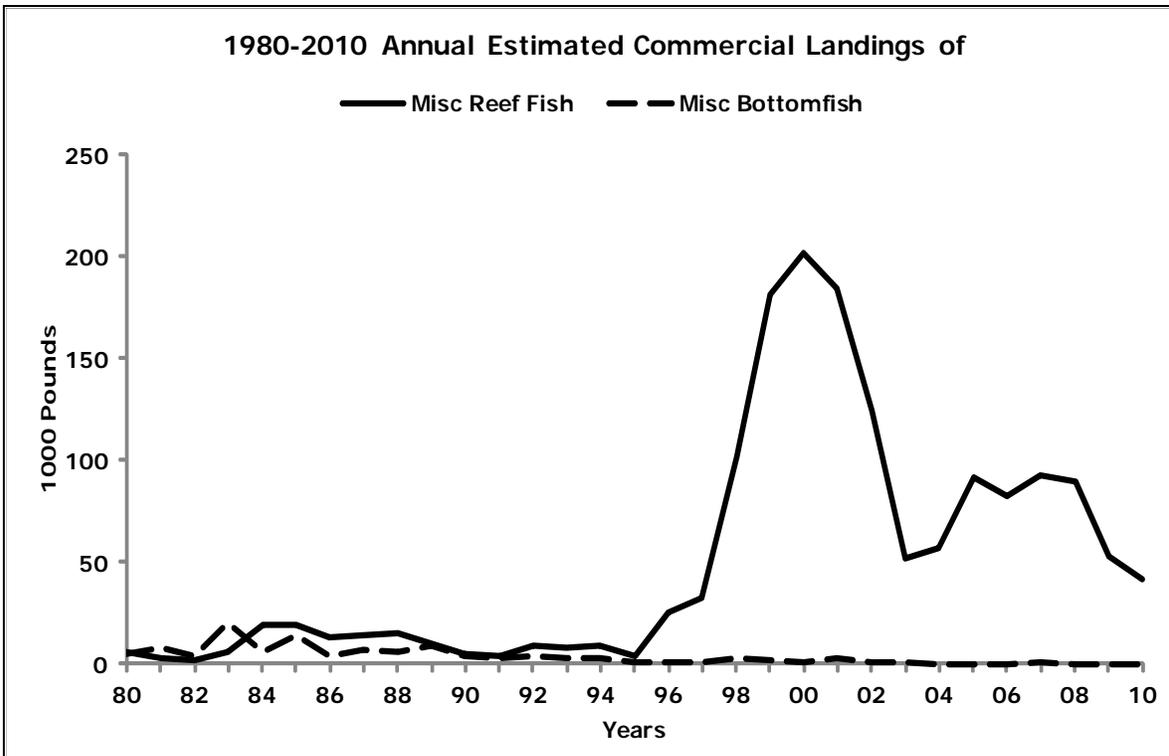


Figure C-3-6

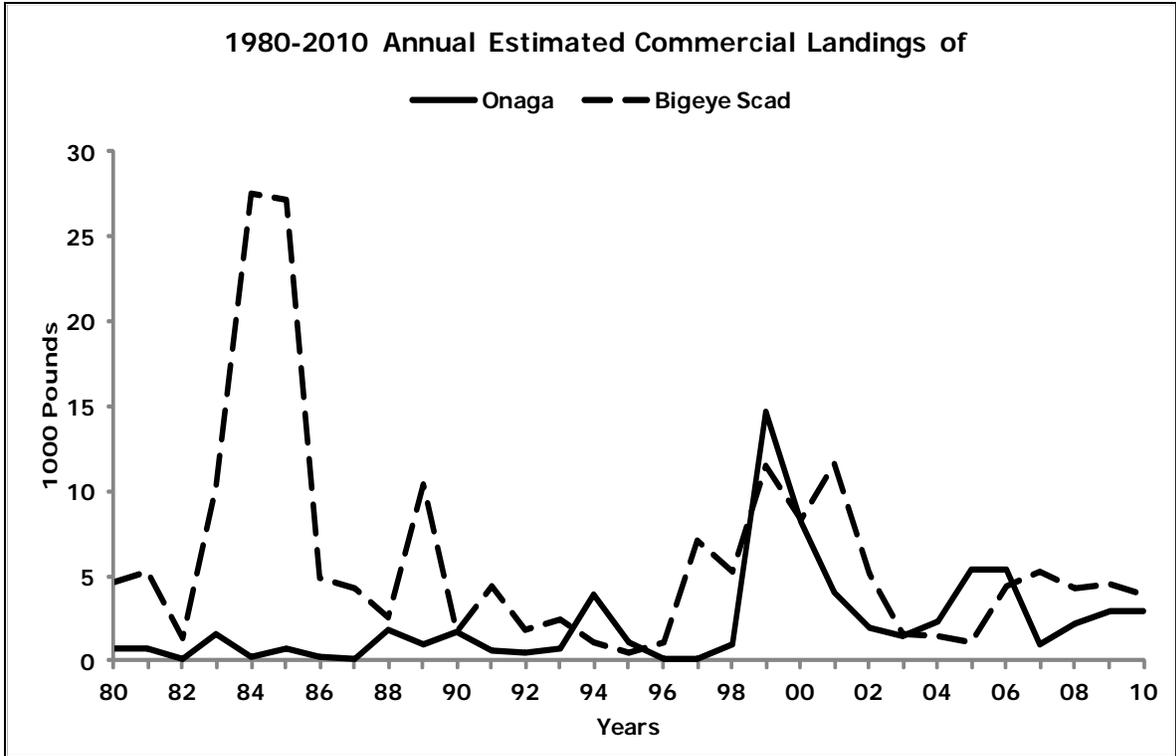


Figure C-3-7

The following graphs plot monthly landings of some commercially important species and document monthly fluctuations over the time series:

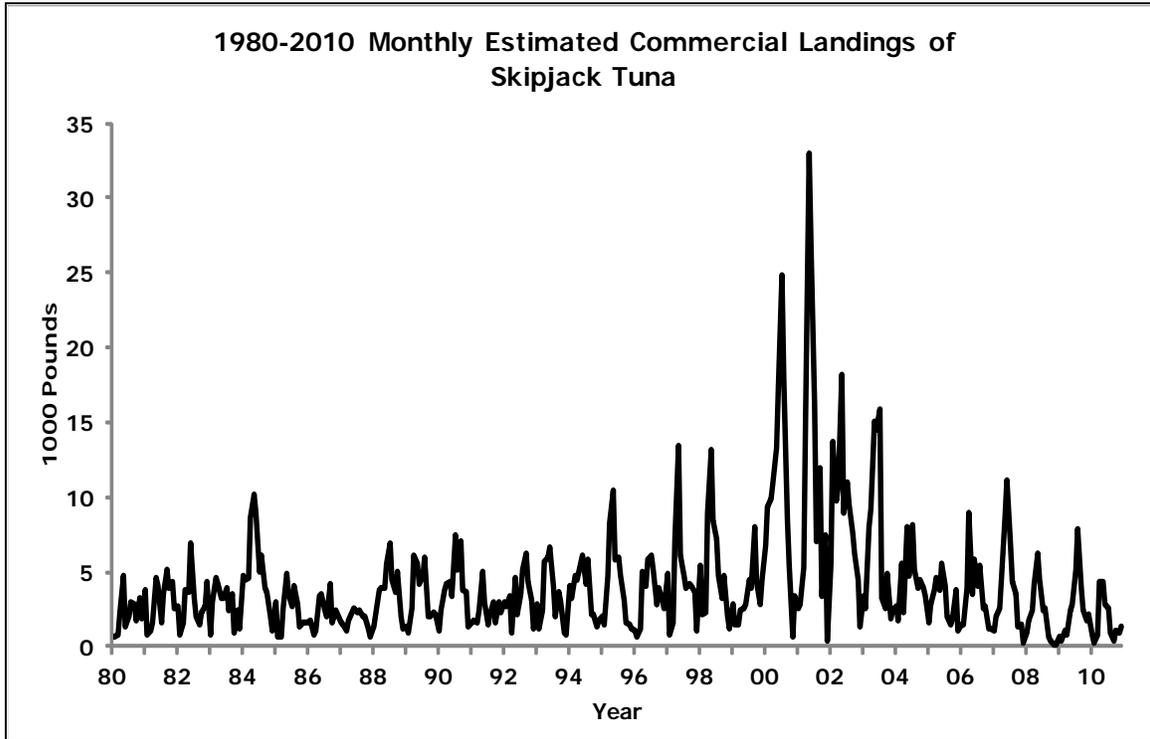


Figure C-4-1

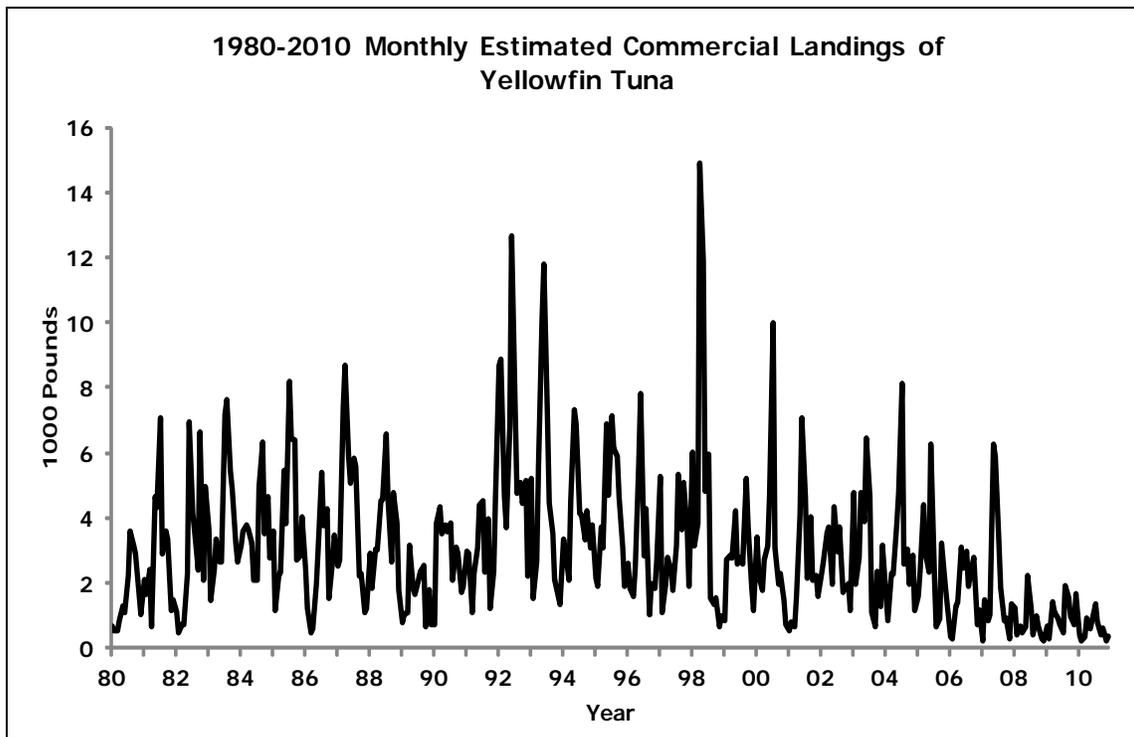


