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**FISH DIVISION**  
**Oregon Department of Fish and Wildlife**

2006 Shoreside Hake Observation Program

# **Shoreside Hake Observation Program: 2006 Annual Report**

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## INTRODUCTION

### *Shoreside Hake Observation Program*

The Shoreside Hake Observation Program (SHOP) was established in 1992 to provide information for monitoring catch in the shoreside component of the directed Pacific hake – also called Pacific whiting – (*Merluccius productus*) fishery, and for evaluating conservation measures adopted to limit the catch of salmon, other groundfish, and other prohibited species. Though instituted as an experimental full retention monitoring program, it has been continued annually to account for all catch landed at shoreside processors by targeted hake trips; tracking potential discards, and accommodating the landing and disposal of un-sorted catch from these trips until permanent federal regulations can be developed.

The SHOP is a cooperative effort between the fishing industry and state and federal management agencies. Participants in the SHOP include mid-water trawlers carrying Exempted Fishing Permits (EFP), designated shoreside processing plants in California, Oregon, and Washington, the Pacific Fishery Management Council (PFMC), the National Marine Fisheries Service (NMFS), 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).

In 1995, the SHOP's required observation rate was reduced from 50 percent of landings to 10 percent, as studies indicated that fish tickets were a good representation of what was actually landed (ODFW 1995). This lower observation rate allowed for increased collection of biological information (*e.g.*, otoliths, length, weight, sex, and maturity) from Pacific hake and 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*), sablefish (*Anoplopoma fimbria*), Pacific (chub) mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*).

### *Shoreside Hake Fishery Overview*

The shoreside hake fishery primarily consists of mid-water trawl vessels delivering unsorted catch to shoreside processors, and is one of four sectors in the Pacific hake fishery. The remaining sectors are catcher-processor vessels, vessels delivering to motherships, and tribal vessels. The recent increase in the ex-vessel value of hake stimulated a few vessels to experiment with sorting their bycatch while still at-sea and therefore not falling under the umbrella of the EFP requirements. Vessels participating in the shoreside fishery apply for and carry an EFP issued by NMFS, Northwest Region, 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.

Overall limits for bycatch of Chinook salmon (*Oncorhynchus tshawytscha*) in the Pacific hake fishery were set in 1991 under NMFS's Biological Opinion for groundfish management (NMFS 1991) at 0.05 salmon per metric ton of captured hake for all sectors. High salmon bycatch in

1995 resulted in the 1996 revision of the Biological Opinion under Section 7 of the Endangered Species Act (ESA). This revision resulted in a clarification that the total catch limit of 11,000 Chinook for the coastwide Pacific hake fishery would apply to all sectors (NMFS 1996). The bycatch rate remained limited to 0.05 Chinook salmon per metric ton of Pacific hake. The fishery is required to re-initiate consultation under ESA if either of these Chinook bycatch thresholds is exceeded.

Beginning in 1999, written agreements were made with designated processors to provide a better understanding of the roles and responsibilities of the parties involved in the fishery 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 conducted.<sup>1</sup> Because there was no relationship between the weight of hake and the weight of yellowtail caught in a tow, the bycatch rate cap specified in the agreement was changed to a trip average of 800 kg (1,764 lbs.) of yellowtail (“penalty box” standard). When the total shoreside hake catch reached the 30 and 55 percent checkpoints, the average yellowtail bycatch rate for each vessel was compared against the penalty box standard. Vessels exceeding the standard were penalized one day of fishing for each 66 kg increment over the standard (i.e. if a vessel’s yellowtail rockfish trip average was 1,064 kg, then they would be required to remain docked for 4 days before they could fish again).

Bycatch of certain overfished rockfish species is managed using bycatch caps. An expected bycatch of canary rockfish and widow rockfish for all sectors of the whiting fishery was based on the level observed during 2004. For the 2005 and 2006 fisheries, hard bycatch caps of 4.7 mt of canary rockfish and 200 mt of widow rockfish were established pre-season via federal regulation. The widow rockfish bycatch cap was increased by the PFMC inseason in both 2005 and 2006. The projected attainment of a hard bycatch cap may result in closure of the fishery prior to attainment of the total allowed harvest of hake. Prior to the opening of the primary shoreside fishery on June 15, 2006, the at-sea fishery encountered much higher rates of darkblotched rockfish than average. The PFMC was concerned with exceeding the total allowed harvest of darkblotched rockfish for all fishery sectors, and in June 2006 established a soft darkblotched rockfish bycatch cap of 25 mt. The projected attainment of a soft bycatch cap may result in additional restrictions on the fishery. Fortunately, this cap was not reached.

### *Electronic Monitoring Program*

Since the SHOP’s inception in 1992, vessels have been subject to State and Federal observer coverage to document and estimate bycatch while fishing under the EFP. At-sea observers have not been present since 1994. In 2004, NMFS contracted with Archipelago Marine Research Ltd. (Archipelago) to verify compliance with the EFP’s full retention requirements and to help characterize daily process of the fishery. To achieve this, electronic monitoring systems (EM) were installed on all vessels operating under the EFP, consisting of video cameras, a global

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<sup>1</sup> Wiedoff, B.L. and Parker, S.J. 2004. Spatial distribution of widow rockfish bycatch in the shoreside Pacific hake fishery in relation to the rockfish conservation area. Poster presented at the 2004 Western Groundfish Conference. Victoria, BC. February 9 – 13.

positioning system, winch rotation and hydraulic pressure sensors, and a data storage unit. The use of EM was continued during the 2006 season.

## **2006 SHORESIDE HAKE FISHERY**

The PFMC's optimum yield (OY) for Pacific hake increased from 250,000 mt in 2004 to 269,069 mt in 2005. The 2006 assessment indicated that the harvestable biomass may be far larger than previously estimated, but uncertainty in these estimates as well as concerns of bycatch of overfished rockfish species, resulted in a decision to maintain the 2006 harvest at the 2005 level. The 2005-2006 shoreside hake allocation was the sector's largest since SHOP inception in 1992 (Table 1). Allocations of the OY among the four Pacific hake sectors are set in regulation and were as follows:

- Shoreside sector—97,469 mt (42 percent of non-tribal OY)
- Catcher/processor sector—78,903 mt (34 percent of non-tribal OY)
- Mothership sector—55,696 mt (24 percent of non-tribal OY)
- Tribal sector—35,000 mt (13 percent of OY)

All skippers participating in the shoreside hake EFP fishery were required to attend a pre-season educational meeting prior to the issuance of the EFP. In 2006, one meeting was held in Eureka, California on March 22, 2006. Three meetings were conducted in Oregon ports, including Charleston (May 10), Astoria (May 11), and Newport (May 25). An additional meeting was conducted in Newport on June 12, to accommodate those unable to attend previously scheduled meetings.

### *Early Southern Fishery (California Only)*

Five EFPs were approved in 2006 for the early California portion (southern component) of the shoreside fishery (south of 42° North Lat.). The southern component opened on April 1, 2006. Throughout the duration of the fishery, the number of weekly landings and the average landing per week were sporadic. Total landings for the southern component were limited to five percent of the shoreside allocation prior to the opening of the primary fishery. In 2006, the southern component exceeded the five percent shoreside allocation (5.33 %) and closed on May 25.

### *Primary Fishery*

Thirty-seven vessels participated in the primary fishery (Washington, Oregon, and California waters), with 35 vessels making landings under the EFP - including 4 vessels that also participated in the southern component and 3 vessels receiving benefits under the American Fisheries Act (AFA) that had not previously participated in the shoreside hake fishery. Two vessels elected to sort at sea (not participating in the EFP fishery) and delivered headed and gutted hake product.

The primary fishery opened as scheduled on June 15, and continued for 49 calendar days of fishing. No landings were made in California after July 6. The shoreside fishery closed on August 2 at 6:00 p.m., harvesting 97,296 mt of hake (99.82 % of the allocation) (Table 2). A total of 1,135 landings were made under EFP provisions coastwide (Table 3). Thirty-seven non-EFP landings occurred during the primary season by two vessels using an at-sea heading and gutting operation. Unsorted EFP Pacific hake landings were observed at 12 processing plants, including Eureka (1), Crescent City (1), Charleston (1), Newport (3), Astoria (4), Westport (1), and Ilwaco (1). The average weight of a landing was 83 mt of hake (Figure 1). The majority of shoreside Pacific hake allocation was landed in Oregon (63%), while the remaining was landed in Washington and California (Table 4). Thirty-three percent of the total shoreside hake allocation was landed in Newport, Oregon.

The rate of landing averaged 12,373 mt per week during the first full four weeks of the primary season increasing to 13,851 mt during the next two weeks (Table 3). Skippers reported scattered schools of hake during the first few days of the fishery followed by several weeks of consistent fishing conditions.

The proportion of hake landings observed by samplers varied among processors. All landings were observed at individual processors in Charleston, Newport, and two processors in Astoria (Table 5). Three new processors joined the fishery in 2006 and provided high observation coverage. Overall, 43 percent of hake (by weight) and 48 percent of landings were observed by SHOP observers in 2006, thereby exceeding the SHOP observation goal of 10-15 percent (Tables 4 and 5).

Hake with no marketable value due to inappropriate size or quality (weighback) were recorded on fish tickets for 1,064 shoreside hake landings in 2006 as hake with zero value. Landings with the greatest percentage of weighback occurred in Washington (11% of hake landed), followed by Oregon (8%) and California (0.3%) (Figure 2). Weighback comprised nine percent of the coastwide shoreside hake landings. California data is not complete as weighback reporting on fish tickets is not consistent.

