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2004 Shoreside Hake Observation Program

Shoreside Hake Observation Program: 2004

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INTRODUCTION

The Shoreside Hake Observation Program (SHOP) was established in 1992 to provide information for evaluating bycatch in the directed Pacific hake (*Merluccius productus*) fishery and for evaluating conservation measures adopted to limit the catch of salmon, other groundfish and prohibited species. Though instituted as an experimental monitoring program, it has been continued annually to account for all catch in targeted hake trip landings, enumerate potential discards, and accommodate the landing and disposal of non-sorted catch from these trips.

The SHOP is a cooperative effort between the fishing industry, state and federal management agencies to observe and collect information on directed Pacific hake landings at shoreside processing plants. Participating vessels apply for and carry exempted fishing permits (EFPs) issued by the National Oceanic and Atmospheric Administration (NOAA), Sustainable Fisheries Division. Permit terms require vessels to land unsorted catch at designated shoreside processing plants. Permitted vessels are not penalized for landing prohibited species (e.g., Pacific salmon, Pacific halibut, Dungeness crab), nor are they held liable for overages of groundfish trip limits. Participants in the SHOP are mid-water trawlers carrying EFPs, designated shoreside processing plants in California, Oregon, and Washington, the Pacific Fishery Management Council (PFMC), NOAA, the Pacific States Marine Fisheries Commission (PSMFC), the Oregon Department of Fish and Wildlife (ODFW), the California Department of Fish and Game (CDFG), and the Washington Department of Fish and Wildlife (WDFW).

Limits to bycatch of Chinook salmon (*Oncorhynchus tshawytscha*) were set in 1991 under the National Marine Fisheries Service's Biological Opinion for groundfish management (NMFS 1991). High numbers of salmon bycatch in 1995 resulted in the revision of 1996 Biological Opinion under section 7 of the ESA (NMFS 1996a). The

bycatch rate is now limited to 0.05 Chinook salmon per metric ton of Pacific hake with an associated total catch of 11,000 Chinook for the coastwide Pacific hake fishery.

In 1995, the SHOP's emphasis changed from a high observation rate (50% of landings), to a lower rate (10% of landings) and increased collection of biological information (e.g., otoliths, length, weight, sex, and maturity) from Pacific hake and selected bycatch species such as yellowtail rockfish (*Sebastes flavidus*), widow rockfish (*S. entomelas*), yelloweye rockfish (*S. ruberrimus*), darkblotched rockfish (*S. crameri*), bocaccio (*S. paucispinis*), canary rockfish (*S. pinniger*), along with sablefish (*Anoplopoma fimbria*), Pacific chub mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*). The required observation rate was decreased as studies indicated that fish tickets were a good representation of what was actually landed (1995, ODFW Report). Focus shifted again due to 1997 changes in the allocation of yellowtail rockfish and increases in yellowtail bycatch rates. Since then, yellowtail and widow bycatch in the shoreside hake fishery have been dramatically reduced because of increased awareness by fishermen of the bycatch and allocation issues involved in the hake fishery.

Beginning in 1999, written agreements were made with designated processors to provide a better understanding of the roles and responsibilities of the processors and agencies involved and to provide a mechanism to enforce bycatch reduction measures, specifically for yellowtail rockfish. The agreement set a vessel-specific maximum rate for yellowtail rockfish bycatch at 12 kg of yellowtail rockfish per metric ton of hake. In 2003 an analysis of single tow trips between 1995 and 2002 was done. Because there was no relationship between the weight of hake and the weight of yellowtail caught per ton of hake, the bycatch rate cap was changed to a trip average of 800kg (1764 lbs.) of yellowtail. This cap reflected the 12 kg/mt of hake rate cap used in previous years. Non-cumulative rate checkpoints were set for when 30 and 55 percent of the shoreside Pacific hake quota had been landed. If a vessel exceeded the average of 800 kg/trip at any of these points it was not permitted to participate in the shoreside Pacific hake fishery for one day for each 66 kg increment over the bycatch cap (i.e. no hake could be landed by this vessel for a set period of time) (for previous years of annual bycatch rates see Wiedoff et al. 2003 or the website listed in the references). This strategy, especially knowledge of the operating requirements of the EFP and the fishery goals, has dramatically reduced yellowtail and widow rockfish bycatch (Table 1).

2004 HAKE FISHERY

The PFM's optimum yield (OY) increased from 148,200 mt to 250,000 mt 2004 (Table 1). The tribal fishery was allocated 13.8% of the OY (32,500 mt) and began harvesting on May 20th, 2004. Commercial fisheries received 86.2% of the U.S. OY. Allocations of this amount were 42% to vessels landing at shoreside processing plants (90,510 mt) (up from 50,904 mt in 2003), 34% to catcher/processors (73,270 mt), and 24% to catcher vessels delivering to motherships (51,720 mt). The directed season for mothership and catcher/processor at-sea processing (north of 42° N) began on the 15th of May 2004. The 2004 directed shoreside hake fishery began on 01 April 2004 off California (south of 42°

N), and on 15 June 2004 off Oregon and Washington (north of 42° N). To avoid pre-empting more northerly segments of the fishery, the California component of the hake fishery is limited to 5% of the total shoreside allocation until the northern component of the shoreside fishery begins. The California fishery closed on May 22nd because 5% of the allocation was met. No landings were made in California for the rest of the primary season.

As of November 15th, 2004 the tribal fishery harvested 88.1% (28,648 mt) of their allocation. The catcher/processor fishery ended on November 11 and harvested 99.9% (73,715 mt). The mothership fishery completed 46.6% (24,102 mt) and closed October 1, 2004 (by PFMC recommendation) to minimize impacts on Darkblotched rockfish, (Preliminary Report #10, NOAA, Seattle) Even though the shoreside allocation was the second largest allocation since 1992 or program inception, the season only lasted 60-days (Table 1). The number of vessels to number of plants has not varied much therefore increased efficiency at the processing plants, fish density and/or technological advances in finding fish possibly contributed to how quickly the allocation was reached. The shoreside directed fishery closed on August 14th at 4:00p.m. and harvested 89,251 mt (1.39% under the allocated amount) (Table 1).

Thirty-one Exempted Fishing Permits (EFP's) were approved in 2004 but only twenty-six midwater trawlers actually made EFP landings. The number of participating vessels was average for the past 10 years. Unsorted EFP Pacific hake landings were observed at nine processing plants; Eureka (1), Crescent City (1), Charleston (1), Newport (3), Astoria (1), Westport (1) and Ilwaco (1). A total of 1,134 landings were made under the EFP within Oregon, Washington and California (Table 2). Hake landing weight distributions show a mode (most frequent) at 50 mt and average landing of 70 mt (Figure 1).

The vast majority of Pacific hake were landed in Oregon (66%); Washington and California landings represented 34% of the shoreside fishery total (Table 3). Within Oregon, 43% of the coastwide hake catch was delivered to Newport and 23% of the total to Astoria and Charleston.

The percentage of hake landings observed by samplers varied among states, with a low of 5.1% in Eureka California and a high of 100% in Charleston, Oregon. Overall, 32.8% of Pacific hake landings at shoreside processors were observed in 2004, exceeding the 10% program goal (Table 4 and 5). Four vessels participated in the California portion of the shoreside season and hake were landed at a fairly constant pace with exception to fishing week 4 (Table 2). Discussions with fisherman revealed heavy winds and strong currents made it difficult to find dense hake populations. This wind and current pattern occurred during the same week in 2003 (Wiedoff et al. 2003). After the northern component of the fishery opened, no landings were made in California due to difficulties finding fish. The catch rate increased each week during the primary season (Table 2).

ELECTRONIC MONITORING PROGRAM

Since program inception in 1992 vessels have been subject to state and Federal observer coverage to document and estimate bycatch while fishing under the EFP. However at-sea observers have not been present since 1994. As a pilot project, this year the NMFS

contracted and funded Archipelago Marine Research Ltd. to verify compliance of the EFP's full retention requirements and to help characterize the daily functioning of the fishery. An electronic monitoring system was installed on all vessels participating in the SHOP. Twenty-six vessels were equipped with video cameras, global positioning system, winch and hydraulic pressure sensors and a data storage unit, which was maintained and downloaded periodically. Archipelago Marine Research Ltd. provided a report to NOAA, NWFSC observer program describing the results.

BYCATCH

Rockfish

Bycatch of yellowtail rockfish increased by 58% from 2003 to 2004 (Table 1 and Figure 2). However, this total is still significantly less compared to previous seasons similar in length of days (Table 1). Landings of yellowtail increased in ports to the north, which is expected since population distribution is denser north of the California/Oregon border (Table 5). Tow locations of single tow trips from 1999-2003 show high interception rates around the Astoria Canyon and south of Cape Flattery (Figure 3). In the 2004 shoreside fishery, vessel bycatch checks for yellowtail rockfish were conducted and no vessel exceeded the average landing cap of 800 kg/trip. Westport had the highest average rate while Eureka had the lowest (Table 5). Also, fishers were asked to actively avoid canary and widow rockfish, which could have influenced their choice of fishing location.

Widow rockfish bycatch increased to 28.6 mt from its low, 2002 level of 5.3 mt (Table 1 and Figure 2). However [it should be noted that] half the weight was caught in 11 fishing trips. Widow rockfish abundance has been the most variable over time and may be confounded by changes in hake tow locations since widow bycatch typically increases towards the south (Figure 4). Surprisingly, mean vessel catch rates for widow rockfish were highest in Washington followed by California then Oregon (Table 5). Bycatch of widow rockfish is a concern for managers as well as the industry because of the overfished status and reductions in OY's for widow rockfish. These constraints will continue to put pressure on fishermen and industry to minimize bycatch.

The 2004 coastwide OY of 47.3 mt for canary rockfish is extremely low. In June canary bycatch in the mothership fishery increased dramatically from an unanticipated, large tow. At the 2004 June PFMC meeting, the Council recommended that NMFS develop an emergency rule that allows an individual sector of the primary hake fishery to be closed if the canary rockfish impacts for the entire hake fishery reached 7.3 mt. Historical and current commercial fishery data, NMFS trawl survey information, and submersible research data were compiled to identify areas where high canary rockfish bycatch were likely to occur. Maps of this information were distributed by NOAA/NWR to the industry to encourage the fleet in voluntary avoidance of the identified areas. Single tow trip locations 1999-2003 that contained canary rockfish are shown in Figure 5.

The SHOP focused on tracking bycatch of species listed as overfished. Among all three states only 10 kg of yelloweye rockfish, 20 kg bocaccio, 740 kg darkblotched rockfish and 750 kg Pacific ocean perch were recorded on fish tickets (Table 2 and 3).

Darkblotched rockfish have been in overfished status since 2000 and OY's have been drastically reduced. Catches in the shoreside fishery have been variable over time and catch increased from 0.26 mt in 2003 to 0.74 mt in 2004. Darkblotched catch rates for single tow trips 1999-2003 are shown in Figure 6. Distributions of all single and multiple tow trips are shown in Figure 7. Overall, rockfish bycatch rates have decreased substantially in recent years and have helped the hake fishery to have a low impact on other mixed-species fisheries. Good communication between vessels, processors and state agency staff of high bycatch areas or "hotspots" was encouraged to reduce bycatch within the directed shoreside fishery. Hake fishermen say they are actively avoiding pelagic rockfish coast wide and are working towards a hake fishery with the lowest bycatch possible. Although there is substantial variation in bycatch rates within a port, the larger overall latitudinal trend is visible (Table 5).

Sablefish

Sablefish bycatch had been declining steadily and dramatically since 1995 (Figure 2). The 2000 sablefish assessment predicted a strong year class to enter the fishery in 2001. An analysis of the 2001-2002 catch, revealed juveniles (one and two years old, respectively) captured on the shelf were recruiting to the bottom. In 2003 a moderate catch of sablefish dominated by three-year-old fish was landed (Figure 8). The strong year class of 2000 continued to show in the 2004 shoreside fishery. As these fish grow older we expect less bycatch as these fish will move to deep water. We also expect lower bycatch in 2005 because of few age-1 fish present in 2004 (Figure 8). The majority of the catch was taken off Newport (Table 3). A substantial increase in landings occurred in fishing weeks 13, 15, 19 and 20 (weekend dates 6/26, 7/10, 8/7 and 8/14)(Table 2). The "hot spots" were localized off Newport and vessels attempted to move out of those areas. This cyclic weekly change was also observed in 2001(Parker 2001), 2002 (Wiedoff and Parker 2002) and 2003(Wiedoff et al. 2003). Only 1.3 mt of sablefish were landed in Washington and California combined.

Pacific and chub Mackerel

Either jack or Pacific chub mackerel can be the largest, single species bycatch component of the hake fishery, with different species predominating in different years. This year jack mackerel numbers were significantly larger than Pacific chub mackerel (107 mt vs. 0.66 mt) (Table 2). Overall, landings for jack mackerel increased and Pacific chub mackerel decreased compared to 2003 (Figure 2).

