

Shoreside Whiting Observation Program: 1998

prepared by

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INTRODUCTION

The Pacific Whiting Shoreside Observation Program was established in 1992 to provide information for evaluating bycatch in the directed Pacific whiting fishery and for evaluating conservation measures adopted to protect salmon and other prohibited species. The program has been continued annually in order to account for all catch in targeted whiting trips, avoid discards and wastage, and accommodate the landing of non-sorted catch from these trips. In 1995, the program changed its emphasis from a high target rate of observation (50% of landings) and a focus on prohibited species to a lower target rate of observation (10% of landings) and increased collection of biological samples and information (otoliths, length, age, weight, sex, maturity) from Pacific whiting and selected bycatch species (yellowtail and widow rockfish, sablefish, chub (Pacific) mackerel, jack mackerel and prohibited species).

The program is a cooperative effort between the fishing industry and management agencies to observe and collect information on directed Pacific whiting landings at shoreside processing plants. Participants are mid-water trawlers delivering unsorted whiting to shoreside processing plants in California, Oregon and Washington, these same shoreside processing plants in the three states, 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). Participating vessels apply for and carry exempted fishing permits (EFPs) issued by the National Marine Fisheries Service. Permit terms allow (and 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.

1998 WHITING FISHERY

The PFMC's harvest guideline and catch allocation among processing sectors were unchanged from 1997: the total commercial harvest guideline (CHG) was 207,000 metric tons; CHG allocations were 42% to vessels landing at shoreside processing plants (86,900 mt), 34% to catcher/processors (70,400 mt), and 24% to catcher vessels delivering to motherships (49,700 mt). The 1998 directed shoreside whiting fishery began on 1 April 1998 off California (south of 42° N), and on 15 June 1998 off Oregon and Washington (north of 42° N). The season opening off California was sixteen days later than in 1997, the opening date off of Oregon and Washington was unchanged from 1997. 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° N) began on 1 May 1998 for catcher/processors and on 15 May for motherships.

The mothership fishery closed on 31 May with a total catch of 50,086 mt of whiting (0.8% over the allocated amount) and the catcher-processor fishery closed on 7 August with a total harvest of 70,364 mt of whiting (0.1% under the allocated amount). The shoreside directed fishery closed on 13 October 1998 with landings of approximately 87,627 mt (0.8% over the allocated amount).

Thirty eight mid-water trawlers participated in the program in 1998 and unsorted Pacific whiting landings were observed at processing plants in the Crescent City (2), Eureka (2), Newport (3), Astoria (2), Ilwaco (1), Westport (1), and Blaine, WA (1) areas. Most mid-water trawlers targeting whiting and delivering fish to onshore processing plants, and most onshore processing plants receiving whiting participated in the observation program. Overall, 14% of Pacific whiting landings at shoreside processors were observed in 1998. This exceeded the 10% program goal, and was the same observation rate as in 1997.

The 1998 fishery suffered from a number of changes resulting from depressed Asian economies and markets. Reduced demand in major markets resulted in lower prices paid to fishers (approximately 2.5 cents/lb round weight for most of the season) and depressed markets for processors. Surimi production declined markedly, and headed-and-gutted and fillet products were produced for alternative markets.

Recent Shoreside Whiting Fishery Participation

Year	Participating Vessels	Participating Processors	Shoreside Landings (mt)	Season Length OR-WA (days)
1994	33	14	72,000	118
1995	35	13	74,000	136
1996	43	13	84,680	87
1997	40	12	87,499	68
1998	38	12	87,627	121

Tables 1a and 1b present landed catch and bycatch by fishing week for the duration of the 1998 whiting season. The vast majority of Pacific whiting (about 81.7%) was landed in Oregon; Washington landings represented 11.8% of the total, and California landings represented about 6.5%. These two tables show the very slight differences resulting from some small directed whiting landings outside the EFP program, and incidental landings. The following abbreviations are used in these two tables: Y'tail - yellowtail rockfish; Widow - widow rockfish; Sable - sablefish; Mac - chub (Pacific) mackerel and jack mackerel (combined); Misc. Rock - miscellaneous rockfish; Misc. Fish - miscellaneous fishes (all others). Weekly EFP whiting landings are presented in Figure 1.

BYCATCH OF GROUND FISH AND PROHIBITED SPECIES

Tables 2 through 5 summarize 1998 landed catch and bycatch for the entire shoreside whiting fishery, and for each state individually. These tables present landing information and bycatch rates from observations in the left column, and landings and rates for the EFP fishery based on fish ticket information in the next column to the right. In some cases, sharp differences can be noted between bycatch rates based on observations and rates calculated from information reported on fish tickets. This is a consequence of the programmatic change initiated in 1995 to 1) reduce observation rates from 50% to 10% and 2) to increase effort on enumeration of groundfish species bycatch and biological sampling.

Rockfish bycatch

Bycatch of rockfish (yellowtail rockfish, widow rockfish and miscellaneous rockfish) was nearly double in 1998 relative to 1997; while 1997 rockfish bycatch quantities and rates were sharply lower than those for 1996. The largest quantities of bycaught rockfish, as with other bycaught groundfish, were landed in Oregon; this reflects the large proportion of whiting landed in Oregon. Bycatch rates of yellowtail rockfish were highest in Washington and lowest in California in 1998; this is the same pattern as observed in 1995 through 1997. Widow rockfish bycatch rates showed the opposite trend – highest in California and lowest in Washington in 1998. Weekly bycatch of rockfish showed considerable variability through the course of the 1997 whiting fishery (Tables 1a and 1b, Figures 2a, 2b and 2e).

Sablefish and Mackerel bycatch

Sablefish bycatch rates dropped by about one-third relative to 1997. (Tables 1a and 1b, Figure 2c)

Mackerel bycatch information combines chub (Pacific) mackerel and jack mackerel, which are taxonomically distinct. The large landings of incidentally caught chub (Pacific) mackerel and jack mackerel experienced in 1997 declined substantially in 1998. (Tables 1a and 1b, Figure 2d)

Salmon bycatch

A total of 1699 chinook salmon, 8 coho, 5 chum and 1 sockeye salmon were taken as bycatch in the 1998 shoreside whiting fishery and were turned over to state agencies by the processors: 1187 in Oregon, 354 in Washington, and 172 in California. This compares with 1484 salmon provided to state agencies by processors in 1997, 651 in 1996, and 2972 in 1995. Overall, this represents an incidental catch rate of 0.020 salmon per metric ton of whiting for the entire EFP fishery. Observers at shoreside plants noted 201 salmon incidentally taken in 189 observed landings of 12,195 mt whiting which results in a rate of 0.016 salmon/mt whiting. These 201 fish are included in the total of 1713 turned over to state agencies. The overall salmon bycatch rate (1713 salmon, 87,627 mt whiting) was 0.020 salmon/mt whiting.

High salmon bycatch rates observed during the first three weeks of the 1995 season led to a one month delay (15 April to 15 May) in the opening of the directed whiting fishery in Oregon and Washington in 1996. While the delay seemed to accomplish its purpose in 1996, with sharply lower salmon bycatch rates noted, there was still a peak in bycatch rates early in the 1996 season. The 1997 season opening of 15 June north of 42° N appears to have led to a further reduction in early season salmon bycatch. (Table 6, Figure 3a). The 1998 shoreside fishery showed some relatively high bycatch rates during the early

California fishery. Bycatch rates dropped off and remained very low until late in the season when they rose again – just as in 1997. We suspect this results from changes in fishing patterns due to two effects: 1) harvesters seeking market size fish while avoiding smaller whiting, and 2) changes in fishing patterns resulting from changes in whiting distribution due to oceanographic conditions.

