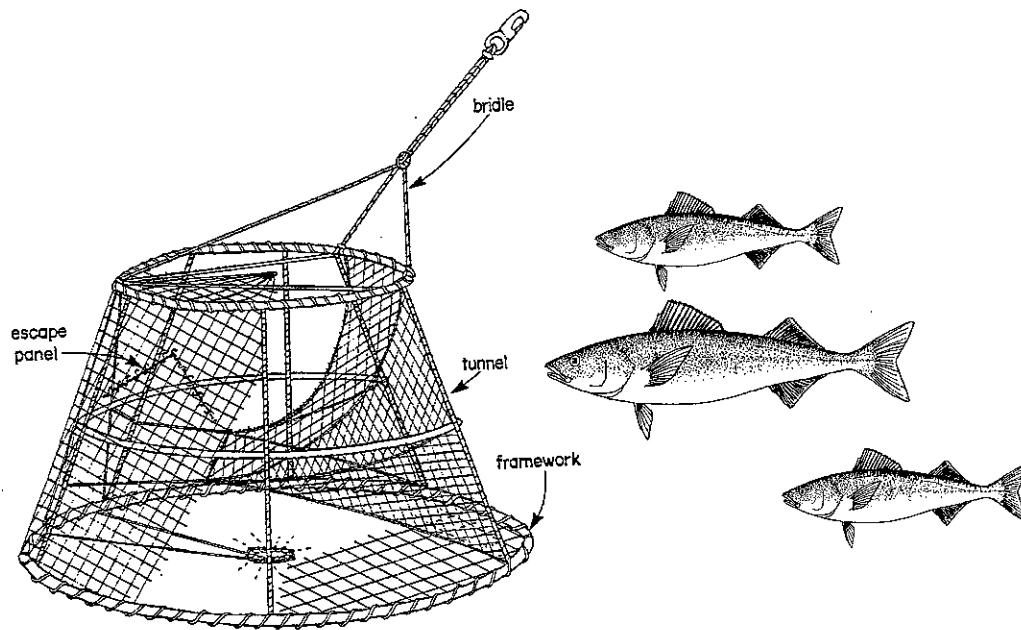


**Cruise Results  
of the  
Cooperative Sablefish Pot Survey  
Conducted off Oregon, October 13-18, 1997**



by

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**December 1997**

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**INTRODUCTION**

A sablefish pot survey was conducted off Oregon as a cooperative research venture involving commercial harvesters, the Oregon Department of Fish and Wildlife (ODFW) and the National Marine Fisheries Service (NMFS). Commercial fishing vessel owner, Stan Schones requested that ODFW use his vessel, Emerald Sea, to conduct a pot survey of sablefish off the coast of Oregon. ODFW provided a scientific crew and a state permit to conduct research. NMFS provided a permit to allow pot research off Oregon and retention of fish caught during the survey to defray vessel costs. This report summarizes the general sampling operations and preliminary results of the survey.

**OBJECTIVES**

The purpose of this pot survey was to provide current data on the status of the sablefish stocks off the central Oregon coast. Our intention was to conduct a pot survey in the manner of those conducted by NMFS off the Oregon coast in the 1980's and sample all the catch including undersized fish. A primary focus was to look at indications of recent recruitment success or failure. From the survey we also intended to obtain the following information:

- 1) Describe the total catch from pots fished at specific depths.
- 2) Describe efficient methods to conduct fish pot surveys aboard commercial vessels.

**STUDY SITE**

Sablefish were sampled from four areas (Figure 1). Two NMFS sablefish abundance indexing sites known as the Cape Lookout and the Yaquina Bay sites were fished with fish pots deployed roughly parallel to the depth contours of 150, 225, 300, 375 and 450 fm. We also set fish pots in 75 fathoms at the Cape Lookout site. A third location, designated the Commercial Site, was off Cape Foulweather and Depoe Bay in 187 to 243 fathoms. This site was chosen based on vessel operator's advice that it was a good location where commercial quantities of sablefish would be found. A fourth site, designated the Small Fish site, was located off Lincoln City and Siletz Bay in 222 to 247 fathoms. This was at a location where our vessel operator knew was occupied by small sablefish earlier in the year.