## **2006 BYCATCH**

### *Rockfish*

The bycatch of rockfish in the fishery has always been a concern. Since 1998, yellowtail rockfish and widow rockfish bycatch in the shoreside hake fishery have been reduced as a result of proactive measures taken by industry and agencies. Most of the bycatch reduction can be attributed to: 1) voluntary efforts to avoid higher bycatch areas; 2) sharing information between vessels on the specific location of high bycatch areas; 3) a website that presents vessel specific bycatch rates (peer pressure); and 4) the “penalty box” system described previously. More recently, the bycatch of several overfished species of rockfish (bocaccio, canary rockfish, darkblotched rockfish, Pacific Ocean perch, and yelloweye rockfish) has been the greatest concern, and the anticipated bycatch for several of these species has constrained the fishery.

Bycatch of yellowtail rockfish increased from a low of 41 mt in 2002 to 155 mt in 2006 (Figure 3). The highest landings of yellowtail rockfish occurred in 1996, when 522 mt were landed in the fishery. Landings in the years since have remained substantially lower. As in 2005, yellowtail rockfish bycatch was higher in ports to the north than in those to the south (Table 6). Westport had the highest average yellowtail rockfish bycatch rate (363 kg per trip), followed by Ilwaco (190 kg per trip) and Astoria (154 kg per trip). Penalty box checks (as described previously) showed that three vessels exceeded the penalty standard. The increased bycatch of yellowtail rockfish in recent years is likely caused by higher hake allocations, but may also be influenced by pressure for vessels to actively avoid bycatch of overfished rockfish species and Chinook salmon.

In January 2001, the stock of widow rockfish was declared ‘overfished’ (NMFS 2001). An initial bycatch cap of 200 mt was established for the 2005 Pacific hake fishery (NMFS 2005c), and the 2006 fishery. At both the September 2005 and September 2006 PFMC meetings the industry requested – and the PFMC approved – increasing the widow rockfish bycatch cap in each of those years. In 2006, the shoreside sector landed 49 mt of widow rockfish, a decrease of 28 mt from 2005 (Figure 3). The ports of Ilwaco and Westport exhibited the highest average widow rockfish bycatch rates, 255 and 34 kg per trip respectively (Table 6). Current trends in widow rockfish population statistics could reduce constraints on the Pacific hake fishery in upcoming seasons by eliminating the bycatch cap or increasing the cap to a level that would no longer constrain the fishery.

Canary rockfish was designated an ‘overfished’ stock in January 2000 (NMFS 2000). As with widow rockfish, the status of canary rockfish presented a significant constraint to the Pacific hake fishery in 2005 when the bycatch of canary rockfish was limited to 4.7 mt for all sectors combined (NMFS 2005c). For 2006, a canary rockfish hard cap of 4.7 mt was again established. In 2006, the shoreside sector landed 1.6 mt of canary rockfish, of which the ports of Newport and Charleston exhibited the highest average bycatch rate (Table 6). Historically, the majority of shoreside hake tows with high canary rockfish bycatch rates were between Newport and Charleston (Wiedoff and Parker 2004).

The catch of darkblotched rockfish in the at-sea fishery was much higher than normal (12.78 mt), and the California shoreside fishery was high as well (2.12 mt). As a result a non-tribal fishery cap of 25 mt was set by the PFMC in June. Fortunately, less than 0.2 mt of darkblotched rockfish were captured by the shoreside sector for the remaining eight weeks of the fishery.

Bycatch of other overfished rockfish species in the shoreside fishery were also monitored by SHOP, including the following (Table 3):

- Boccacio—0.25 mt landed
- Pacific ocean perch—0.13 mt landed
- Yelloweye—0.06 mt landed

### *Sablefish*

The bycatch of sablefish in 2006 totaled 11 mt, a decrease of 50 percent from the prior year, and the lowest since 2000 (Figure 3). As in previous years, Newport contributed the largest amount of sablefish toward this total. Sablefish bycatch rates varied greatly within individual weeks of the 2006 shoreside fishery, and such variable bycatch rates have been observed by SHOP in most years. The 2000 sablefish stock assessment predicted a strong year class to enter the fishery in 2001 (Schirripa and Methot 2001). The progression of this year class from 2001 through 2006 is shown by length-frequency histograms for sablefish specimens collected in Oregon only (Figure 4).

### *Jack and Pacific (chub) Mackerel*

Since the start of the fishery, jack mackerel and Pacific (chub) mackerel have been two of the largest bycatch components in the shoreside hake fishery. Though little work has been done examining patterns in mackerel bycatch in the fishery, the recent low bycatch rates of mackerel are likely related to the lack of strong El Nino events. Jack mackerel bycatch totaled only 6.17 mt in 2006, a decrease of 74 mt from 2005 (Table 3), and the lowest bycatch since the fishery began. Pacific (chub) mackerel became a minor bycatch species in 2002 has remained less than 4.0 mt since then (Figure 3). Total Pacific (chub) mackerel bycatch in the 2006 fishery was 0.14 mt.

### *Salmon*

A total of 860 salmon were landed as bycatch in the 2006 shoreside hake fishery, including 839 Chinook, 18 coho, and 3 chum. No pink or sockeye salmon were landed in the fishery (Table 7). Sixteen percent of the Chinook measured were less than 60 cm, generally representing fish two or less years in age (Figure 5). Of the 860 salmon landed, 384 were landed in Oregon, 263 in Washington, and 213 in California. Salmon were turned over to state agencies and donated to charity when in suitable condition, or disposed of if unsuitable for human consumption.

With a prediction of reduced salmon abundance in 2006, it was expected that high salmon bycatch rates would not be a concern as this would force fishing in deeper water resulting in a likely increase in darkblotched rockfish bycatch. The rate of salmon bycatch exceeded the guideline specified in the biological opinion (0.05 salmon per mt of hake) during weeks 4 and 6 of the early California season. During the primary season (Figure 6) the peak rate of Chinook bycatch was 0.015 salmon per mt of whiting. The overall rate of Chinook bycatch was 0.009 Chinook per mt of hake (Table 7), which is far less than the threshold rate of 0.05 prescribed in the 1996 Biological Opinion (NMFS 1996).

The bycatch of salmon in 2005 represented the second largest number since the inception of SHOP, being 147 less than that reported in 2004 (Wiedoff and Parker 2004). In response to inquiries regarding where the highest salmon bycatch was occurring, SHOP developed an inseason map that identified the locations of tows with high salmon bycatch during the 2005 season. Fishers were then encouraged to take voluntary actions to reduce Chinook bycatch by



avoiding such areas. In August 2005, following the closure of the shoreside hake fishery, an emergency rule was implemented by NMFS to further reduce the potential for salmon bycatch. This rule established a salmon conservation zone (NMFS 2005a) prohibiting fishing for hake shoreward of a defined boundary line approximating the 100 fathom depth contour. This same rule was available for the 2006 season, but was not needed due to relatively low salmon bycatch.

While observing offloads of vessels at shoreside processors, samplers observed 313 salmon or 36 percent of all salmon landed (Table 4). The un-observed salmon were held at processing plants until the fish could be examined by samplers. Agency samplers collected biological data and checked for clipped adipose fins on 829 salmon landed. Snouts were collected from 88 salmon (including 84 Chinook). CWT data for 2006 are not yet available.

### *Pacific Halibut and Dungeness Crab*

The 2006 shoreside hake fishery landed 73 Pacific halibut (*Hippoglossus stenolepis*) (Table 3), 21 more than the peak in 2004 (Wiedoff and Parker 2004). Forty-three Dungeness crab (*Cancer magister*) were landed in the fishery (Table 3), compared to zero in 2004 (Wiedoff and Parker 2004), and 65 in 2005 (Nottage and Parker 2005).

### *Other Fish and Invertebrate Species*

The SHOP continues to document landings data for other fish species of interest for management, including lingcod (*Ophiodon elongatus*), walleye pollock (*Theragra chalcogramma*), Pacific herring (*Clupea harengus pallasi*), American shad (*Alosa sapidissima*), and spiny dogfish (*Squalus ancanthias*) (Table 3). All of these species, with the exception of Pacific herring, were landed in lower quantities during the 2006 fishery when compared with 2005 (Nottage and Parker 2005). Miscellaneous species such as Pacific cod (*Gadus macrocephalus*), sardine (*Sardinops sagax*), squids, sharks, skates, octopus, jellyfish and flatfish other than halibut constitute the "other" category (Table 3). These "other" species totaled 8.93 mt in 2006, a decrease of over 50 percent compared to the 24.9 mt landed during 2005.

### Marine Mammals

Reporting of incidental mortalities and injuries of marine mammals in commercial fisheries is mandated under the Marine Mammal Protection Act of 1972, and all fishers in the shoreside sector have been provided with forms for reporting such incidents. One harbor seal mortality occurred on June 16, 2007 and was reported to NMFS's Marine Mammal Authorization Program by the vessel.<sup>2</sup>

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<sup>2</sup> Personal communication, Patricia Lawson, NOAA Fisheries, Office of Protected Resources, January 24, 2007.

## **2006 BIOLOGICAL SAMPLING**

Prior to the opening of the shoreside hake fishery and following consultation with each state, sampling goals were established by SHOP for each processor. In addition to documenting bycatch and species composition of hake landings, SHOP industry and agency samplers collected biological information from several species that will be used in stock assessment analyses. Biological sampling included acquiring otoliths and length-frequency data for hake as well as a variety of primary bycatch species (Tables 10 and 11).

Samplers measured 7,315 hake for length-frequency data alone, and collected 1,659 hake otolith samples, accompanied with length and weight data. Sampled hake exhibit a larger length when progressing toward northern ports (Figure 8). The coastwide average length of 44 cm for hake landed in 2006 is similar to that landed in 2005, and the range of average length was 39 to 46 cm reflecting the market size for hake (Figure 9).