Salmon processors notably improved their efforts to tag and set aside unobserved salmon for pick-up and record-keeping in 1998. We appreciate these efforts which helped the project more fully realize expectations.

Recent Salmon Bycatch in Shoreside Whiting Fisheries

Year	Shoreside Landings (mt)	Salmon Incidental Catch (#)	Incidental Catch Rate (# salmon/mt whiting)
1994	72,000		0.008
1995	74,000	2972	0.032
1996	84,680	651	0.008
1997	87,499	1484	0.017
1998	87,627	1713	0.020

Halibut Bycatch

Sixteen Pacific halibut were landed in the three states by the 1998 whiting shoreside fishery; all of these in Oregon. These fish were also provided to hunger relief agencies.

Other

Ten Dungeness crab were reported as incidental catch in Newport and turned over to ODFW. For the most part, the poor condition of these animals prevented us from turning them over to Lincoln County Food Share.

PROGRAM COSTS

In 1998, the cost of the Oregon-Washington portion of the shoreside observation program was approximately \$60,000 (approximately \$30,000 for coordination and data processing costs, and an estimated \$30,000 for observers). This was essentially unchanged from 1996 and 1997. Since 1995, most program funding has been provided by industry. Government costs were relatively minor in 1998, as in the previous three years, and are not included in the above summary. Oregon shoreside processing plants hired two observers to make observations at five processors. The Washington Department of Fish and Wildlife and the California Department of Fish and Game provided shoreside landing observations with existing staff.

BIOLOGICAL SAMPLING

In addition to documenting bycatch rates, shoreside observers collect a variety of biological information and samples which are used in stock assessment analyses. In particular, observers in Newport and Astoria measured about 2800 Pacific whiting for length frequency information, and collected over 1600 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 700 samples) have been provided to the Washington Department of Fish and Wildlife for future stock assessments on this species.

Biological samples of chub (Pacific) mackerel are provided to the California Department of Fish and Game 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 1999

The PFMC and members of the fishing community expect this project to supply accurate information on incidental catch of other species in the whiting fishery. Our results have been good, but each year we try to improve.

Salmon processors notably improved their efforts to tag and set aside unobserved salmon for pick-up and record-keeping in 1998. We appreciate these efforts which helped the project more fully realize expectations.

A continuing area of emphasis will involve working with processors to better report all incidentally taken groundfish species on fish tickets - even if these are purely weighbacks. With lower rates of observation in this fishery, fish tickets are our primary basis to estimate fishing mortality. Since the volume of fish taken in all fisheries is used to estimate total fishing mortality for stock assessment purposes, it is important that we take all measures possible to ensure accurate reporting. Large volumes of mackerel bycatch sometimes overwhelmed processors in 1997 to the degree that estimates of landed volume were not made. This problem was greatly reduced in 1998. As accurate weighing is required by Oregon regulation and the spirit of this permit program, we will continue to work with processors to report bycatch volumes on fish tickets in 1999.

Another area of emphasis will be to continue to encourage 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.

Washington, Oregon and California pacific whiting trips
 By Fishing Week
 Trawl only
 04/01/98 - 10/13/98
 Data from fish tickets except salmon from observations

FISHING WEEK	START DATE	ENDING DATE	WHITING LANDINGS	WHITING MT	LANDINGS OBS.	MT WHITING OBS.	SALMON OBS.	Y'TAIL MT	WIDOW MT	SABLE MT	MAC MT	MISC ROCK MT	MISC FISH MT
1	03/29/98	04/04/98	1	11.13	0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
2	04/05/98	04/11/98	9	452.19	1	66.82	0	0.00	0.00	0.00	0.00	1.00	0.14
3	04/12/98	04/18/98	8	478.65	1	69.37	0	0.00	0.00	0.00	0.00	0.01	0.60
4	04/19/98	04/25/98	13	582.14	2	62.48	0	0.00	5.93	0.00	0.00	0.06	2.09
5	04/26/98	05/02/98	10	367.14	1	26.61	0	0.00	0.00	0.08	0.00	0.03	7.74
6	05/03/98	05/09/98	14	389.06	1	49.96	0	0.00	0.01	0.00	0.08	0.02	0.12
7	05/10/98	05/16/98	5	296.21	0	0.00	0	0.00	0.54	0.00	0.11	0.01	0.14
8	05/17/98	05/23/98	8	217.11	1	48.93	1	0.00	0.02	0.26	1.60	0.03	0.22
9	05/24/98	05/30/98	8	227.37	1	61.94	3	0.00	0.15	0.00	0.06	9.35	0.34
10	05/31/98	06/06/98	13	299.84	1	42.34	10	0.19	0.90	0.00	0.03	0.00	0.19
11	06/07/98	06/13/98	6	216.97	0	0.00	0	0.00	0.41	0.00	0.00	9.11	0.07
12	06/14/98	06/20/98	92	6,059.07	17	956.79	5	9.02	14.70	6.11	68.59	4.54	3.74
13	06/21/98	06/27/98	125	8,336.20	17	1,229.52	7	26.35	12.08	0.31	85.52	5.75	1.64
14	06/28/98	07/04/98	102	7,150.66	16	1,223.21	1	27.25	32.08	0.10	97.45	1.19	1.92
15	07/05/98	07/11/98	114	7,761.62	18	1,097.97	5	28.83	9.35	0.08	36.83	1.85	3.39
16	07/12/98	07/18/98	98	6,373.60	18	1,312.30	13	42.63	21.32	0.13	24.23	0.99	10.04
17	07/19/98	07/25/98	99	6,628.63	14	949.14	33	80.87	41.97	8.17	59.81	5.49	13.11
18	07/26/98	08/01/98	87	5,511.81	11	814.05	12	29.40	38.48	2.53	38.34	2.53	37.59
19	08/02/98	08/08/98	66	4,568.10	10	609.24	11	42.13	18.28	1.53	22.36	1.79	21.24
20	08/09/98	08/15/98	69	4,528.77	10	868.26	13	51.25	28.64	2.55	72.52	2.08	10.37
21	08/16/98	08/22/98	71	5,064.88	8	636.53	7	31.64	26.07	0.61	36.55	1.80	46.34
22	08/23/98	08/29/98	61	3,809.39	6	374.22	3	38.61	11.29	0.53	26.39	6.04	16.96
23	08/30/98	09/05/98	70	3,799.12	6	383.29	4	32.23	14.13	1.22	83.70	2.05	40.83
24	09/06/98	09/12/98	60	3,301.66	6	335.66	11	20.39	30.56	1.24	170.05	0.10	19.50
25	09/13/98	09/19/98	56	2,760.56	5	183.71	24	17.56	16.76	1.45	163.80	0.87	26.81
26	09/20/98	09/26/98	48	2,381.50	8	406.43	31	9.06	10.39	0.21	191.67	0.86	5.20
27	09/27/98	10/03/98	56	3,481.63	5	290.30	2	12.03	20.79	0.13	69.66	0.78	18.57
28	10/04/98	10/10/98	39	1,969.24	4	192.78	5	18.27	9.36	0.02	31.99	4.63	2.83
29	10/11/98	10/17/98	13	602.22	1	63.50	0	0.09	2.23	0.00	21.12	2.90	5.73
YEAR	TOTAL		1421	87,626.46	189	12,355.33	201	517.80	366.44	27.24	1,302.47	65.87	297.48

