

Shoreside Whiting Observation Program: 2000

prepared by

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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. The monitoring program has been continued annually to account for all catch in targeted whiting trip landings, potential discards, and accommodate the landing 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 8-16% of the total yellowtail allocation with the total whiting fishery landing between 22 and 50 percent.

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.

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. In 2000, written agreements were also signed by the vessels and their designated processors for the same purpose and to further bycatch reduction measures. These agreements will also be in effect for the 2001 season. The agreements set a vessel-specific maximum rate for yellowtail rockfish bycatch. In 2000, this rate was 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). These penalties were enforced by the processors through their agreements with the vessels. Bycatch rates were calculated, using fish ticket information, by the ODFW in Newport, OR. In 2000, these management rules did not apply to the early part of the fishery off the coast of California (prior to June 15th) because this season opened (April 1st) prior to these measures being approved by the Pacific Fisheries Management Council (PFMC).

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).

2000 WHITING FISHERY

The PFMC's optimum yield (OY) and catch allocation among processing sectors underwent minor changes from 1998 levels and have been relatively stable since 1996 (Table 1, the total OY remaining at 232,000 metric tons (mt). The tribal fishery was allocated 32,500 mt, leaving 199,500 mt for the commercial fishery. Commercial fishery allocations were 42% to vessels landing at shoreside processing plants (83,800 mt), 34% to catcher/processors (67,800 mt), and 24% to catcher vessels delivering to motherships (47,900 mt). The 2000 directed shoreside whiting fishery began on 01 April 2000 off California (south of 42° N), and on 15 June 2000 off Oregon and Washington (north of 42° 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. In 2000, the southern component of the fishery landed its five percent prior to the 15th of June, having to be closed and then reopened with the entire shoreside fishery on the 15th. The directed season for at-sea processors (north of 42° N) began on 01 May 2000 for catcher/processors and on 15 May for motherships.

The mothership fishery closed on 09 June with a total catch of 46,840 mt of whiting (2.2% below the allocated amount) and the catcher-processor fishery closed on 06 November with a total harvest of 67,815 mt of whiting (0.02% over the allocated amount) (personal communication, Becky Renko, NMFS, Seattle). The tribal fishery harvested 6,251 mt (80.8% below its allocation)(personal communication, Becky Renko, NMFS, Seattle). The shoreside directed fishery closed on 15 September with landings of 85,653 mt (2.2% over the allocated amount) (Table 1, Table 2). The 93 day shoreside season was an average season length (range 68-136) (Table 1). The total commercial catch was 0.4% over the allocation and the total harvest (206,559 mt) was 11.0% below the OY.

Thirty-five midwater trawlers and 12 processors participated in the SWOP in 2000 and unsorted Pacific whiting landings were observed at processing plants in Crescent City (1), Eureka (2), Charleston (1), Newport (3), Astoria (3), Ilwaco (1), and Westport (1) (Table 1). There were only 38 Non-EFP whiting deliveries in 2000, but 1066 EFP landings, so most of the midwater trawlers targeting whiting and delivering shoreside, and most onshore processing plants receiving whiting participated in the SWOP. Overall, 23% of Pacific whiting landings at shoreside processors were observed in 2000, exceeding the 10% program goal (Table 3). The percentage of trips observed varied with state and port, with a low of 6% in California, and a high of 37% in Newport/Charleston. Only 248.25 mt of whiting was delivered in the non-EFP fishery. Whiting was landed at a fairly constant pace throughout much of the season, but slowed at the end of August. The vast majority of Pacific whiting (about 80.2%) was landed in Oregon; Washington landings represented 14.0% of the total, and California landings represented about 5.8% (Tables 4, 5 and 6). Within Oregon, a slightly greater percentage of the whiting was delivered to Newport compared to Astoria.

BYCATCH

Rockfish

In 2000 the major issue in the whiting fishery was bycatch of yellowtail rockfish (*Sebastes flavidus*)(see Hutton and Parker, 1999 for review). A Council-approved bycatch reduction program was put in place to try and minimize the amount of yellowtail rockfish bycatch and this program proved to be quite successful. The 2000 yellowtail bycatch rate was the lowest it has ever been (Table 1, Figure 1 and 2). The yellowtail bycatch rate of 2000, even less than the rate obtained in 1997 by the shoreside fleet. It decreased by more than 60 percent from its 1999 level. Unfortunately, although other sectors of the whiting fishery also implemented council approved bycatch measures, the mothership portion of the fishery showed an increase in its yellowtail bycatch rate for 2000.

The Widow rockfish (*S. entomelas*) bycatch rate continued to decline from its 1999 level and showed a 21% decline in bycatch rate compared to the rise it had in 1998 and is at its lowest rate ever (Figure 2). 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 increase to the south. However, it is interesting to note that, in Oregon in 2000, widow rockfish bycatch rates actually reversed the prior trend in catch distribution and increased to the north (Table 5). A possible explanation for this could be that fleets delivering into northern ports fished further south in 2000 than they had in previous years in an attempt to avoid areas of high yellowtail bycatch and to follow the whiting which were distributed farther to the south in 2000.

The largest quantities of rockfish, reflecting the magnitude of whiting landings, were landed in Oregon. Bycatch rates of yellowtail rockfish were highest in Washington and lowest in California in 2000, as they have been since 1996 (Table 7, Figure 4). Widow rockfish bycatch rates showed the opposite trend – highest in California and lowest in Washington (Tables 4, 5, and 6). Weekly bycatch of yellowtail rockfish showed considerable variability through the course of the season, but rates tended to be highest during July and August (Table 2).