Biological samples acquired by SHOP during the fishing season were sent to the following locations:

- Pacific hake—Omar Rodriguez, NOAA Fisheries, Fishery Resource Analysis and Monitoring Division (Newport, Oregon)
- Yellowtail rockfish—Sandra Rosenfeld, WDFW, Marine Fish & Shellfish Division (Olympia, Washington)
- Widow rockfish—Don Pearson, NOAA Fisheries, NMFS (Santa Cruz, California)
- Other species—Sablefish, jack and Pacific chub mackerel, darkblotched, bocaccio, canary rockfish, and other bycatch species data have been retained by respective state agencies where specimens were landed for analysis (WDFW, ODFW, CDFG).

## **PROGRAM COSTS**

In 2006, the cost of the Oregon, Washington and California portion of the SHOP was approximately \$158,881 (Table 12). Since 1995, most program funding has been provided by industry through the PSMFC. Government costs, including agency sampling personnel, infrastructure, summary and analysis during winter months, and PFMC support on bycatch issues, are not included in the previously indicated cost. These costs have become more substantial over time due to the increasing attention paid to bycatch issues, and have amounted to months of staff time at a cost approaching \$70,000.

Participating processors in the program in 2006 were Alber Seafoods, Bandon Pacific, Bornstein Seafoods, Da Yang Seafoods, Del Mar Seafoods, Jessie's Ilwaco Fish, Ocean Beauty, Ocean Gold Seafood, Pacific Choice Seafood, Pacific Coast Seafood, Pacific Shrimp, and Trident Seafood.

## **AREAS FOR IMPROVEMENT IN 2007**

For the 2007 season, the monitoring program will be adjusted to reflect changes needed to remove the shoreside hake fishery from operating under an EFP. State agencies and NMFS will work with the hake industry to design a regulated monitoring and management program for the shoreside fishery which is scheduled to be implemented for 2008 as Amendment 10 to the PFMC's Groundfish Fishery Management Plan (FMP).

To facilitate transition to a NMFS coordinated shoreside monitoring program for 2008, SHOP recommends the following incremental steps during the 2007 fishery:

- Regular reporting (weekly or daily as needed) of target hake catch and bycatch to a NMFS data coordinator via a report (faxed or email) or electronic fish ticket system.
- Distribution of weekly (or more frequently as a catch target or bycatch cap is approached) catch data including target hake catch and key bycatch species (bocaccio, canary rockfish, darkblotched rockfish, Pacific Ocean perch and widow rockfish). The traditional NMFS "all sectors" catch report should continue along with a more detailed shoreside fishery report.
- Validation of the shoreside fishery catch estimates reported to NMFS via state fish ticket system (direct state reporting or PacFIN).
- Develop a rapid "high bycatch area" reporting mechanism to advise vessels to avoid areas of high prohibited species or groundfish bycatch.
- Develop an incentive/penalty system for vessels with bycatch rates that are much lower (incentive), or much higher (penalty) than the fleet average.
- Consider reducing bycatch via a high vessel bycatch ("dirty dozen") reporting system.
- Develop an incentive/penalty system for processors that fail to provide timely and accurate inseason and post season catch accounting.
- Begin process to require all designated hake processors to implement accurate weighing systems (e.g. hopper scales).
- Continue to evaluate the effectiveness of at-sea observers, plant monitors/observers, electronic monitoring (camera system), and vessel logbooks as tools for accurate accounting of all shoreside hake fishery catch (hake, groundfish bycatch, prohibited species).
- Evaluate and implement equitable catch accounting and verification for all sectors of the hake fishery.

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Note: Visit the SHOP website for further information about the program, as well as access to annual reports and data; available at:

*[www.dfw.state.or.us/mrp/hake](http://www.dfw.state.or.us/mrp/hake)*

**Table 1. Summary of allocations and total catch for Pacific hake fishery, 1998 - 2006.**

Year	US Optimum Yield (mt)	Shoreside		Catcher-Processor		Mothership		Tribal	
		Allocation	Catch	Allocation	Catch	Allocation	Catch	Allocation	Catch
1998	232,000	86,900	87,627	70,400	70,365	49,700	50,087	25,000	24,509
1999	232,000	83,800	83,388	67,800	67,679	47,900	47,580	32,500	25,844
2000	232,000	83,790	85,653	67,830	67,815	47,880	46,840	32,500	6,251
2001 <sup>1</sup>	190,400	72,618	73,326	58,786	58,628	41,496	41,903	17,500	6,080
2002 <sup>2</sup>	129,600	44,906	45,276	36,353	36,341	25,661	26,593	22,680	22,793
2003	148,200	50,904	51,061	41,208	41,214	29,088	26,021	25,000	23,454
2004	250,000	90,510	89,251	73,270	73,175	51,720	24,102	32,500	28,648
2005	269,069 <sup>3</sup>	97,469	97,378	78,903	78,147	55,696	39,599	35,000	34,357
2006 <sup>4</sup>	269,069	97,469	97,296	78,903	78,864	55,696	55,355	35,000	35,441

Note: Shoreside data provided by SHOP, at-sea data based on preliminary NMFS observer program. Allocation shows original (preseason) allocation.

<sup>1</sup> 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.

<sup>2</sup> The Pacific hake stock was officially declared overfished in 2002.

<sup>3</sup> In 2005 and 2006, 2000 mt was reserved for scientific research.

<sup>4</sup> 2006 at-sea catch is as of January 22, 2007.

**Table 2. Summary of the shoreside sector<sup>1</sup> of the Pacific hake fishery, 1992 - 2006.**

Year	Shoreside Allocation (mt)	Hake Landed (mt)	Percent Under/Over	Participating Vessels	Start Date*	End Date	Number of Participating Processors
1992	80,000	49,092	-38.64	23	4/15	10/30	7
1993	42,000	41,926	-0.18	24	4/15	8/24	13
1994	97,000	72,367	-25.39	33	4/15	11/23	8
1995	75,776	73,397	-2.43	35	4/15	7/25	15
1996	87,001	84,680	-2.67	37	5/15	9/10	11
1997	86,900	87,499	+0.69	38	6/15	8/22	12
1998	86,900	87,627	+0.84	35	6/15	10/13	13
1999	83,800	83,388	-0.49	36	6/15	9/13	14
2000	83,790	85,653	+2.22	36	6/15	9/15	14
2001 <sup>2</sup>	72,618	73,326	+0.97	29	6/15	9/26	13
2002	44,906	45,276	+0.82	29	6/15	7/17	8
2003 <sup>3</sup>	50,904	51,061	+0.31	35	6/15	7/14	9
2004 <sup>4</sup>	90,510	89,251	-1.39	26	6/15	8/14	9
2005 <sup>5</sup>	97,469	97,378	-0.09	29	6/15	8/18	10
2006 <sup>6</sup>	97,469	97,296	-0.18	37	6/15	8/2	14

\* Between 1997 - 2006, the shoreside fishery south of 42° N latitude opened April 1<sup>st</sup>.

<sup>1</sup> Includes both EFP and non-EFP landings.

<sup>2</sup> 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.

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

<sup>4</sup> 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.

<sup>5</sup> In 2005, the shoreside fishery closed on 8/18/2005 at 9:00 p.m.

<sup>6</sup> In 2006, the California fishery closed on 5/25 at 6:00 p.m. then reopened with the primary season on 6/15/06. The shoreside fishery closed on 8/2/06 at 6:00 p.m.

**Table 3A. Weekly landings and bycatch for California during the southern component of the shoreside hake fishery (south of 42°N).  
Best available data as of 01/22/07.**

Week Number	1	2	3	4	5	6	7	8	9	10	11
Week Ending Date*	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27	6/3	6/10
Num. of EFP Hake Landings	0	9	14	11	16	9	11	17	9	0	0
Hake Landed (mt)	0.00	323.88	682.96	644.26	857.40	562.27	627.65	958.49	534.03	0.00	0.00
Cumulative Hake Landed (mt)	0.00	323.88	1,006.84	1,651.10	2,508.50	3,070.77	3,698.42	4,656.91	5,190.94	5,190.94	5,190.94
% of Hake Quota Landed	0	0.33	1.03	1.69	2.57	3.15	3.79	4.78	5.33	5.33	5.33
Num. of Landings Observed	0	1	2	2	3	0	1	3	3	0	0
Num. of Salmon	0	5	31	22	62	25	48	19	1	0	0
Num. of Chinook Salmon	0	5	31	22	62	25	48	19	1	0	0
Num. of Pacific Halibut	0	0	0	0	1	0	0	0	0	0	0
Num. of Dungeness Crab	0	0	0	0	0	0	0	0	0	0	0
Yellowtail Rockfish(mt)	0.00	0.00	0.00	0.00	t	0.00	0.00	t	0.00	0.00	0.00
Widow Rockfish (mt)	0.00	0.19	0.32	0.69	0.28	1.14	0.25	0.29	0.24	0.00	0.00
Yelloweye Rockfish (mt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Canary Rockfish (mt)	0.00	0.00	t	0.00	0.00	t	t	0.01	0.00	0.00	0.00
Darkblotched Rockfish (mt)	0.00	0.00	0.03	0.93	0.07	0.18	0.23	0.68	t	0.00	0.00
Bocaccio Rockfish (mt)	0.00	0.00	0.00	0.00	t	0.00	0.00	0.00	t	0.00	0.00
Pacific Ocean Perch (mt)	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Chilipepper Rockfish (mt)	0.00	0.33	3.05	2.60	0.86	1.22	2.10	1.07	0.17	0.00	0.00
Sablefish (mt)	0.00	t	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Mackerel (mt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	t	0.00	0.00
Jack Mackerel (mt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Lingcod (mt)	0.00	t	0.01	0.02	0.00	0.00	0.01	t	0.00	0.00	0.00
Walleye Pollock (mt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring (mt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
American Shad (mt)	0.00	0.00	0.19	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Spiny Dogfish (mt)	0.00	t	0.04	0.01	0.21	0.00	0.06	0.09	t	0.00	0.00
Misc Rockfish (mt)	0.00	0.00	0.13	0.54	t	0.02	0.00	2.27	0.00	0.00	0.00
Other Species (mt)	0.00	0.00	0.00	0.23	0.00	t	0.04	0.00	0.17	0.00	0.00