Table 1a. Weekly EFP and NON-EFP pacific whiting landings and bycatch for Washington, Oregon and California, 1998.
 (See text for explanation of abbreviations)

Washington, Oregon and California pacific whiting trips
 By Fishing Week
 Midwater trawl only
 04/01/98 - 10/13/98
 Data from fish tickets except salmon from observations

FISHING WEEK	START DATE	ENDING DATE	WHITING LANDINGS	WHITING MT	LANDINGS OBS.	MT WHITING OBS.	SALMON OBS.	Y'TAIL MT	WIDOW MT	SABLE MT	MAC MT	MISC ROCK MT	MISC FISH MT
1	03/29/98	04/04/98	0	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
2	04/05/98	04/11/98	7	390.82	1	66.82	0	0.00	0.00	0.00	0.00	1.00	0.14
3	04/12/98	04/18/98	8	478.65	1	69.37	0	0.00	0.00	0.00	0.00	0.01	0.60
4	04/19/98	04/25/98	13	582.14	2	62.48	0	0.00	5.93	0.00	0.00	0.06	2.09
5	04/26/98	05/02/98	9	361.47	1	26.61	0	0.00	0.00	0.08	0.00	0.03	7.74
6	05/03/98	05/09/98	11	386.32	1	49.96	0	0.00	0.01	0.00	0.08	0.02	0.12
7	05/10/98	05/16/98	5	296.21	0	0.00	0	0.00	0.54	0.00	0.11	0.01	0.14
8	05/17/98	05/23/98	4	214.40	1	48.93	1	0.00	0.02	0.26	1.60	0.03	0.22
9	05/24/98	05/30/98	4	224.83	1	61.94	3	0.00	0.15	0.00	0.06	9.35	0.34
10	05/31/98	06/06/98	5	289.66	1	42.34	10	0.00	0.06	0.00	0.03	0.00	0.19
11	06/07/98	06/13/98	4	213.98	0	0.00	0	0.00	0.41	0.00	0.00	9.11	0.07
12	06/14/98	06/20/98	91	6,054.57	17	956.79	5	8.82	14.70	6.11	68.59	4.54	3.74
13	06/21/98	06/27/98	117	8,300.09	17	1,229.52	7	26.35	12.08	0.31	85.52	5.75	1.64
14	06/28/98	07/04/98	101	7,150.64	16	1,223.21	1	27.25	32.08	0.10	97.45	1.19	1.92
15	07/05/98	07/11/98	112	7,751.86	18	1,097.97	5	28.83	9.35	0.08	36.83	1.85	3.39
16	07/12/98	07/18/98	93	6,372.97	18	1,312.30	13	42.63	21.32	0.13	24.23	0.99	10.04
17	07/19/98	07/25/98	96	6,622.24	14	949.14	33	80.70	41.97	8.17	59.81	5.49	13.08
18	07/26/98	08/01/98	79	5,505.75	11	814.05	12	29.40	38.48	2.53	38.34	2.53	37.59
19	08/02/98	08/08/98	66	4,568.10	10	609.24	11	42.13	18.28	1.53	22.36	1.79	21.24
20	08/09/98	08/15/98	63	4,521.72	10	868.26	13	51.25	28.64	2.55	72.52	2.08	10.37
21	08/16/98	08/22/98	69	5,061.84	8	636.53	7	31.64	26.07	0.61	36.55	1.80	46.34
22	08/23/98	08/29/98	60	3,809.21	6	374.22	3	38.61	11.29	0.53	26.39	6.04	16.96
23	08/30/98	09/05/98	70	3,799.12	6	383.29	4	32.23	14.13	1.22	83.70	2.05	40.83
24	09/06/98	09/12/98	59	3,300.16	6	335.66	11	20.39	30.56	1.24	170.05	0.10	19.50
25	09/13/98	09/19/98	50	2,747.21	5	183.71	24	17.40	16.76	1.45	161.60	0.87	26.81
26	09/20/98	09/26/98	48	2,381.50	8	406.43	31	9.06	10.39	0.21	191.67	0.86	5.20
27	09/27/98	10/03/98	55	3,481.36	5	290.30	2	12.03	20.79	0.13	69.66	0.78	18.57
28	10/04/98	10/10/98	37	1,968.80	4	192.78	5	2.29	6.67	0.02	31.99	4.38	2.83
29	10/11/98	10/17/98	12	598.26	1	63.50	0	0.07	2.22	0.00	21.12	2.90	5.73
YEAR	TOTAL		1348	87,433.88	189	12,355.33	201	501.06	362.90	27.24	1,300.27	65.62	297.45

Table 1b. Weekly EFP pacific whiting landings and bycatch for Washington, Oregon and California, 1998.
 (See text for explanation of abbreviations)

Cumulative Whiting Report

WASHINGTON, OREGON AND CALIFORNIA Shoreside Fishery, Midwater Trawl Only
(Best Available Data as of 12/16/98)



***All Ports and Plants Cumulative Whiting Report, Through October 13, 1998**

	Observed Total	EFP Fishery Total	NON-EFP Fishery Total	Fishery ** Total
Whiting Harvest (mt)	12,195	87,434	193	87,626
Number of Deliveries	189	1,348	73	1,421
Salmon Catch (no)	201			201
Misc Rockfish (lb)	20,478	144,660	558	145,218
Yellowtail Rockfish (lb)	132,221	1,104,644	36,897	1,141,541
Widow Rockfish (lb)	106,009	800,050	7,793	807,843
Sablefish (lb)	11,802	60,049	0	60,049
Mackerel (lb)	382,351	2,866,578	4,850	2,871,428
Misc. Other Fish (lb)	40,020	655,753	63	655,816
Salmon Rate (no/mt)	0.016			
Rockfish Rate (lb/mt)	1.679	1.655	2.897	1.655 **
Yellowtail Rate (lb/mt)	10.842	12.634	191.592	12.634
Widow Rate (lb/mt)	8.693	9.150	40.466	9.150
Sablefish Rate (lb/mt)	0.968	0.687	0.000	0.687
Mackerel Rate (lb/mt)	31.353	32.786	25.184	32.786
Other Fish Rate (lb/mt)	3.282	7.500	0.327	7.500
% of Deliveries Observed	14			

* Includes all trips with whiting lbs>0

** All rates are calculated using only EFP totals

Table 2. 1998 Cumulative shoreside whiting fishery report for Washington, Oregon and California.

Cumulative Whiting Report

WASHINGTON Shoreside Fishery, Midwater Trawl Only
(Best Available Data as of 12/16/98)



***All Ports and Plants Cumulative Whiting Report, Through October 13, 1998**

	Observed Total	EFP Fishery Total	NON-EFP Fishery Total	Fishery ** Total
Whiting Harvest (mt)	1,057	10,326	4	10,330
Number of Deliveries	16	138	1	139
Salmon Catch (no)	42			
Misc Rockfish (lb)	5,719	19,588	0	19,588
Yellowtail Rockfish (lb)	44,941	337,247	451	337,698
Widow Rockfish (lb)	15,547	59,821	0	59,821
Sablefish (lb)	1,006	1,901	0	1,901
Mackerel (lb)	39,366	183,191	0	183,191
Misc. Other Fish (lb)	16,384	86,157	0	86,157
Salmon Rate (no/mt)	0.040			
Rockfish Rate (lb/mt)	5.410	1.897	0.000	1.897 **
Yellowtail Rate (lb/mt)	42.513	32.661	100.371	32.661
Widow Rate (lb/mt)	14.707	5.793	0.000	5.793
Sablefish Rate (lb/mt)	0.952	0.184	0.000	0.184
Mackerel Rate (lb/mt)	37.239	17.741	0.000	17.741
Other Fish Rate (lb/mt)	15.499	8.344	0.000	8.344
% of Deliveries Observed	12			

* Includes all trips with whiting lbs>0

** All rates are calculated using only EFP totals

Table 5. 1998 Cumulative shoreside whiting fishery report for Washington.