Miscellaneous rockfish bycatch increased, returning to levels comparable with 1998 and represented a more significant, but still relatively minor portion of the total bycatch at 7.2 percent, totaling 50,644 kg in 2000. The trend in miscellaneous rockfish bycatch appears to show some annual variability, but has been relatively stable since 1994 (Figure 2).

Sablefish

Sablefish (*Anoplopoma fimbria*) bycatch dropped by more than half compared to 1999, and by more than 96 percent since 1997 (Figure 2). Sablefish bycatch abundance has been declining steadily since 1995. No obvious shift in fleet distribution or other whiting fishery-dependent factor is attributed to this drop in relative abundance. Although other bycatch species show annual fluctuations in abundance, sablefish is the only one with this consistent trend.

Mackerel

Mackerel bycatch information combines chub (Pacific) mackerel (*Scomber japonicus*) and jack mackerel (*Trachurus symmetricus*). Observer data indicates that the mackerel bycatch was comprised of approximately 80% jack mackerel. Overall mackerel bycatch dropped almost 69% compared to 1999. It appears as if a large age class has moved through the fishery and bycatch rates are returning to pre-1997 levels (Figure 2).

Miscellaneous fish

The amount of bycatch classified as miscellaneous is substantial, and totaled 120,136 kg in 2000. The trend in this category had shown annually increasing levels to a high in 1998, but dropped approximately 20% in 2000 from 1999 levels, paralleling the catch of widow rockfish (Figure 2). Miscellaneous fish represents such non-rockfish species as shad, spiny dogfish, herring and squid.

Salmon

A total of 3,345 salmon (3,321 chinook (*Oncorhynchus tshawytscha*), 23 coho (*Oncorhynchus kisutch*), and 1 chum (*Oncorhynchus keta*) salmon) were taken as bycatch in the 2000 shoreside whiting fishery and were turned over to state agencies by processors: 2,008 in Oregon, 717 in Washington, and 620 in California. This is a significant increase, almost doubling the 1,712 salmon provided to state agencies by processors in 1999. Overall, this represents an incidental catch rate of 0.039 salmon per metric ton of whiting for the entire EFP fishery (Table 8) and was the highest rate in the history of the shoreside fishery. Observers at shoreside plants noted 535 salmon incidentally taken in 240 observed landings of 17,871 mt whiting, which results in an observed rate of 0.030 salmon/mt whiting. These 535 fish are included in the total of 3,345 made available to state agencies. The five highest weekly bycatch rates in 2000 were before June 15, during the southern component early season (Table 8). Once the entire shoreside fishery began the highest weekly bycatch rate was in late. Overall, the bycatch rate was fairly variable in 2000. Salmon bycatch was highest for the Makah and mothership fishery and lowest for the shoreside and catcher/processor fishery (personal communication, Becky Renko, NMFS, Seattle). The salmon bycatch rate for all sectors combined was 0.057 per metric ton of whiting, exceeding the 11,000 salmon threshold for total chinook salmon caught. This led to a re-evaluation of the biological opinion that sets the allowable chinook salmon threshold. The high level of salmon bycatch also prevented NMFS from redistributing, late in the season, some of the unutilized Makah quota to other sectors of the whiting fishery. One possible explanation for the high level of bycatch in 2000 may be that there are simply more salmon present, in the ocean, leading to a greater rate of interception. Discussions with fishers have revealed no changes in fishing behavior that would account for a change in the salmon interception rate.

Halibut

Sixty-three Pacific halibut were landed in the three states by the 2000 whiting shoreside fishery; 9 in Astoria, 54 in Newport. Though still a small number and patchy in distribution, it is almost twice the 35 caught in 1999. The reason for this increase is unclear. We will examine logbook data for patterns in halibut catch when they become available. These fish were also provided to hunger relief agencies.

Other

A substantial decrease in crab was noted. Two Dungeness crabs were reported as incidental catch in Newport and turned over to ODFW, far less than the 55 landed in 1999. Any that were alive were distributed to Lincoln County Food Share.

PROGRAM COSTS

In 2000, the cost of the Oregon-Washington portion of the SWOP was approximately \$70,696 (approximately \$38,152 for coordination and data processing costs, and an estimated \$32,544 for observers). This has been essentially unchanged since 1995. Since

1995, most program funding has been provided by industry through PSMFC. In the past, government costs have been relatively minor and are not included in the above summary. However, they 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. Oregon shoreside processing plants hired six observers to make observations at six processors. The WDFW and the CDFG provided shoreside landing observations with existing staff. Participating processors, and those contributing to the cost of the program in 2000, are Merino's Seafood, Jessie's Ilwaco, Crystal Ocean, Pacific Coast, Point Adam's, Pacific Whiting Producers, Pacific Shrimp, Trident Seafood, and Bandon Pacific. However, PSMFC is still waiting for partial payment from Trident Seafood, Merino's Seafood and Crystal Ocean Seafood.