\* Primary component of fishery opened 6/15/06 (week 12) and is included in Table 3B.

t = trace; less than 0.005 mt



**Table 3B. Weekly landings and bycatch for the primary shoreside hake fishing season (coastwide).  
Best available data as of 01/22/07**

Week Number	12	13	14	15	16	17	18	19	EFP	Non-EFP <sup>1</sup>	Fishery
Week Ending Date	6/17	6/24	7/1	7/8	7/15	7/22	7/29	8/5	Total	Total	Total
Num. of Hake Landings	45	138	140	143	146	159	161	107	1,135	37	1,172
Hake Landed (mt)	4,019.70	12,065.99	12,352.91	12,436.28	12,637.91	13,787.75	13,915.01	10,212.04	96,618.53	677.69	97,296
Cumulative Hake Landed (mt)	9,210.64	21,276.63	33,629.54	46,065.82	58,703.73	72,491.48	86,406.49	96,618.53	96,618.53	677.69	97,296
% of Hake Quota Landed	9.45	21.83	34.50	47.26	60.23	74.37	88.65	99.13	99.13	0.70	99.82
Num. of Landings Observed	16	68	81	77	80	78	76	53	544	0	544
Num. of Salmon	49	182	87	40	97	120	47	25	860	0	860
Num. of Chinook Salmon	49	181	87	34	94	111	45	25	839	0	839
Num. of Pacific Halibut	1	9	6	10	31	11	4	0	73	0	73
Num. of Dungeness Crab	1	9	5	11	8	4	3	2	43	0	43
Yellowtail Rockfish (mt)	7.95	52.02	27.55	28.11	11.45	14.71	10.01	2.91	154.72	0.27	155.00
Widow Rockfish (mt)	5.56	5.11	2.92	21.26	9.72	0.47	0.73	0.18	49.36	0.02	49.38
Yelloweye Rockfish (mt)	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.06	0.00	0.06
Canary Rockfish (mt)	0.07	0.22	0.24	0.23	0.34	0.10	0.29	0.12	1.63	0.00	1.63
Darkblotched Rockfish (mt)	0.03	0.01	0.02	0.05	0.02	0.02	0.00	t	2.27	0.00	2.27
Bocaccio Rockfish (mt)	0.00	0.20	0.01	0.02	0.01	t	0.01	t	0.25	0.00	0.25
Pacific Ocean Perch (mt)	0.02	0.06	t	t	0.01	0.01	t	t	0.13	t	0.13
Chilipepper Rockfish (mt)	t	t	0.02	1.24	0.01	0.01	t	0.00	12.68	0.00	12.68
Sablefish (mt)	0.00	0.09	0.03	0.05	0.04	2.35	8.24	0.33	11.12	0.00	11.12
Pacific Mackerel (mt)	0.01	0.02	t	t	t	0.06	0.06	t	0.14	0.00	0.14
Jack Mackerel (mt)	0.40	0.45	0.12	0.04	0.34	1.27	2.52	0.99	6.17	t	6.18
Lingcod (mt)	0.25	0.85	0.88	0.77	1.34	0.96	0.24	0.54	5.86	0.00	5.86
Walleye Pollock (mt)	t	0.00	0.00	0.00	t	0.00	t	0.00	0.00	0.00	0.00
Herring (mt)	4.16	9.92	0.02	t	0.00	0.95	0.04	t	15.09	0.00	15.09
American Shad (mt)	5.34	5.20	7.56	1.34	1.84	10.24	2.12	3.63	37.51	0.00	37.51
Spiny Dogfish (mt)	0.01	0.55	1.39	8.27	3.30	7.99	5.58	6.81	34.31	t	34.32
Misc Rockfish (mt)	0.14	0.14	0.02	0.04	0.10	0.13	0.24	0.17	3.93	0.00	3.93
Other Species (mt) <sup>2</sup>	0.04	1.65	0.74	1.34	1.71	1.79	0.85	0.38	8.93	0.00	8.93

<sup>1</sup>Includes 35 deliveries sorted at-sea and two deliveries under 10,000 lbs.

<sup>2</sup>Other species includes shark (1.7mt), pacific cod, flatfish (other than halibut), skates, sardines, octopus, sunfish, jellyfish and squid.

t = trace; less than 0.005 mt

**Table 4. Cumulative shoreside hake fishery report for Oregon, 2006 (Washington and California data are not listed individually due to processor confidentiality requirements). Best available data as of 01/22/07.**

	Oregon Fishery Total	CA/OR/WA Fishery Total	Oregon Observed	CA/OR/WA Observed	Percent Landing Observed
EFP Hake (mt)	60,654.37	96,618.52	32659.24	41232.64	42.68
Number of Landings	748	1135	460	548	48.28
No. of Salmon	384	860	173	313	36.40
No. of Chinook Salmon	376	839	172	308	36.71
No. of Pacific Halibut	39	71	23	32	45.07
No. of Dungeness Crab	22	43	18	28	65.12
Yellowtail (kg)	57,461.07	154,723.51	32,910.84	58,055.73	37.52
Widow (kg)	11,323.48	49,363.54	6,334.42	26,168.19	53.01
Yelloweye (kg)	55.79	61.69	43.54	46.72	75.74
Canary (kg)	1,169.81	1,636.56	626.41	873.62	53.38
Darkblotched (kg)	78.02	2,277.03	58.97	330.67	14.52
Bocaccio (kg)	14.97	264.44	9.98	124.74	47.17
POP (kg)	28.12	138.35	21.32	95.25	68.85
Sablefish (kg)	10,692.98	11,128.43	1,460.11	1,661.96	14.93
Pacific Mackerel (kg)	41.73	160.57	21.77	84.37	52.54
Jack Mackerel (kg)	3,886.83	6,180.65	1,699.16	2,264.33	36.64
Lingcod (kg)	3,024.55	5,869.03	1,610.25	2,365.03	40.30
Spiny Dogfish (kg)	7,531.90	34,315.62	4,437.49	16,109.78	46.95
Chilipepper Rockfish (kg)	27.67	12,682.44	21.77	2,858.99	22.54
Nearshore Rockfish (kg)	46.72	73.94	36.74	39.92	53.99
Shelf Rockfish (kg)	411.86	734.37	141.07	213.19	29.03
Slope Rockfish (kg)	259.91	3,036.80	104.78	375.12	12.35
Misc Rockfish <sup>1</sup> (kg)	75.30	91.63	73.94	76.66	83.66
Pacific Herring (kg)	4,716.91	15,092.38	58.51	9,947.28	65.91
American Shad (kg)	13,372.81	37,509.36	8,163.30	18,440.79	49.16
Walleye Pollock (kg)	0.91	2.27	0.00	0.45	20.00
Other Species <sup>2</sup> (kg)	4,790.84	8,931.23	1,777.63	3,264.96	36.56

<sup>1</sup> Misc. rockfish includes shortspine thornyhead, blackmouth rockfish.

<sup>2</sup> Other species includes shark (1.7mt), pacific cod, flatfish (other than halibut), skates, sardines, octopus, sunfish, jellyfish and squid.

<sup>3</sup> Non-EFP landings include whiting deliveries sorted at sea and those less than 10,000 lbs

**Table 5. Percentage of EFP trips observed by SHOP at each processor for the 2006 fishery.**

Processor	Port	Number of Trips	Number of Trips Observed	Percentage of Trips Observed
Ocean Gold Seafoods	Westport	192	36	18.75
Jessie's Ilwaco	Ilwaco	94	36	38.30
Del Mar Seafoods, Astoria	Astoria	17	17	100.00
Da Yang Seafoods	Astoria	34	34	100.00
Bornstein Seafoods	Astoria	37	27	72.97
Pacific Coast Seafoods	Warrenton	195	60	30.77
Ocean Beauty	Newport	45	19	42.22
Trident Seafoods	Newport	164	47	28.66
Pacific Shrimp Seafoods	Newport	163	163	100.00
Bandon Pacific	Charleston	93	93	100.00
Alber Seafoods	Crescent City	28	7	25.00
Pacific Choice Seafoods	Eureka	73	9	12.33

**Table 6. Average bycatch rate by port and vessel for bycatch species of concern in 2006. Vessel rates are calculated as the average weight of bycatch (kg) per EFP trip.**

