Shoreside Whiting Observation Program: 2001

prepared by

Steve Parker

Marine Resources Program
Oregon Department of Fish and Wildlife
Hatfield Marine Science Center
Newport, OR 97365

(541) 867-4741
e-mail: steve.parker@hmsc.orst.edu

December 27, 2001

INTRODUCTION

The Shoreside Whiting Observation Program (SWOP) was established in 1992 to provide information for evaluating bycatch in the directed Pacific whiting (*Merluccius productus)* fishery and for evaluating conservation measures adopted to limit the catch of salmon and other prohibited species. Though instituted as an experimental monitoring program, it has been continued annually to account for all catch in targeted whiting trip landings, potential discards, and accommodate the landing and disposal of non-sorted catch from these trips. In 1995, the SWOP'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 whiting and selected bycatch species (yellowtail and widow rockfish, sablefish, Pacific mackerel, and jack mackerel). The required observation rate was decreased as studies indicated that fish tickets were a good representation of what was actually being landed. Focus shifted again due to 1997 changes in the allocation of yellowtail rockfish and increases in yellowtail bycatch rates. Since then, yellowtail bycatch in the shoreside whiting fishery has been dramatically reduced because of increased awareness by fishermen of the bycatch and allocation issues involved in the SWOP program.

The SWOP is a cooperative effort between the fishing industry and state and federal management agencies to observe and collect information on directed Pacific whiting landings at shoreside processing plants. Participating vessels apply for and carry exempted fishing permits (EFPs) issued by the National Marine Fisheries Service (NMFS). Permit terms require vessels to land unsorted whiting 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 SWOP are mid-water trawlers carrying EFPs, designated shoreside processing plants in California, Oregon, and Washington, the PFMC, the 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).

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 agreements set a vessel-specific maximum rate for yellowtail rockfish bycatch at 12 kg of yellowtail rockfish per metric ton of whiting. Non-cumulative bycatch rate check points were set for when 30, 55, and 85 percent of the shoreside Pacific whiting quota had been landed. If a vessel exceeded the 12 kg/mt bycatch rate cap at any of these points it did not participate in the shoreside Pacific whiting fishery for one day for each kg/mt it was over the bycatch rate cap (*i.e.* no whiting was landed by this vessel for a set period of time during the following week) (for 2000 bycatch rates see Hutton and Parker (2000). These penalties were enforced by the processors through their operating agreements with the vessels. Bycatch rates were calculated using fish ticket information on landings. This strategy, especially knowledge of the operating requirements of the EFP and fishery goals, has dramatically reduced yellowtail rockfish and widow rockfish bycatch.

2001 WHITING FISHERY

The PFMC's optimum yield (OY) decreased due to a lower stock biomass from 232,000 mt to 190,400 metric tons (mt) (Table 1). The tribal fishery was originally allocated 27,500 mt, but 10,000 mt was reallocated in September from the Makah tribe to the other fishery sectors. Commercial fishery allocations (following the adjustment in September) were 42% to vessels landing at shoreside processing plants (72,618 mt) (down from 83,800mt in 2000), 34% to catcher/processors (58,786 mt), and 24% to catcher vessels delivering to motherships (41,496 mt). The 2001 directed shoreside whiting fishery began on 01 April 2001 off California (south of 42^{o} N), and on 15 June 2001 off Oregon and Washington (north of 42^{o} N). To avoid pre-empting more northerly segments of the fishery, the southern component of the whiting fishery is limited to 5% of the total shoreside allocation until the northern component of the shoreside fishery begins. The directed season for at-sea processors (north of 42^{o} N) began on 01 May 2001 for catcher/processors and on 15 May for motherships and in contrast to previous years, continued through the fall.

The mothership fishery was extended in 2001 and was still open as of November 28, 2001 with 86.3% of their allocation taken. The catcher-processor fishery closed on November 13 with a total harvest of 58,628 mt of whiting (99.7% of the allocated

amount) (Whiting Report #10, NMFS, Seattle). The tribal fishery harvested 6,080 mt (35% of its allocation). The shoreside directed fishery closed on 15 September with landings of 73,326 mt (1.0 % over the allocated amount) (Table 2). The 76-day shoreside season was an average length (range: 68-136 days) (Table 1). The season was closed on August 21st, then reopened on September 17th through the 26th after reallocation of the additional whiting quota from the Makah tribe. The total commercial catch was 91.3% of the allocation and the total harvest (173,857 mt) was 8.7% below the OY as of November 28, 2001 (Whiting Report #10, NMFS, Seattle).

Twenty-nine midwater trawlers and 12 processors participated in the SWOP in 2001 and unsorted Pacific whiting landings were observed at processing plants in Crescent City (1), Eureka (2), Charleston (2), Newport (3), Astoria (2), Ilwaco (1), and Westport (1). The number of participating vessels was the lowest to date, with the normal number in the middle to upper thirties. There were only 17 non-EFP whiting deliveries in 2001, but 1013 EFP landings, so most of the midwater trawlers targeting whiting and delivering shoreside, and almost all onshore processing plants receiving whiting participated in the SWOP. Overall, 24% of Pacific whiting landings at shoreside processors were observed in 2001, exceeding the 10% program goal, although observation rates were lower in Washington and California (Table 3). The percentage of trips observed varied with state and port, with a low of 8% in Eureka and Ilwaco, and a high of 39% in Newport. Only 64 mt of whiting was delivered in the non-EFP fishery. Whiting was landed at a fairly constant pace throughout much of the shoreside season (Table 2). The vast majority of Pacific whiting (about 72.9%) was landed in Oregon; Washington landings represented 24% of the total, and California landings represented about 3.1% (Tables 4, 5 and 6). Coastwide, 43% of the whiting catch was delivered to Newport, with Astoria at 26% of the total.