Cumulative Whiting Report

OREGON Shoreside Fishery, Midwater Trawl Only
(Best Available Data as of 12/16/98)



***All Ports and Plants Cumulative Whiting Report, Through October 13, 1998**

	Observed Total	EFP Fishery Total	NON-EFP Fishery Total	Fishery ** Total
Whiting Harvest (mt)	10,371	71,539	40	71,579
Number of Deliveries	158	1,107	6	1,113
Salmon Catch (no)	137			
Misc Rockfish (lb)	10,610	80,187	558	80,745
Yellowtail Rockfish (lb)	87,050	764,002	36,446	800,448
Widow Rockfish (lb)	74,583	650,150	7,793	657,943
Sablefish (lb)	10,616	57,394	0	57,394
Mackerel (lb)	333,599	2,651,694	4,848	2,656,542
Misc. Other Fish (lb)	22,695	539,453	63	539,516
Salmon Rate (no/mt)	0.013			
Rockfish Rate (lb/mt)	1.023	1.121	13.965	1.121 **
Yellowtail Rate (lb/mt)	8.393	10.680	912.122	10.680
Widow Rate (lb/mt)	7.191	9.088	195.033	9.088
Sablefish Rate (lb/mt)	1.024	0.802	0.000	0.802
Mackerel Rate (lb/mt)	32.165	37.067	121.329	37.067
Other Fish Rate (lb/mt)	2.188	7.541	1.577	7.541
% of Deliveries Observed	14			

* Includes all trips with whiting lbs>0

** All rates are calculated using only EFP totals

Table 4. 1998 Cumulative shoreside whiting fishery report for Oregon.

Cumulative Whiting Report

CALIFORNIA Shoreside Fishery, Midwater Trawl Only
(Best Available Data as of 12/16/98)



***All Ports and Plants Cumulative Whiting Report, Through October 13, 1998**

	Observed Total	EFP Fishery Total	NON-EFP Fishery Total	Fishery ** Total
Whiting Harvest (mt)	766	5,570	148	5,718
Number of Deliveries	15	103	66	169
Salmon Catch (no)	22			
Misc Rockfish (lb)	4,154	44,885	0	44,885
Yellowtail Rockfish (lb)	230	3,395	0	3,395
Widow Rockfish (lb)	16,029	90,079	0	90,079
Sablefish (lb)	180	754	0	754
Mackerel (lb)	9,766	31,693	2	31,695
Misc. Other Fish (lb)	3,355	30,143	0	30,143
Salmon Rate (no/mt)	0.029			
Rockfish Rate (lb/mt)	5.420	8.059	0.000	8.059 **
Yellowtail Rate (lb/mt)	0.300	0.610	0.000	0.610
Widow Rate (lb/mt)	20.913	16.174	0.000	16.174
Sablefish Rate (lb/mt)	0.235	0.135	0.000	0.135
Mackerel Rate (lb/mt)	12.742	5.690	0.014	5.690
Other Fish Rate (lb/mt)	4.377	5.412	0.000	5.412
% of Deliveries Observed	15			

* Includes all trips with whiting lbs>0

** All rates are calculated using only EFP totals

Table 3. 1998 Cumulative shoreside whiting fishery report for California.

Table 6. Weekly bycatch rate of salmon (# of salmon/mt. of whiting) in the shorebased whiting fishery, 1992-1998. Rates for 1992-1994 are based on observations. Rates for 1995-1998 are based on salmon turned over to state agencies by processors.

Month	1992*	1993	1994	1995**	1996**	1997**	1998**
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
May		0.038	0.015	0.041	0.000	0.000	0.000
	0.019	0.034	0.002	0.040	0.000	0.001	0.049
	0.097	0.054	0.004	0.019	0.029	0.010	0.101
	0.056	0.014	0.003	0.011	0.136	0.003	0.205
June		0.019	0.000	0.004	0.024	0.000	0.053
	0.015	0.021	0.017	0.008	0.007	0.000	0.041
	0.004	0.000	0.007	0.032	0.007	0.000	0.028
	0.001	0.001	0.007	0.013	0.000	0.011	0.006
July		0.000	0.001	0.035	0.001	0.005	0.005
	0.000	0.011	0.001	0.024	0.000	0.010	0.001
	0.002	0.010	0.003	0.011	0.004	0.016	0.002
	0.003	0.004	0.001		0.003	0.025	0.011
August		0.008	0.001		0.002	0.034	0.050
	0.002	0.003	0.003		0.001	0.012	0.013
	0.004	0.008	0.002		0.001	0.025	0.033
	0.005	0.003	0.001		0.000	0.014	0.014
September		0.014	0.000		0.000	0.022	0.014
	0.015		0.002		0.000		0.010
	0.002		0.004		0.000		0.028
	0.009		0.008		0.000		0.069
October			0.001				0.094
			0.003				0.025
	0.005		0.010				0.003
	0.016		0.000				0.005
Rate for Year			0.002				0.008
			0.039				0.008
	0.014						0.020
Rate for Year	0.010	0.010	0.008	0.032	0.008	0.017	0.020