Salmon

A total of 4,257 (includes 4206 Chinook) salmon was taken as bycatch in the 2004 shoreside hake fishery and turned over to state agencies by processors: 3,697 in Oregon, 286 in Washington, and 274 in California (Table 3). Although this year marked the highest salmon interception since the program began, the shoreside component total was well below the 11,000 Chinook salmon cap. The shoreside rate represents an incidental catch rate of 0.048 salmon per metric ton of hake for the entire EFP fishery (Table 6). Rates for individual salmon species can be found in Table 7 for 1992-2004.

Samplers at shoreside plants recorded 1,273 salmon incidentally taken in 372 observed landings of 24,777 mt of hake, which results in an observed rate of 0.05 salmon/mt hake (Table 3). These fish are included in the total of 4,257 made available to state agencies. The highest weekly bycatch rate occurred in the second week of the California fishery (weekending 4/10). During that week 97 fish were landed in 13 trips that resulted in the a salmon interception rate of 0.18 salmon/mt hake (Table 6). Discussions with fishers have revealed no changes in fishing behavior that would account for a change in the salmon interception rate, so it is likely that the rates reflect salmon moving through fishing areas. All fish were either donated to food share cooperatives and hunger relief agencies or ground and disposed of due to poor quality.

The coast wide average Chinook size decreased from last year by 3 cm to 57 cm, but the condition factor or shape of the fish was similar (Table 8, Figure 9 and 10). A weekly average bycatch rate for all species of salmon during the shoreside fishery shows a variable and sometimes higher than average rate at the start of the fishery. In 1997 the start date for the primary season in Oregon and Washington was moved from mid May to mid June to reduce bycatch. Overall, the weekly average bycatch rate (salmon/metric ton of hake) for past twelve years has been well below the suggested maximum rate of 0.05 and total number landed has not exceeded the 11,000 Chinook cap set by NMFS (Table 6 and Figure 11). The SHOP collected biological data and checked for adipose fin clips on all salmon. Of the 4,206 Chinook landed, 425 fish (10.1%) were identified as hatchery fish by an adipose clip (Table 9). Coded wire tags have been submitted to the Regional Mark Information System (RMIS) since 1993 and numbers by hatchery and release basin are listed in Table 10. High recovery numbers of Columbia River released fish may be due to fishing activity in and around the Astoria Canyon, but we have not examined catch locations for tagged fish to date.

Pacific halibut and Dungeness crab

The 2004 shoreside hake fishery landed fifty-two Pacific halibut. All fish were landed in Oregon with forty-six in Newport, two in Charleston and two in Astoria. This is the highest number landed since program inception. Length distributions are shown in Figure 12. No Dungeness crabs were landed for the entire fishery (Table 3).

Other fish and invertebrate species

The SHOP continues to individually track many species previously listed in the "other" category because several species in this category are overfished and of special concern to managers (Tables 2 and 4). Yelloweye rockfish, canary rockfish, darkblotched rockfish, bocaccio, Pacific ocean perch, lingcod (*Ophiodon elongatus*), walleye pollock (*Theragra chalcogramma*), Pacific herring (*Clupea harengus pallasii*), American shad (*Alosa sapidissima*), spiny dogfish (*Squalus ancanthias*), and miscellaneous rockfish are tracked as separate categories. Miscellaneous species such as Pacific cod (*Gadus macrocephalus*), sardine, squids, sharks, skates, octopus, jellyfish and flatfish other than halibut, now constitute the "other" category (Tables 2 and 3). These "other" species totaled 4.46 mt in 2004. Several large sharks such as salmon, blue and soupfin were observed and recorded along with several Pacific pomfrets, and one albacore tuna. The

SHOP will continue to monitor the composition of the "other" category to insure major species are recorded accurately.

Marine Mammals

Reporting of incidental mortalities and injuries of marine mammals in commercial fisheries is mandated under the Marine Mammal Protection Act of 1972. NMFS was notified of two incidents through the Marine Mammal Authorization Program. One California sealion was offloaded at a shoreside processor and one harbor seal was discarded at sea, both in Oregon.

BIOLOGICAL SAMPLING

In addition to documenting bycatch/species composition, shoreside samplers collected biological information from several species that are used in stock assessment analyses (Table 11). Samples of Darkblotched rockfish were adequate to measure size and showed a bimodal distribution while all other distributions were normal (Table 12 and Figure 13). Mean length of yellowtail, canary, and widow rockfish increased from 2003 to 2004 and processors marketed a majority of the catch. Most of the sablefish caught off Oregon were slightly larger than previous years; mean size ~1,459 g with a mean length of 51 cm (Table 12 and Figure 8). Sizes of sablefish varied between ports with larger fish landed in Newport and Charleston and smaller in Astoria. Samplers measured 5,730 Pacific hake for length-frequency information, and collected 1,440 Pacific hake otolith samples, along with length and weight information (Table 11 and 13). The size distribution for hake also differed by port with smaller fish landed in Eureka and larger fish in Westport (Figure 14). The overall average length of 43 cm for hake landed in 2004 has been fairly constant during the primary season from 1993-2004 and the range of average length between 40 to 46 cm reflects the market size for hake (Figure 14 and 15). There is a narrow length distribution (age 5) in the 2004 fishery and an absence of small fish recruiting into the fishery (Figure 16). Weighbacks (hake with no marketable value due to inappropriate size or quality) are tracked throughout the 2004 fishery (Figure 17). Within the state of Oregon, an average of 5.7% of hake was weighed back. California and Washington averaged 8.1% and 4.4% respectively. Pacific hake information and samples have been provided to NOAA FRAM Division in Newport, Oregon for incorporation into subsequent hake stock assessments. Yellowtail rockfish otoliths and length-frequency information are provided to Sandra Rosenfeld at the Department of Fisheries Marine Fish & Shellfish Division in Olympia, Washington for future stock assessments on this species. Biological samples of widow rockfish are sent to Don Pearson NMFS in Santa Cruz, California. Sablefish, jack and Pacific chub mackerel, darkblotched, bocaccio and canary rockfish have been retained at ODFW and are available for future biological study.

PROGRAM COSTS

In 2004, the cost of the Oregon, Washington and California portion of the SHOP was approximately \$71,468 (Table 14). Since 1995, most program funding has been provided by industry through PSMFC. Government costs (state agencies providing sampling

personnel, infrastructure, summary and analysis during winter months, data tracking, and council support on bycatch issues) are not included in the above summary. These costs have become more substantial over time due to the increasing attention paid to bycatch issues and are quite considerable now, amounting to months of staff time costing almost \$50,000.

Oregon shoreside processing plants hired 5 samplers to make observations at 5 processors. The WDFW and the CDFG provided minimal shoreside landing observations with state staff. Participating processors and those contributing to the cost of the program in 2004, were Ocean Gold Seafood, Jessie's Ilwaco Fish, Pacific Coast Seafood, Ocean Beauty, Pacific Shrimp, Trident Seafood, Bandon Pacific, Alber's Seafood, and Pacific Choice Seafood.

AREAS FOR IMPROVEMENT IN 2005

We list some of the issues that need to be addressed in 2005, to keep the hake fishery monitoring accurate and efficient.

- Continue to investigate whether it is feasible and identify obstacles to convert the Pacific hake EFP program into a normal monitored fishery. Several technical, legal, sampling and observation issues need to be addressed for this to happen. Some progress has been made by NOAA/NWR to begin this process. The environmental assessment required for this step is under review by NOAA, states, and industry.
- Determine what biological samples are needed for assessment and how biological sampling can be streamlined and its cost minimized.

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Note: Current and past shoreside hake observation reports are available on the internet at <http://hmsc.oregonstate.edu/odfw/reports/hake.html>

Table 1. Summary of the EFP shoreside component of the US Pacific hake fishery through 2004. Weights are in metric tons. *Please note the California fishery started April 1st for years 1997-2004.

Year	US optimum yield (mt)	Shoreside allocation (mt)	Hake landed (mt)	Percent under/over	Yellowtail bycatch (mt)	Widow bycatch (mt)	Participating vessels	Start date*	End date	Number of participating processors
1992	208,800	80,000	56,127	-29.84	59.37	84.20	23	4/15	10/30	7
1993	142,000	42,000	41,926	-0.18	137.89	155.68	24	4/15	8/24	13
1994	260,000	97,000	72,367	-25.39	255.5	216.76	33	4/15	11/23	8
1995	178,400	75,776	73,937	-2.43	273.82	221.92	35	4/15	7/25	15
1996	212,000	87,001	84,680	-2.67	521.62	586.83	37	5/15	9/10	11
1997	232,000	86,900	87,499	+0.69	233.02	157.92	38	6/15	8/22	12
1998	232,000	86,900	87,627	+0.84	501.06	360.02	35	6/15	10/13	13
1999	232,000	83,800	83,388	-0.49	481.39	191.74	36	6/15	9/13	14
2000	232,000	83,800	85,653	+2.21	189.81	82.54	36	6/15	9/15	14
2001 ¹	190,400	72,618	73,326	+0.97	95.86	43.60	29	6/15	9/26	13
2002 ²	129,600	44,906	45,276	+0.82	41.37	5.32	29	6/15	7/17	8
2003 ³	148,200	50,904	51,061	+0.31	48.7	8.97	35	6/15	7/14	9
2004 ⁴	250,000	90,510	89,251	-1.39	114.63	28.59	26	6/15	8/14	9

¹ In 2001, the fishery closed on 8/21/01. The Makah tribe then returned 10,000 mt of its allocation to NMFS, which reallocated it to the other fishery sectors. The shoreside component then reopened from 9/17 - 9/26/01.

² The Pacific hake stock was officially declared overfished in 2002.

³ In 2003, the fishery closed on 7/14/03 at 12:00 p.m.

⁴ In 2004, the California fishery closed on 5/22 12:00 p.m. then reopened on 6/15. The shoreside fishery closed on 8/14/2004 at 4:00 p.m.

Table 2. Weekly EFP Pacific hake landings and bycatch for Washington, Oregon, and California, 04/01/2004 - 08/14/2004. Data from fish tickets and observed landings in mt. Best available data as of 9/30/2004. Line down center of table indicates start of primary season north of CA/OR border (N 42°). No non-EFP landings were made during the primary season.

Week end date	4/3	4/10	4/17	4/24	5/1	5/8	5/15	5/22	5/29	6/5	6/12	6/19	6/26	7/3	7/10	7/17	7/24	7/31	8/7	8/14	EFP Fishery Total	
Week number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Number of EFP hake landings	5	14	17	11	14	18	13	17	0	0	0	68	109	113	114	125	124	121	123	128	1,134	
Hake landed (mt)	147	527	698	476	602	810	661	667	0	0	0	5,771	8,924	9,236	9,349	10,037	10,049	10,130	10,267	10,902	89,251	
Cumulative hake landed (mt)	147	674	1,372	1,848	2,450	3,260	3,921	4,588	4,588	4,588	4,588	10,359	19,283	28,519	37,868	47,905	57,954	68,084	78,351	89,251		
% of hake quota landed	0	0.74	1.52	2.04	2.71	3.60	4.33	5.07	5.07	5.07	5.07	11.45	21.30	31.51	41.84	52.93	64.03	75.22	86.57	98.61	98.61	
Num. of landings observed	0	0	1	1	1	2	1	1	0	0	0	23	35	35	44	44	41	44	49	50	372	
Num. of salmon	18	97	38	10	83	10	8	10				48	331	209	473	173	382	974	515	878	4,257	
Num. of Pacific halibut												20	9	4	1	4		1	2	9	52	
Num. of Dungeness crab																						
Yellowtail rockfish (mt)												12.14	27.62	14.02	5.34	16.98	19.97	2.44	4.56	11.57	114.64	
Widow rockfish (mt)		0.45	3.75	2.38	0.18	0.20	0.11	0.44				2.40	1.32	5.48	3.17	0.57	2.95	0.61	0.92	3.67	28.59	
Yelloweye rockfish (mt)												t	t			t	t		t		0.01	
Canary rockfish (mt)				t		t						0.04	0.07	0.22	0.05	0.09	0.14	0.11	0.07	0.03	0.83	
Darkblotched rockfish (mt)	t		t	0.07	0.01	0.03	0.06	0.45				0.01	0.01	0.02	t	0.01	0.01	0.06	0.01	t	0.74	
Boccaccio (mt)	t			t								0.01	t							t	0.02	
Pacific ocean perch (mt)												t		0.01	t	0.29	0.10	0.04	0.30	0.01	0.75	
Sablefish (mt)		0.01	0.12	0.05	0.10	0.53	0.12	0.10				0.24	37.12	9.46	16.07	7.98	2.02	2.43	14.31	22.67	113.33	
Pacific mackerel (mt)																	0.01		0.01	0.66	0.67	
Jack mackerel (mt)					t							0.01	0.99	0.54	3.28	16.83	11.85	16.09	22.96	34.62	107.16	
Lingcod (mt)		0.04	t	0.02	0.01	t	t	t				0.31	0.29	0.56	0.34	0.66	0.53	0.21	0.43	0.29	3.70	
Walleye pollock (mt)													0.02	0.41	1.53		t	5.28	0.15	t	7.39	
Pacific Herring (mt)												2.36	0.03	0.11	29.04	0.88	0.31	0.04	28.91	0.40	62.07	
American Shad (mt)												0.01	4.53	0.61	3.12	9.92	1.11	13.09	8.04	6.12	46.55	
Spiny Dogfish (mt)	t	0.01				t	0.01					2.42	1.06	2.71	1.87	1.52	5.82	2.92	7.89	3.52	29.75	
Misc. rockfish* (mt)	0.57	3.87	4.30	0.85	1.52	1.78	3.71	4.68				0.72	0.11	0.18	0.26	0.05	0.67	0.46	0.39	0.50	24.64	
Other** (mt)		0.01	0.03	t	0.01	t	0.01	0.04				0.36	0.55	0.25	0.40	0.45	0.63	0.23	0.65	0.84	4.46	

* Misc. rockfish include chilipepper, greenstripe, redstripe, sharpchin, shortbelly, shortspine thornyhead, and other slope and shelf rockfish.