Figure C-4-2

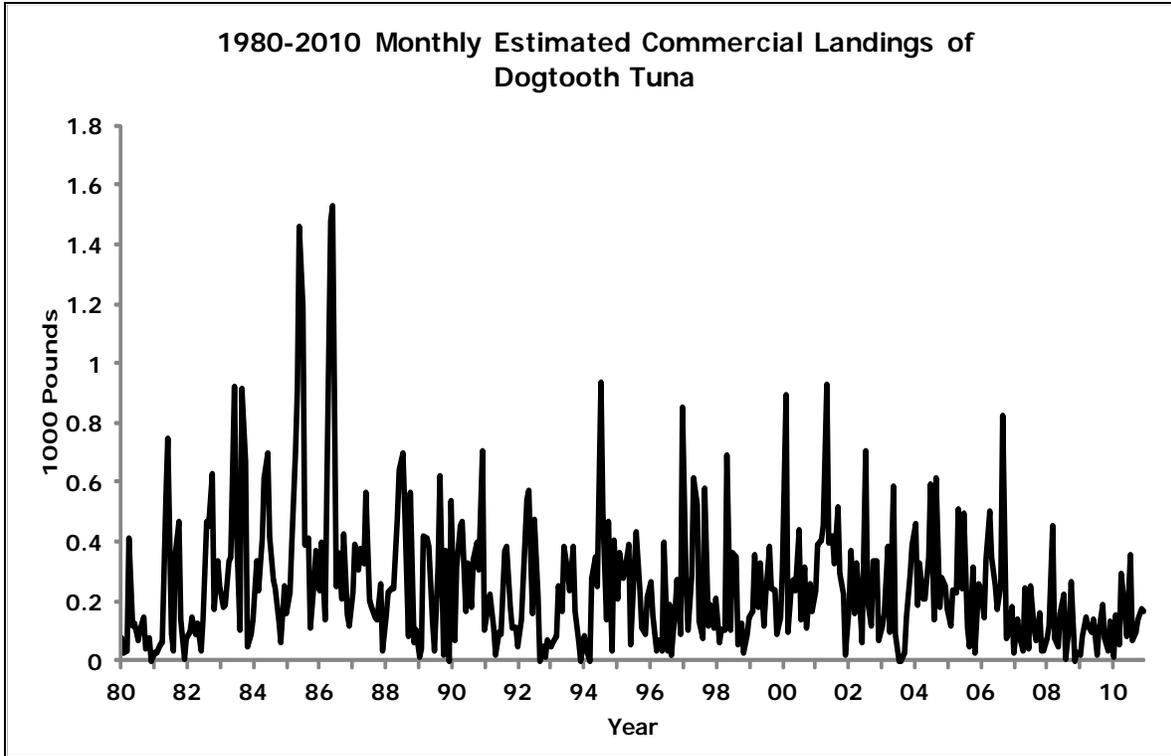


Figure C-4-3