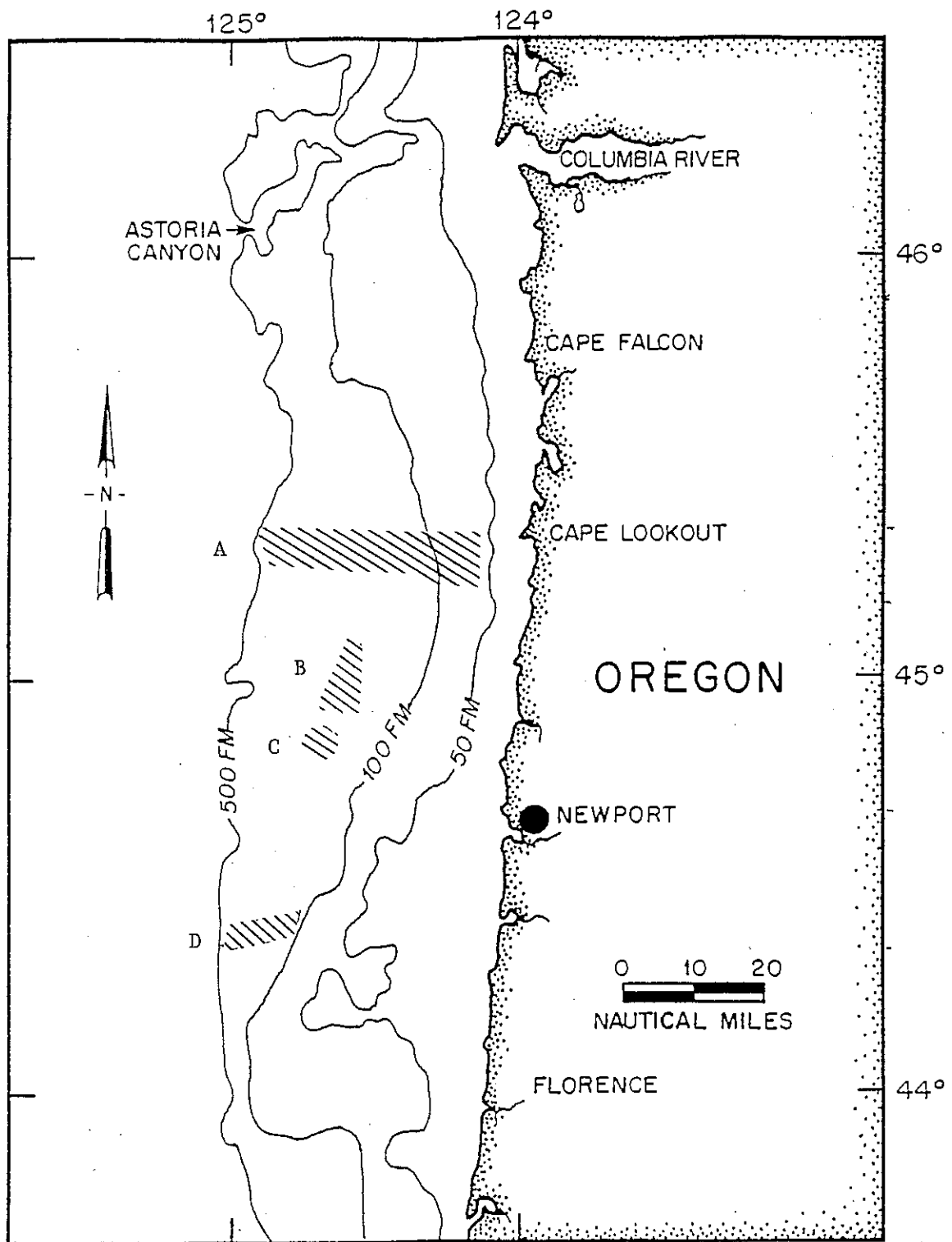


Figure 1. Areas off the central Oregon coast sampled during the sablefish pot survey aboard the commercial vessel F/V Emerald Sea in October, 1997. Cross-hatched areas denote sampling areas as follows: "A" is the Cape Lookout site, "B" is the Small Fish site, "C" is the Commercial site, and "D" is the Yaquina Bay site.