BIOLOGICAL SAMPLING

In addition to documenting bycatch composition and rates, shoreside observers collected a variety of biological information and samples which are used in stock assessment analyses. In particular, observers in Newport and Astoria measured about 1,150 Pacific whiting for length-frequency information, and collected over 1,400 Pacific whiting otolith samples. This information and samples have been provided to Martin Dorn of the NMFS Alaska Fisheries Science Center for incorporation into subsequent whiting stock assessments.

Similarly, yellowtail rockfish otoliths and length-frequency information (approximately 35 samples of 1050 fish) have been provided to the WDFW for future stock assessments on this species.

Biological samples of chub (Pacific) mackerel (25 samples totaling 761 fish) are provided to the CDFG for their stock assessment work on this species.

Biological samples of widow rockfish (32 samples of 959 fish), sablefish (8 samples of 171 fish) and jack mackerel (35 samples of 1050 fish) are also taken; these have been retained at ODFW and are available for future assessment efforts.

AREAS FOR IMPROVEMENT IN 2001

The 2000 season went along with very few administrative problems, and those that came up were relatively minor. We list some of the issues that need to be addressed in 2001, to keep the whiting fishery monitoring accurate and efficient.

- Incorporation of California into the current management framework for 2001 in anticipation of needed management programs for salmon and widow rockfish bycatch.

- PSMFC has not been receiving payments on time from whiting processors to cover their payments for coordination of the fishery. This must be addressed to assure continued information transfer which everyone (fishers, processors, and agencies) relies on.
- We will work to develop mechanisms to get fish tickets quickly so information updates are more real-time. We will also post this whiting report and whiting fishery updates on the Internet with links from the ODFW Marine Resources Program webpage.
- We will continue with the measures to minimize yellowtail bycatch and discuss the need for these measures to apply to other bycatch species.
- We will 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.
- Another area of emphasis will be to continue to encourage accurate recording and the timely provision of logbook information. Information from fishing logs is particularly important to the use of biological samples in stock assessments. These assessments are stratified by fishing area, and knowledge of where a particular sample was taken is an essential element to incorporating information from a biological sample into a stock assessment. We will develop mechanisms to ensure these tickets and logbooks are reconciled each 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.

Table 1. Summary of the EFP shoreside component of the US Whiting fishery through 2000. Weights are in metric tons and bycatch rates are in kg/mt whiting.

Year	US OY	Whiting landed	Yellow-tail bycatch	Yellowtail bycatch rate	Participating vessels	Participating Processors	Season Length (days)
1992	208,800	56,127	59.37	1.05	**	**	**
1993	142,000	41,926	137.89	3.29	**	**	**
1994	260,000	72,367	255.50	3.53	33	14	118
1995	178,400	73,937	273.82	3.70	35	13	136
1996	212,000	84,986	521.62	6.13	37	13	87
1997	232,000	85,810	233.02	2.71	38	12	68
1998	232,000	87,387	501.06	5.73	35	12	121
1999	232,000	83,272	481.39	5.78	36	11	91
2000	232,000	85,653	189.81	2.22	36	12	93

Table 2. Weekly EFP Pacific whiting landings and bycatch for Washington, Oregon and California, 04/01/2000-09/15/2000. Data from fish tickets, except salmon totals from observations.

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)	Number of salmon observed	Yellowtail landed (mt)	Widow Landed (mt)	Sablefish landed (mt)	Pacific Mackerel landed (mt)	Jack Mackerel landed (mt)	Miscellaneous Rockfish landed (mt)	Miscellaneous fish landed (mt)
14	04/01/00	0	0.00			0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	04/08/00	0	0.00	0.00	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	04/15/00	0	0.00	0.00	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	04/22/00	2	154.43	154.43	0.18	1	82.78	4	0.00	0.08	0.00	0.00	0.00	4.43	0.00
18	04/29/00	4	248.15	402.58	0.48	1	85.27	1	0.00	0.35	0.00	0.00	0.00	13.34	0.24
19	05/06/00	4	242.73	645.31	0.77	0	0.00	0	0.00	0.13	0.00	0.00	0.00	10.51	0.67
20	05/13/00	7	411.87	1,057.18	1.26	0	0.00	0	0.00	0.15	0.00	0.00	0.00	3.15	0.30
21	05/20/00	15	900.24	1,957.43	2.34	1	78.06	7	0.00	0.56	0.00	0.00	0.00	1.50	0.09
22	05/27/00	13	835.81	2,793.24	3.33	0	0.00	0	0.00	0.79	0.00	0.19	0.13	2.47	0.22
23	06/03/00	10	644.50	3,437.73	4.10	0	0.00	0	0.00	0.72	0.00	0.00	0.11	1.60	0.06
24	06/10/00	11	667.12	4,104.86	4.90	2	112.88	6	0.00	3.81	0.00	0.00	0.00	2.62	0.02
25	06/17/00	12	754.84	4,859.70	5.80	2	152.75	0	6.60	0.86	0.00	0.00	0.00	0.53	0.16
26	06/24/00	60	4,758.25	9,617.95	11.48	17	1,397.65	86	18.03	0.90	0.09	0.00	0.74	0.20	12.26
27	07/01/00	54	3,987.26	13,605.21	16.24	10	636.53	51	29.52	5.07	0.02	0.01	0.07	0.31	2.73
28	07/08/00	66	5,508.72	19,113.93	22.81	15	1,105.81	3	36.25	19.39	0.03	0.00	0.23	0.51	5.12
29	07/15/00	45	3,658.39	22,772.32	27.17	10	831.86	51	14.12	3.86	0.00	0.00	0.25	0.04	7.18
30	07/22/00	77	6,397.36	29,169.68	34.81	22	1,723.36	51	8.11	6.63	0.01	6.74	7.23	0.48	2.89
31	07/29/00	71	5,159.49	34,329.17	40.97	20	1,224.82	125	6.90	1.81	0.06	13.50	14.74	0.41	16.30
32	08/05/00	78	6,290.23	40,619.40	48.47	23	1,464.07	27	3.16	2.23	0.04	0.85	14.05	0.21	6.77
33	08/12/00	84	7,333.81	47,953.21	57.22	22	1,781.67	31	18.99	4.15	0.05	3.69	13.38	0.51	6.58
34	08/19/00	97	7,933.45	55,886.66	66.69	21	1,352.17	3	10.05	1.97	0.06	0.74	4.94	1.63	9.10
35	08/26/00	96	7,707.26	63,593.92	75.89	25	1,606.87	44	1.13	4.36	1.05	32.03	27.38	4.68	13.90
36	09/02/00	88	7,345.19	70,939.11	84.65	20	1,408.37	15	17.98	1.50	0.05	13.76	53.48	0.27	15.61
37	09/09/00	91	7,266.98	78,206.08	93.32	15	1,429.97	28	11.41	0.52	0.03	15.81	18.86	0.60	5.67
38	09/15/00	81	7,198.32	85,404.40	101.91	13	1,396.00	2	7.56	16.00	0.08	1.31	19.34	0.64	14.29
EFP total		1066	85,404.40		101.91	240	17,870.90	535	189.81	75.84	1.56	88.63	174.93	50.64	120.14
Non-EFP total		38	248.25		0.30										
Fishery total		1104	85,652.64		102.21										