** Other species include Pacific cod, sardine, flatfish(other than halibut), squid, shark, skates, octopus and jellyfish.

t = trace; less than 0.004 mt

Table 3. Cumulative shoreside hake fishery report for Oregon, 2004. Overall fishery total includes Oregon, Washington, and California totals and non-EFP trips. Washington and California data are combined for confidentiality. Best available data as of 9/30/04.

	Oregon only	CA/OR/WA		Oregon only	CA/OR/WA	
	EFP fishery total	Overall fishery total	Non-EFP fishery total	Observed total	Observed total	Percent landing category observed
Hake harvest (mt)	59,006	89,251	-	21,480	24,777	27.8
Number of deliveries	815	1,134	-	341	372	32.8
Salmon catch (no)	3,697	4,257	-	1,197	1,273	29.9
Pacific halibut (no)	52	52	-	10	10	19.2
Dungeness crab (no)	0	0	-	0	0	0
Yellowtail rockfish (kg)	32,992	114,640	-	2,992	12,676	11
Widow rockfish (kg)	12,199	28,589	-	4,424	4,954	17
Yelloweye rockfish (kg)	10	10	-	1	1	9
Canary rockfish (kg)	596	829	-	327	461	56
Darkblotched rockfish (kg)	108	736	-	89	105	14
Boccacio (kg)	17	23	-	12	15	66
Pacific ocean perch (kg)	398	749	-	248	293	39
Sablefish (kg)	111,975	113,330	-	42,652	43,125	38
Pacific mackerel (kg)	666	666	-	91	91	14
Jack mackerel (kg)	100,226	107,159	-	40,825	40,825	38
Lingcod (kg)	3,162	3,700	-	853	1,842	50
Walleye pollock (kg)	16	7,393	-	0	1	0
Pacific herring (kg)	62,039	62,065	-	6,806	6,806	11
American shad (kg)	32,417	46,546	-	5,828	7,246	16
Spiny dogfish (kg)	4,219	29,751	-	641	2,614	9
*Misc. rockfish (kg)	2,370	24,636	-	831	1,482	6
**Other species (kg)	3,217	4,459	-	1,780	2,040	46

*Misc. rockfish includes chilipepper, greenstripe, redstripe, sharpchin, shortbelly, shortspine thornyhead, and other slope and shelf rockfishes.

**Other species include: Pacific cod, Pacific pomfret, squid, shark, skate, flatfish (except halibut), sardine, and octopus.

Table 4. Percentage of trips observed by SHOP by port.

Dealer	Port	Number of observed trips	Number of trips	Percentage of trips observed
Pacific Coast Seafoods	Astoria	32	185	17.3
Bandon Pacific	Charleston	106	106	100.0
Albers Seafoods	Crescent City	3	29	10.3
Pacific Choice Seafoods	Eureka	4	80	5.0
Jessie's Ilwaco	Ilwaco	5	38	13.2
Ocean Beauty	Newport	11	57	19.3
Pacific Shrimp Seafoods	Newport	139	226	61.5
Trident Seafoods	Newport	53	241	22.0
Ocean Gold Seafoods	Westport	19	172	11.0

Table 5. Average bycatch in 2004 by port and vessel for overfished species, yellowtail and sablefish. Vessel rates are calculated as the average kg bycatch/trip and port rates are the average weight of all landings for each port. Vessels landing in more than one port show rates for each port. Bycatch is based on fish ticket weights. Limit for yellowtail rockfish is vessel catch average of 800 kg/landing(see text). Best available data as of 9/30/04

Port/Vessel	%									
	Landings observed	Widow rockfish	Yelloweye rockfish	Canary rockfish	Darkblotched rockfish	Boccacio rockfish	Lingcod	Pac.ocean perch	Yellowtail rockfish	Sablefish
Westport										
CHELLISSA	15.6	6.51		0.31	0.00		2.76	0.43	427.57	1.32
JAMIE MARIE	8.8	20.60		0.80	0.00		2.99	0.31	497.19	0.00
MARATHON	7.5	11.96		1.02	0.03		2.10	6.82	427.10	0.14
PACIFIC CHALLENGER	16.1	30.82		3.56	0.12		0.92	1.58	453.14	0.56
SEA CLIPPER	8.6	9.14		1.11	0.41		2.95	0.16	330.76	0.00
Westport Total	11.0	15.48	0.00	1.32	0.11	0.00	2.36	2.04	426.13	0.38
Illwaco										
MUIR MILACH	13.2	163.88		0.05			1.60		219.83	6.78
Illwaco Total	13.2	163.88	0.00	0.05	0.00	0.00	1.60	0.00	219.83	6.78
Astoria										
GEORGE ALLEN	13.9	14.67	0.03	0.18	0.00		2.04	0.03	137.98	3.10
NICOLE	9.1	131.45	0.03	0.32	0.00		4.32	0.00	259.23	6.07
PREDATOR	43.5	0.71	0.00	0.06	0.00		7.53	0.00	10.26	25.97
RAVEN	12.5	9.56	0.00	0.81	0.11		10.08	0.00	180.79	46.08
SEA CLIPPER	0.0	26.31	0.00	1.36	0.00		14.51	0.00	4.54	0.45
SEEKER	19.5	3.93	0.00	0.77	0.02		9.24	0.00	188.01	10.18
Astoria Total	17.3	37.29	0.01	0.47	0.03	0.00	6.67	0.00	170.56	17.50
Newport										
BAY ISLANDER	19.3	7.05	0.04	0.25	0.00	0.00	1.45	2.51	0.54	122.51
BLUE FOX	24.5	7.50	0.09	0.15	0.08	0.00	2.38	1.51	0.23	121.20
EXCALIBUR	33.3	3.44	0.00	0.20	0.03	0.11	6.20	0.00	0.11	330.34
GRUMPY J	32.0	9.43	0.00	0.34	0.07	0.00	1.03	0.02	6.39	16.75
LISA MELINDA	18.8	10.07	0.00	0.75	0.09	0.00	3.15	0.00	0.18	454.47
MISS BERDIE	75.6	6.81	0.00	2.78	0.10	0.00	2.74	1.60	4.55	146.64
MISS SUE	62.7	3.79	0.00	0.52	0.02	0.00	2.10	1.15	3.74	126.93
PACIFIC	67.3	3.96	0.00	0.42	0.14	0.00	1.00	0.05	0.97	41.84
PACIFIC FUTURE	47.2	1.78	0.00	0.78	0.00	0.00	2.07	0.06	0.48	244.52
PACIFIC RAM	18.8	48.74	0.03	0.14	0.11	0.00	2.30	0.08	0.06	154.40
PEGASUS	15.7	6.56	0.00	0.10	0.09	0.00	10.59	0.63	0.61	236.03
PREDATOR	100.0	1.50	0.00	1.59	0.14	0.00	9.84	0.00	2.40	1242.07
Newport Total	38.7	9.76	0.01	0.57	0.07	0.01	3.41	0.74	1.43	205.29
Charleston										
GRUMPY J	100.0	2.04		0.82	0.00	0.00	0.50	0.00	1.41	6.67
JEANETTE MARRIE	100.0	1.79		0.21	0.01	0.12	1.04	0.04	1.84	6.68
LAST STRAW		1.74		3.35	1.16	0.12	1.63	0.09	10.45	14.61
Charleston Total	100.0	1.78	0.00	1.99	0.64	0.11	1.31	0.06	6.51	11.02
Crescent City										
MISS SUE	10.3	114.34		0.05	11.78	0.03	0.44			30.77
Crescent City Total	10.3	114.34	0.00	0.05	11.78	0.03	0.44	0.00	0.00	30.77
Eureka										
FISHWISH	4.0	11.56		0.00	8.40	0.00	0.73			1.42
PACIFIC	6.9	36.17		0.11	0.57	0.18	0.19			0.60
WARRIOR II	3.7	106.47		0.00	1.13	0.00	1.36			2.18
Eureka Total	5.0	51.52	0.00	0.04	3.23	0.06	0.75	0.00	0.00	1.38
Grand Mean All Ports	32.8	25.21	0.01	0.73	0.65	0.02	3.26	0.66	101.09	99.94

Table 6. Weekly bycatch rate of salmon (number of salmon/mt of hake) in the shorebased Pacific hake fishery, 1992-2003. Rates for 1992-1994 are based on observer data at-sea and shoreside. Rates for 1995-2004 are based on all salmon species donated to state agencies by processors. See table 7 and text for salmon species composition. Rates are all salmon species per metric ton of hake.

Month	1992*	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
April		0.088	0.042	0.069	0.000		0.000				0.000	0.000	0.122
		0.076	0.074	0.398	0.003	0.000	0.054			0.105	0.001	0.037	0.182
		0.019	0.052	0.422	0.000	0.000	0.000			0.031	0.000	0.167	0.054
		0.135	0.031	0.018	0.000	0.000	0.000		0.026	0.000	0.102	0.050	0.021
May		0.038	0.015	0.041	0.000	0.000	0.000		0.298	0.012	0.000	0.000	0.138
	0.019	0.034	0.002	0.040	0.000	0.001	0.049	0.013	0.132	0.008	0.028	0.000	0.012
	0.097	0.054	0.004	0.019	0.029	0.010	0.101	0.000	0.022	0.058	0.000	0.059	0.012
	0.056	0.014	0.003	0.011	0.136	0.003	0.205	0.000	0.137	0.126	0.000	0.469	0.015
June	0.028	0.019	0.000	0.004	0.024	0.000	0.053	0.000	0.280	0.014	0.000	0.000	0.000
	0.015	0.021	0.017	0.008	0.007	0.000	0.041	0.000	0.186	0.000	0.011	0.015	0.000
	0.004	0.000	0.007	0.032	0.007	0.000	0.028	0.000	0.034	0.000	0.023	0.000	0.000
	0.001	0.001	0.007	0.013	0.000	0.011	0.006	0.002	0.005	0.030	0.012	0.008	0.008
July	0.000	0.001	0.001	0.035	0.001	0.005	0.005	0.005	0.072	0.082	0.013	0.007	0.035
	0.000	0.011	0.001	0.024	0.000	0.010	0.001	0.013	0.049	0.045	0.009	0.003	0.023
	0.002	0.010	0.003	0.011	0.004	0.016	0.002	0.007	0.011	0.022	0.006	0.002	0.050
	0.003	0.004	0.001		0.003	0.025	0.011	0.053	0.040	0.227	0.115	0.001	0.016
August	0.008	0.002	0.001		0.002	0.034	0.050	0.064	0.018	0.027			0.037
	0.002	0.003	0.003		0.001	0.012	0.013	0.017	0.093	0.012			0.096
	0.004	0.008	0.002		0.001	0.025	0.033	0.029	0.027	0.010			0.050
	0.005	0.003	0.001		0.000	0.014	0.014	0.021	0.018	0.006			0.080
September	0.014	0.003	0.000		0.000	0.022	0.014	0.020	0.029	0.027			
	0.015		0.002		0.000		0.010	0.009	0.053	0.003			
	0.002		0.004		0.000		0.028	0.004	0.027	NA			
	0.009		0.008		0.000		0.069	0.003	0.027	NA			
October	0.017		0.001				0.094	0.011	0.008	0.001			
	0.005		0.003				0.025			0.001			
	0.016		0.010				0.003						
	0.012		0.000				0.005						
	0.001	0.002				0.008							
	0.003	0.039											
	0.014												
Total rate (#/mt)	0.007	0.008	0.008	0.040	0.008	0.018	0.020	0.021	0.039	0.041	0.025	0.008	0.048
Total salmon landed	380	333	566	2,972	674	1,561	1,713	1,712	3,330	2,997	1,148	425	4,257

*Oregon Only

Note: Bold text indicates highest weekly rate for season.

Table 7. Salmon incidentally taken in the shoreside hake fishery from 1992-2004. Rate is calculated as number of fish/mt hake.