## METHODS

### Vessel and Gear

The cooperating vessel, Emerald Sea, is a house-forward, steel vessel 63 feet in length. The vessel was operated by a captain and a crew of three. The vessel is a combination vessel, that is, it fishes for sablefish and crabs with pots, for swordfish with gillnets, and for ocean shrimp with trawl. The vessel is powered with a 360 HP main engine. The vessel fishes up to six 7/8 inch groundlines, and usually 25 conical fish pots (traps) separated at 40 fathom intervals along the groundline. Pots were baited with about two pounds of chopped squid in perforated plastic jars along with about five pounds of Pacific whiting or Pacific mackerel placed loosely in each pot. We attempted to soak pots for 24 hours.

For each set of the gear we recorded set number, number of pots deployed, bottom depth in fathoms, and date and time gear set and retrieved, and location (latitude and longitude).

### Sampling Methods

The vessel crew retrieved the fish pots and dumped the contents into a box. The captain usually operated the snatch block while two crew handled the pots and dumped the fish into a sorting box. The third crew member coiled the groundlines.

Two ODFW biologists sampled the catch. Bycatch (crab and fish other than sablefish) was recorded by species and number. Crab and Pacific halibut were discarded with the help of the crew. Other bycatch was retained or discarded if it had no legal market. Sablefish were placed in plastic baskets and a count and total weight (to a tenth of a pound) was obtained for the catch from each pot. This weight was determined by using an electronic platform scale. Sablefish length (fork length) was recorded to the nearest cm on all fish. Length by sex information was taken on about half the sablefish and maturity was noted as immature or mature for these fish. From the first 20 sablefish of each haul, samplers recorded individual weight (to the nearest gram), individual length and removed otoliths for individual fish age determination.

## RESULTS

The survey did not start until October 13, because of bad weather. Once the survey was under way, fishing conditions were usually excellent. Six days rather than the planned four days were required to complete the survey, because of the long distance between some stations, time and difficulty in preparing large numbers of

pots and groundline for transport, and the need to soak pots for at least 24 hours.

Catch was sampled at a total of 20 haul locations distributed through the four sites. Location of pot hauls and catch summary is given in Table 1. We were unable to set gear in 75 fathoms at the Yaquina Bay site because of rough bottom terrain. We sampled all 492 pots which contained a total of 3,913 sablefish weighing 18,422 pounds (Table 2). We measured all sablefish; the length frequency of these fish is shown in Figure 2. Over half of the catch was sampled for sex and maturity data; length frequency for these fish by sex is summarized in Figure 3.

At each of the 20 locations, the first 20 sablefish (a total of 373 fish) were sampled for individual length, weight, sex, and maturity; otoliths were also collected for age determination. Comparing the 20 haul locations, we found that catch ranged from 0.1 pounds of sablefish per pot to 102.2 pounds per pot. Comparing average sablefish weight from the locations, average weight ranged from 1.5 pounds to 8.1 pounds.

Bycatch was recorded by number and species (Table 3). The bycatch species most frequently found in pots were Pacific halibut and arrowtooth flounder. The largest catches of bycatch by number and species were tanner crabs and box crabs, although they were found at relatively few haul locations. Other species occurring in the pots were rougheyed rockfish, greenstriped rockfish, darkblotched rockfish, lingcod, spiny dogfish, Dungeness crab, Dover sole, Pacific sanddab, petrale sole, Pacific hagfish, black hagfish, and octopus.