Table 3. 2000 Cumulative shoreside whiting fishery report for Washington, Oregon and California. Fishery total includes non-EFP trips, but rates are calculated using only EFP totals . (Best Available Data as of 12/28/2000)

	Observed total	EFP fishery total	Non-EFP fishery total	Fishery total
Whiting harvest (mt)	17,871	85,404	248	85,653
Number of deliveries	240	1,066	38	1,104
Salmon catch (no)	535	3,345		3,345
Miscellaneous rockfish (kg)	12,446	50,644		50,644
Yellowtail rockfish (kg)	41,484	189,813		189,813
Widow rockfish (kg)	13,162	75,841		75,841
Sablefish (kg)	323	1,562		1,562
Mackerel (kg)	39,734	263,556		263,556
Miscellaneous fish (kg)	19,864	120,137		120,137
Salmon rate (no/mt of whiting)	0.030	0.039		0.039
Misc. Rockfish rate (kg/mt)	0.696	0.593		0.593
Yellowtail rate (kg/mt)	2.321	2.223		2.223
Widow rate (kg/mt)	0.737	0.888		0.888
Sablefish rate (kg/mt)	0.018	0.018		0.018
Mackerel rate (kg/mt)	2.223	3.086		3.086
Miscellaneous fish rate (kg/mt)	1.112	1.407		1.407
Percent of deliveries observed		23		

Table 4. 2000 Cumulative shoreside whiting fishery report for Washington.
 Fishery total includes non-EFP trips, but rates are calculated using only EFP totals .
 (Best Available Data as of 12/28/2000)

	Observed total	EFP fishery total	NON-EFP fishery total	Fishery total
Whiting harvest (mt)	1,169	11,967		11,967
Number of deliveries	17	172		172
Salmon catch (no)	104	717		717
Miscellaneous rockfish (kg)	32	77		77
Yellowtail rockfish (kg)	5,803	53,656		53,656
Widow rockfish (kg)	736	4,064		4,064
Sablefish (kg)	0	16		16
Mackerel (kg)	2,177	35,144		35,144
Miscellaneous fish (kg)	4,489	34,554		34,554
Salmon rate (no/mt of whiting)	0.089	0.060		0.060
Misc. Rockfish rate (kg/mt)	0.028	0.006		0.006
Yellowtail rate (kg/mt)	4.962	4.484		4.484
Widow rate (kg/mt)	0.630	0.340		0.340
Sablefish rate (kg/mt)	0.000	0.001		0.001
Mackerel rate (kg/mt)	1.861	2.937		2.937
Miscellaneous fish rate (kg/mt)	3.839	2.888		2.888
Percent of deliveries observed		10		

Table 5. 2000 Cumulative shoreside whiting fishery report for Oregon. Fishery total for whiting harvest and number of deliveries includes non-EFP trips, but rates are calculated using only EFP totals . (Best Available Data as of 12/28/2000)

	Astoria observed total	Newport & Charleston observed	Astoria fishery total	Newport & Charleston fishery total	Fishery total
Whiting harvest (mt)	5,762	10,581	33,907	34,568	68,701
Number of deliveries	62	156	389	421	838
Salmon catch (no)	378	35	1,884	124	2,008
Miscellaneous rockfish (kg)	1,220	1,085	5,824	3,920	9,744
Yellowtail rockfish (kg)	30,892	4,789	120,575	15,574	136,149
Widow rockfish (kg)	3,550	6,755	42,602	21,566	64,169
Sablefish (kg)	151	173	935	611	1,546
Mackerel (kg)	3,471	34,087	79,775	148,175	227,951
Miscellaneous fish (kg)	12,972	2,303	76,140	7,803	83,943
Salmon rate (no/mt of whiting)	0.066	0.003	0.056	0.004	0.029
Misc. Rockfish rate (kg/mt)	0.212	0.103	0.172	0.113	0.142
Yellowtail rate (kg/mt)	5.362	0.453	3.556	0.451	1.982
Widow rate (kg/mt)	0.616	0.638	1.256	0.624	0.934
Sablefish rate (kg/mt)	0.026	0.016	0.028	0.018	0.023
Mackerel rate (kg/mt)	0.602	3.222	2.353	4.286	3.318
Miscellaneous fish rate (kg/mt)	2.252	0.218	2.246	0.226	1.222
Percent of deliveries observed			16	37	26