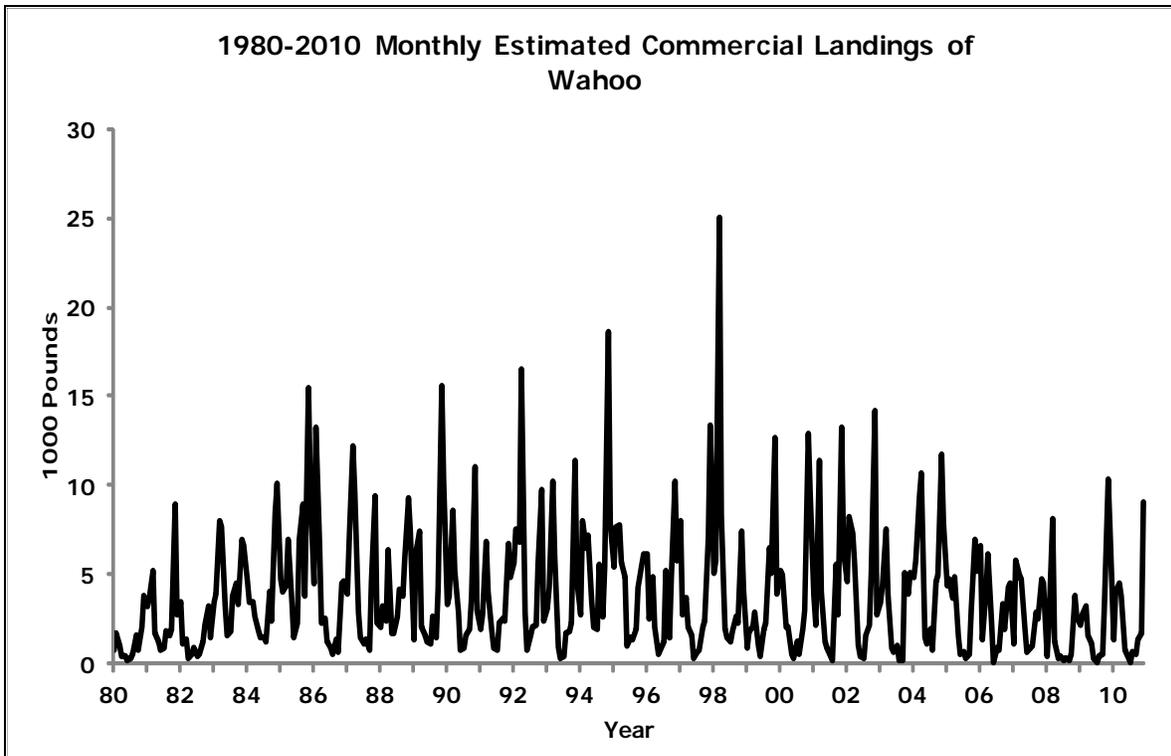


Figure C-4-4

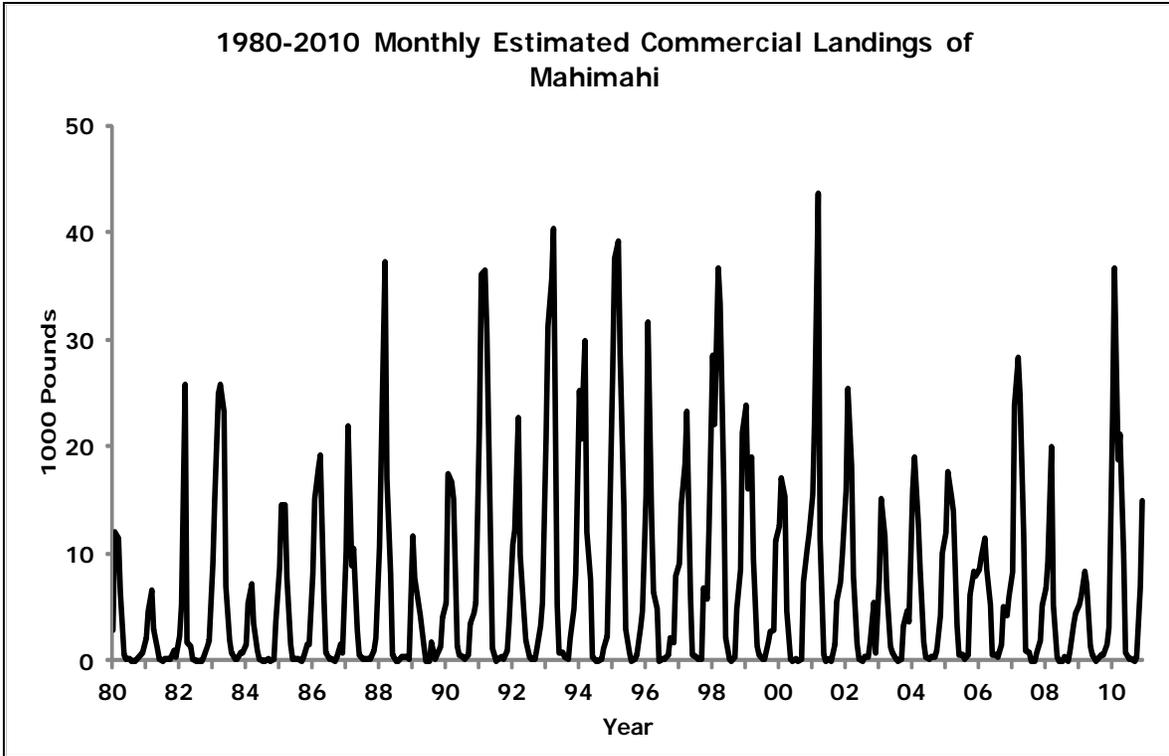