Port	Vessel	% Landings Observed	Yellowtail Rockfish	Widow Rockfish	Yelloweye Rockfish	Canary Rockfish	Darkblotched Rockfish	Bocaccio Rockfish	Pacific Ocean Perch	Sablefish
Westport	CHELLISSA	28.57	259.96	0.75	0.11	0.68	0.00	0.21	0.00	3.52
	JAMIE MARIE	4.35	248.59	56.07	0.00	0.63	0.00	0.59	0.02	0.00
	MARATHON	19.23	808.96	10.68	0.00	0.65	0.65	4.05	0.00	0.19
	MARK-1	20.69	357.20	136.30	0.00	1.61	0.00	0.08	0.58	0.75
	OCEAN HUNTER	10.00	324.58	60.20	0.00	1.58	0.00	0.00	0.09	0.13
	PACIFIC CHALLENGER	28.57	528.93	32.42	0.00	8.29	0.32	5.21	1.75	0.00
	PREDATOR	12.00	281.46	0.31	0.00	0.58	0.00	0.00	0.00	1.20
	SEA CLIPPER	27.78	327.68	6.37	0.00	0.53	0.00	0.00	0.02	0.14
STARWARD	0.00	130.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Westport Average</b>			<b>363.14</b>	<b>33.68</b>	<b>0.01</b>	<b>1.62</b>	<b>0.11</b>	<b>1.13</b>	<b>0.27</b>	<b>0.66</b>
Ilwaco	COLLIER BROTHERS	40.00	118.59	25.08	0.00	3.10	0.00	0.00	0.05	1.83
	DEFIANT	42.86	154.71	591.10	0.00	0.00	0.00	0.45	0.00	0.65
	GRUMPY J	33.33	1.26	0.30	0.00	0.00	0.00	0.00	0.00	5.54
	MUIR MILACH	40.74	499.89	656.03	0.00	0.64	0.00	0.00	0.59	5.49
	WARRIOR II	22.22	177.10	2.17	0.30	0.05	0.00	0.00	0.00	0.00
<b>Ilwaco Average</b>			<b>190.31</b>	<b>254.93</b>	<b>0.06</b>	<b>0.76</b>	<b>0.00</b>	<b>0.09</b>	<b>0.13</b>	<b>2.70</b>
Astoria	ANNETTE	100.00	37.96	1.59	0.00	0.06	0.00	0.00	0.00	0.75
	DEFIANT	100.00	27.33	1.25	0.00	0.00	0.00	0.00	0.00	0.00
	GEORGE ALLEN	70.97	7.13	1.27	0.00	0.16	0.00	0.00	0.00	0.98
	GRUMPY J	90.00	61.28	0.59	0.00	0.36	0.00	0.00	0.00	0.77
	NICOLE	36.11	117.03	10.79	0.00	0.29	0.06	0.00	0.00	0.71
	NORDIC FURY	32.00	264.68	3.63	0.24	4.10	0.00	0.00	0.00	2.70
	PACIFIC FUTURE	32.26	80.58	1.65	0.00	0.63	0.00	0.03	0.00	0.83
	PERSEVERANCE	37.14	76.31	25.39	0.00	0.40	0.05	0.00	0.10	1.31
	RAVEN	22.86	242.52	5.77	0.00	2.54	0.00	0.00	0.00	3.47
	SEEKER	24.24	90.68	3.30	0.00	1.29	0.00	0.00	0.00	4.22
STARWARD	100.00	685.68	56.22	0.00	1.81	0.03	0.00	0.00	2.12	
<b>Astoria Average</b>			<b>153.74</b>	<b>10.13</b>	<b>0.02</b>	<b>1.06</b>	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	<b>1.62</b>
Newport	BAY ISLANDER	42.22	58.26	5.22	0.00	0.02	0.00	0.11	0.00	13.46
	BLUE FOX	46.67	24.55	32.87	0.17	1.98	0.48	0.00	0.08	7.62
	EXCALIBUR	100.00	12.69	4.11	0.12	0.36	0.00	0.03	0.04	0.57
	LISA MELINDA	28.13	54.84	7.54	0.09	2.15	0.00	0.00	0.00	242.71
	MISS BERDIE	100.00	15.50	8.03	0.22	2.38	0.62	0.02	0.11	2.87
	MISS SARAH	27.78	34.44	58.99	0.45	5.09	0.05	0.16	0.09	3.48
	MISS SUE	100.00	16.69	2.70	0.10	0.99	0.00	0.00	0.02	4.37
	PACIFIC	100.00	9.68	21.63	0.06	0.79	0.17	0.03	0.17	22.99
	PACIFIC RAM	17.65	39.10	51.76	0.00	1.61	0.15	0.00	0.03	0.39
PEGASUS	25.00	123.94	11.44	0.00	3.06	0.00	0.00	0.16	10.36	
<b>Newport Average</b>			<b>38.97</b>	<b>20.43</b>	<b>0.12</b>	<b>1.85</b>	<b>0.15</b>	<b>0.04</b>	<b>0.07</b>	<b>30.88</b>
Charleston	JEANETTE MARRIE	100.00	24.29	2.75	0.07	2.49	0.10	0.00	0.00	0.67
Charleston	LAST STRAW	100.00	57.49	31.59	0.03	1.74	0.29	0.00	0.00	0.26
<b>Charleston Average</b>			<b>40.89</b>	<b>17.17</b>	<b>0.05</b>	<b>2.11</b>	<b>0.19</b>	<b>0.00</b>	<b>0.00</b>	<b>0.46</b>
Crescent City	FISHWISH	20.00	0.00	26.67	0.00	0.00	8.80	0.00	0.00	0.00
	MISS SUE	26.09	0.00	29.60	0.00	0.06	6.45	0.00	0.00	0.16
<b>Crescent City Average</b>			<b>0.00</b>	<b>28.14</b>	<b>0.00</b>	<b>0.03</b>	<b>7.62</b>	<b>0.00</b>	<b>0.00</b>	<b>0.08</b>
Eureka	FISHWISH	20.00	0.45	24.13	0.00	0.00	109.32	0.36	0.00	0.00
	MISS BERDIE	8.82	0.00	30.34	0.00	0.08	30.62	0.00	0.00	0.00
	PACIFIC	8.33	0.11	53.20	0.00	0.05	10.81	0.20	1.45	0.00
	WARRIOR II	30.00	0.23	24.13	0.00	0.64	12.52	0.00	0.00	0.00
<b>Eureka Average</b>			<b>0.20</b>	<b>32.95</b>	<b>0.00</b>	<b>0.19</b>	<b>40.82</b>	<b>0.14</b>	<b>0.36</b>	<b>0.00</b>

Note: Best available data as of January 22, 2006. Port rates are calculated as the average weight of landings for each port.

**Table 7. Annual salmon bycatch in the shoreside hake fishery, 1992-2006.**

Year	Hake Landed (mt)	Number of Chinook	Rate of Chinook <sup>1</sup>	Number of Coho	Number of Pink	Number of Chum	Number of Sockeye
1992	49,092	491	0.010	0	0	0	0
1993	41,926	419	0.010	0	0	0	0
1994	72,367	581	0.008	4	0	0	0
1995	73,397	2,954	0.040	2	15	1	0
1996	84,680	651	0.008	0	0	0	0
1997	87,499	1,482	0.017	2	0	0	0
1998	87,627	1,699	0.019	8	0	5	1
1999	83,388	1,696	0.020	5	11	0	0
2000	85,653	3,306	0.039	23	0	1	0
2001	73,326	2,627	0.036	35	303	32	0
2002	45,276	1,062	0.023	14	0	72	0
2003	51,061	425	0.008	0	0	0	0
2004	89,670	4,206	0.047	8	0	43	0
2005	97,378	4,018	0.041	37	49	6	0
2006	97,296	839	0.009	18	0	3	0

Note: For 1992 - 1996, refer to Weeks and Kaiser (1997). For years following 1997, refer to annual Shoreside Hake Observation Program reports

<sup>1</sup>Rate is calculated as number of fish per mt hake.

<sup>2</sup> Of these salmon, 4 were not identified by a State Observer but were recorded on fish tickets as Chinook.

**Table 8. Number of Chinook salmon with coded wire tags recovered by the Shoreside Hake Observation Program, 1992-2006.**

Year	Number of Chinook Landed	Number of Snouts Collected	Number of Chinook with CWT	Percent of Landed Chinook with CWT
1992	491	17	0	0.0
1993	419	14	13	3.1
1994	581	31	0	0.0
1995	2,954	122	0	0.0
1996	651	25	31	4.8
1997	1,557	50	41	2.6
1998	1,695	70	51	3.0
1999	1,695	111	105	6.2
2000	3,306	301	211	6.4
2001	2,672	215	130	4.9
2002	1,062	87	64	6.0
2003	425	55	25	5.9
2004	4,206	436	260	6.2
2005	4,017*	260	161	4.0
2006	839	84	N/A	N/A

Note: For 1992 - 1996, refer to Weeks and Kaiser (1997). For years 1997 - 2005, best available data as of 10/23/06 (RMIS 2006 and respective state agencies).

\* 783 fish were not examined for clipped adipose fins due to being excluded during sub-sampling. An additional two fish were determined to be missing from landings. With eight percent of examined salmon in 2005 having clipped adipose fins, had these 785 fish also been examined it is estimated that 63 would have had an adipose fin clip.

**Table 9. Recoveries of coded wire tags from Chinook recovered by Shoreside Hake Observation Program Samplers by release basin, 1993, 1996-2005.**

Region Name	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Georgia Strait		3		1	5		1					10
Fraser R – Thompson R		6	4	9	21	14	5	9			2	70
Puget Sound Mid				1	2	4	1				1	9
Puget Sound South			1		8	4	2					15
Coastal Washington, North							1					1
Skagit R				1								1
Stillaguamish R – Snohomish R					1	1		1				3
Upper Columbia R (abv. McNary Dam; excl. Snake R)		1	1		2	20	14	5	1	4		48
Central Columbia R (Bonneville Dam to McNary Dam)					2	19	20	5		1	3	50
Lower Columbia R (mouth to Bonneville Dam)	6	3	11	2	16	43	30	20	5	51	23	210
Columbia R, general			1		1							2
Snake R			7	1	13	40	18	10	1	43	15	148
Hood Canal				3	3	4					5	15
Coastal Oregon, North					1	1		1		1		4
Klamath R – Trinity R	2	3		8	2	9	4	1	2	22	32	85
Coastal Oregon, South	4	9	5	4	7	36	11	8	6	17	17	124
Sacramento R	1	4	6	15	10	10	16	3	9	77	45	196
San Joaquin R		2	5	5	2	5	7	1	1	13	3	44
Nooksack R						1					2	3
Coastal California, Central				1						2	1	4
Coastal California, South												0
<b>Total</b>	<b>13</b>	<b>31</b>	<b>41</b>	<b>51</b>	<b>96</b>	<b>211</b>	<b>130</b>	<b>64</b>	<b>25</b>	<b>231</b>	<b>149</b>	<b>1042</b>

Notes:

Data downloaded from RMIS 10/23/2006

Some data provided directly from respective state agencies

In 1993, 1996 and 1997 only Oregon data is available

No snouts taken 1994 or 1995

California data only available for 1998, 2000, 2001 and 2003

Washington data missing for 2003 and 2004

**Table 10. Biological sampling (otoliths, length, weight, and sex) of bycatch species in Oregon and Washington ports conducted by the Shoreside Hake Observation Program during the 2006 fishery.**