Table 6. 2000 Cumulative shoreside whiting fishery report for California
 Fishery total includes non-EFP trips, but rates are calculated using only EFP totals .
 (Best Available Data as of 12/28/2000)

	Observed total	EFP fishery total	NON-EFP fishery total	Fishery total
Whiting harvest (mt)	359	4,963	22	4,985
Number of deliveries	5	84	10	94
Salmon catch (no)	18	620		620
Miscellaneous rockfish (kg)	10,108	40,823		40,823
Yellowtail rockfish (kg)	0	8		8
Widow rockfish (kg)	2,112	7,609		7,609
Sablefish (kg)	0	0		0
Mackerel (kg)	0	461		461
Miscellaneous fish (kg)	100	1,641		1,641
Salmon rate (no/mt of whiting)	0.050	0.125		0.125
Misc. Rockfish rate (kg/mt)	28.157	8.225		8.225
Yellowtail rate (kg/mt)	0.000	0.002		0.002
Widow rate (kg/mt)	5.883	1.533		1.533
Sablefish rate (kg/mt)	0.000	0.000		0.000
Mackerel rate (kg/mt)	0.000	0.093		0.093
Miscellaneous fish rate (kg/mt)	0.279	0.331		0.331
Percent of deliveries observed		6		

Table 7. Annual yellowtail bycatch rates by port and vessel for 2000. Rates are kg/mt whiting. Rank is overall rank in the fishery.

2000 (35 Vessels)			
Major Port	Vessel Name	Total	Rank
Westport	Jamie Marie	6.44	1
	Chellissa	5.85	2
	Aleutian Challenger	4.95	6
	Blue Horizon	2.01	19
<i>Westport Total</i>		<i>4.91</i>	
Ilwaco	Muir Milach	2.54	17
<i>Ilwaco Total</i>		<i>2.34</i>	
Astoria	Amber Dawn	5.47	3
	Predator	5.26	4
	Persistence	5.11	5
	Pacific Future	4.82	7
	George Allen	4.74	8
	American Beauty	4.22	9
	Sea Clipper	3.98	10
	Morning Star	3.82	11
	Perseverance	3.73	12
	Ocean Leader	3.07	13
	Betty A	3.02	14
	Grumpy J	2.61	16
	Seeker	2.19	18
Raven	1.88	20	
Collier Brothers	0.47	21	
<i>Astoria Total</i>		<i>3.56</i>	
Newport	Excalibur I	2.91	15
	Miss Sarah	0.42	22
	Miss Berdie	0.41	23
	Miss Sue	0.38	24
	Blue Fox	0.35	25
	Pacific	0.32	26
	Sea Storm	0.30	27
	Pegasus	0.19	28
	Lisa Melinda	0.09	30
	Bay Islander	0.01	32
<i>Newport Total</i>		<i>0.45</i>	
Charleston	Jeanette Marrie	0.12	29
<i>Charleston Total</i>		<i>0.12</i>	
Crescent City	Pacific Ram	0.00	34
<i>Crescent City Total</i>		<i>0.00</i>	
Eureka	Fish Wish	0.01	31
	Leslie Lee	0.00	33
	Tatiana	0.00	35
<i>Eureka Total</i>		<i>0.00</i>	
Grand Total		2.22	

Table 8. Weekly bycatch rate of salmon (# of salmon/mt of whiting) in the shorebased whiting fishery, 1992-2000. Rates for 1992-1994 are based on observations. Rates for 1995-2000 are based on salmon turned over to state agencies by processors.

Month	1992*	1993	1994	1995	1996	1997	1998	1999	2000
April		0.088	0.042	0.069	0.000		0.000		
		0.076	0.074	0.398	0.003	0.000	0.054		
		0.019	0.052	0.422	0.000	0.000	0.000		
		0.135	0.031	0.018	0.000	0.000	0.000		0.026
May		0.038	0.015	0.041	0.000	0.000	0.000		0.298
	0.019	0.034	0.002	0.040	0.000	0.001	0.049	0.013	0.132
	0.097	0.054	0.004	0.019	0.029	0.010	0.101	0.000	0.022
	0.056	0.014	0.003	0.011	0.136	0.003	0.205	0.000	0.137
June	0.028	0.019	0.000	0.004	0.024	0.000	0.053	0.000	0.280
	0.015	0.021	0.017	0.008	0.007	0.000	0.041	0.000	0.186
	0.004	0.000	0.007	0.032	0.007	0.000	0.028	0.000	0.034
	0.001	0.001	0.007	0.013	0.000	0.011	0.006	0.002	0.005
July	0.000	0.001	0.001	0.035	0.001	0.005	0.005	0.005	0.072
	0.000	0.011	0.001	0.024	0.000	0.010	0.001	0.013	0.049
	0.002	0.010	0.003	0.011	0.004	0.016	0.002	0.007	0.011
	0.003	0.004	0.001		0.003	0.025	0.011	0.053	0.040
August	0.008	0.002	0.001		0.002	0.034	0.050	0.064	0.018
	0.002	0.003	0.003		0.001	0.012	0.013	0.017	0.093
	0.004	0.008	0.002		0.001	0.025	0.033	0.029	0.027
	0.005	0.003	0.001		0.000	0.014	0.014	0.021	0.018
September	0.014	0.003	0.000		0.000	0.022	0.014	0.020	0.029
	0.015		0.002		0.000		0.010	0.009	0.053
	0.002		0.004		0.000		0.028	0.004	0.027
	0.009		0.008		0.000		0.069	0.003	0.027
October	0.017		0.001				0.094	0.011	0.008
	0.005		0.003				0.025		
	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
Total number of salmon landed	491	419	585	2972	651	1484	1713	1712	3345