Total landings from this survey were 15,183 pounds of sablefish, 104 pounds of lingcod, and 100 pounds of red rockfish. Total ex-vessel value of this landed fish was \$30,049.80. Breakdown of sablefish weight (pounds) by size categories (weight intervals in pounds) of landed catch was as follows:

<u>Wt interval (lbs)</u>	<u>0 - 3 1/2</u>	<u>3 1/2 - 5</u>	<u>5 - 7</u>	<u>7 - up</u>	<u>TOTAL</u>
pounds landed	641	4,506	3,601	6,435	15,183

## DISCUSSION

Our trip was successful, because we were able to conduct timely research within a narrow window of opportunity. Excellent cooperation from the vessel owner, captain and crew were responsible for our success. Permitting the vessel to sell all sablefish and legal bycatch allowed ODFW to conduct the research without a budget for this work and enabled the cooperating fishers to receive compensation for their time and expenses.

Samplers were able to obtain depth specific data on sablefish catch which was a primary objective of this project.

Table 1 . Pot haul locations and catch summary for the central Oregon sablefish survey.

Haul #	Date	Soak hours	Depth fms	Start		End		Sablefish Catch	
				Lat.	Lon.	Lat.	Lon.	No.	Lbs.
1	10/13	34.0	196-205	44°50.02'	124°39.08'	44°49.33'	124°38.54'	257	1,709
2	10/13	34.0	212-208	49.31'	41.11'	48.58'	41.67'	178	1,449
3	10/13	35.0	187-212	51.68'	41.12'	51.02'	40.67'	254	1,373
4	10/14	50.0	217-212	50.91'	41.37'	50.31'	40.67'	252	1,356
5	10/14	45.0	226-214	49.50'	42.51'	48.77'	42.47'	193	977
6	10/14	39.0	243-233	44°51.29'	124°45.23'	44°50.71'	124°46.04'	305	1,250
7	10/15	29.0	376-378	45°20.40'	45.94'	45°19.55'	48.14'	72	286
8	10/15	25.5	299-299	21.05'	45.82'	20.24'	46.13'	601	2,452
9	10/15	31.0	450-451	20.79'	50.69'	20.16'	50.53'	110	389
10	10/16	31.0	76-76	44°13.85'	11.63'	44°12.85'	11.49'	1	2
11	10/16	30.5	151-148	45°19.82'	124°22.82'	45°19.10'	124°27.34'	14	51
12	10/16	32.0	223-224	19.34'	33.03'	18.50'	32.44'	227	1,182
13	10/16	26.5	222-224	04.12'	35.14'	03.03'	34.50'	36	200
14	10/16	26.0	246-245	44°57.74'	34.90'	44°56.83'	34.90'	52	236
15	10/16	27.5	247-247	56.02'	37.18'	55.28'	36.99'	188	915
16	10/18	25.5	450-448	44°22.63'	125°02.33'	44°22.63'	125°02.42'	117	494
17	10/18	26.3	375-370	22.73'	124°59.65'	21.84'	124°59.33'	158	711
18	10/18	27.0	300-295	23.28'	55.88'	22.50'	55.61'	204	1,089
19	10/18	29.0	224-220	24.64'	49.85'	23.70'	49.51'	408	2,025
20	10/18	29.5	151-150	25.82'	47.14'	24.92'	47.69'	59	275

Table 2. Catch information from the Oregon sablefish pot survey.