Year	Hake (mt)	Number of chinook	Rate of chinook	Number of coho	Number of pink	Number of chum	Number of sockeye	Total	Total rate of salmon
								number of salmon	
1992	56,127	380	0.007	0	0	0	0	380	0.007
1993	41,926	310	0.007	1	22	0	0	333	0.008
1994	72,367	563	0.008	3	0	0	0	566	0.008
1995	73,937	2,954	0.040	2	15	1	0	2,972	0.040
1996	84,680	674	0.008	0	0	0	0	674	0.008
1997	87,499	1,558	0.018	3	0	0	0	1,561	0.018
1998	87,627	1,699	0.019	8	0	5	1	1,713	0.020
1999	83,388	1,696	0.020	5	11	0	0	1,712	0.021
2000	85,653	3,306	0.039	23	0	1	0	3,330	0.039
2001	73,326	2,627	0.036	35	303	32	0	2,997	0.041
2002	45,276	1,062	0.023	14	0	72	0	1,148	0.025
2003	51,061	425	0.008	0	0	0	0	425	0.008
2004	89,251	4,206	0.047	8	0	43	0	4,260	0.048

Table 8. Biological characteristics of observed Chinook salmon in the 1998-2004 Shoreside Hake Observation Program. Condition factor calculated as $(W(g)/L(cm)^3)*100$.

Year	Female.				Male			
	Mean length (cm)	Mean weight (gm)	Condition factor	Number of fish	Mean length (cm)	Mean weight (gm)	Condition factor	Number of fish
1992	56	2,149	1.212	153	54	2,023	1.305	154
1993	54	2,177	1.400	80	51	2,064	1.514	69
1994	56	2,478	1.413	121	56	2,437	1.390	110
1995	57	2,613	1.411	209	57	2,658	1.422	179
1996	60	3,233	1.465	94	54	2,596	1.626	130
1997	60	2,918	1.346	731	60	3,055	1.441	680
1998	63	4,002	1.600	539	62	3,804	1.596	447
1999	60	3,107	1.438	808	61	3,467	1.527	595
2000	54	2,350	1.492	817	53	2,260	1.518	746
2001	52	2,276	1.619	695	50	1,867	1.494	915
2002	53	2,172	1.459	398	50	1,983	1.586	433
2003	60	2,967	1.374	207	60	3,095	1.433	181
2004	57	2,666	1.440	1684	58	2,771	1.420	1680

Table 9. Number of Chinook salmon observed by SHOP with a CWT 1992-2004.

N/A means not available.

Year	Total Chinook Salmon recovered by SHOP	Number of Chinook salmon snouts collected	Number of fish with CWT	% of total Chinook marked with CWT
1992	380	0	N/A	N/A
1993	310	14	13	4.2
1994	563	2	0	0.0
1995	2,954	3	0	0.0
1996	674	28	23	3.4
1997	1,158	170	66	5.7
1998	1,699	69	47	2.8
1999	1,696	111	68	4.0
2000	3,306	292	141	4.3
2001	2,627	184	89	3.4
2002	1,062	77	19	1.8
2003	425	55	N/A	N/A
2004	4,206	425	N/A	N/A

Table 10. Hatchery Chinook recovered in SHOP 1992-2002 by release basin and hatchery location. No tags recovered 1994-1995.

Release Basin	1993	1996	1997	1998	1999	2000	2001	2002	2003	Total
Columbia	6	4	20	2	26	84	53	10	N/A	205
Sacramento / San Joaq.	1	4	20	31	13	9	20	5	N/A	103
British Columbia		8	5	4	15	12	3	2	N/A	49
Elk River	3	4	7	1	5	18	5	1	N/A	44
Klamath		1	10	4	2	2	2	1	N/A	22
Puget Sound			1	4	4	7	2		N/A	18
Umpqua	1	1	1		1	4	2		N/A	10
Rogue	1	1	2	1		3			N/A	8
OR Coast					1	1	1		N/A	3
Other	1				1	1	1		N/A	4
Total	13	23	66	47	68	141	89	19		466

Table 11. Summary of sampling conducted in each port during the 2004 SHOP. Samples consist of length-frequency only samples and biological samples (otoliths, length, weight, sex, and maturity).

Port	Species	Length-frequency samples		Biological samples		
		Fish per sample	Fish sampled	Fish per sample	Number of Samples	Fish sampled
Westport	Pacific hake	100	908	20	9	180
	Jack mackerel				9	97
	Widow rockfish				17	167
	Yellowtail rockfish				18	1,012
	Canary rockfish				12	66
	Sablefish				3	20
	Darkblotched rockfish				2	6
	Bocaccio				1	1
Hwaco	Pacific hake	100	509	20	4	80
	Jack mackerel				3	50
	Widow rockfish				1	6
	Yellowtail rockfish				5	80
	Sablefish				2	31
Astoria	Pacific hake	100	1,106	20	28	540
	Jack mackerel			30	6	210
	Widow rockfish			30-50	5	250
	Yellowtail rockfish			30-50	14	700
	Canary rockfish					6
	Sablefish			30	4	120
	Darkblotched rockfish					10
Newport	Pacific hake	100	1,100	20	31	620
	Jack mackerel			30	11	330
	Widow rockfish			30-50	30	30
	Yellowtail rockfish			30-50	1	50
	Canary rockfish					99
	Sablefish			30	8	240
	Darkblotched rockfish					27
	Bocaccio					1
	Yelloweye rockfish					1
	Redstripe rockfish				1	50
Charleston	Pacific hake	100	1,907	20		
	Jack mackerel			30	2	60
	Yellowtail rockfish			30-50	2	100
	Canary rockfish					38
	Sablefish			30	2	60
	Darkblotched rockfish					13
					1	
Crescent City	Pacific hake	100				
	Chilipepper rockfish				1	72
Eureka	Pacific hake	100	200	20	1	20
	Widow rockfish			15	6	89
	Chilipepper rockfish			43	9	384
	Darkblotched RF			35	2	70
	Canary			1	1	1
Total for all ports	Pacific hake	100	5,730			1,440
	Jack mackerel					747
	Widow rockfish					542
	Yellowtail rockfish					1,942
	Canary rockfish					210
	Sablefish					471
	Bocaccio					3
	Darkblotched rockfish					126
	Chilipepper rockfish					72
	Redstipe rockfish					50

Table 12. Biological characteristics of bycatch species sampled in the 2004 SHOP. Condition factor is calculated as $(W(g)/L(cm)^3)*100$. Ratio is number of males divided by total number of fish sampled.

Species	Female				Male				Ratio
	Mean length (cm)	Mean weight	Condition factor	Number of fish	Mean length (cm)	Mean weight	Condition factor	Number of fish	Male:Female
Jack mackerel	52	1,641	1.163	298	53	1,768	1.164	300	50%
Yellowtail rockfish	44	1,149	1.317	397	42	1,103	1.450	453	53%
Canary rockfish	48	1,657	1.503	67	45	1,310	1.439	76	53%
Widow rockfish	36	726	1.609	81	37	846	1.700	149	65%
Darkblotched rockfish	31	570	1.858	16	31	413	1.331	34	68%
Sablefish	53	1,526	1.054	188	51	1,406	1.063	232	55%

Table 13. Biological characteristics of Pacific hake sampled by the SHOP. Condition factor is calculated as $(W(g)/L(cm)^3)*100$. Ratio is number of males divided by total number of fish sampled.

Year	Female				Male				Ratio
	Mean length (cm)	Mean weight	Condition factor	Number of fish	Mean length (cm)	Mean weight	Condition factor	Number of fish	Male:Female
1993	43	485	0.602	274	43	472	0.575	336	55%
1994	45	582	0.632	571	44	559	0.641	698	55%
1995	46	576	0.596	535	45	552	0.595	662	55%
1996	42	702	0.932	471	42	686	0.936	449	49%
1997	44	523	0.631	808	43	478	0.622	832	51%
1998	41	455	0.658	748	41	429	0.628	852	53%
1999	42	494	0.687	856	40	454	0.688	744	47%
2000	47	763	0.757	733	45	692	0.735	662	47%
2001	45	644	0.696	802	45	627	0.684	798	50%
2002	43	524	0.664	980	42	507	0.668	695	41%
2003	41	530	0.772	702	40	516	0.781	855	55%
2004	45	553	0.589	688	44	470	0.551	851	55%

Table 14. 1995-2004 Shoreside Hake Observation Program budget. Oregon, Washington and California costs include costs for supplies, travel, vehicle use, and salaries. Some fishery administration costs are paid for by industry and included in the Oregon costs. Estimated industry sampler costs are for 15% sampling coverage for all ports.

Year	Length of primary season	Shoreside Allocation (mt)	Oregon Cost (\$)	Washington and California Costs (\$)	Estimated Industry Samplers (\$)	Total cost (\$)	Cost per mt whiting (\$/mt)	Cost per day of fishery (\$/d)
1995	102	73,937	51,000	18,000	25,000	94,000	1.27	921
1996	119	84,680	49,000	18,000	29,000	96,000	1.13	806
1997	69	86,900	48,000	27,000	30,000	105,000	1.21	1,522
1998	121	86,900	49,000	27,000	30,000	106,000	1.22	876
1999	91	83,800	51,339	27,000	32,544	110,883	1.32	1,218
2000	93	83,800	56,152	27,000	32,544	115,696	1.38	1,244
2001	76	72,618	64,738	27,000	35,770	127,508	1.76	1,678
2002	31	44,906	56,297	27,000	29,808	113,105	2.52	3,649
2003	30	50,904	58,519	18,000	29,808	106,327	2.09	3,544
2004	60	90,510	53,468	18,000	27,000	98,468	1.08	1,641

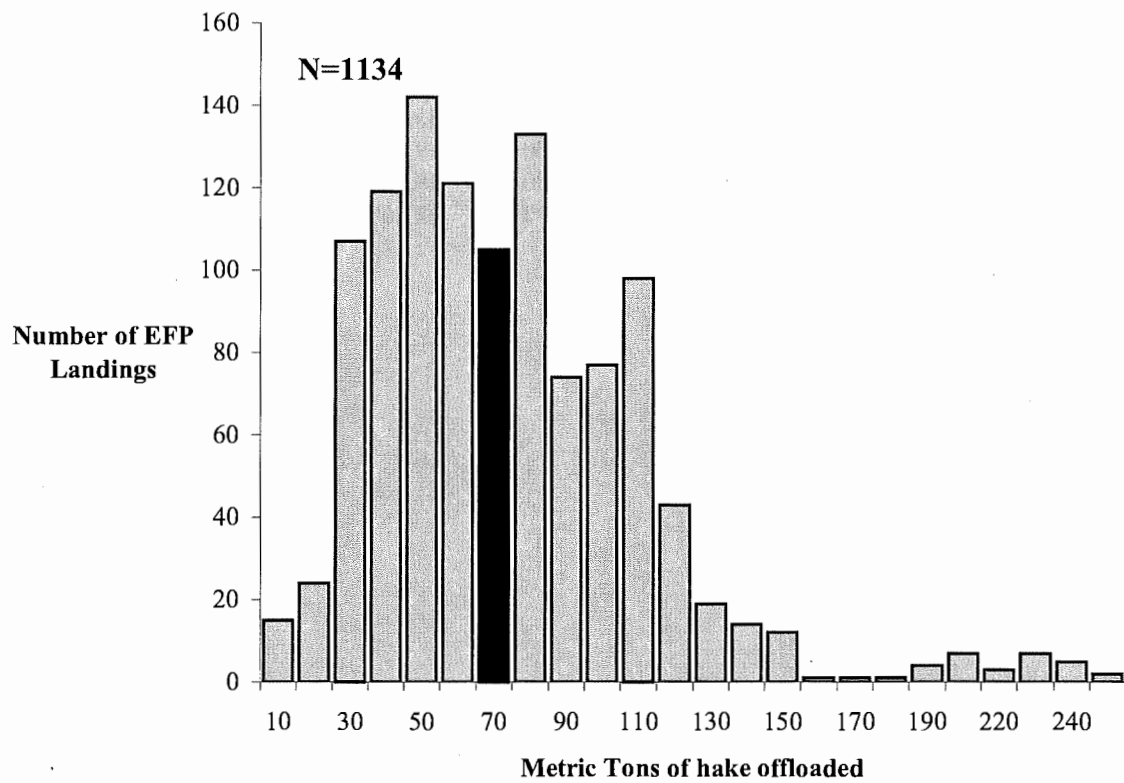


Figure 1. Frequency distribution of hake landing weights in the 2004 shoreside EFP hake fishery. Black bar indicates mean landing weight.