*Oregon Only

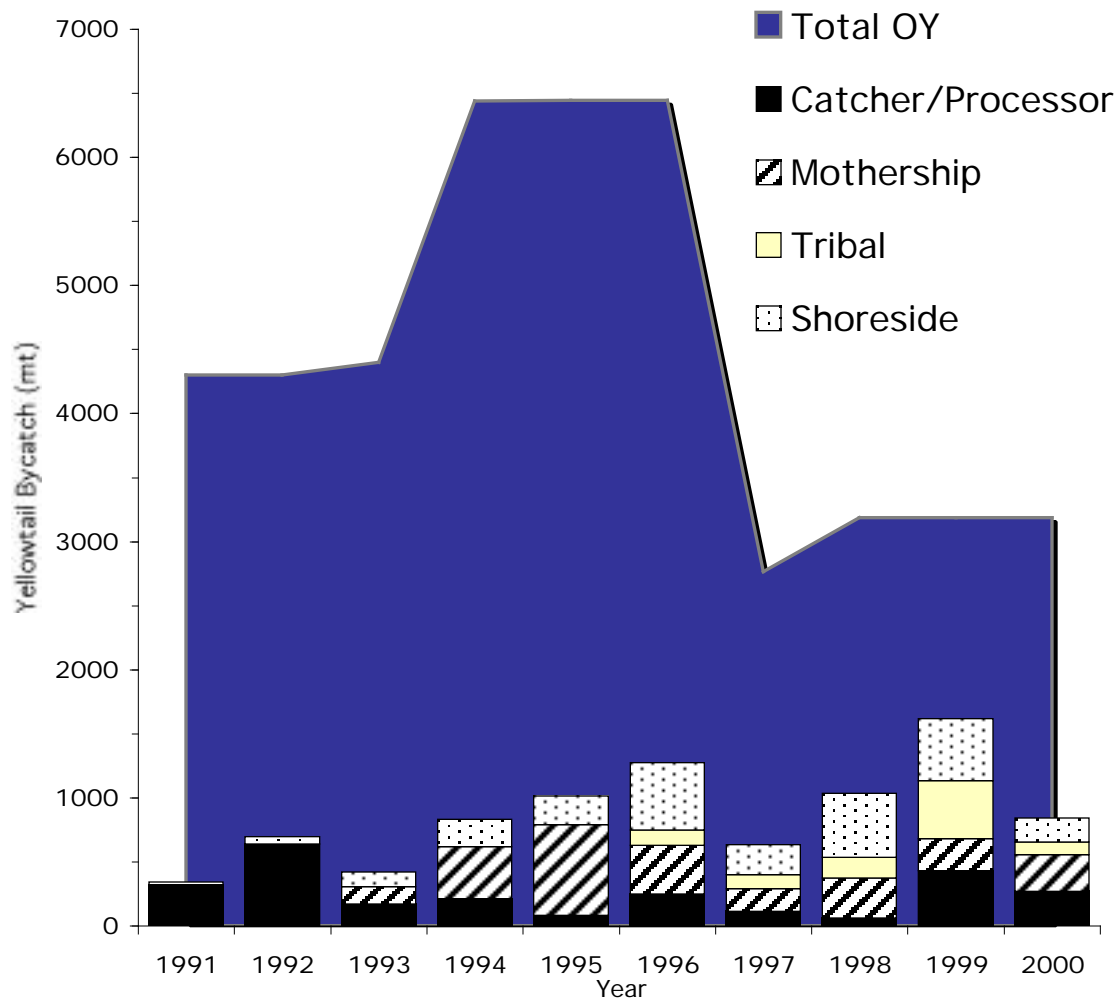


Figure 1. Total yellowtail bycatch and total yellowtail OY, 1991-2000. 2000 data is preliminary.