Site	Haul Number	Depth Fathoms	Number Pots	Number Sablefish	Total Pounds	Pounds per Pot	Average Fish Wt (lb)
Commercial	1	196-205	21	257	1,709.1	81.4	6.65
"	2	212-208	22	178	1,448.6	65.9	8.14
"	3	187-212	22	254	1,372.9	62.4	5.41
"	4	217-212	27	252	1,356.3	50.2	5.38
"	5	226-214	23	193	977.4	42.5	5.06
"	6	243-233	23	305	1,250.4	54.4	4.10
NMFS-C.Lookout	7	376-378	28	72	286.0	10.2	3.97
"	8	299-299	24	601	2,451.9	102.2	4.08
"	9	450-451	24	110	389.0	16.2	3.54
"	10	76-76	23	1	1.5	.1	1.50
"	11	151-148	25	14	50.9	2.0	3.64
"	12	223-224	28	227	1,181.8	42.2	5.21
Small Fish	13	222-224	25	36	199.8	8.0	5.55
"	14	246-245	27	52	236.4	8.8	4.55
"	15	247-247	26	188	915.4	35.2	4.87
NMFS-Yaquina	16	450-448	21	117	493.7	23.5	4.22
"	17	375-370	27	158	711.0	26.3	4.50
"	18	300-295	27	204	1,089.4	40.4	5.34
"	19	224-220	24	408	2,024.8	84.4	4.96
"	20	151-150	25	59	275.4	11.0	4.67
Total.....			492	3,913	18,421.7	37.4	4.71