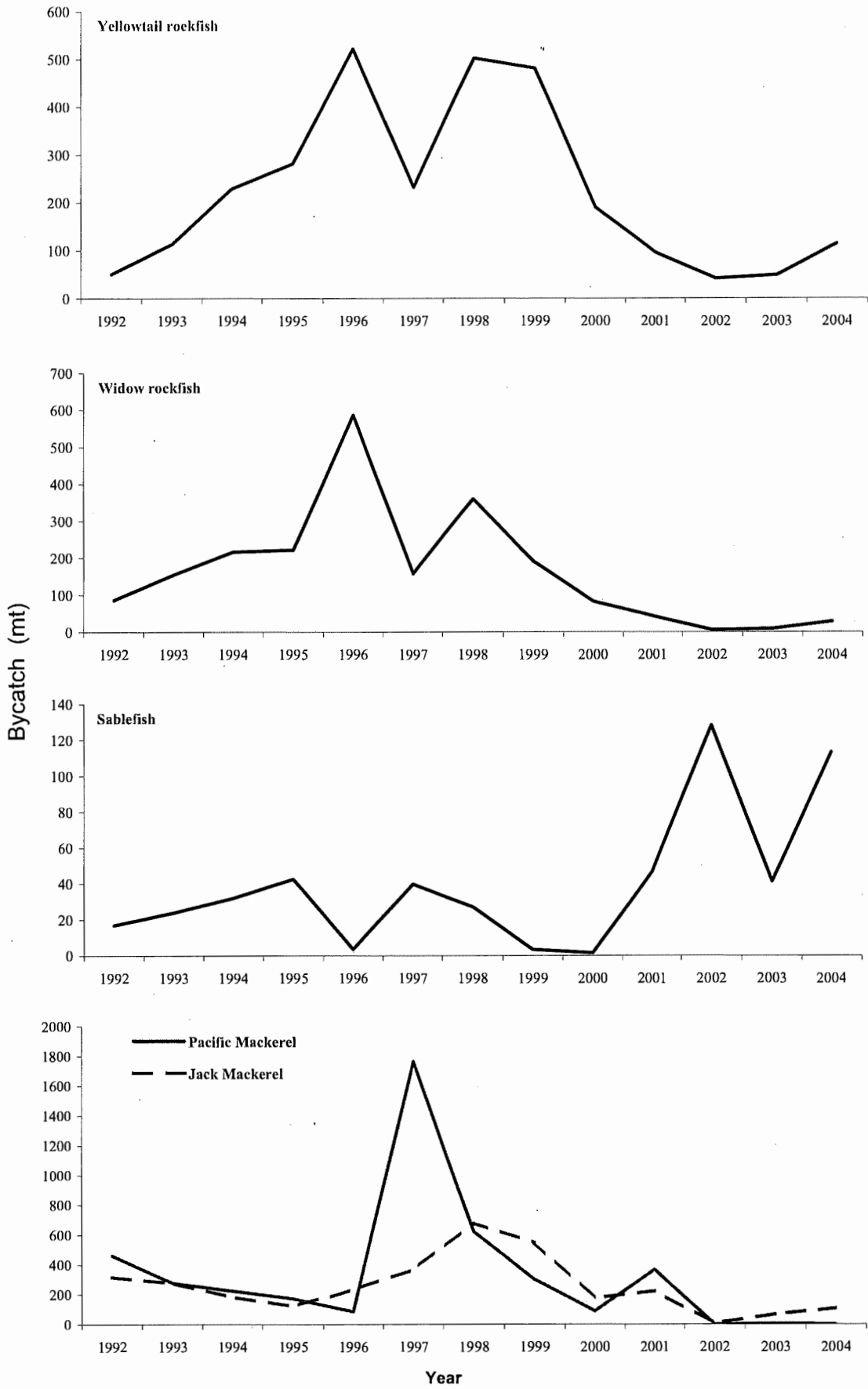


Figure 2. Trends in major bycatch components of the shoreside hake fishery, 1992-2004.

Note: 1992 allowed sorting of bycatch

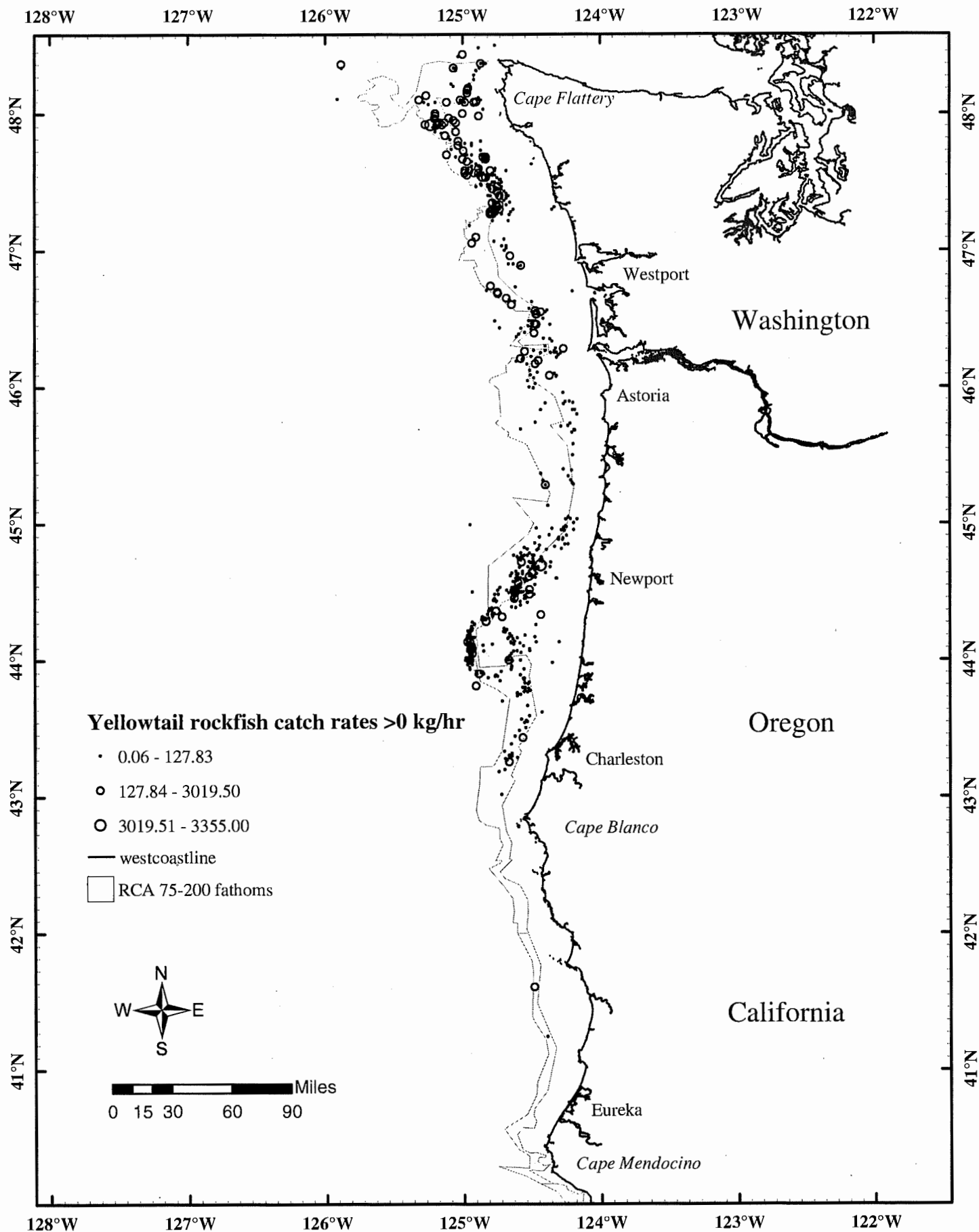


Figure 3. Yellowtail rockfish catch rates in kg/hr towed for single tow trips 1999-2003, (n=691).

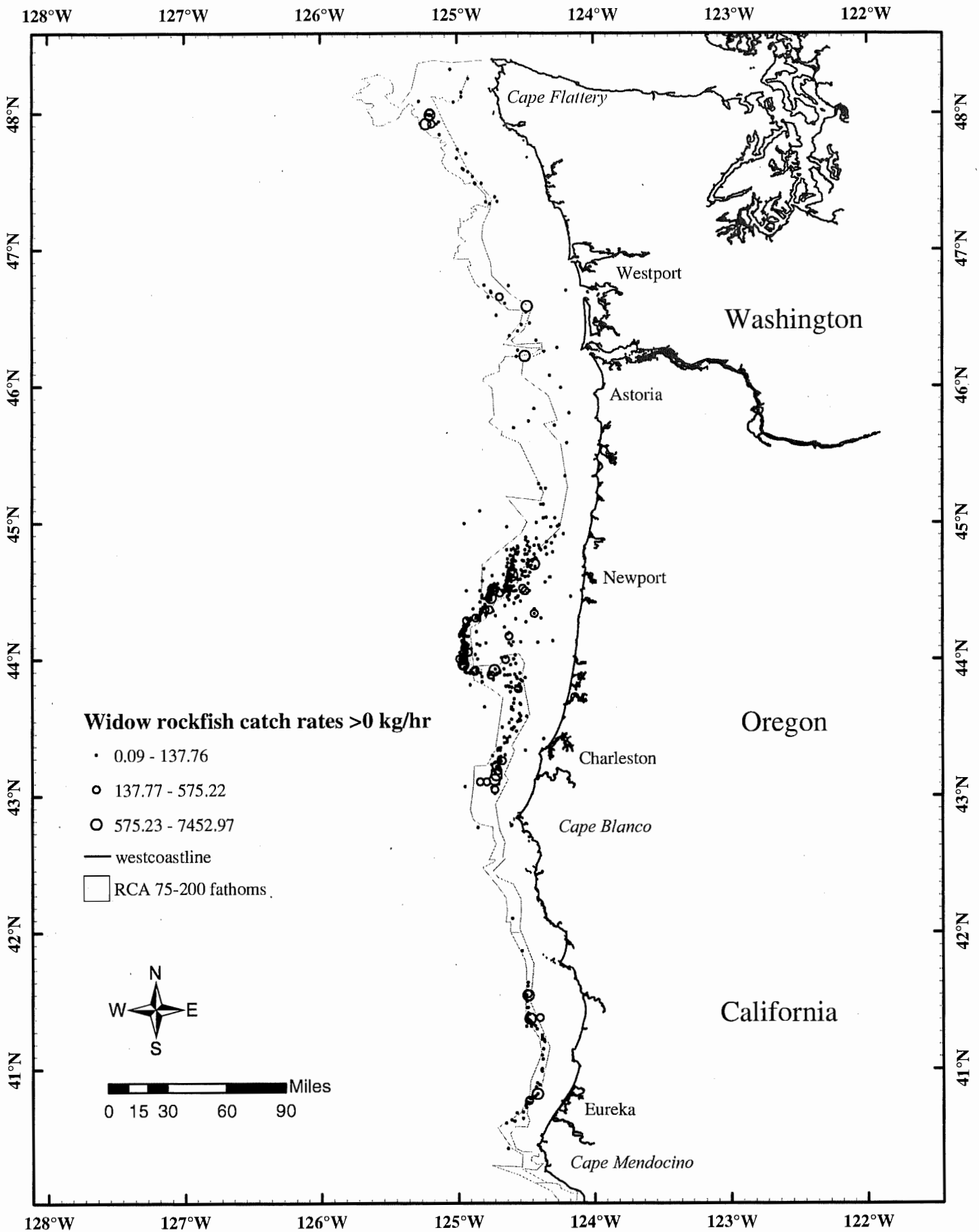


Figure 4. Widow rockfish catch rates in kg/hr towed for single tow trips 1999-2003, (n=680).

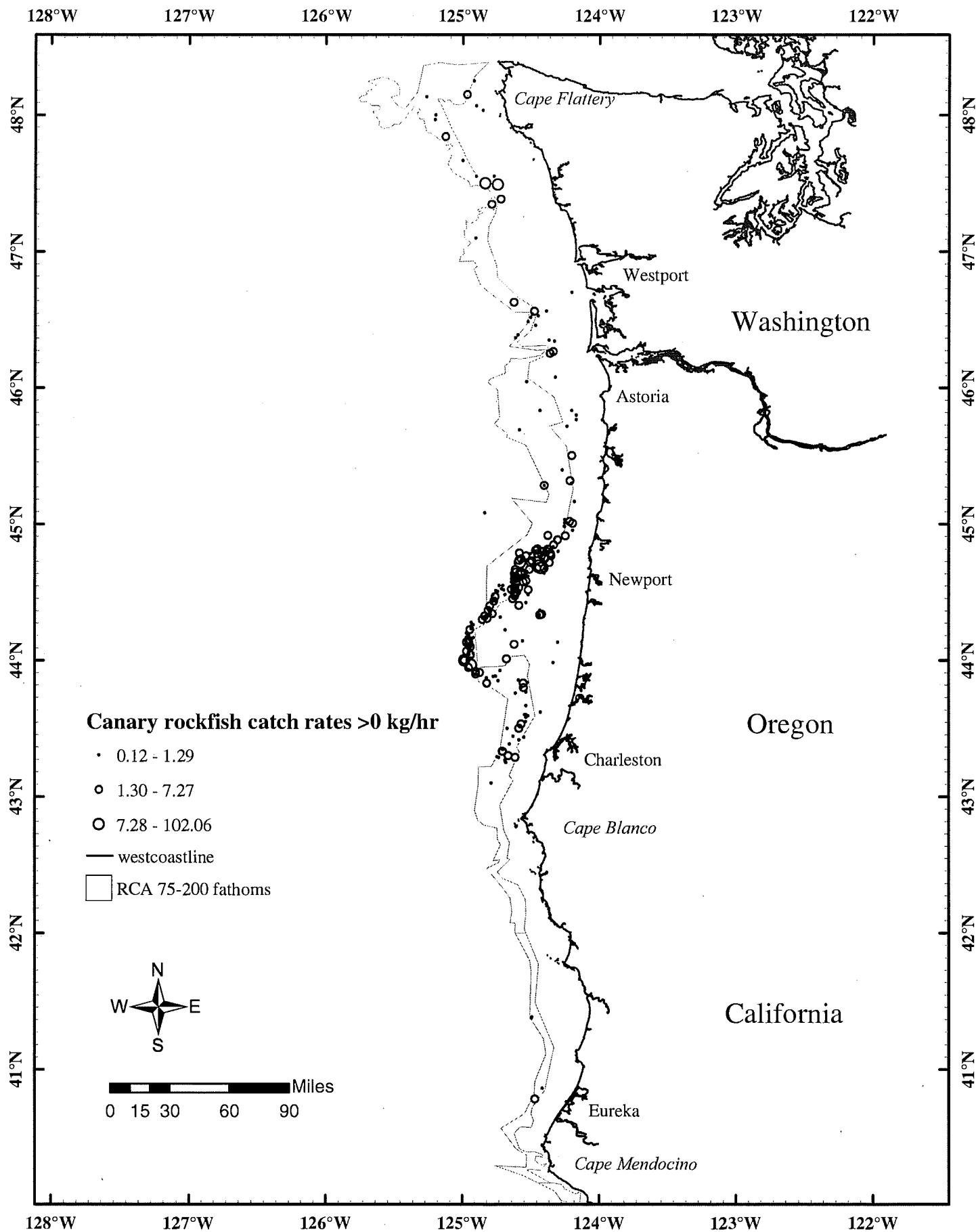


Figure 5. Canary rockfish catch rates in kg/hr towed for single tow trips 1999-2003, (n=263).