*Oregon Only

**Salmon from all landings

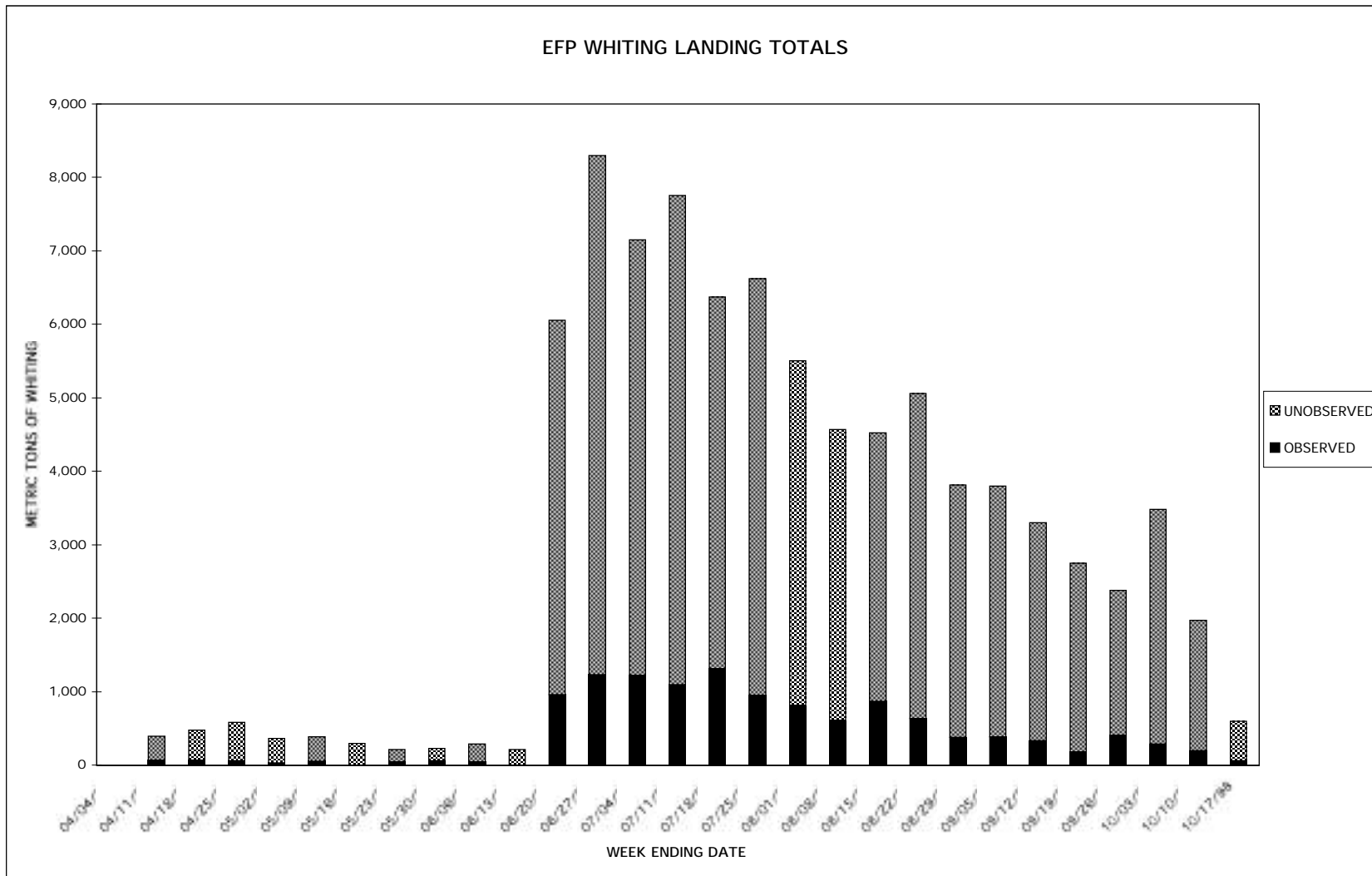


Fig. 1. 1998 Weekly shoreside whiting landings; Washington, Oregon and California.

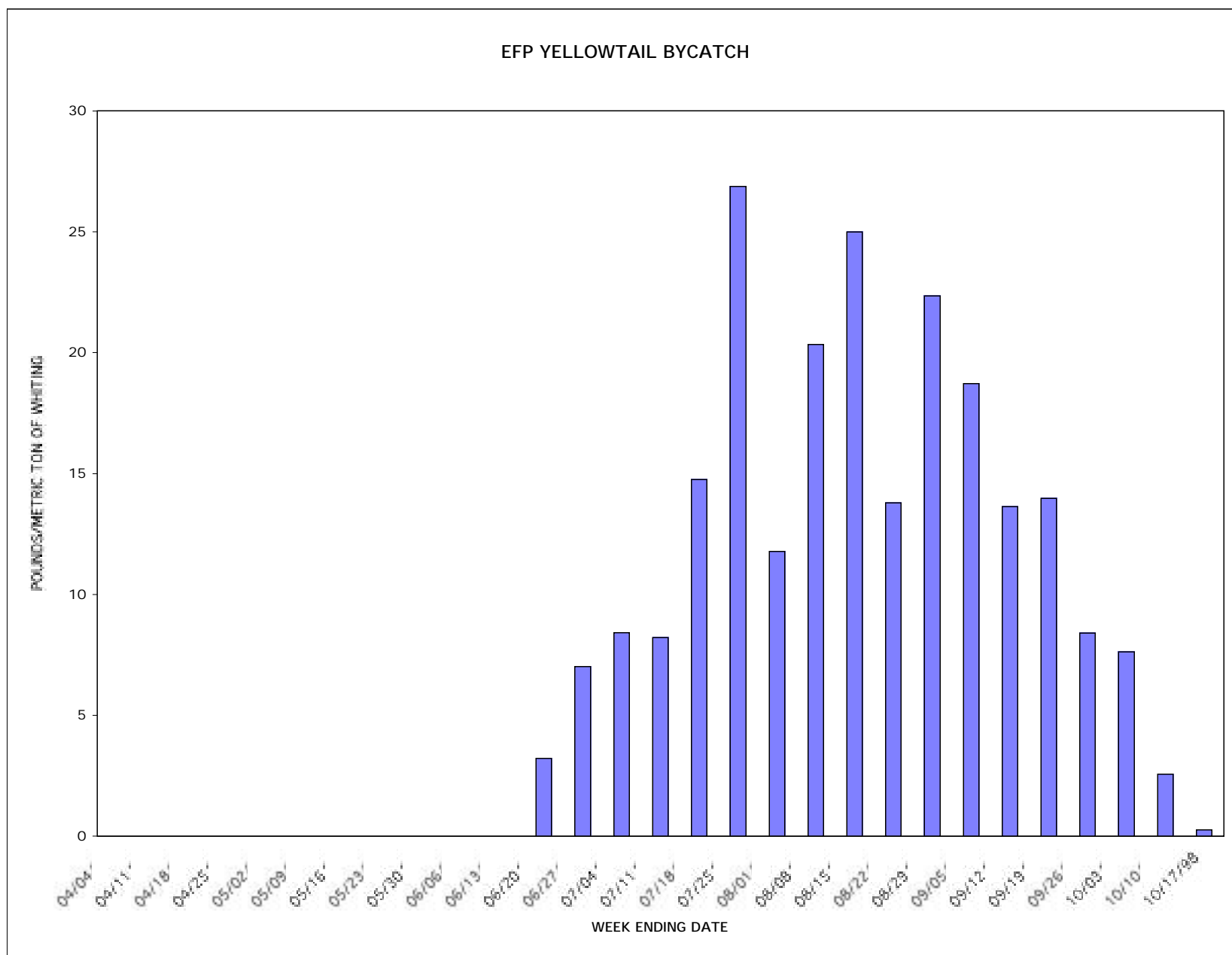


Fig. 2a. Weekly yellowtail rockfish bycatch in the shoreside whiting fishery for Washington, Oregon and California, 1998