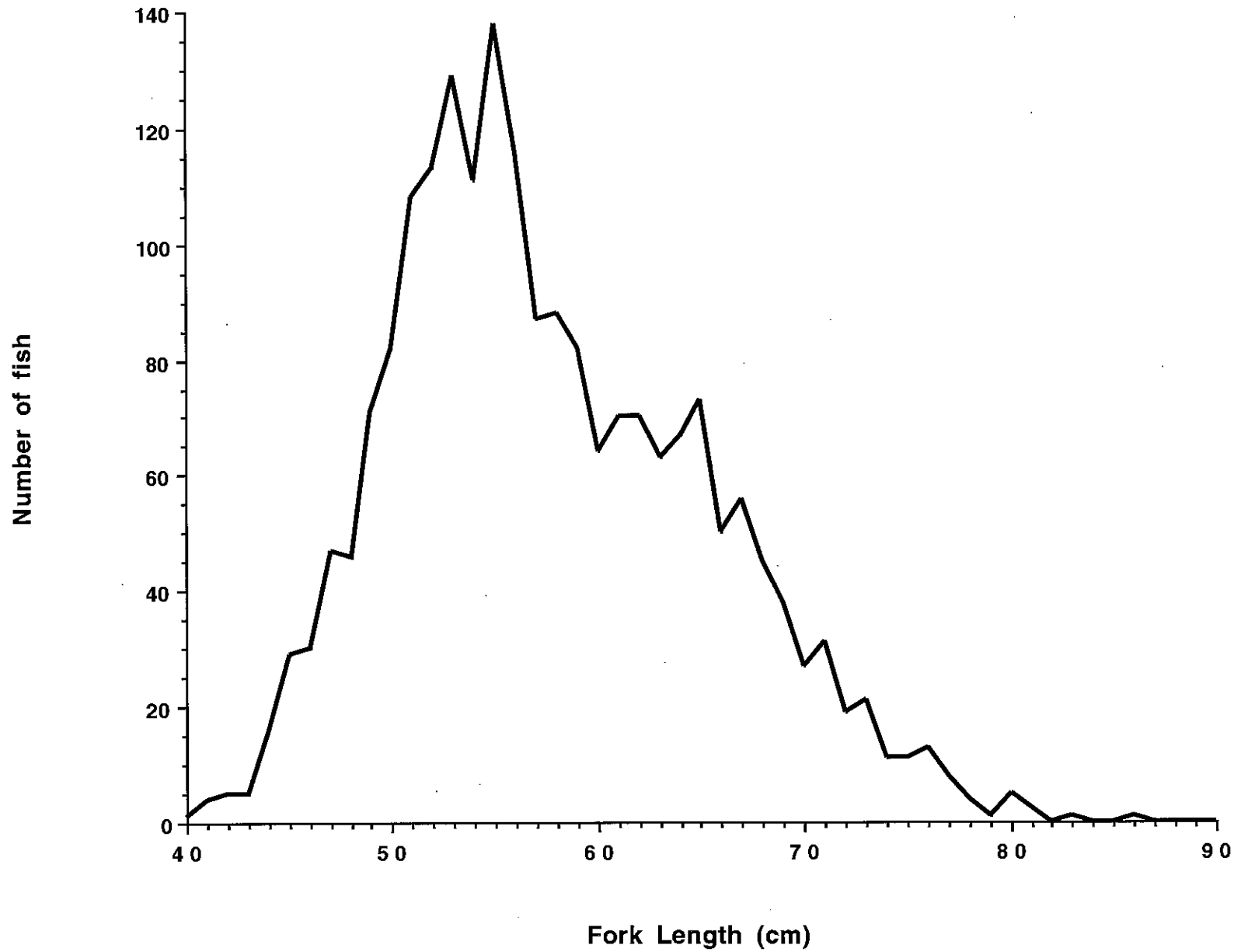


Figure 2. Sablefish length frequency from the pot survey conducted off Oregon, 1997.