	Westport			Ilwaco			Astoria			Newport			Charleston		
	No. Fish	No. Samples	Total Fish	No. Fish	No. Samples	Total Fish	No. Fish	No. Samples	Total Fish	No. Fish	No. Samples	Total Fish	No. Fish	No. Samples	Total Fish
Pacific Hake (bio. sample)	20	7	140	20	8	160	20	27	540	20	32	640	19-20	5	99
Pacific Hake (lgth/wt only)	100-111	8	833	92-100	7	682	100	23	2,300	100	26	2,600	100	5	500
Jack Mackerel	-	-	-	-	-	-	30	3	90	30	1	30	30	1	30
Yellowtail Rockfish	44-50	5	244	50	2	100	5-50	15	705	50	4	200	50	1	50
Widow Rockfish	24-50	4	174	-	-	-	8-50	8	294	50	4	200	50	1	50
Canary Rockfish	1-17	6	27	50	1	50	47	1	47	1-15	15	57	38,736	28	111
Darkblotched Rockfish	-	-	-	-	-	-	-	-	-	3	1	3	3-19	4	29
Yelloweye Rockfish	1	1	1	-	-	-	1	1	1	1-3	6	12	1	3	3
Tiger Rockfish	-	-	-	-	-	-	-	-	-	-	-	-	3	1	3
Bocaccio	-	-	-	-	-	-	-	-	-	1	2	2	-	-	-
Sablefish	-	-	-	-	-	-	-	-	-	30	2	60	-	-	-
<b>Total</b>		<b>31</b>	<b>1,419</b>		<b>18</b>	<b>992</b>		<b>78</b>	<b>3,977</b>		<b>93</b>	<b>3,804</b>		<b>49</b>	<b>875</b>

**Table 11. Biological sampling (otoliths, length, weight, and sex) of bycatch species in California ports conducted by the Shorside Hake Observation Program during the 2006 fishery.**

	Eureka			Crescent City		
	No. Fish	No. Samples	Total Fish	No. Fish	No. Samples	Total Fish
Pacific Hake (bio. sample)	20	2	40	20	2	40
Pacific Hake (lgth/wt only)	100	3	300	100	1	100
Widow Rockfish	0	0	0	0	0	0
Darkblotched Rockfish	0	0	0	0	0	0
Splitnose Rockfish	0	0	0	0	0	0
Chilipepper Rockfish	0	0	0	0	0	0
Bocaccio	0	0	0	0	0	0
<b>Total</b>		<b>5</b>	<b>340</b>		<b>3</b>	<b>140</b>

**Table 12. In-season budget for the Shoreside Hake Observation Program, 1995 - 2006.**

Year	Length of Primary Season (days)	Shoreside Hake Allocation (mt)	Oregon Cost (\$)	Industry funds to Oregon	Washington and California Cost (\$)	Estimated Industry Samplers <sup>1</sup> (\$)	Total Cost (\$)	Cost per mt Hake (\$/mt)	Cost per Day of Fishery (\$/d)
1995	102	75,776	~20,000	~30,000	18,000	25,000	93,000	1.23	912
1996	119	87,001	~20,000	~30,000	18,000	29,000	97,000	1.11	815
1997	69	86,900	17,706	30,294	27,000	30,000	105,000	1.21	1,522
1998	121	86,900	19,000	30,000	27,000	30,000	106,000	1.22	876
1999	91	83,800	18,000	33,339	27,000	32,544	110,883	1.32	1,218
2000	93	83,790	18,000	38,371	27,000	32,544	115,696	1.38	1,244
2001	76	72,618	18,000	46,734	27,000	35,770	127,508	1.76	1,678
2002	31	44,906	17,926	38,371	27,000	29,808	113,105	2.52	3,649
2003	30	50,904	18,000	40,519	18,000	29,808	106,327	2.09	3,544
2004	60	90,510	22,000	53,467	18,000	27,000	120,467	1.33	2,008
2005	65	97,469	28,693	67,867	18,000	27,000	141,560	1.45	2,178
2006	49	97,469	25,000 <sup>2</sup>	79,881	27,000	27,000	158,881	1.63	3,242

<sup>1</sup> Oregon cost includes industry funding to PSMFC (\$67,867) and ODFW funding for coordinator salary (\$28,693)

Note:

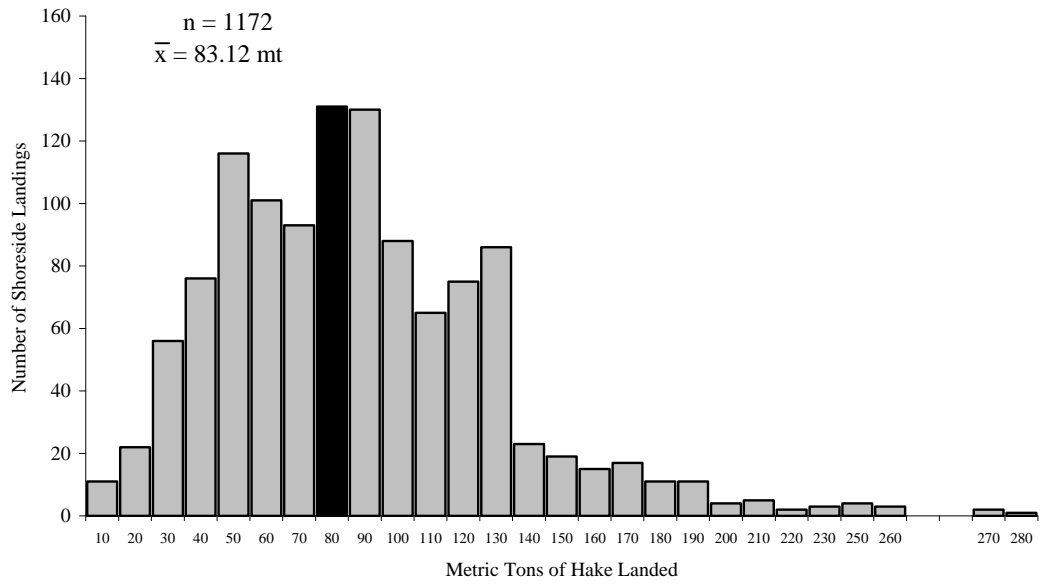
<sup>1</sup>Estimated observer costs are for 15% observer coverage for all ports.

<sup>2</sup>ODFW typically contributes approximately \$70,000 for off-season management, not included above.

Cost of vessel electronic monitoring not included.

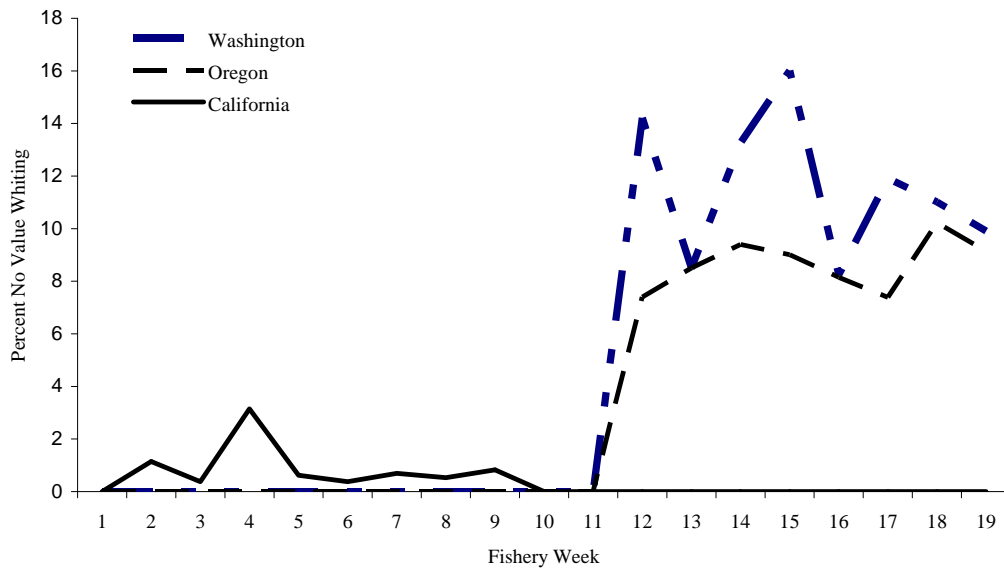
Total fixed costs include costs for supplies, travel, vehicle use, and salaries.