BYCATCH

Rockfish

Bycatch of yellowtail rockfish (*Sebastes flavidus*) was the lowest in almost a decade (Table 1)(see Hutton and Parker, 1999 for review). The catch in 2000 was more than a 60% drop from 1999, and the drop in 2001 was 50% of the 2000 catch. Even considering a decrease in whiting quota, the bycatch rate decreased from 2.22 to 1.3 kg/mt of whiting (Figure 1). Data on the bycatch rates of the at-sea component of the whiting fishery for comparison were not available as of December 26, 2001.

The widow rockfish (*S. entomelas*) bycatch rate continued to decline from its low 2000 level, showing a 56% further reduction and is at its lowest rate ever (Figure 1). Their abundance has been the most variable over time and may be confounded by changes in whiting tow or landing locations since widow bycatch rates typically increase to the south. The catch rates for widow rockfish were highest in California and lowest in Washington (Tables 4, 5, and 6). The low bycatch rate for widow rockfish is welcome because of the overfished status and reductions in OY for widow rockfish in place for

2002. Bycatch rates of 42 mt instead of 300 – 500 mt as in the 1990's will allow more flexibility in managing the groundfish limited entry fishery and remove some pressure from the whiting fishery.

Overall, rockfish bycatch rates have decreased substantially in the past two years and have helped the whiting fishery to have a minimal impact on other mixed-species fisheries. It is obvious that whiting fishermen are actively avoiding pelagic rockfishes coastwide and are working towards a whiting fishery with the lowest bycatch rates possible. Sustained low bycatch rates on widow rockfish especially will help the fishery avoid unwanted restrictions from managers concerned with overall widow rockfish mortality.

Sablefish

Sablefish (*Anoplopoma fimbria*) bycatch rate and abundance had been declining steadily and dramatically since 1995. No obvious shift in fleet distribution or other whiting fishery-dependent factor has been attributed to this drop in relative abundance. However, in 2001, sablefish bycatch dramatically increased (Figure 1). Most of these sablefish were small; average size was ~550 g (Table 10). There was some tendency for larger fish to be caught in Charleston(1.7 kg), though no fish were landed in California. Very few fish were landed until the end of June and most were landed near the end of July. Throughout August and September, they were not landed in significant numbers (Table 2).

Mackerel

Mackerel bycatch information has combined chub (Pacific) mackerel (*Scomber japonicus*) and jack mackerel (*Trachurus symmetricus*). Beginning in 2002, mackerel will be tracked as separate categories. Either jack or Pacific mackerel can be the largest single species bycatch component of the whiting fishery, with different species predominating in different years. Combined bycatch rates are lower than they have been in the past and likely reflect changes in abundance, but because they are not tracked as individual species, the rates cannot distinguish changes in relative proportions. Tracking each species separately will help to show if bycatch rates are associated with strong year classes or with changes in fishing distribution or effort, and may help in predicting bycatch levels or locations.

Other species

Other species landed in the whiting fishery are a substantial component of the bycatch as a whole. Combined, these species totaled 451 mt in 2001, significantly up from 170 mt in 2000 and the highest catch by almost 200 mt since the fishery started. The miscellaneous fish category changed dramatically for Washington in 2001, with an order of magnitude increase. The large increase was due to landings of walleye pollock (*Theragra chalcogramma*) in Westport. The composition of this category varies yearly. The

species composition of this category will also be monitored more closely in the future as several species in this category are overfished and of special concern to managers.

Salmon
A total of 3,005 salmon (2,634 chinook (*Oncorhynchus tshawytscha*), 304 pink (*Oncorhynchus gorbushca)*, 35 coho (*Oncorhynchus kisutch*), and 32 chum (*Oncorhynchus keta*) salmon) were taken as bycatch in the 2001 shoreside whiting fishery and were turned over to state agencies by processors: 2,251 in Oregon, 754 in Washington, and 105 in California. This rate is high for the fishery, and similar to the rate observed in 2000. The shoreside component itself was below the 0.050 salmon per mt whiting set as a cap by the NMFS. In 2001 the shoreside rate represents an incidental catch rate of 0.042 salmon per metric ton of whiting for the entire EFP fishery (Table 8). However, salmon presence in coastal waters was the highest in decades and run sizes broke records in Washington, Oregon, and California. The numbers of pink salmon were also much higher in 2001. No pink salmon were noted in 2000, and only 11 in 1999. Pink salmon were also not noted in earlier years, so the higher numbers of pink likely represent increased abundance in a normally strong pink salmon year.

Observers at shoreside plants noted 381 salmon incidentally taken in 248 observed landings of 17,157 mt of whiting, which results in an observed rate of 0.022 salmon/mt whiting. These 381 fish are included in the total of 3,005 made available to state agencies. The highest weekly bycatch rate occurred the week of July 15th as opposed to previous years when early season catches were highest. Most of this catch occurred in just three landings in Astoria (173, 301, and 181 salmon trips) (Table 8). Rates that week were also high in Washington with the average trip landing near 20 salmon. Discussions with fishers have revealed no changes in fishing behavior that would account for a change in the salmon interception rate.