Figure C-4-5

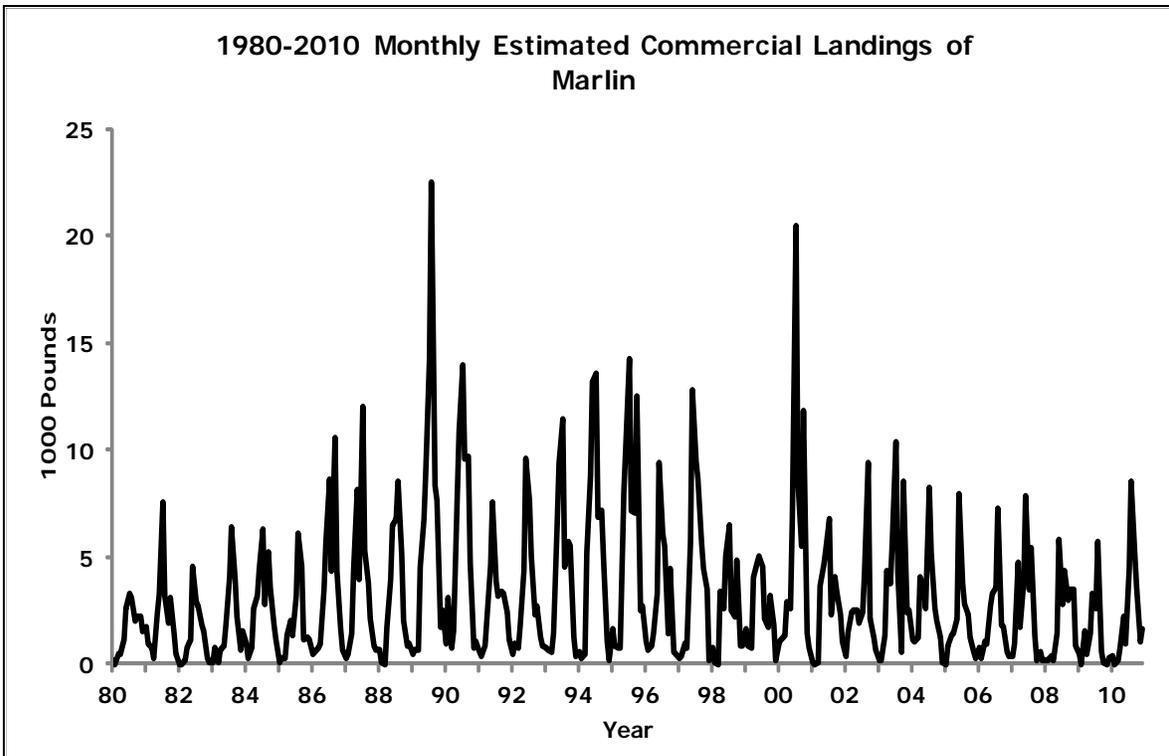


Figure C-4-6