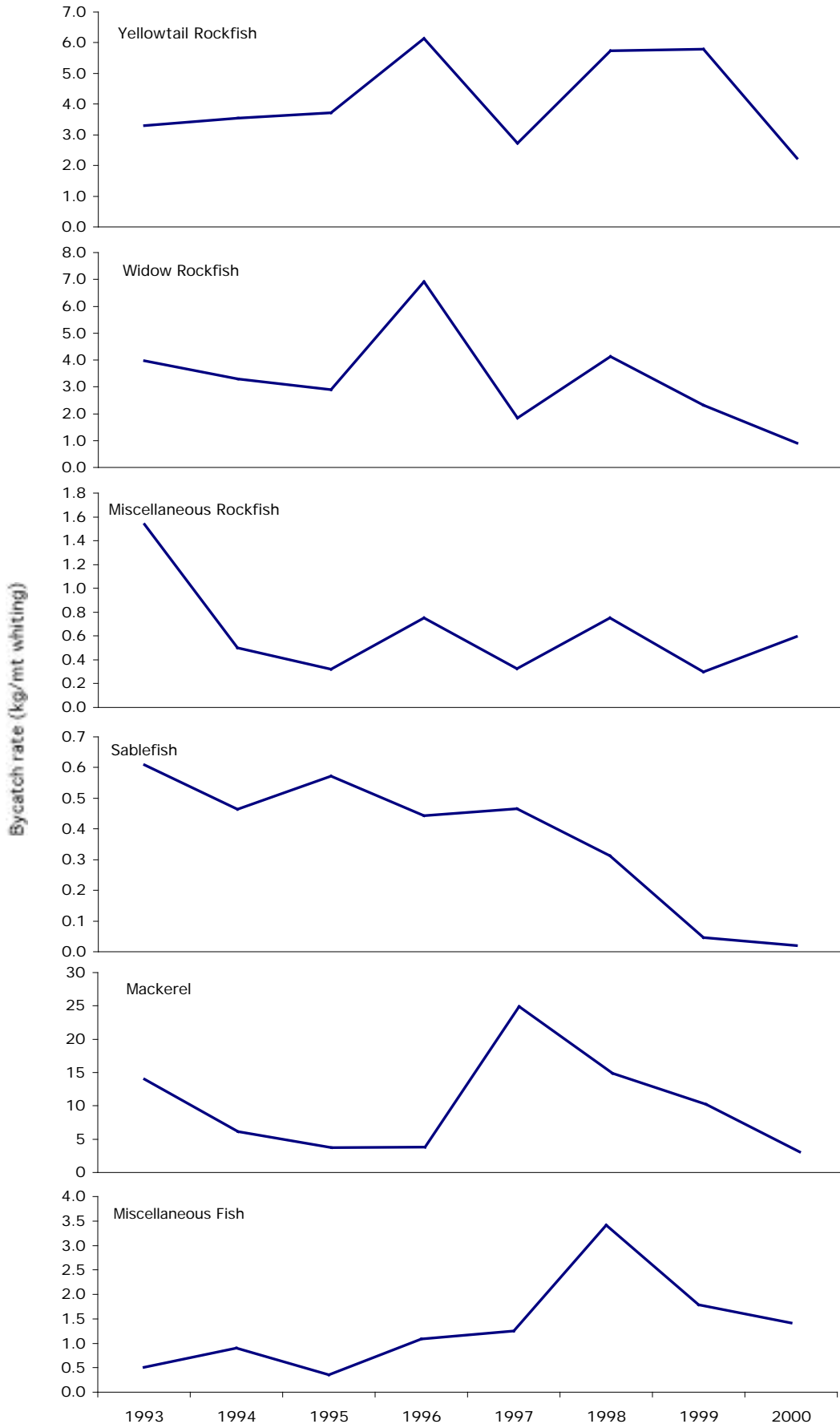


Figure 2. Bycatch rates for components of the shoreside whiting fishery catch, 1993-2000.