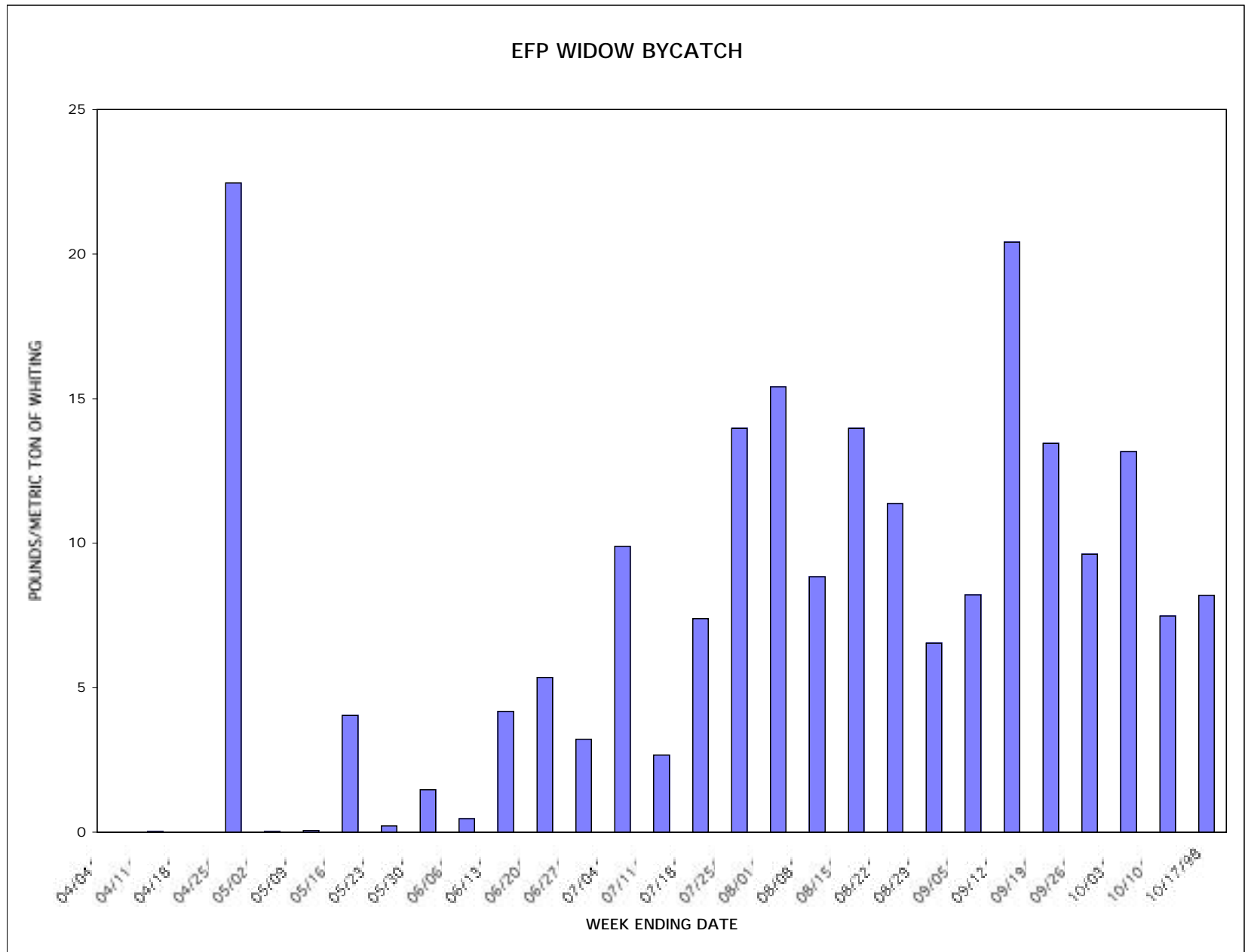


Fig. 2b. Weekly widow rockfish bycatch in the shoreside whiting fishery for Washington, Oregon and California, 1998

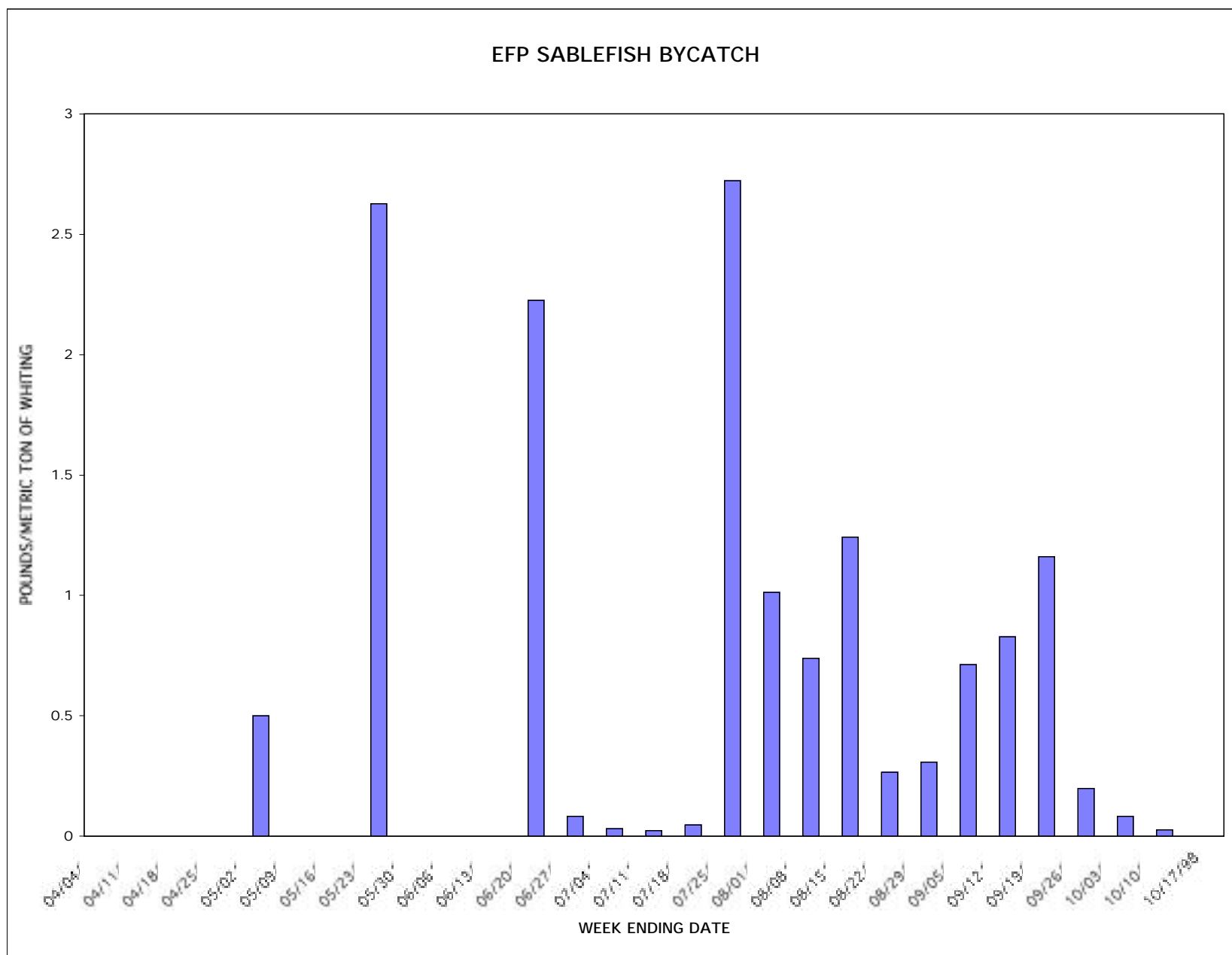


Fig. 2c. Weekly sablefish bycatch in the shoreside whiting fishery for Washington, Oregon and California, 1998