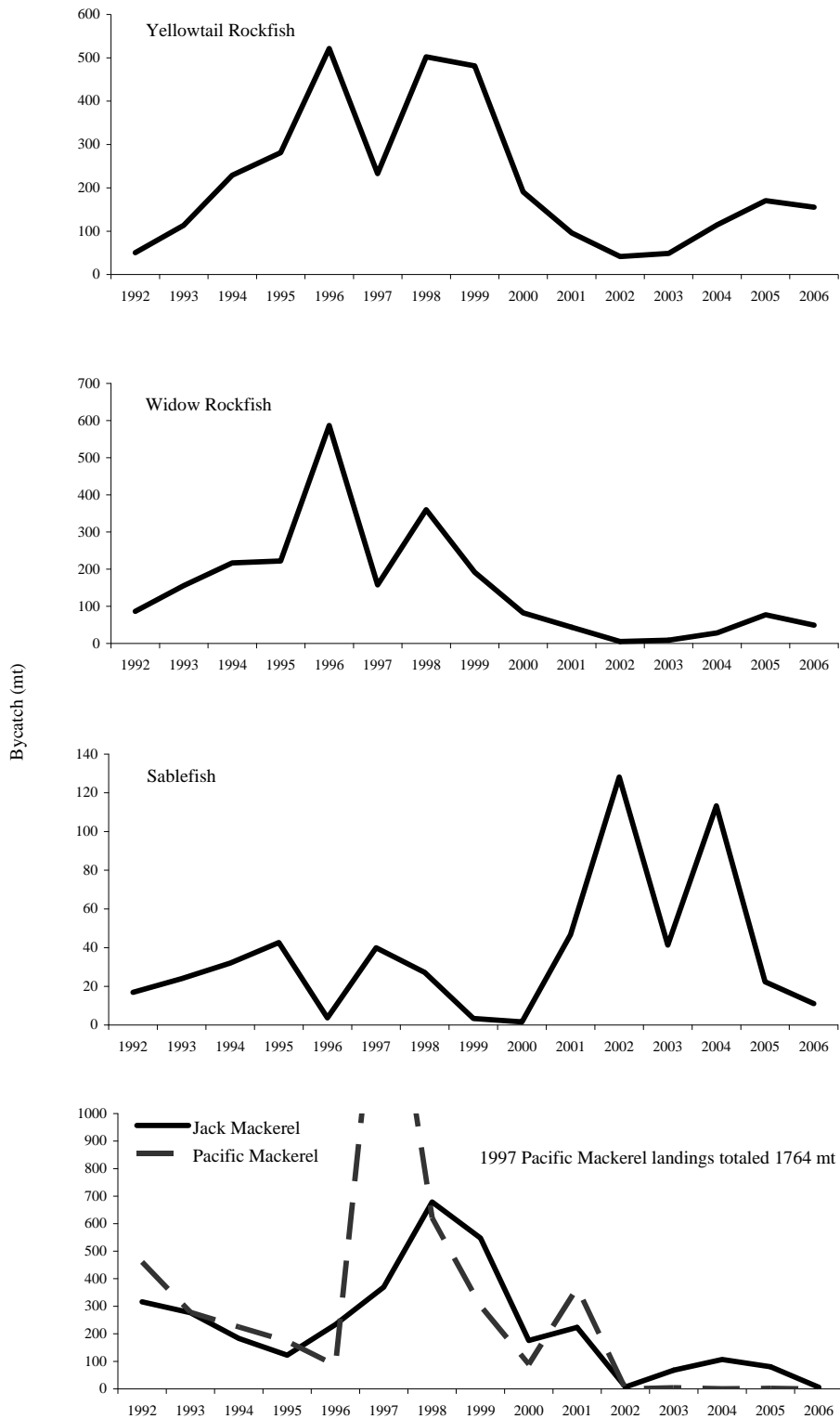
**Figure 1. Frequency distribution of hake landing weights in the 2006 shoreside hake fishery.**

Note: Black bar indicates mean landing weight.

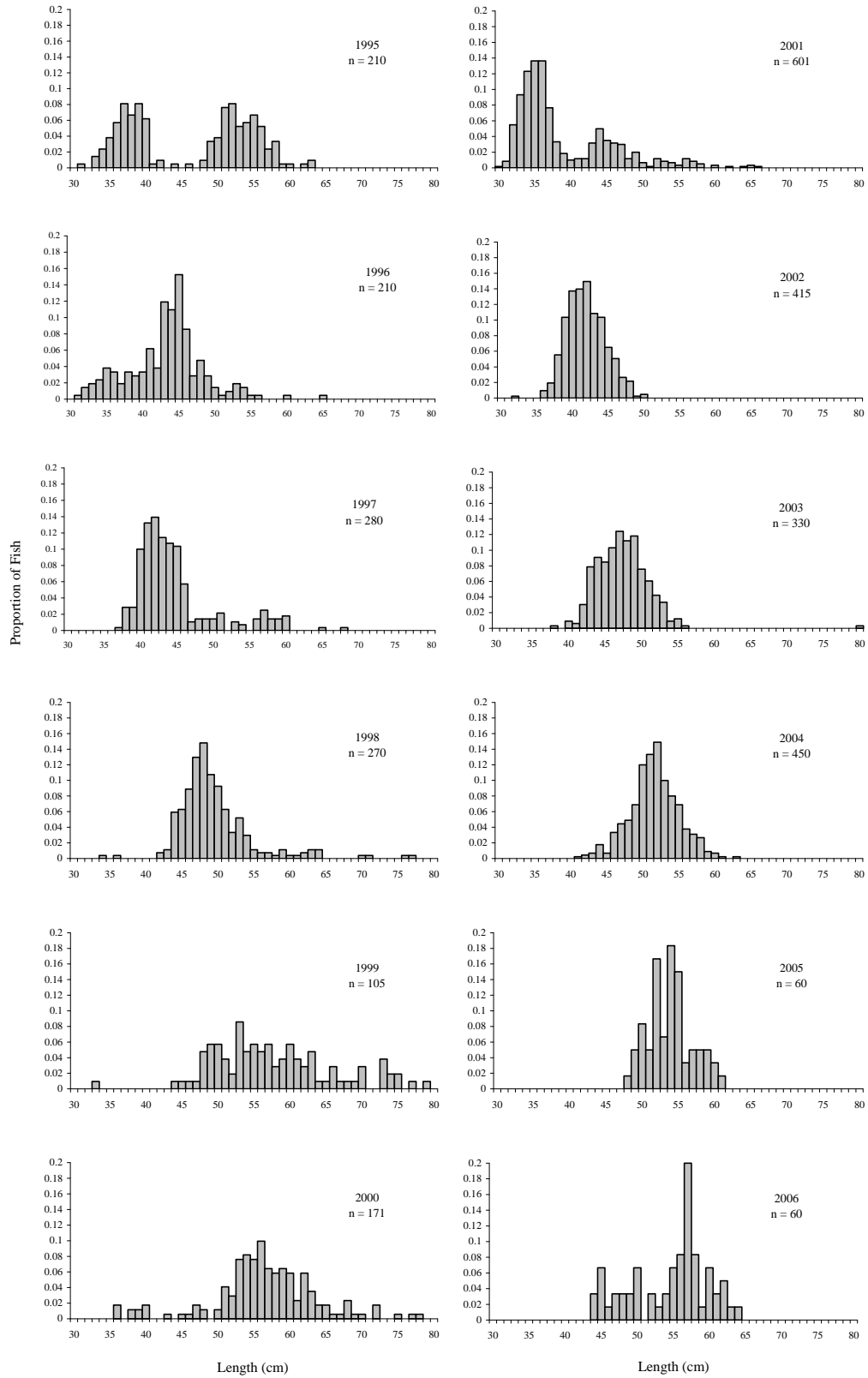


**Figure 2. Percentage of hake identified as no value (weighbacks) on fishtickets by fishery week in the 2006 shoreside hake fishery.**

Note: Calculated using 1,064 of 1,172 shoreside hake landings where weighback were reported.

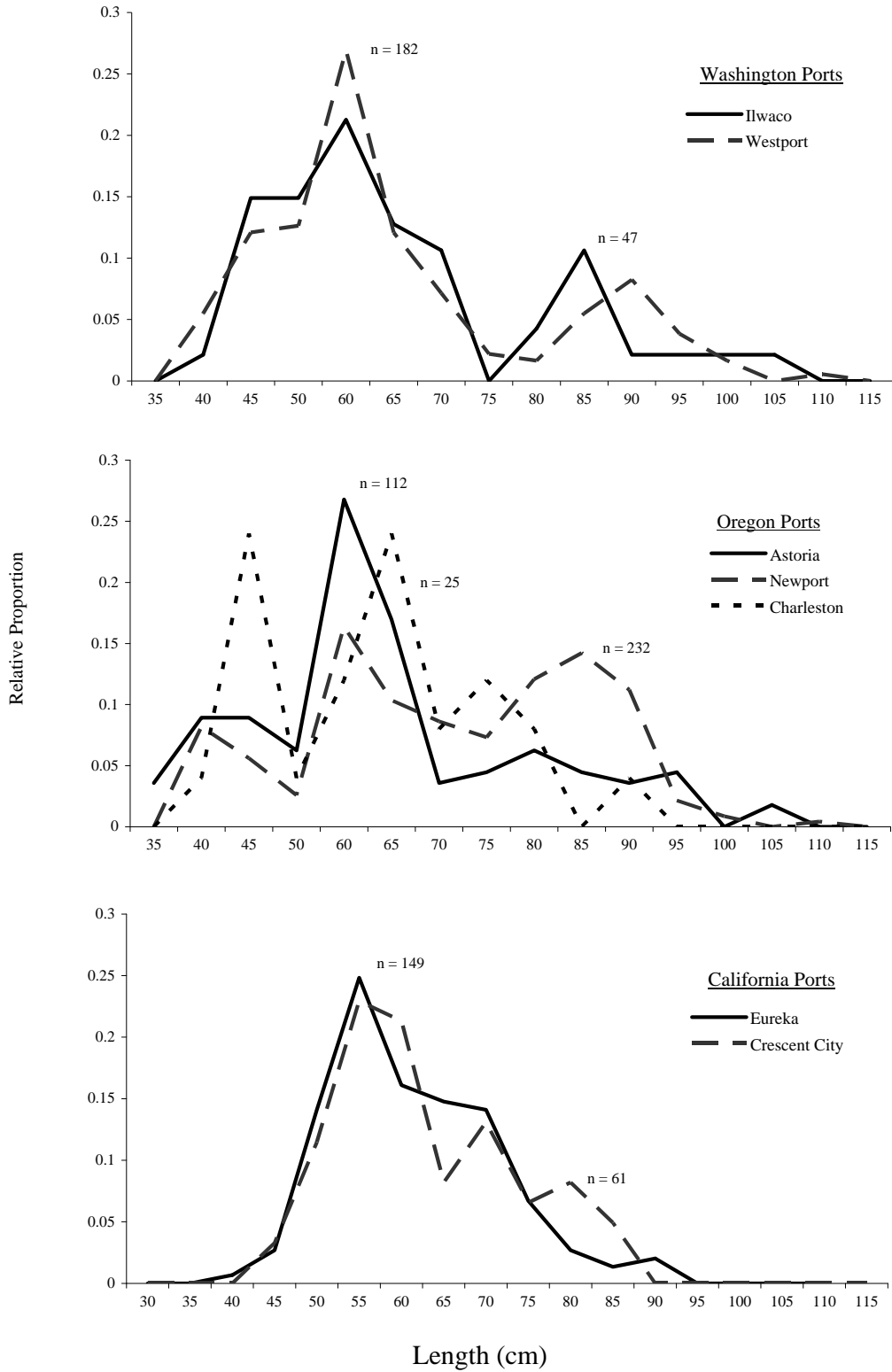


**Figure 3. Trends in major bycatch components of the shoreside hake fishery, 1992 - 2006.**  
 Note: 1992 allowed sorting of bycatch