Pacific halibut and Dungeness crab
Only 23 Pacific halibut were landed in all three states by the 2001 whiting shoreside fishery; 2 in Washington, 20 in Oregon, and 1 in California. This is a more normal number compared to the high of 63 caught in 2000. Dungeness crab numbers were at a normal number of 89 for the season. Eighty-eight of the crabs were from just two trips (46 and 42 crabs each) landed in Newport in early July.

PROGRAM COSTS

In 2001, the cost of the Oregon-Washington portion of the SWOP was approximately $82,508 (approximately $46,738 for coordination and data processing costs, and an estimated $35,770 for observers). This has increased slightly due to labor costs since 1995. 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 more than $20,000. Oregon shoreside processing plants hired six observers to make observations at six processors. The WDFW and the CDFG provided minimal shoreside landing observations with existing state staff. Participating processors, and those contributing to the cost of the program in 2002, are Merino's Seafood, Jessie's Ilwaco Fish, Pacific Coast Seafood, Point Adam's Packing, Pacific Whiting Producers, Pacific Shrimp, Trident Seafood, and Bandon Pacific.

BIOLOGICAL SAMPLING

In addition to documenting bycatch composition and rates, shoreside observers collected a variety of biological information and samples that are used in stock assessment analyses (Table 9). Observers in Newport and Astoria measured about 1,150 Pacific whiting for length-frequency information, and collected 1600 Pacific whiting otolith samples, along with length and weight information (Figure 2, Table 10). Pacific whiting information and samples have been provided to Thomas Helser of the NMFS Alaska Fisheries Science Center for incorporation into subsequent whiting stock assessments. Yellowtail rockfish otoliths and length-frequency information are provided to the WDFW for future stock assessments on this species. Biological samples of Pacific mackerel are provided to the CDFG for their stock assessment work on this species. Biological samples of widow rockfish, sablefish and jack mackerel are also taken. These have been retained at ODFW and are available for future assessment efforts.

AREAS FOR IMPROVEMENT IN 2002

The 2001 season had few administrative problems. We established a better system for PSMFC to bill, receive payment, and track payments from processors. We have posted previous whiting observation reports on the internet (see below). We developed a method to predict salmon bycatch prior to the season to help in expectations of salmon bycatch in relation to the ESA Section 7 Biological Opinion. We list some of the issues that need to be addressed in 2002, to keep the whiting fishery monitoring accurate and efficient.

- Investigate whether it is feasible and what the obstacles are to convert the Pacific whiting EFP program into a normal monitored fishery. Several technical and legal sampling and observation issues need to be addressed for this to happen.

- Look more closely at salmon bycatch and search for possible predictors or indicators for salmon bycatch levels for a given season prior to the start of the season.

- Develop reporting procedures to provide species compositions for miscellaneous rockfish and fish categories.

References

Hutton, L. and S.J. Parker. 1999. Bycatch of yellowtail rockfish in the Pacific whiting fishery (1996-1999): Analysis and solutions. Oregon Department of Fish and Wildlife, Newport. 14 p.

Hutton, L. and S.J. Parker. 2000. Shoreside Whiting Observation Program: 2001. Oregon Department of Fish and Wildlife, Newport.

Note: This report and past shoreside whiting observation reports are available on the internet at http://www.hmsc.orst.edu/odfw/reports/whiting.html

Table 1. Summary of the EFP shoreside component of the US Whiting fishery through 2001. Weights are in metric tons and bycatch rates are in kg/mt whiting.

Year	US optimum yield (mt)	Whiting landed (mt)	Yellow-tail bycatch	Yellowtail bycatch rate	Participating vessels	Start date	End date	Season length (days)
1992	208,800	56,127	59.37	1.05	NA			NA
1993	142,000	41,926	137.89	3.29	NA	4/15/93	8/24/93	132
1994	260,000	72,367	255.5	3.53	33	4/15/94	11/23/94	223
1995	178,400	73,937	273.82	3.70	35	4/15/95	7/25/95	102
1996	212,000	84,986	521.62	6.13	37	5/15/96	9/10/96	119
1997	232,000	85,810	233.02	2.71	38	6/15/97	8/22/97	69
1998	232,000	87,387	501.06	5.73	35	6/15/98	10/13/98	121
1999	232,000	83,272	481.39	5.78	36	6/15/99	9/13/99	91
2000	232,000	85,653	189.81	2.22	36	6/15/00	9/15/00	93
2001	190,400	73,326	95.86	1.30	29	6/15/01	9/26/01	76*

* 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 the other fishery sectors. The shoreside component then re-opened from 9/17 - 26/01.

Table 2. Weekly EFP Pacific whiting landings and bycatch for Washington, Oregon and California, 04/01/2001-09/26/2001. Data from fish tickets and observations. The fishery was closed from 1200 h 08/21-1200h 9/17.