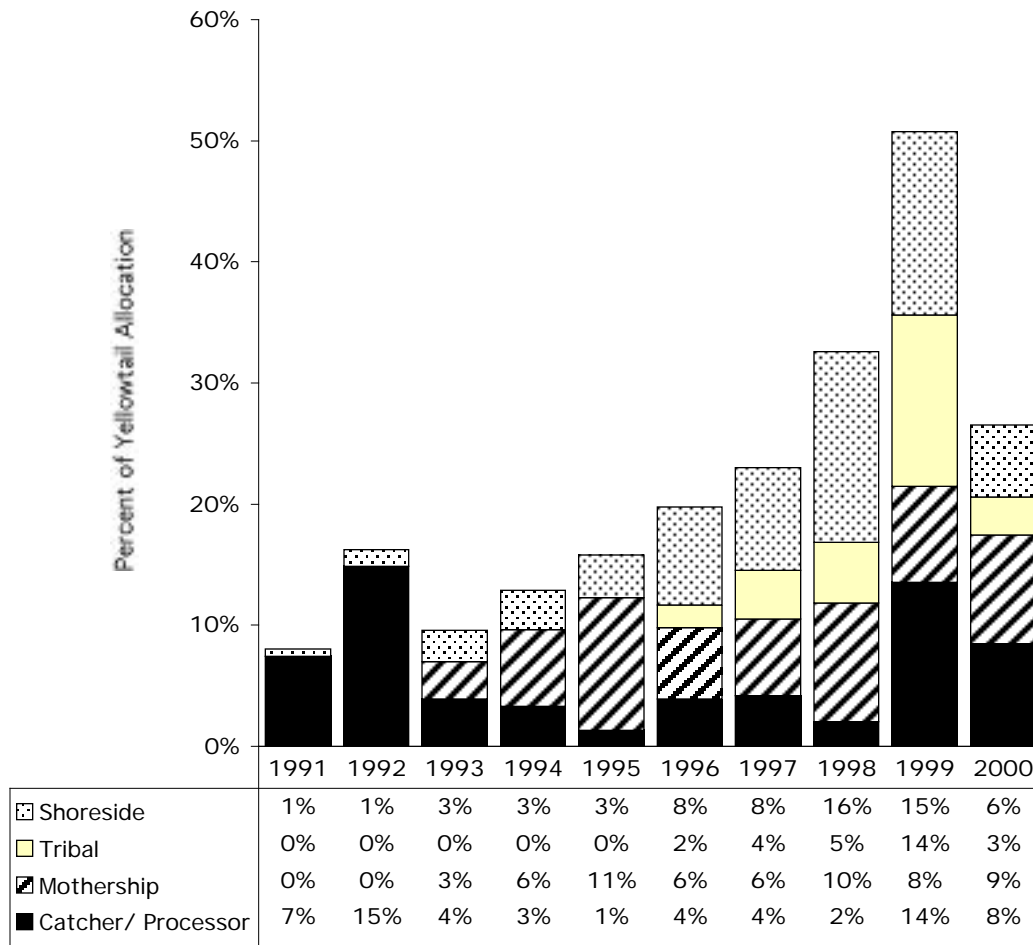


Figure 3. Percentage of the total yellowtail OY taken as bycatch in the whiting fishery, 1991-2000. 2000 data is preliminary.

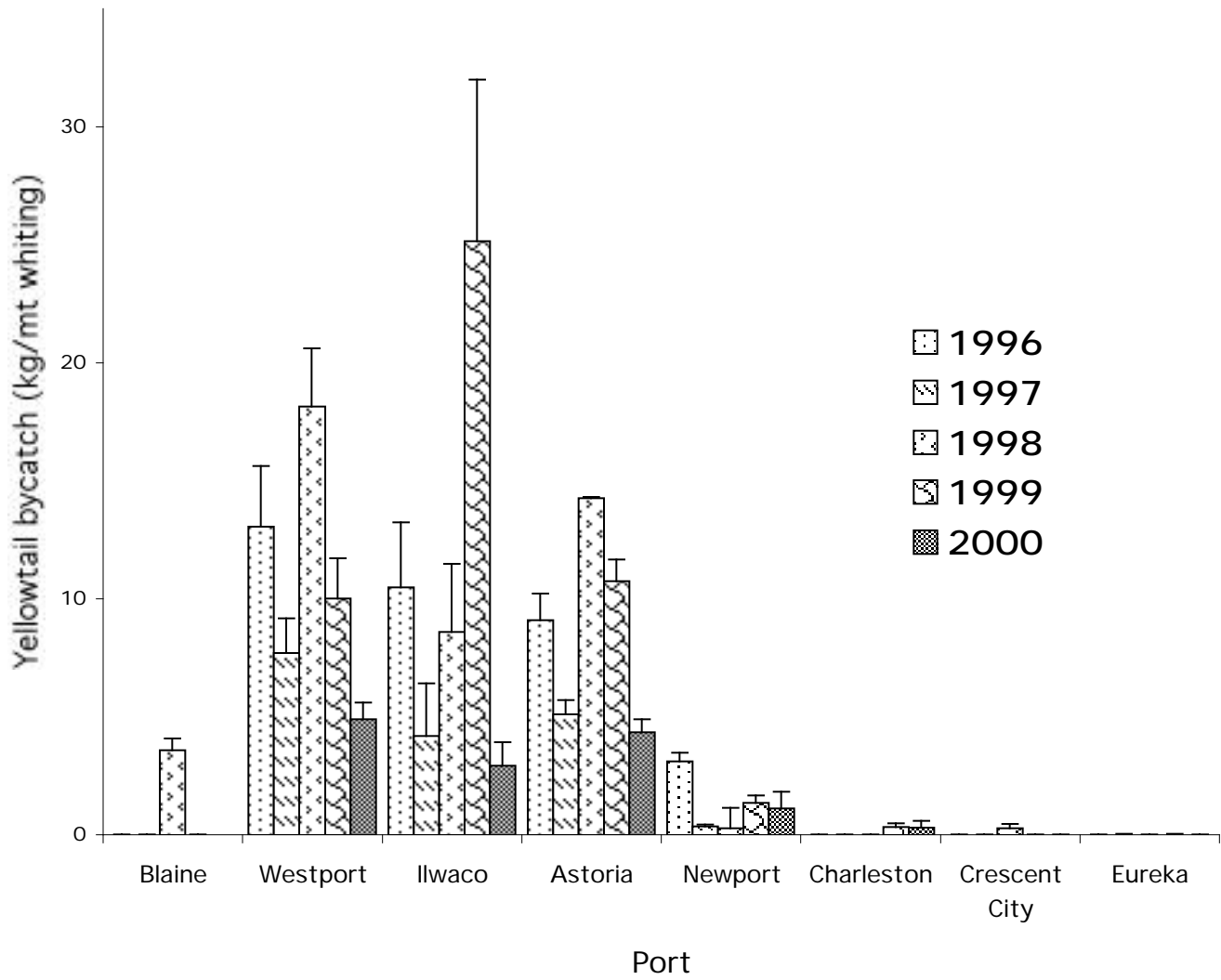


Figure 4. Yellowtail bycatch rate (kg/mt of whiting) grouped by port for 1996-2000. Values are \pm SE