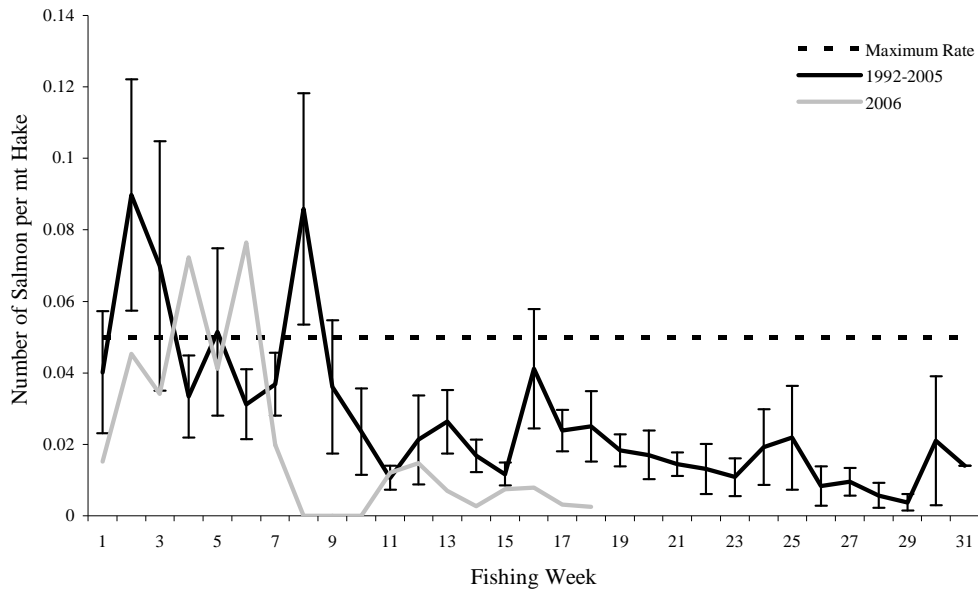
**Figure 4. History of length-frequency distributions for sablefish observed by the Shoreside Hake Observation Program in Oregon, 1995 - 2006.**

Note: Biological samples of sablefish were not taken in Washington or California.



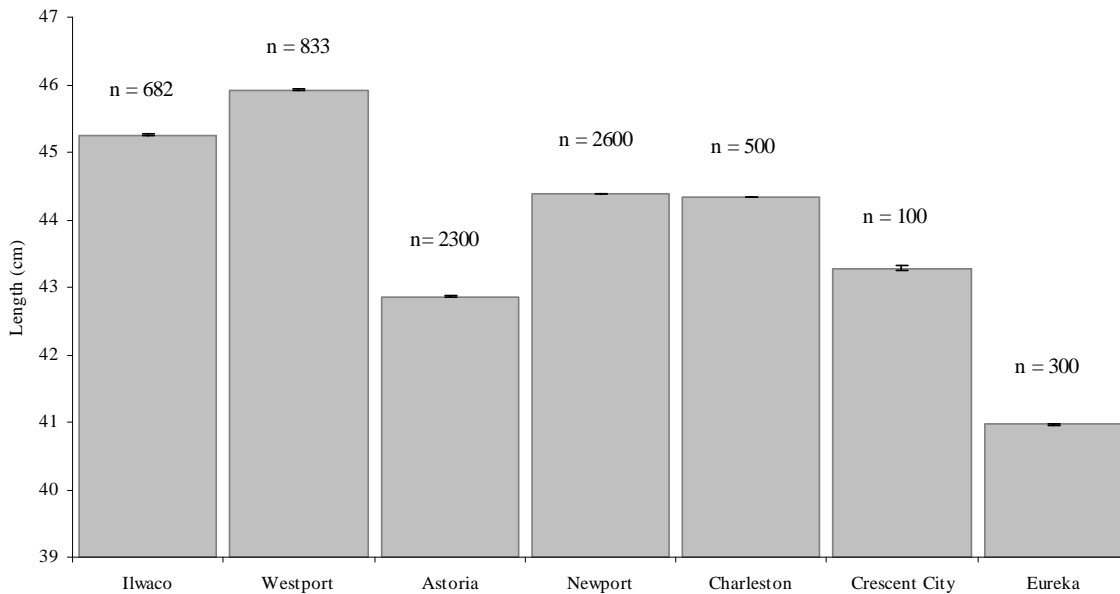
**Figure 5. Length frequency histogram (in cm) for Chinook salmon bycatch in the shoreside hake fishery, 2006.**

Note: Chinook salmon less than 24 inches (60cm) in length are generally 2 years of age or less  
Length data was unavailable for 31 Chinook salmon.

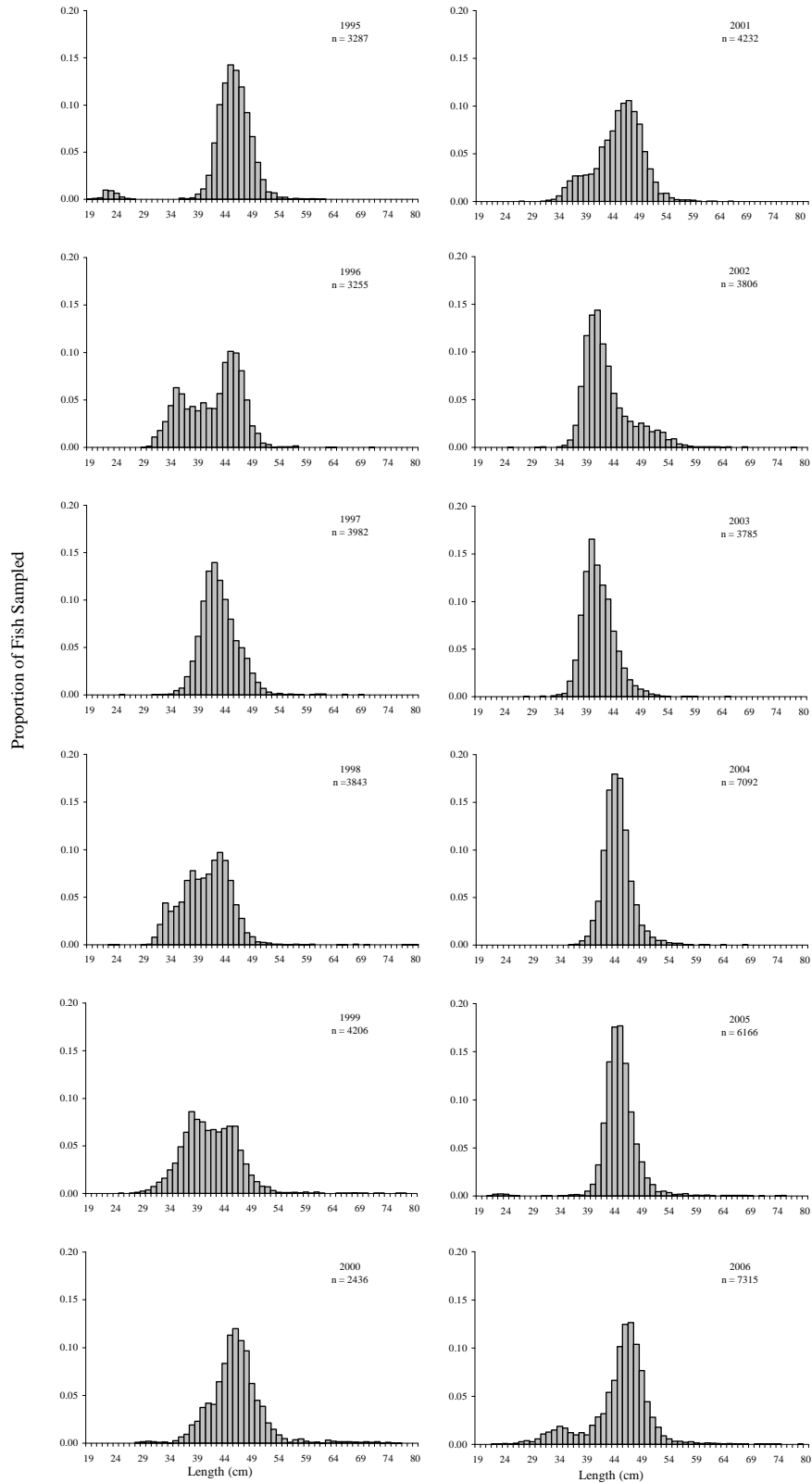


**Figure 6. Weekly bycatch rate of salmon in the 2006 shoreside hake fishery compared to average rates ( $\pm$ SEM) for 1992-2005.**

Note: Maximum rate is stipulated by the 1996 NMFS Biological Opinion (NMFS 1996)  
 The primary season opened on 15 June 2006, in Week 12



**Figure 7. Mean length ( $\pm$ SEM) of Pacific hake by port in the shoreside hake fishery, 2006.**



**Figure 8. History of length-frequency distributions of Pacific hake in the shoreside hake fishery, 1995 - 2006.**

Note: 1995 - 2001 includes data from Oregon only. Washington, Oregon, and California included in 2002 - 2006.



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