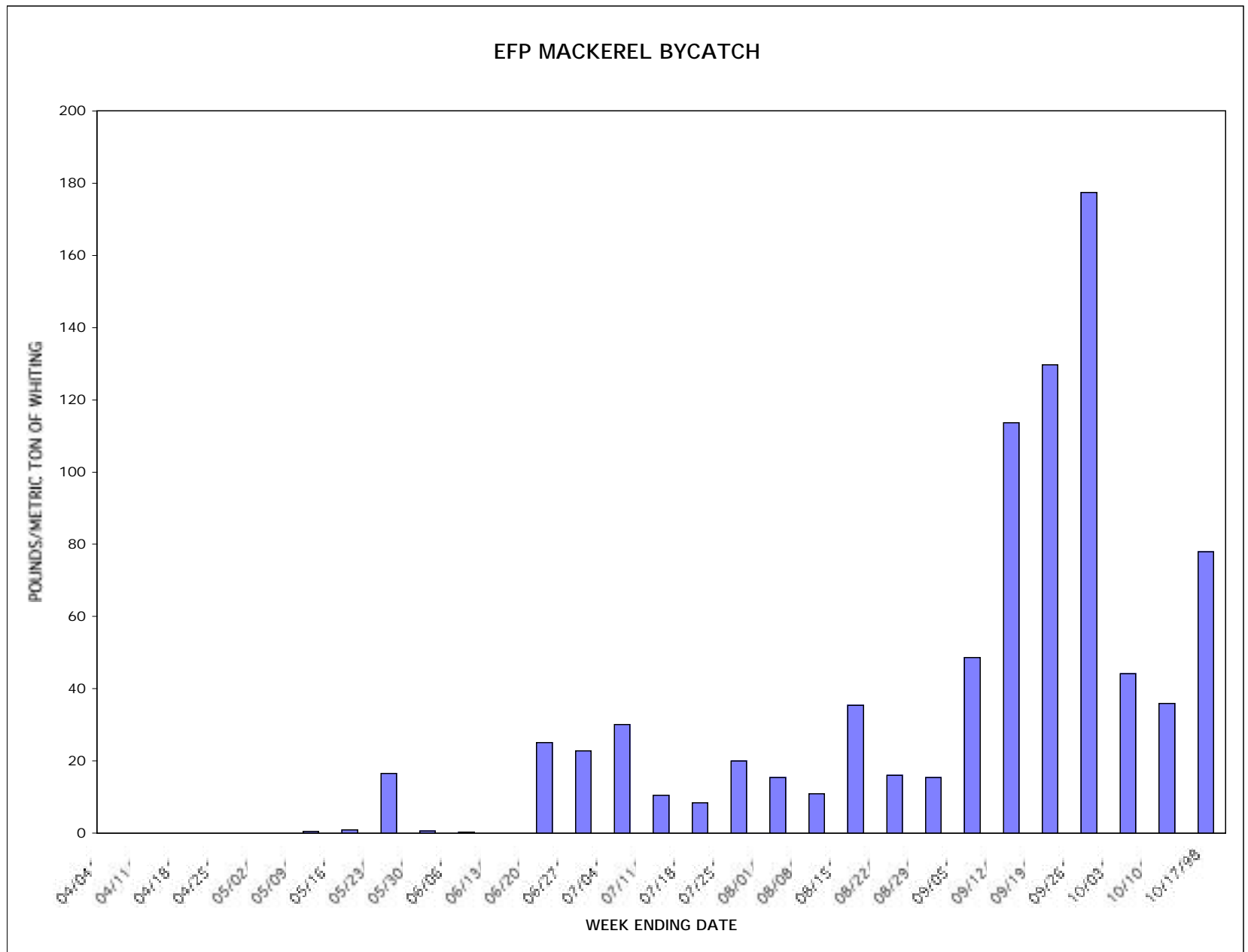
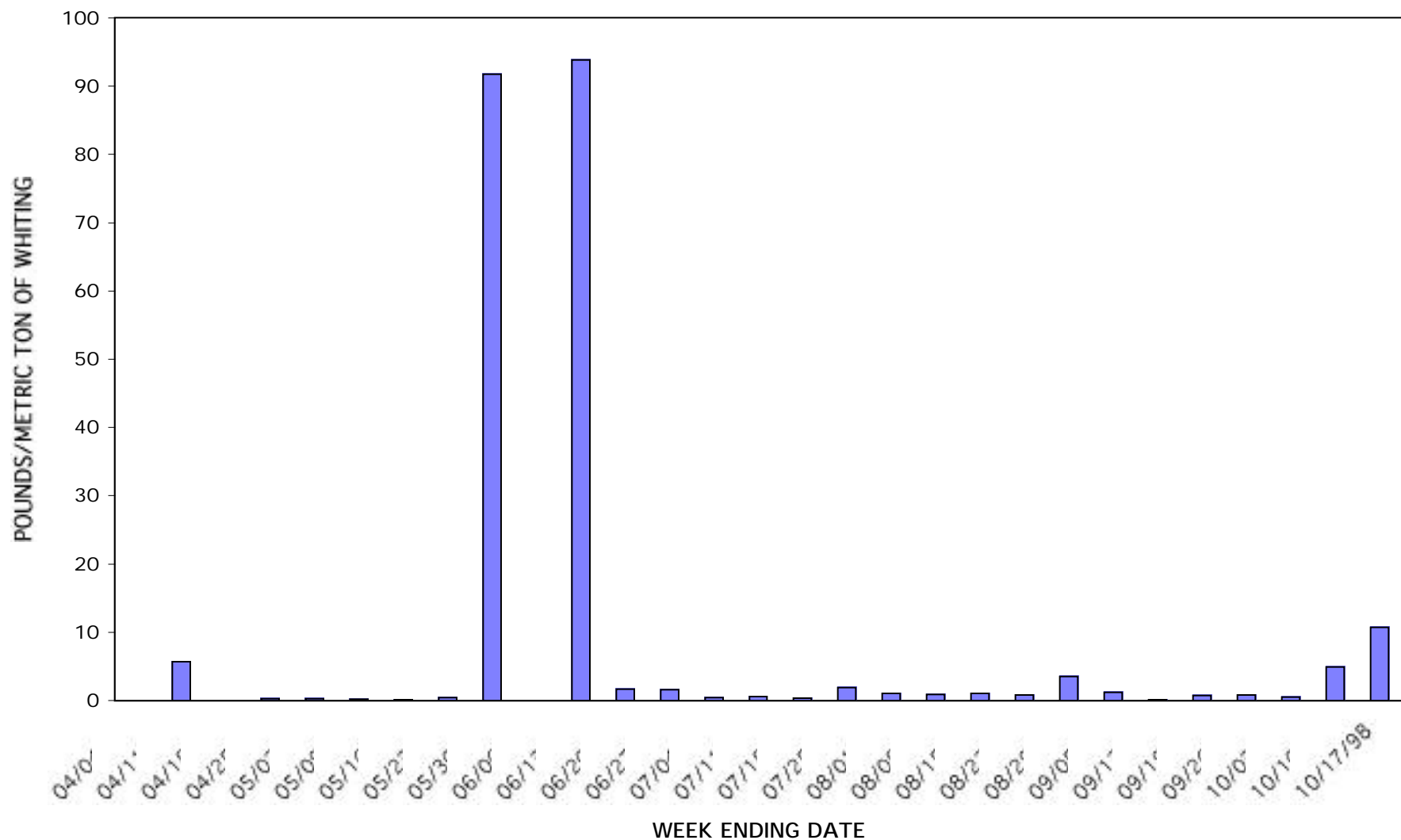


Fig. 2d. Weekly mackerel bycatch in the shoreside whiting fishery for Washington, Oregon and California, 1998