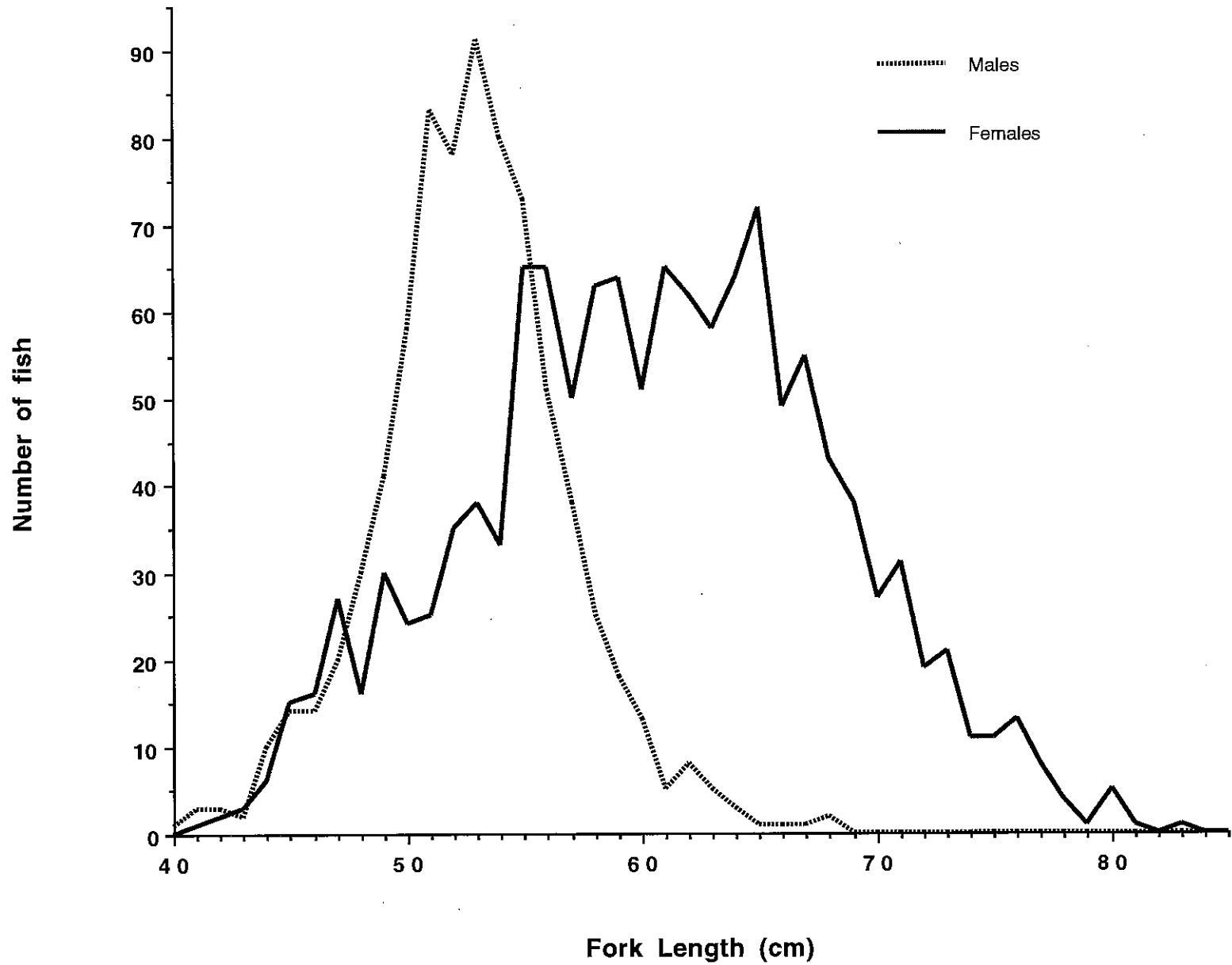


Figure 3. Sablefish length frequencies by sex from all sites combined.

Table 3 . Bycatch (number of specimens) by species in sablefish pots pulled during the Oregon cooperative sablefish survey.

Haul	Flatfish					Rockfish				Crab					
	P.halibut	Arrowtooth	Dover	Sanddab	Petrals	Rougheye	G.stripe	D.blotched	Dogfish	Ling	Hagfish	Tanner	Box	Dung.	Octopus
1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	2	2	0	0	0	1	0	0	0	0	0	0	0	0
6	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
10	0	0	1	4	0	0	1	1	0	0	0	0	0	19	0
11	9	0	0	0	1	0	0	0	56	4	0	0	0	12	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	25	1	0	0	0	1	0	0	0	0	1	0	0	0	0
14	3	1	2	0	0	1	0	0	0	0	0	0	0	0	0
15	6	3	0	0	0	12	0	0	0	0	1	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	342	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	275	0	1

Our second objective was to describe efficient methods to conduct fish pot surveys aboard commercial vessels. We have shown that with the federal and state permits and industry cooperation, we can field pot research in a timely and cost effective manner. We found that conducting pot research is physically demanding, and believe that three samplers would enable more efficient and easier handling of large catches and enable more sampling of fish for sex and maturity determination.

With only two samplers, we found that it was most efficient with the following division of tasks:

- Both samplers would work together to save the first 20 fish from a haul for an ageing sample (individual weight, length, sex, maturity and otoliths). The total weight and number of sablefish by pot should be recorded for these fish.
- A sampler (sampler number one) then coordinated the placing of sablefish in baskets, obtained pot totals for sablefish weight and number, and recorded the number of fish in the bycatch.
- The second sampler recorded sablefish length and maturity by sex for as many baskets as possible.
- During any time not needed for counting and weighing fish, sampler number one would take sablefish lengths.
- When length had been taken on all sablefish except the saved sample, the two samplers would work together to process the 20 fish ageing sample. A sampler would obtain individual fish weights, hand the fish to the second sampler, and record all the individual fish data. The other sampler would measure each fish, determine the sex and maturity, and remove and secure the otoliths.

Industry and fishery managers have been very interested in knowing the strength of recent year classes of sablefish. While some small sablefish were sampled during the cruise, we were unable to observe a large incoming year class (fish under 50 cm). Graphing length frequency by sex (Figure 3) does show a modest jump in the number of small female sablefish which we suspect are two year olds. We expect that there is too much overlap in the lengths of male sablefish from different year classes to show the relative abundance of two year old males.

#### SCIENTIFIC PERSONNEL

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Field Operations Port Sampler  
Marine Finfish Program

**ACKNOWLEDGEMENTS**

Special appreciation is given to Stan Schones, the owner of the fishing vessel Emerald Sea. Without his foresight and offer to provide free vessel time for sablefish pot research, the research project would never have been initiated. Special recognition is given to Mark Schones, captain of the Emerald Sea, and his crew for their help in conducting the work at sea. We are also grateful to NMFS for providing an experimental fishing permit to conduct the study and enable the retention of fish caught during the research cruise. Advice on research methods was provided by Mark Saunders, Department of Fisheries and Oceans at Nanaimo, B.C., and Frank Shaw, Mark Wilkins and Rick Methot, NMFS at Seattle, WA.