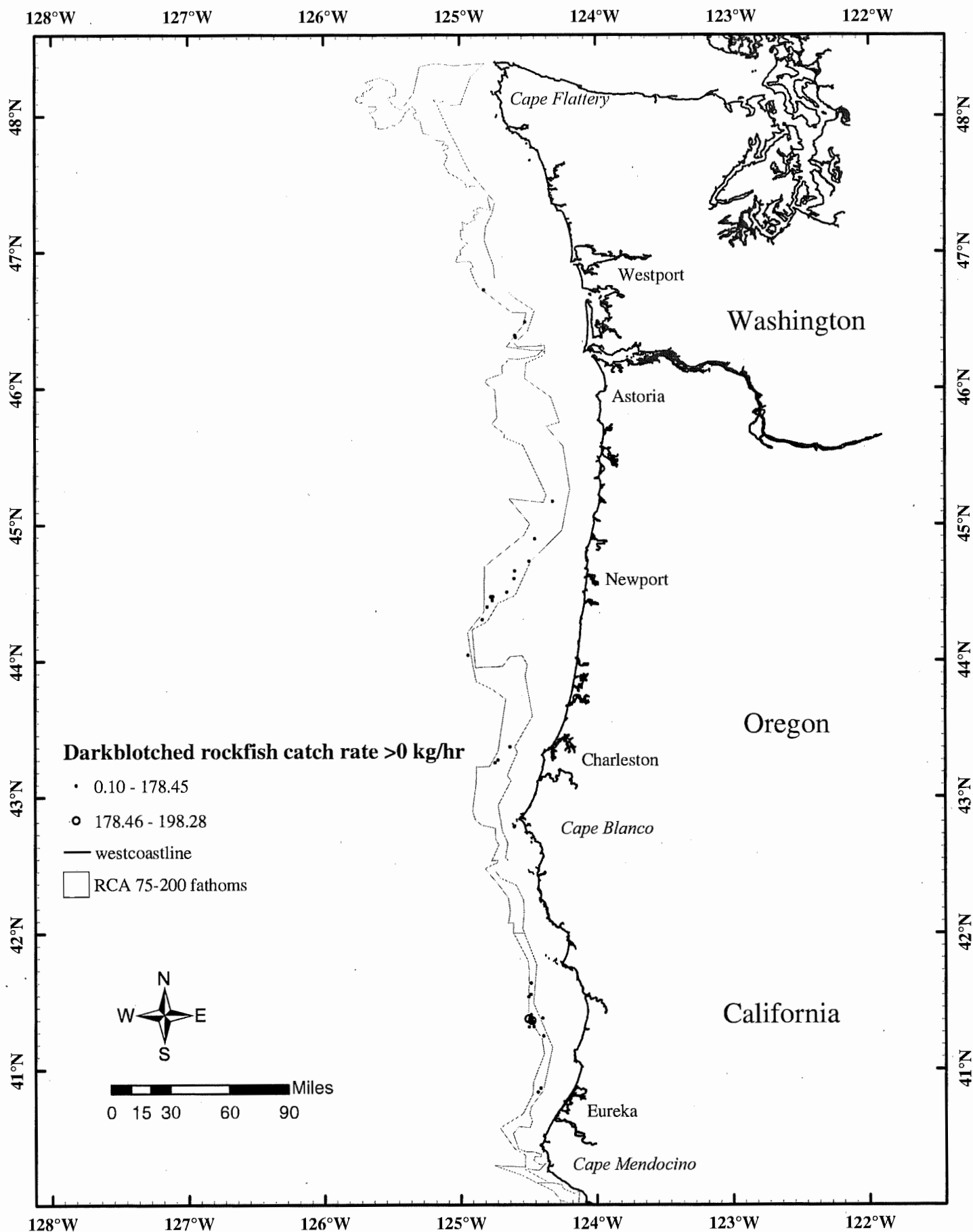


Figure 6. Darkblotched rockfish catch rates in kg/hr towed for single tow trips 1999-2003, (n=36).

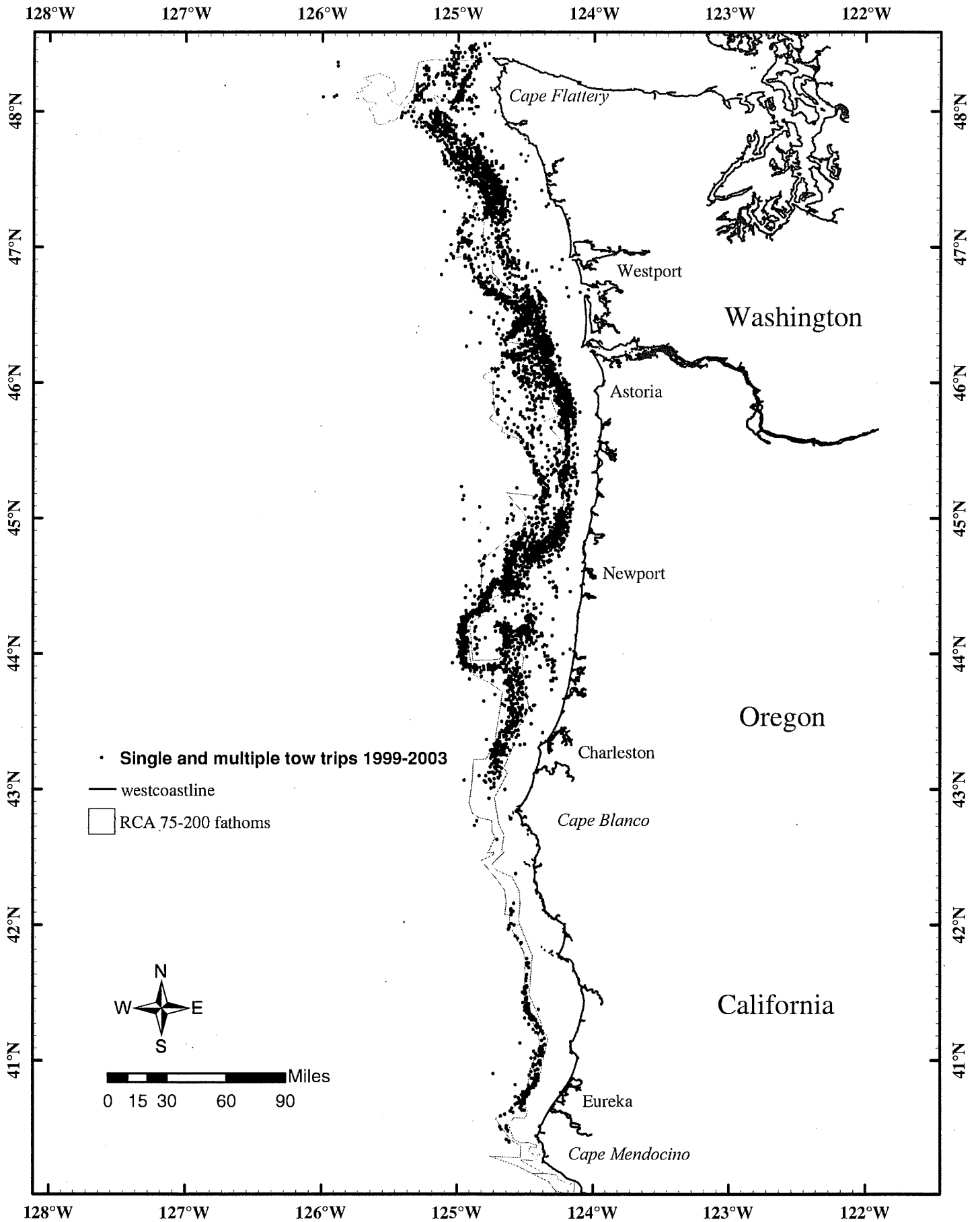


Figure 7. All tows for single and multi-tow trips in the Shoreside Hake Fishery 1999-2003, (n=6535).

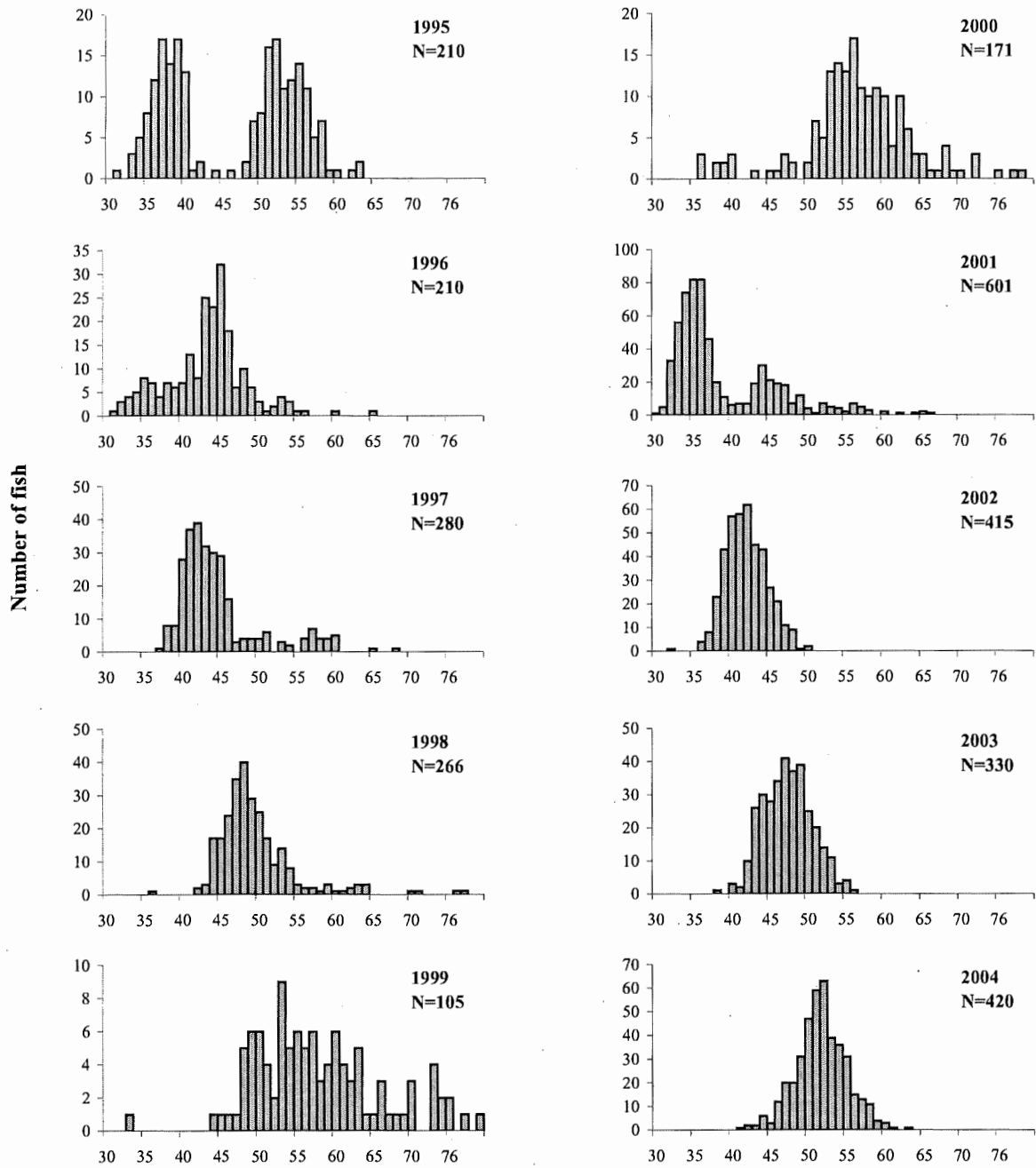


Figure 8. Length-frequency distributions of sablefish in the Oregon SHOP, 1995-2004. No samples were taken in Washington or California.