EFP MISCELLANEOUS ROCKFISH BYCATCH



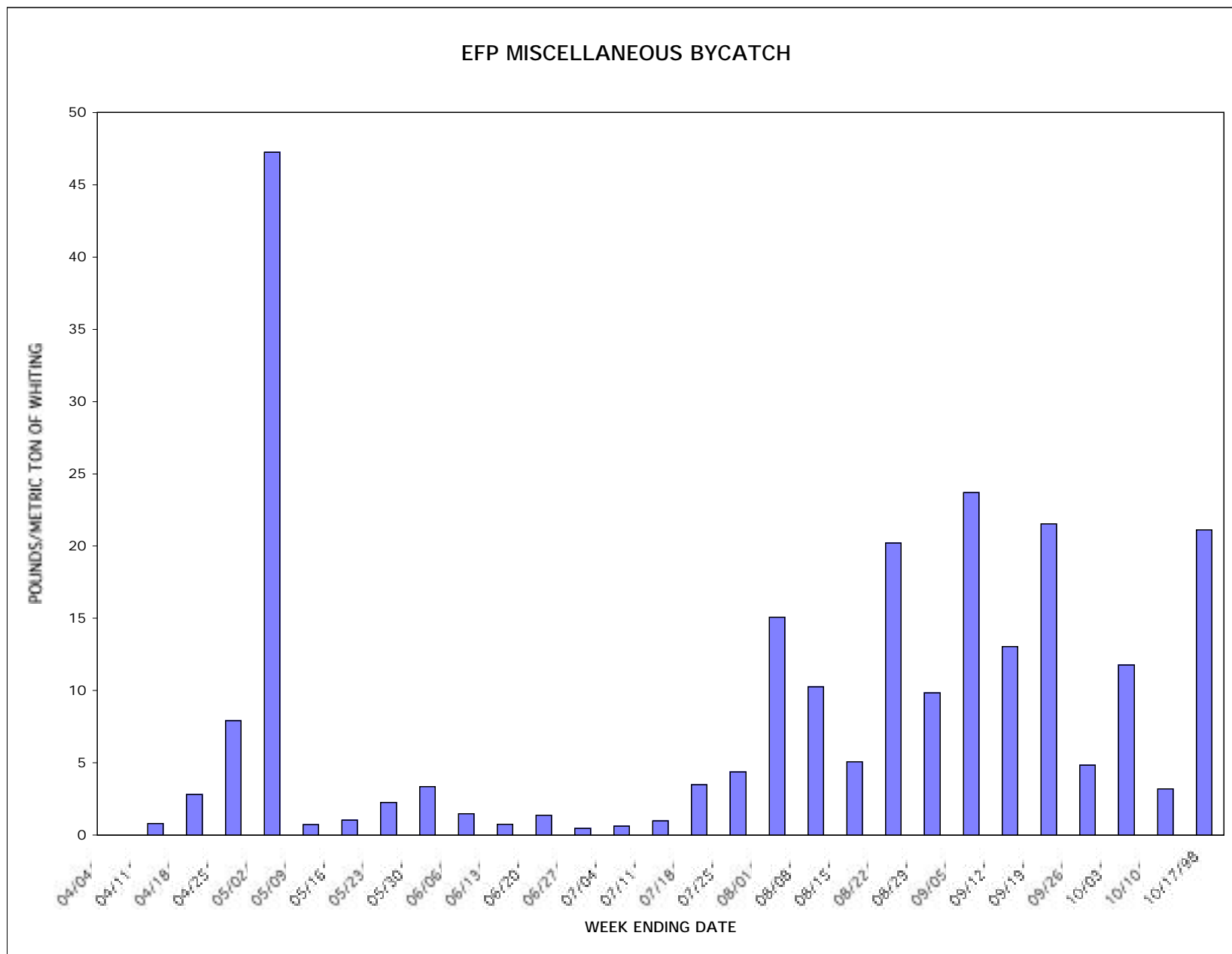


Fig. 2f. Weekly miscellaneous bycatch in the shoreside whiting fishery for Washington, Oregon and California, 1998

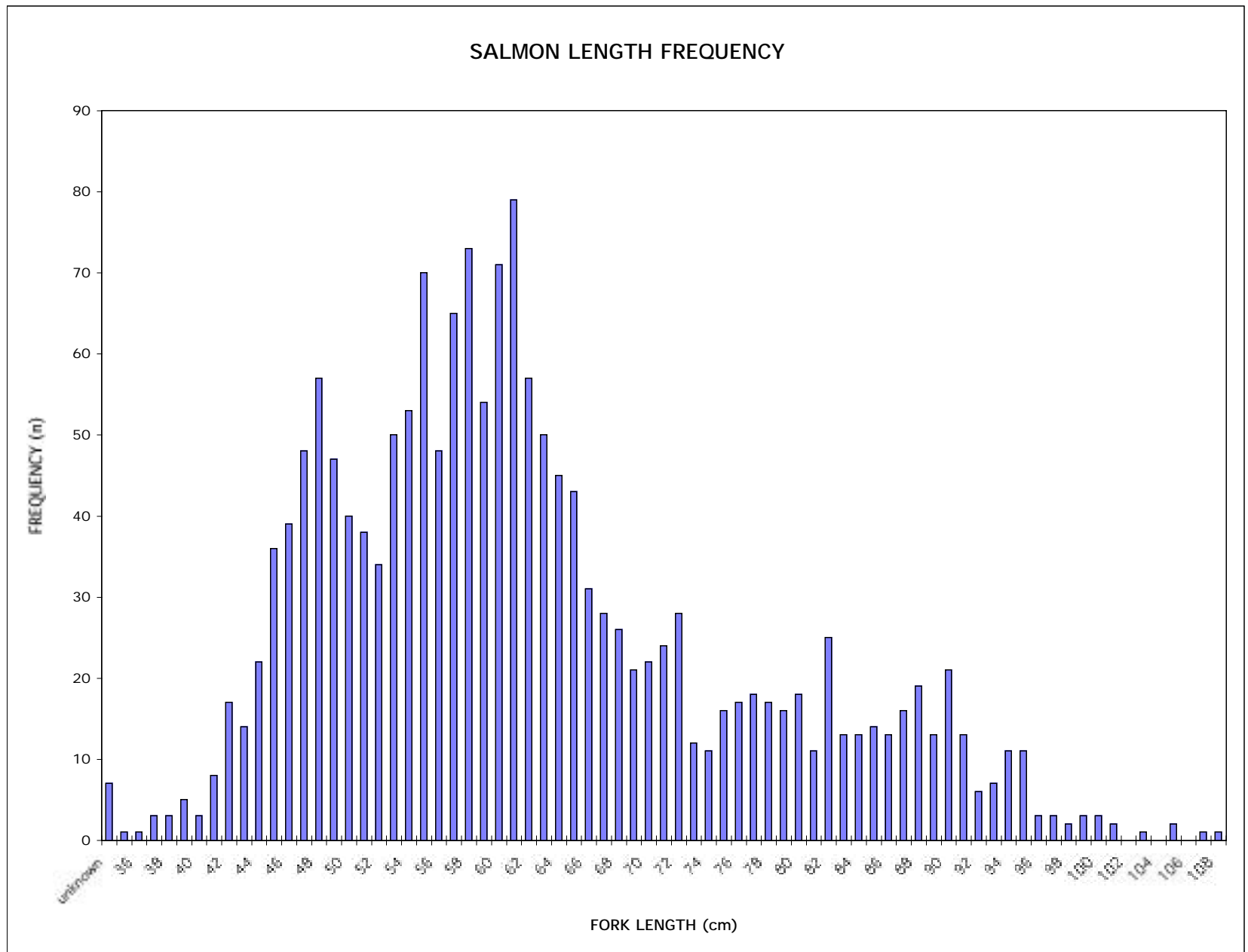


Fig. 3b. 1998 Length frequency of salmon bycatch in the whiting fishery; Washington, Oregon and California