Fishing week	Week ending date	Number of whiting landings	Whiting landed (mt)	Cumulative whiting landed (mt)	Percentage of whiting quota landed	Number of landings observed	Whiting observed (mt)	Salmon landed	Pacific halibut landed	Dungeness crab landed	Yellowtail landed (mt)	Widow landed (mt)	Sablefish landed (mt)	Pacific mackerel landed (mt)	Jack mackerel landed (mt)	Other species landed (mt)
14	04/01/01															
15	04/08/01	4	180.85	180.85	0.25	1	41.91	19								0.06
16	04/15/01	3	128.30	309.15	0.43			4								
17	04/22/01	1	70.29	379.44	0.52											0.05
18	04/29/01	3	162.56	542.00	0.75	1	54.36	2								0.01
19	05/06/01	4	235.79	777.78	1.07			2	1			0.01				0.81
20	05/13/01	8	502.55	1,280.33	1.76	1	46.87	29				0.04				3.69
21	05/20/01	7	358.32	1,638.65	2.26	1	69.07	45				0.04				0.01
22	05/27/01	4	280.35	1,919.00	2.64			4				7.63				
23	06/03/01	3	126.58	2,045.58	2.82	1	68.29					0.00				0.17
24	06/10/01	4	161.29	2,206.87	3.04							0.01				3.36
25	06/17/01	13	731.87	2,938.74	4.05			22			0.46	0.01	0.01		0.03	0.51
26	06/24/01	88	6,283.30	9,222.04	12.70	24	1,668.77	514		1	6.31	0.19	0.81	23.30	1.06	12.46
27	07/01/01	80	5,409.62	14,631.66	20.15	22	1,449.91	246	4		10.60	0.16	0.44	24.99	13.13	21.85
28	07/08/01	89	6,622.75	21,254.41	29.27	22	1,377.20	148		46	1.11	0.01	0.21	5.25	0.71	19.43
29	07/15/01	86	5,996.64	27,251.04	37.53	16	1,219.91	1,363	4	42	10.94	2.98	0.41	27.92	6.60	82.78
30	07/22/01	97	6,185.42	33,436.47	46.04	26	1,422.02	164	2		17.59	10.94	8.91	43.84	27.56	49.61
31	07/29/01	103	7,821.79	41,258.26	56.82	40	2,844.18	97	3		8.60	0.92	21.95	96.33	40.44	134.30
32	08/05/01	108	8,418.37	49,676.62	68.41	29	2,001.91	80	1		10.06	5.11	10.58	48.38	25.56	99.32
33	08/12/01	100	7,639.33	57,315.96	78.93	29	1,853.20	46	7		8.48	0.07	0.38	83.83	45.25	9.27
34	08/19/01	96	7,792.91	65,108.87	89.66	25	2,062.63	208	1		14.53	5.05	1.83	24.03	28.44	6.63
35	08/26/01	32	2,595.94	67,704.80	93.23	5	430.74	8			1.90	0.04	0.01	0.24	0.53	5.47
36	09/02/01	NA														
37	09/09/01	NA														
38	09/16/01	NA			93.23											
39	09/23/01	47	2,968.61	70,673.41	97.32	4	493.05	2			3.46	1.96	0.51	18.02	8.56	0.41
40	09/30/01	33	2,588.30	73,261.71	100.89	1	53.24	2			1.81	7.11	0.68	7.23	13.34	0.73
	EFP total	1013	73,262		100.89	248	17,157.26	3,005	23	89	95.86	42.27	46.72	403.37	211.21	450.92
	Non-EFP total	17	64		0.09											
	Fishery total	1030	73,326		100.97											

Table 3. 2001 Cumulative shoreside whiting fishery report for Washington, Oregon and California. Fishery total includes non-EFP trips, but rates are calculated as the average of all the individual rates for each EFP landing.

Best available data as of 11/11/2001

	Observed total	EFP fishery total	Non-EFP fishery total	Fishery total
Whiting harvest (mt)	17,157	73,262	64	73,326
Number of deliveries	248	1,013	17	1,030
Percent of deliveries observed	24			
Salmon catch (no)	381	3,001		3,005
Pacific halibut (no)	9	23		23
Dungeness crab (no)	1	89		89
Yellowtail rockfish (kg)	21,065	95,860		95,860
Widow rockfish (kg)	8,199	42,270		42,270
Sablefish (kg)	9,578	46,730		46,730
Pacific mackerel (kg)	65,264	403,370		403,370
Jack mackerel (kg)	44,700	211,210		211,210
Other species* (kg)	19,078	450,925		439,270
Salmon rate (no/mt of whiting)	0.022	0.041		0.041
Yellowtail rate (kg/mt of whiting)	1.175	1.299		1.299
Widow rate (kg/mt of whiting)	0.588	0.618		0.618
Sablefish rate (kg/mt of whiting)	0.717	0.619		0.619
Pacific mackerel (kg/mt of whiting)	4.471	5.119		5.119
Jack mackerel (kg/mt of whiting)	2.722	2.769		2.769

*Other species include rockfishes (e.g., redstripe, canary, darkblotch, bocaccio), lingcod, herring, shad, dogfish, sardine, squid, and others.

Table 4. 2001 Cumulative shoreside whiting fishery report for Washington. Fishery total includes non-EFP trips, but rates are calculated as the average of all the individual rates for each EFP landing.