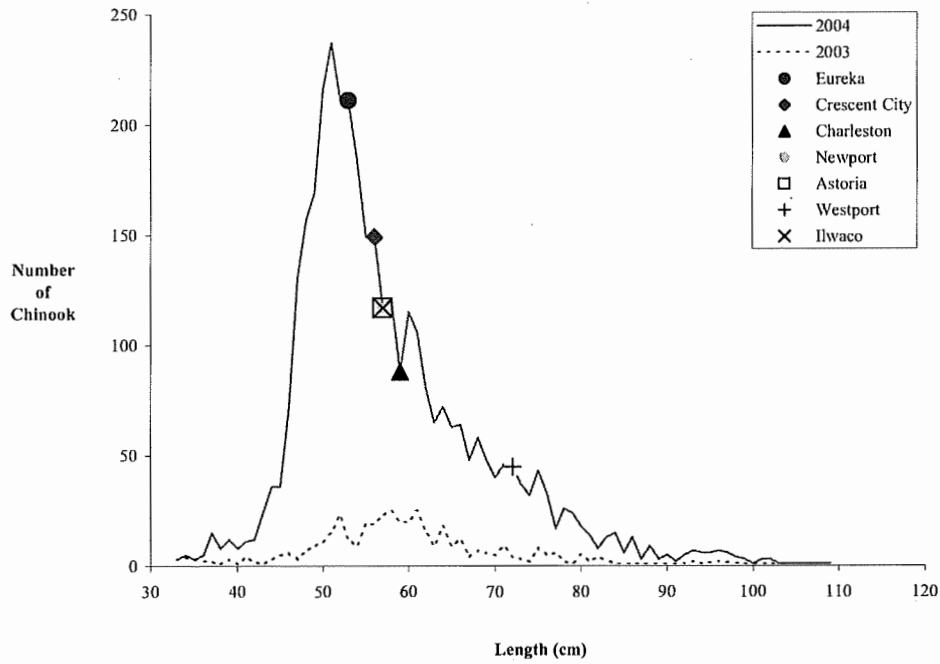


Figure 9. Distributions of Chinook salmon length by port in 2003 and 2004. Symbols represent 2004 mean lengths by port.

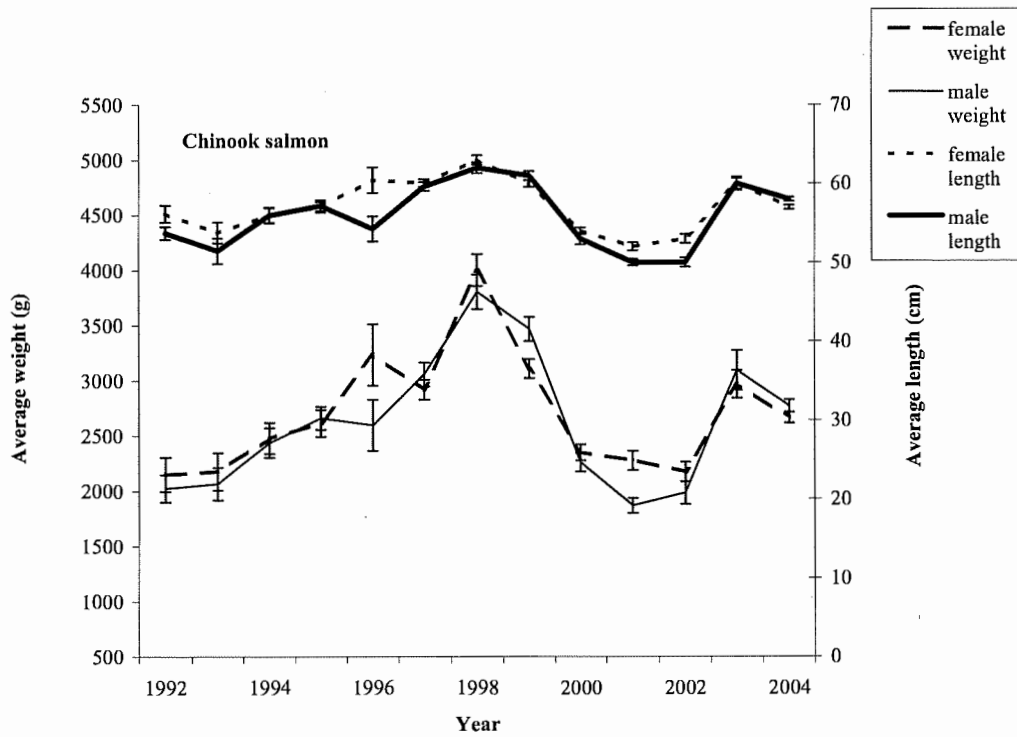


Figure 10. Trends in average weight and length (\pm SEM) for Chinook salmon, 1992-2004.

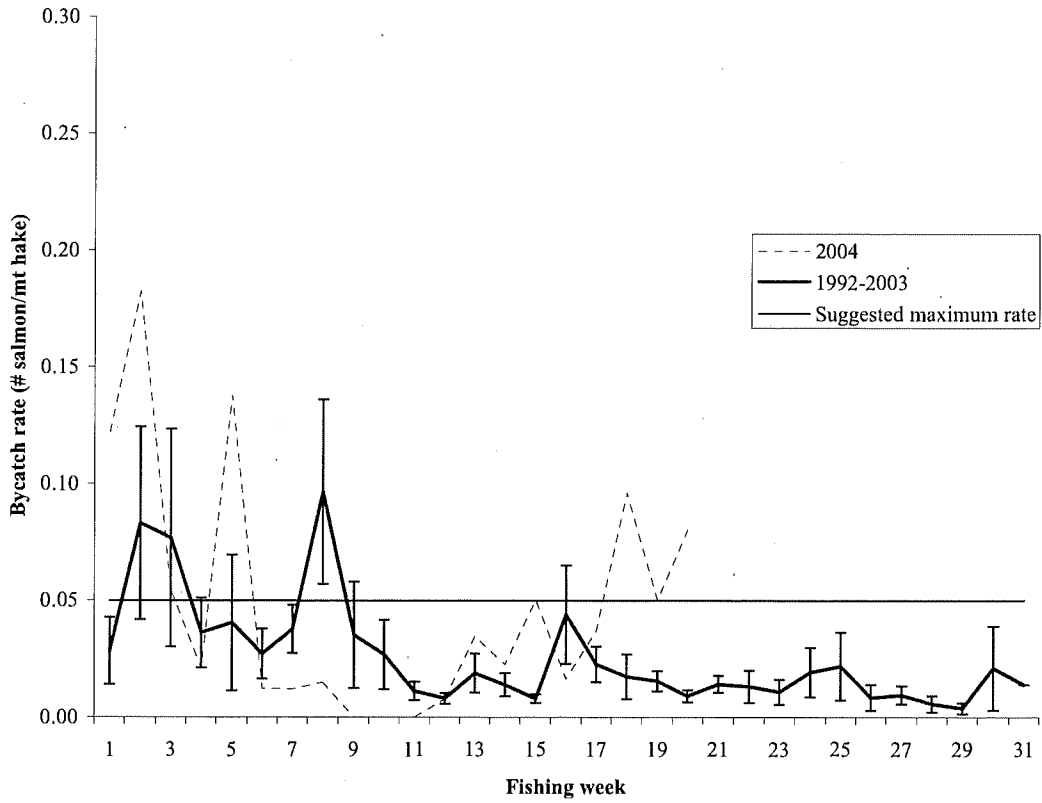


Figure 11. Weekly average bycatch rate (\pm SEM) of salmon in the 2004 shoreside Pacific hake fishery compared to a twelve-year average rate.

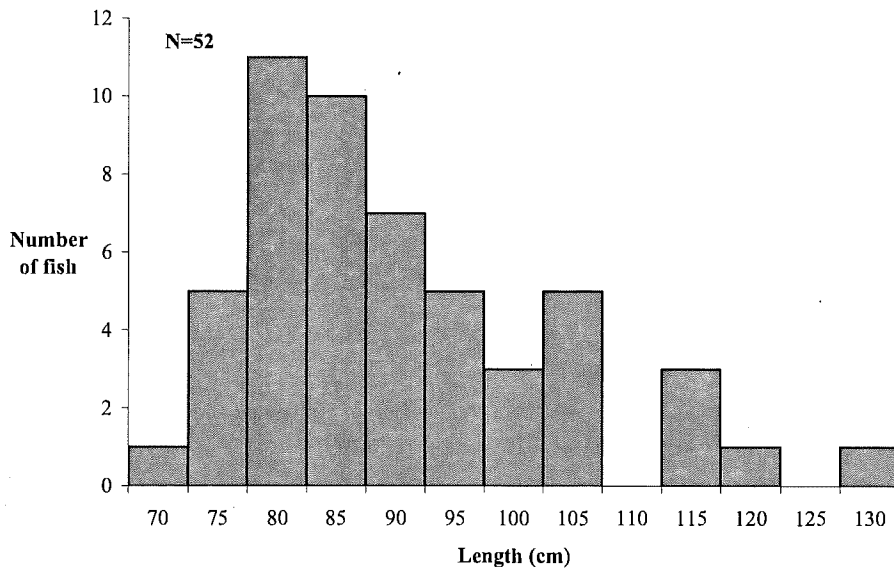


Figure 12. Length-frequency distribution of Pacific halibut in the 2004 SHOP.

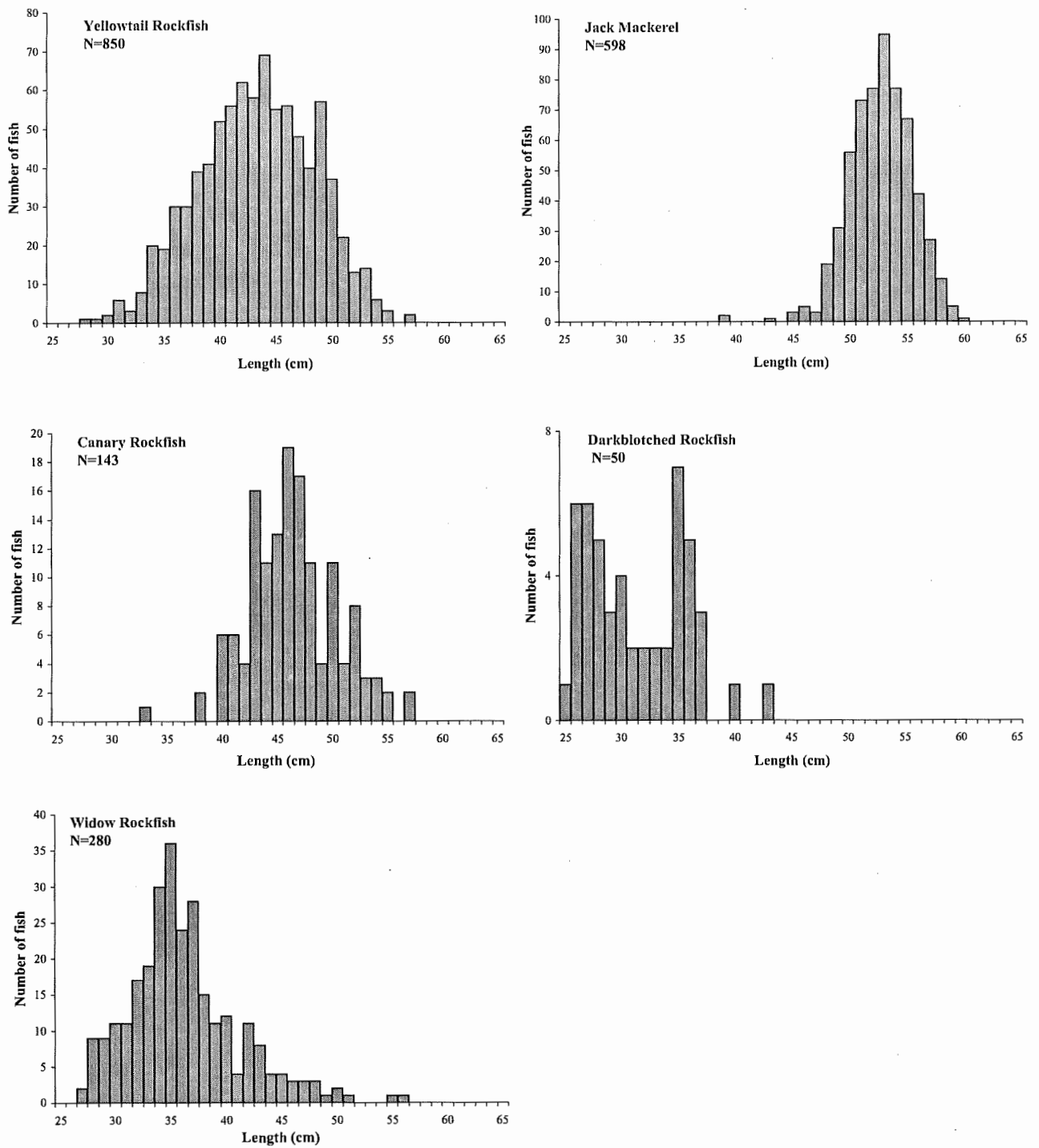


Figure 13. Length-frequency distributions for yellowtail, jack mackerel, canary, darkblotched and widow rockfish observed in the Oregon SHOP, 2004. Sample data from other ports were not readily available.