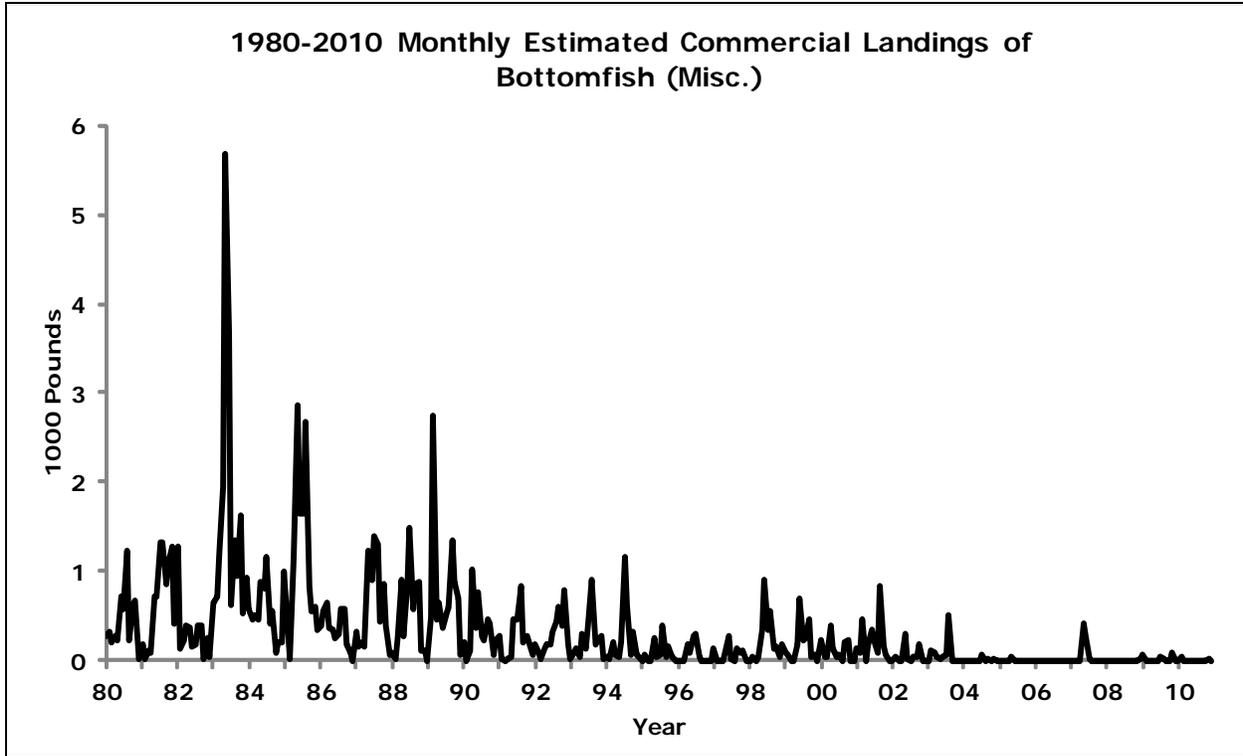


Figure C-4-7

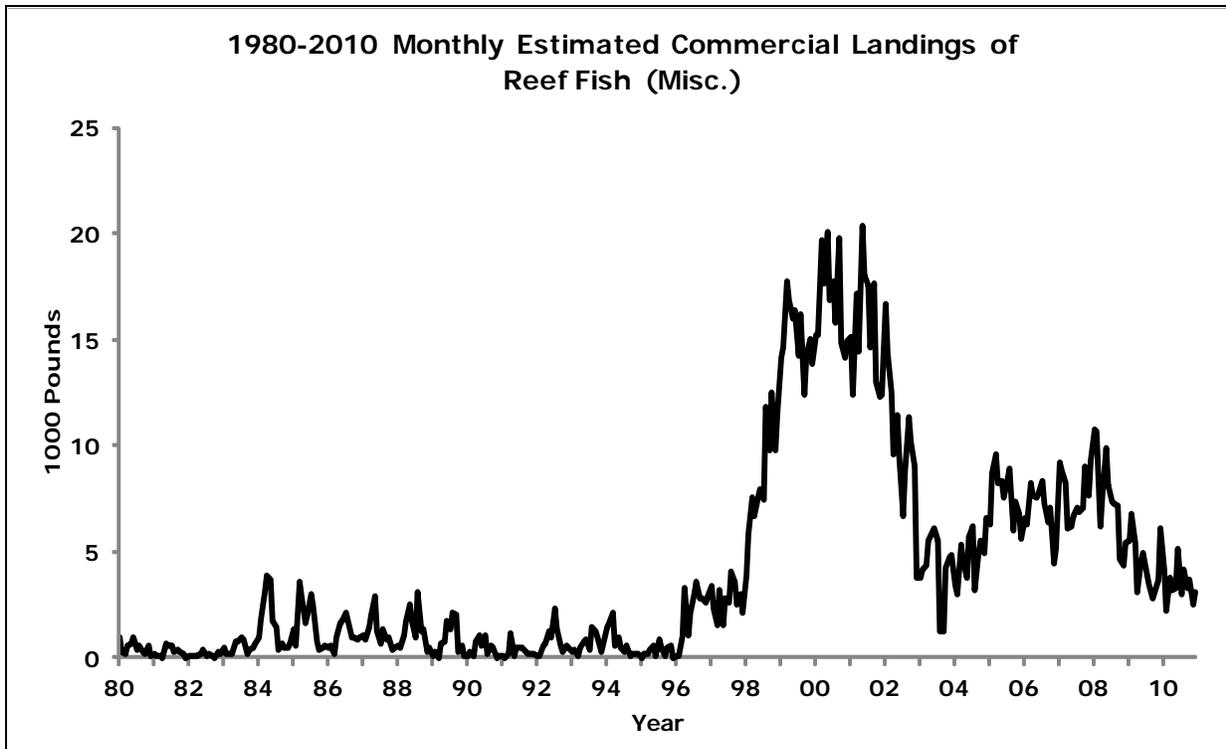