Best available data as of 11/11/2001

	Observed total	EFP fishery total	Non-EFP fishery total	Fishery total
Whiting harvest (mt)	1,883	17,599	0	17,599
Number of deliveries	18	198	0	198
Percent of deliveries observed	9			
Salmon catch (no)	52	754		754
Pacific halibut (no)	2	2		2
Dungeness crab (no)	0	0		0
Yellowtail rockfish (kg)	4,180	36,740		36,740
Widow rockfish (kg)	632	9,050		9,050
Sablefish (kg)	108	2,030		2,030
Pacific mackerel (kg)	13,980	99,690		99,690
Jack mackerel (kg)	9,723	28,860		28,860
Other species* (kg)	6,833	325,102		325,100
Salmon rate (no/mt of whiting)	0.028	0.043		0.043
Yellowtail rate (kg/mt of whiting)	1.429	2.566		3.879
Widow rate (kg/mt of whiting)	0.129	0.391		0.391
Sablefish rate (kg/mt of whiting)	0.071	0.163		0.163
Pacific mackerel (kg/mt of whiting)	12.928	6.993		6.993
Jack mackerel (kg/mt of whiting)	6.743	1.870		1.870

*Other species include rockfishes (e.g., redstripe, canary, darkblotch, bocaccio), lingcod, herring, shad, dogfish, sardine, squid, and others.

Table 5. 2001 Cumulative shoreside whiting fishery report for Oregon.
Fishery total includes non-EFP trips, but rates are calculated as the average of all the individual rates for each EFP landing.

Best available data as of 11/11/2001

	Observed total	EFP fishery total	Non-EFP fishery total	Fishery total
Whiting harvest (mt)	14,527	53,383	39	53,422
Number of deliveries	222	769	4	773
Percent of deliveries observed	29			
Salmon catch (no)	318	2,251		2,251
Pacific halibut (no)	7	20		20
Dungeness crab (no)	1	89		89
Yellowtail rockfish (kg)	16,886	59,120		59,120
Widow rockfish (kg)	7,567	25,380		25,380
Sablefish (kg)	9,469	44,690		44,690
Pacific mackerel (kg)	51,284	303,680		303,680
Jack mackerel (kg)	34,977	182,350		182,350
Other species* (kg)	12,071	117,655		117,660
Salmon rate (no/mt of whiting)	0.022	0.042		0.042
Yellowtail rate (kg/mt of whiting)	1.178	1.050		2.249
Widow rate (kg/mt of whiting)	0.644	0.536		0.535
Sablefish rate (kg/mt of whiting)	0.795	0.772		0.772
Pacific mackerel (kg/mt of whiting)	3.771	4.930		4.930
Jack mackerel (kg/mt of whiting)	2.403	3.180		3.180

*Other species include rockfishes (e.g., redstripe, canary, darkblotch, bocaccio), lingcod, herring, shad, dogfish, sardine, squid, and others.

Table 6. 2001 Cumulative shoreside whiting fishery report for California. Fishery total includes non-EFP trips, but rates are calculated as the average of all the individual rates for each EFP landing.

Best available data as of 11/11/2001

	Observed total	EFP fishery total	Non-EFP fishery total	Fishery total
Whiting harvest (mt)	281	2,279	25	2,305
Number of deliveries	5	46	13	59
Percent of deliveries observed	8			
Salmon catch (no)	11	105		105
Pacific halibut (no)	0	1		1
Dungeness crab (no)	0	0		0
Yellowtail rockfish (kg)	0	1		1
Widow rockfish (kg)	1	7,840		7,840
Sablefish (kg)	0	2		2
Pacific mackerel (kg)	0	0		0
Jack mackerel (kg)	0	0		0
Other species* (kg)	1,174	8,167		8,170
Salmon rate (no/mt of whiting)	0.039	0.046		0.046
Yellowtail rate (kg/mt of whiting)	0.000	0.001		0.025
Widow rate (kg/mt of whiting)	0.003	2.948		2.825
Sablefish rate (kg/mt of whiting)	0.000	0.001		0.001
Pacific mackerel (kg/mt of whiting)	0.000	0.000		0.000
Jack mackerel (kg/mt of whiting)	0.000	0.000		0.000

*Other species include rockfishes (e.g., redstripe, canary, darkblotch, bocaccio), lingcod, herring, shad, dogfish, sardine, squid, and others.

Table 7. Annual bycatch rates by port and vessel for major bycatch species in 2001. All rates are in kg/mt of whiting. Vessels landing in more than one port show rates for each port.