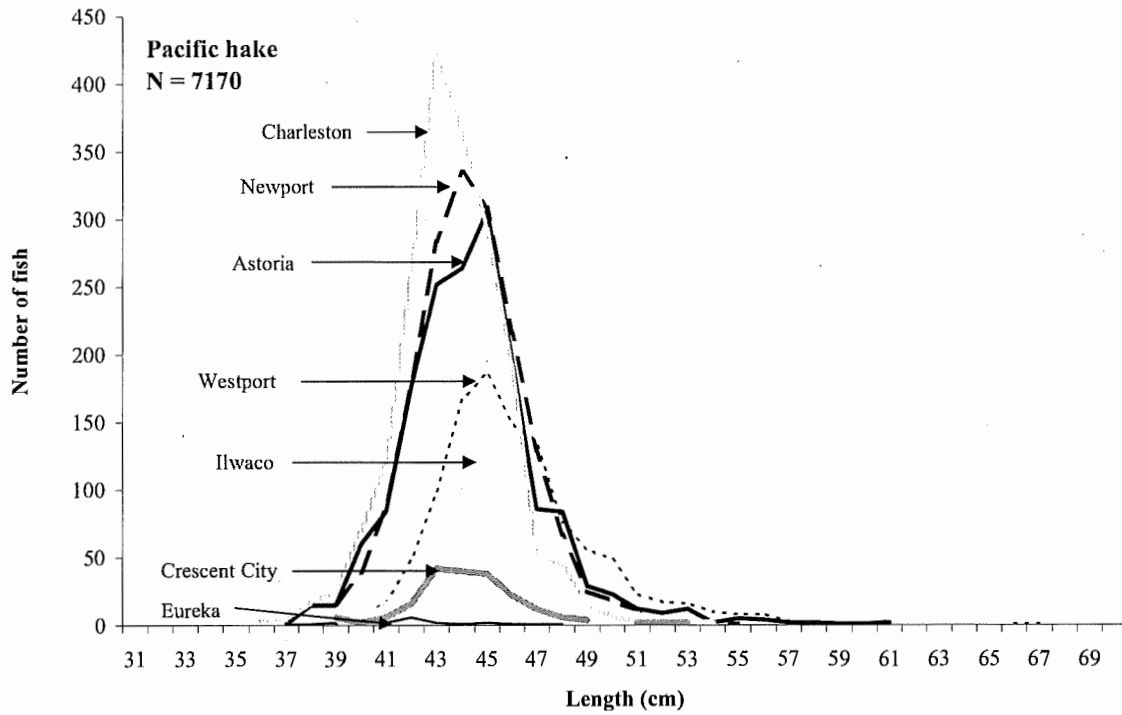


Figure 14. Length-frequency distributions of Pacific hake by port in 2004 shorside Pacific hake fishery.

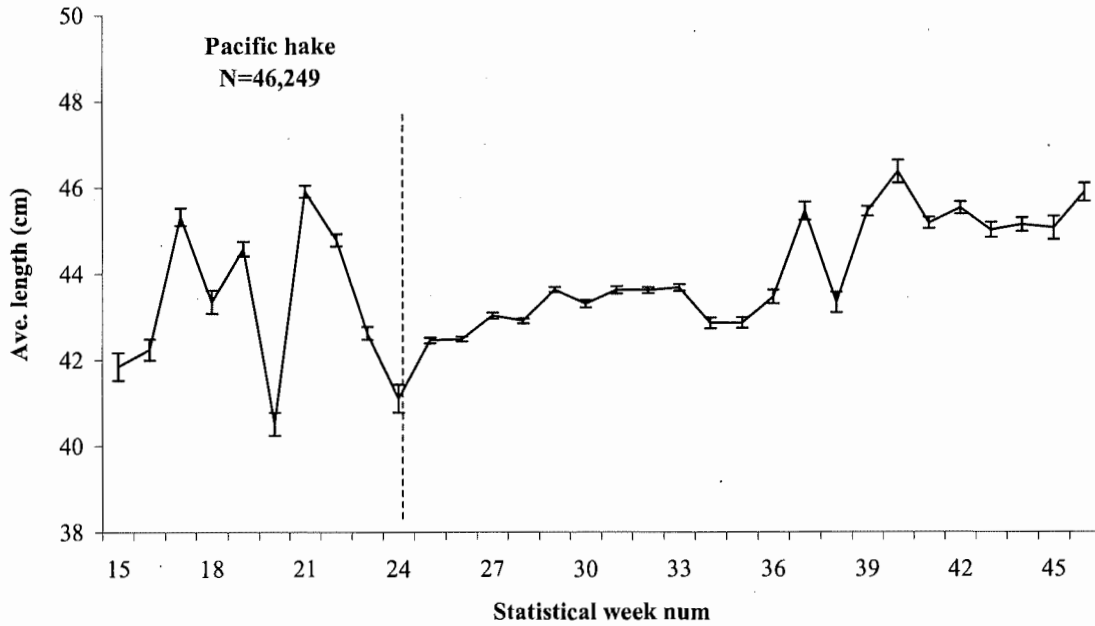


Figure 15. Average length (\pm SEM) of Pacific hake by statistical week from 1993-2004. Dashed line down center of graph indicates start of primary season north of CA/OR border (N 42°).

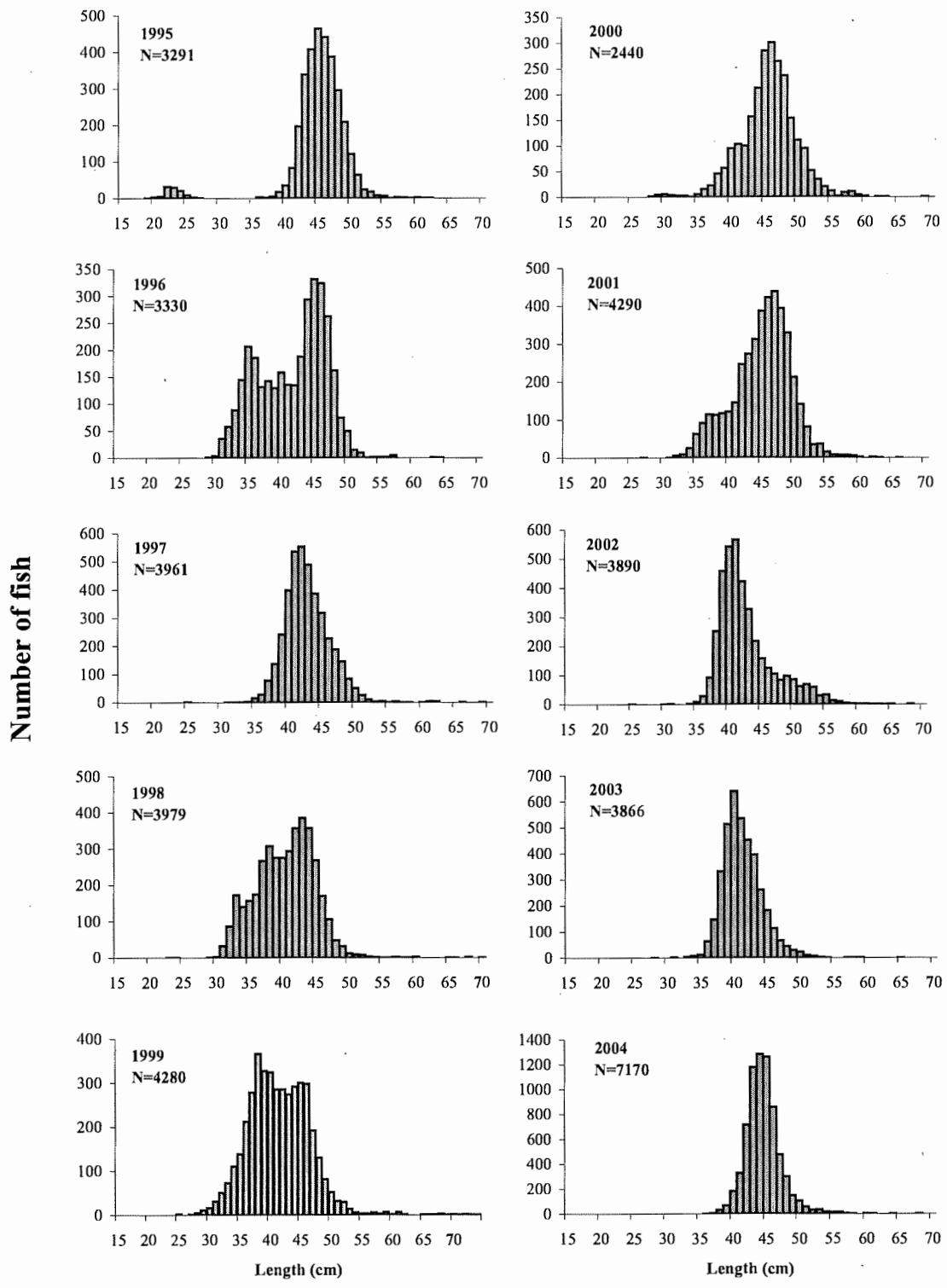


Figure 16. History of length-frequency distributions of Pacific hake in the Oregon shoreside hake fishery, 1995-2001. 2002-2004 are Oregon, California and Washington samples.

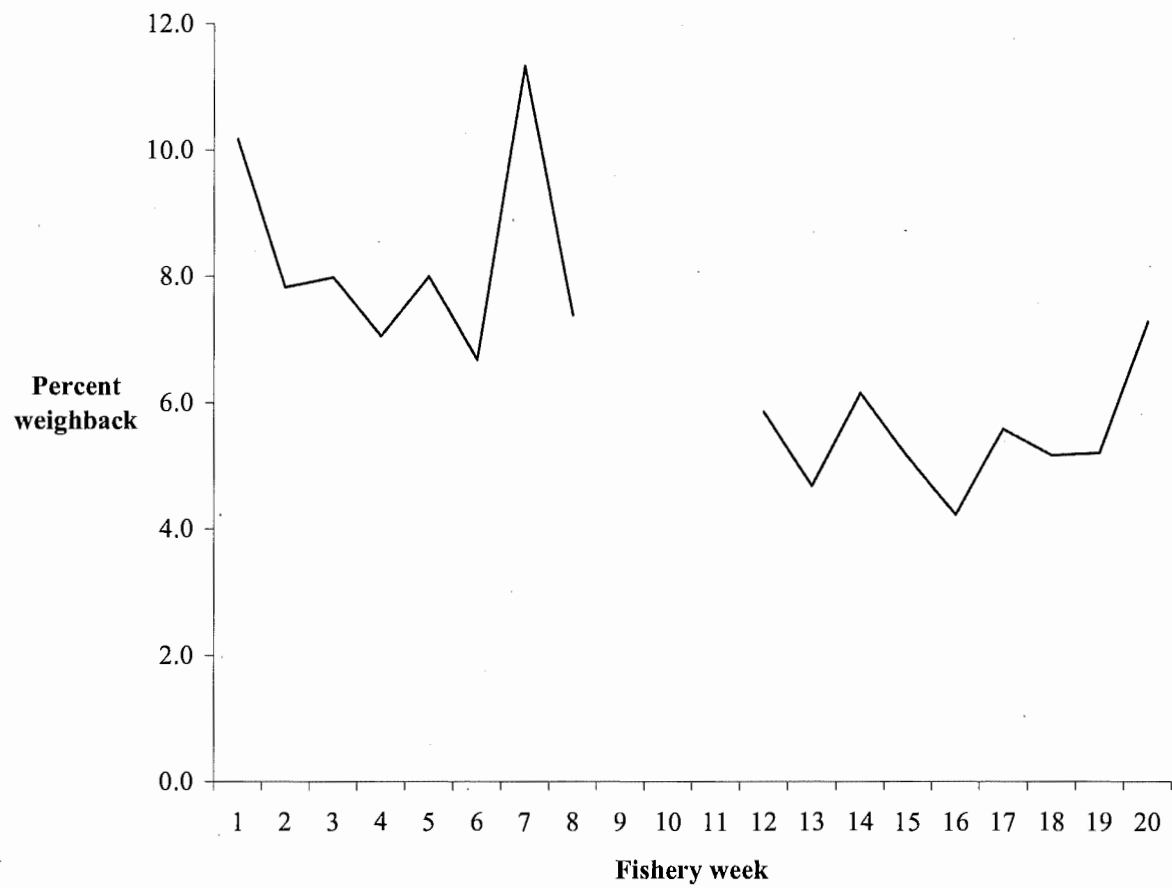


Figure 17. Percentage of Pacific hake with no value (weighback) by fishery week in the shoreside Pacific hake fishery 2004. California fishery was closed between fishing weeks 9-11; primary season began on week 12.