Figure C-4-8

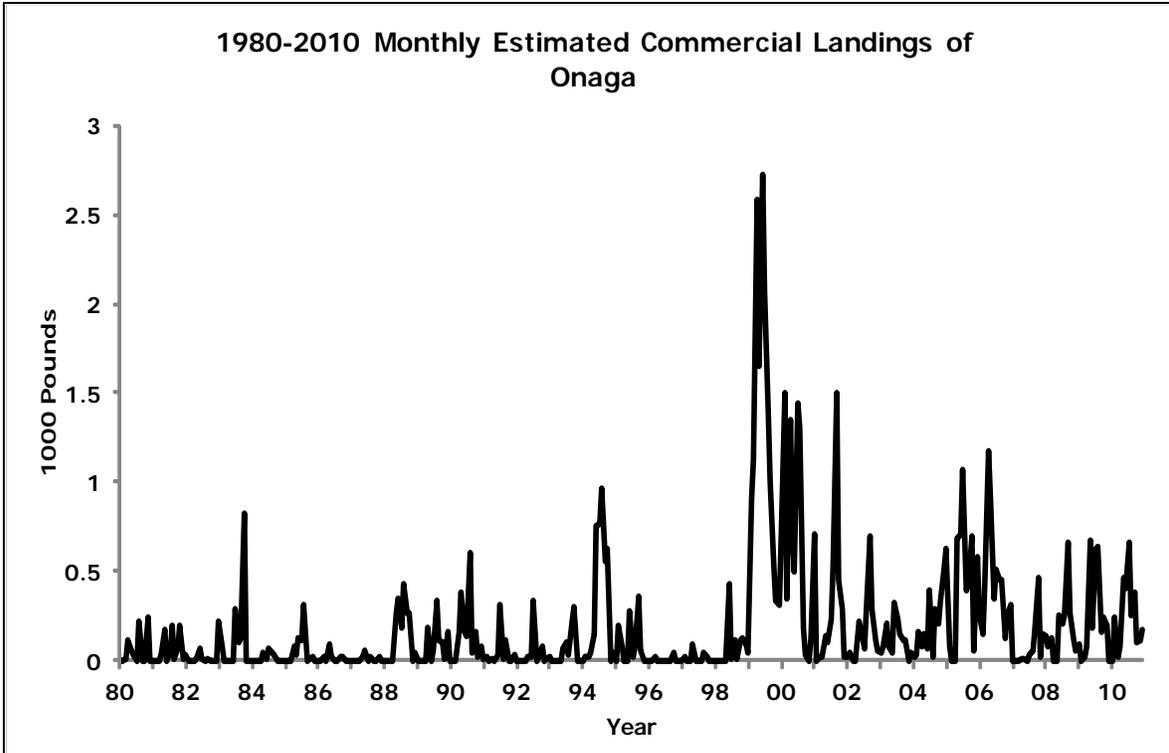


Figure C-4-9

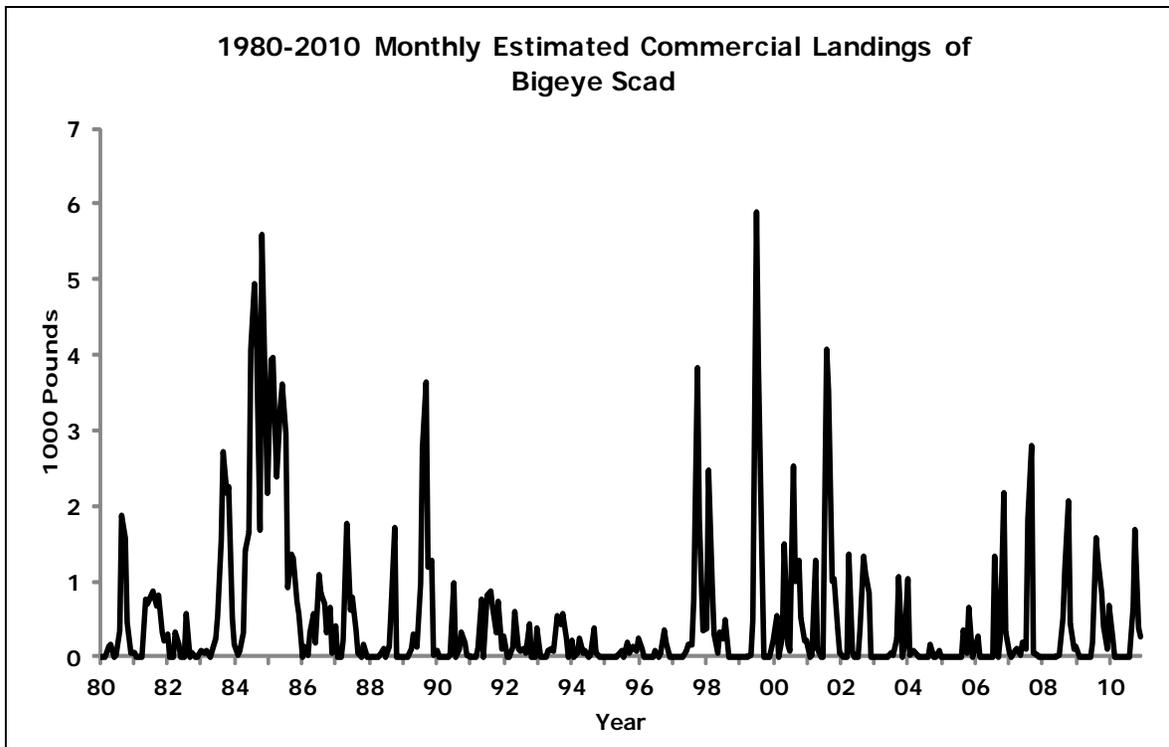


Figure C-4-10

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