Best available data as of 11/11/2001

Port	Vessel	Yellowtail rockfish	Widow rockfish	Sablefish	Pacific mackerel	Jack Mackerel	Other species
Westport	BETTY A	2.13	0.00	0.06	2.53	3.51	8.89
	CHELLISSA	4.89	0.00	0.04	16.47	0.20	8.48
	JAMIE MARIE	1.69	0.79	0.02	6.08	3.67	27.22
	NICOLE	2.63	0.00	0.02	1.47	0.00	39.23
	PACIFIC CHALLENGER	2.87	0.64	0.03	4.95	1.09	26.36
Westport Total		**2.89**	**0.32**	**0.04**	**7.37**	**2.05**	**18.38**
Ilwaco	GEORGE ALLEN	1.07	3.32	0.00	0.00	0.00	0.04
	GRUMPY J	0.15	0.00	1.36	6.13	0.00	2.72
Ilwaco Total		**0.40**	**0.89**	**0.99**	**4.48**	**0.00**	**2.00**
Astoria	GEORGE ALLEN	0.81	0.00	1.39	2.19	4.18	1.21
	MUIR MILACH	0.77	0.00	2.03	15.25	4.72	8.78
	NICOLE	3.28	0.00	0.00	30.65	0.00	0.91
	PACIFIC FUTURE	0.78	0.03	1.51	10.20	11.11	2.11
	PERSEVERANCE	1.27	0.08	0.00	6.67	0.33	0.44
	PREDATOR	2.18	0.00	2.66	6.84	2.78	8.28
	RAVEN	1.43	0.00	2.15	10.37	6.57	4.85
	SEA CLIPPER	1.77	0.00	2.83	11.12	2.98	4.72
	SEEKER	2.31	0.00	1.24	16.24	4.66	10.83
Astoria Total		**1.52**	**0.01**	**1.87**	**11.46**	**5.36**	**5.83**
Newport	BAY ISLANDER	0.02	0.38	0.39	1.61	1.36	0.04
	BLUE FOX	0.61	0.14	0.05	0.41	0.93	0.12
	CAPE KIWANDA	1.77	1.19	0.07	3.27	1.81	0.12
	EXCALIBUR	2.04	2.58	0.01	2.75	2.35	0.66
	GRUMPY J	0.01	0.00	1.02	0.00	0.03	0.22
	LAST STRAW	1.69	0.28	0.00	0.00	0.00	0.54
	LISA MELINDA	1.11	1.22	0.06	2.44	2.41	0.10
	MISS BERDIE	0.96	0.09	2.10	4.15	6.77	0.26
	MISS SARAH	1.40	0.48	0.07	1.53	2.57	0.09
	MISS SUE	0.74	1.05	0.14	1.98	2.66	0.14
	PACIFIC	1.17	0.09	0.38	4.41	0.61	0.20
	PACIFIC RAM	0.01	0.01	0.00	0.00	0.06	0.14
	PEGASUS	0.65	0.79	0.31	8.72	7.03	0.06
Newport Total		**0.98**	**0.70**	**0.40**	**2.71**	**2.52**	**0.18**
Charleston	JEANETTE MARRIE	0.20	0.72	0.01	0.73	0.87	0.48
	LAST STRAW	0.12	1.33	0.04	0.16	1.70	0.87
Charleston Total		**0.16**	**0.99**	**0.02**	**0.48**	**1.23**	**0.65**
Crescent City	MISS SUE	0.00	5.72	0.00	0.00	0.00	1.03
	PACIFIC RAM	0.00	0.13	0.00	0.00	0.00	5.02
Crescent City Total		**0.00**	**3.48**	**0.00**	**0.00**	**0.00**	**2.62**
Eureka	FISHWISH	0.00	13.70	0.00	0.00	0.00	0.00
	PACIFIC	0.00	0.00	0.00	0.00	0.00	18.06
	WARRIOR II	0.00	0.00	0.00	0.00	0.00	0.09
Eureka Total		**0.00**	**1.25**	**0.00**	**0.00**	**0.00**	**4.98**
Grand Total		1.30	0.62	0.62	5.12	2.77	4.70

Table 8. Weekly bycatch rate of salmon (# of salmon/mt of whiting) in the shorebased whiting fishery, 1992-2001.
Rates for 1992-1994 are based on observations. Rates for 1995-2001 are based on salmon turned over to state agencies by processors.
Rates include all salmon landed. See text for salmon species composition.

Month	1992*	1993	1994	1995	1996	1997	1998	1999	2000	2001
April		0.088	0.042	0.069	0.000		0.000			
		0.076	0.074	0.398	0.003	0.000	0.054			0.105
		0.019	0.052	0.422	0.000	0.000	0.000			0.031
		0.135	0.031	0.018	0.000	0.000	0.000		0.026	0.000
		0.038	0.015	0.041	0.000	0.000	0.000		0.298	0.012
May	0.019	0.034	0.002	0.040	0.000	0.001	0.049	0.013	0.132	0.008
	0.097	0.054	0.004	0.019	0.029	0.010	0.101	0.000	0.022	0.058
	0.056	0.014	0.003	0.011	0.136	0.003	0.205	0.000	0.137	0.126
	0.028	0.019	0.000	0.004	0.024	0.000	0.053	0.000	0.280	0.014
June	0.015	0.021	0.017	0.008	0.007	0.000	0.041	0.000	0.186	0.000
	0.004	0.000	0.007	0.032	0.007	0.000	0.028	0.000	0.034	0.000
	0.001	0.001	0.007	0.013	0.000	0.011	0.006	0.002	0.005	0.030
	0.000	0.001	0.001	0.035	0.001	0.005	0.005	0.005	0.072	0.082
July	0.000	0.011	0.001	0.024	0.000	0.010	0.001	0.013	0.049	0.045
	0.002	0.010	0.003	0.011	0.004	0.016	0.002	0.007	0.011	0.022
	0.003	0.004	0.001		0.003	0.025	0.011	0.053	0.040	0.227
	0.008	0.002	0.001		0.002	0.034	0.050	0.064	0.018	0.027
August	0.002	0.003	0.003		0.001	0.012	0.013	0.017	0.093	0.012
	0.004	0.008	0.002		0.001	0.025	0.033	0.029	0.027	0.010
	0.005	0.003	0.001		0.000	0.014	0.014	0.021	0.018	0.006
	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
September	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
	0.017		0.001				0.094	0.011	0.008	0.001
	0.005		0.003				0.025			0.001
October	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)	0.010	0.010	0.008	0.032	0.008	0.017	0.020	0.021	0.039	0.041
Total salmon landed	491	419	585	2972	651	1484	1713	1712	3345	3005

*Oregon Only

Table 9. Summary of biological sampling conducted during the shoreside Pacific whiting observation program during 2001.

Port	Species	Length frequency	Otolith Samples	Fish per sample	Fish sampled
Astoria					
	Pacific whiting	1,496	40	20	800
	Jack mackerel		21	30	630
	Pacific mackerel		22	30	660
	Widow rockfish			30	
	Yellowtail rockfish		19	30	570
	Canary rockfish		1	20	20
	Sablefish		12	30	331
Newport					
	Pacific whiting	1,200	40	40	800
	Jack mackerel		19	30	570
	Pacific mackerel		18	30	540
	Widow rockfish		17	30	510
	Yellowtail rockfish		15	30	450
	Canary rockfish		0		
	Sablefish		8	30	240
Charleston					
	Pacific whiting		0	40	
	Jack mackerel		0	30	
	Pacific mackerel		0	30	
	Widow rockfish		1	30	30
	Yellowtail rockfish		1	30	30
	Canary rockfish		0		
	Sablefish		0	30	
Total Samples					
	Pacific whiting	2,696	80	20	1,600
	Jack mackerel	0	40	30	1,200
	Pacific mackerel	0	40	30	1,200
	Widow rockfish	0	18	30	540
	Yellowtail rockfish	0	35	30	1,050
	Canary rockfish	0	1	20	20
	Sablefish	0	20	30	571

Table 10. Summary of biological characteristics of species sampled in the shoreside portion of the Pacific whiting fishery, 2001. Condition factor is calculated as (L(cm)3/W(g))*100.

	Female				Male			
Species	Mean length (cm)	Mean weight (gm)	Condition factor	Number of fish	Mean length (cm)	Mean weight (gm)	Condition factor	Number of fish
Pacific whiting	45	433	0.470	1155	45	429	0.456	1204
Jack mackerel	47	1305	1.201	678	46	1238	1.225	518
Pacific mackerel	35	584	1.356	552	35	580	4.773	617
Widow rockfish	21	1098	1.630	147	25	1370	1.576	152
Yellowtail rockfish	33	1086	1.713	359	37	1282	1.729	329
Canary rockfish	48			9	50			11
Sablefish	26	570	0.925	166	30	529	0.926	142

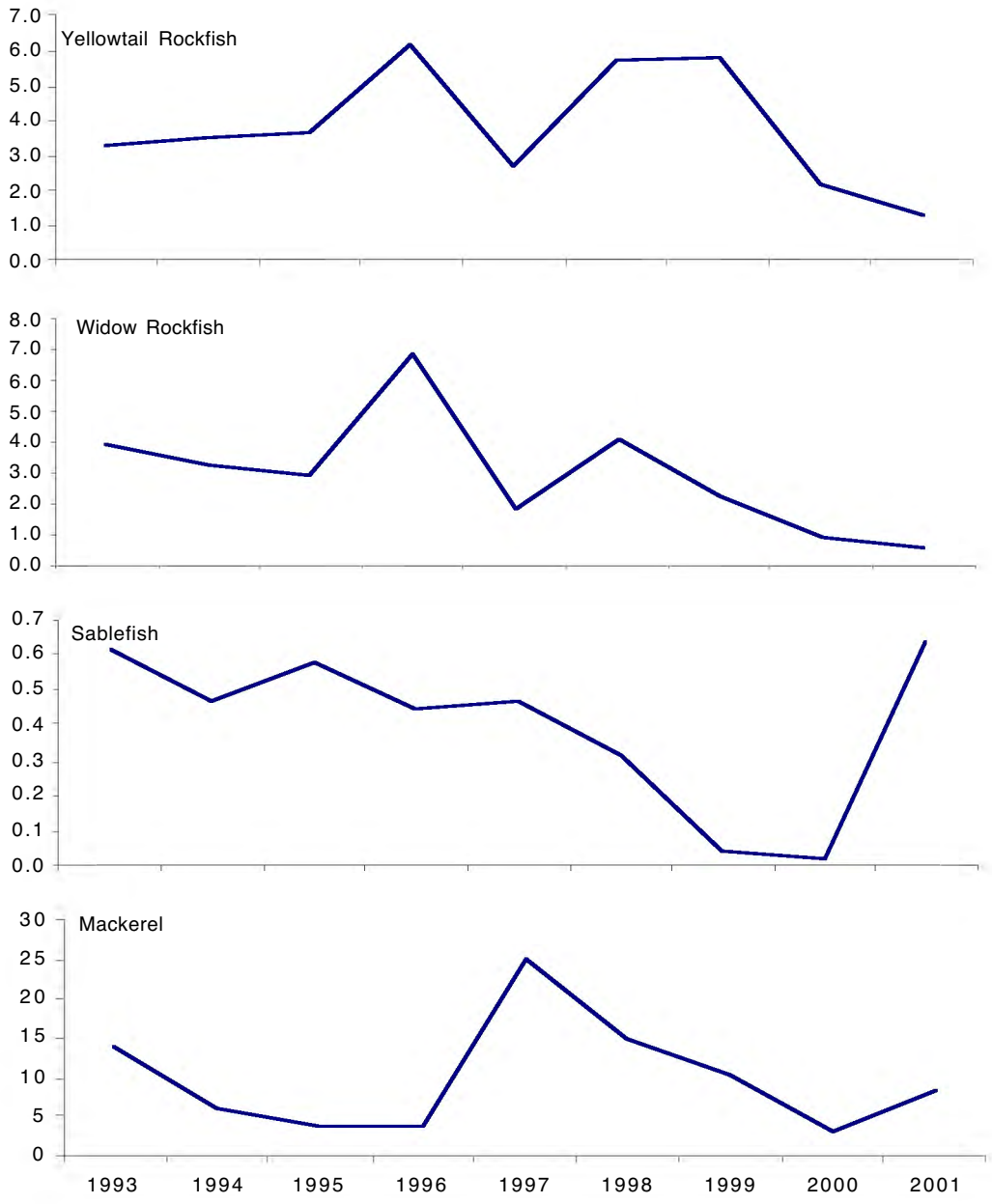

Figure 1. Bycatch rates for major components of the shoreside whiting fishery catch, 1993-2001.

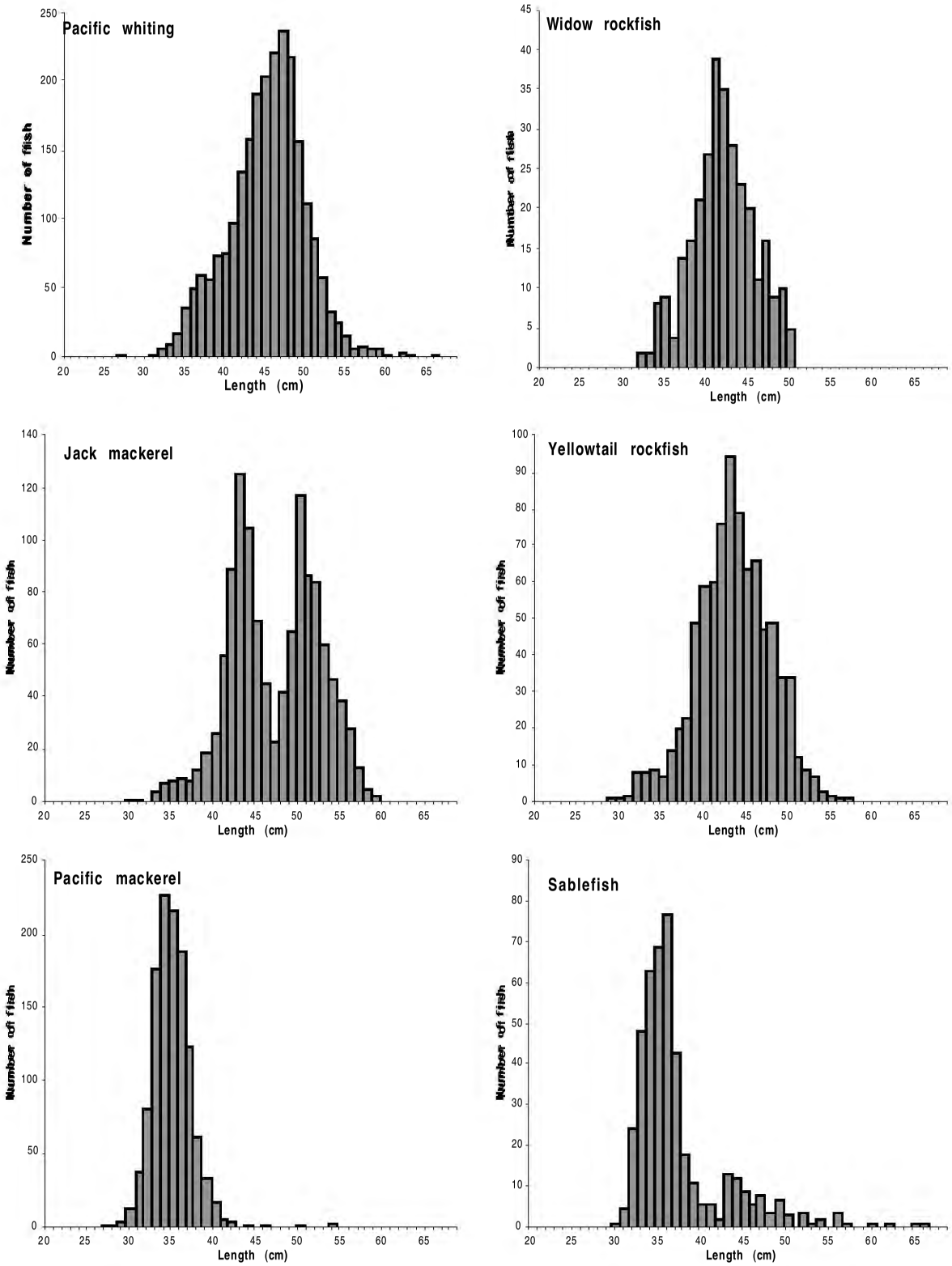

Figure 2. Length frequency distributions for Pacific whiting and associated major bycatch species landed in the Oregon shoreside whiting fishery, 2001.