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# 1992 Research Catch and Effort Data on Nearshore Reef-fishes in British Columbia Statistical Area 12

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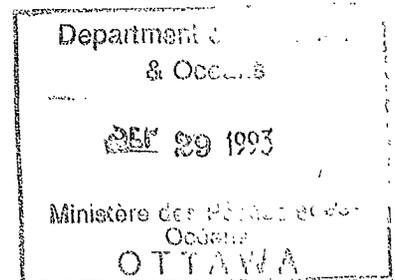
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1992 RESEARCH CATCH AND EFFORT DATA ON NEARSHORE REEF-FISHES  
IN BRITISH COLUMBIA STATISTICAL AREA 12

by

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## ABSTRACT

Yamanaka, K. L., and L. J. Richards. 1993. 1992 Research catch and effort data on nearshore reef-fishes in British Columbia Statistical Area 12. Can. Manuscr. Rep. Fish. Aquat. Sci. 2184: 77 p.

As part of a research program in support of stock assessments for nearshore reef-fishes, a hook and line survey was conducted in statistical area 12 (Johnstone Strait) in June 1992. The results are presented in this report, and the 1992 data are compared with data from similar surveys conducted in 1986, 1987 and 1988. Research CPUE data were collected by angling with trolling rods and reels, using frozen herring as bait. Three depth intervals (5-40 m, 41-70 m, and 71-100 m) were fished at most sites. Quillback and total rockfish CPUE were higher at most depth/site locations in the 1992 survey than in the 1986-88 surveys. Quillback rockfish, kelp greenling, yellowtail rockfish and copper rockfish were the dominant species in the catch. Quillback rockfish length increased with depth. Median lengths of quillback and copper rockfish, kelp greenling and lingcod decreased between the 1986-88 surveys and the 1992 survey. Median age of quillback rockfish also decreased between the 1986-88 surveys and the 1992 survey, in part due to the recruitment of a strong 1985 year-class (age 7). This strong year-class accounts for the increase in CPUE between the 1986-88 and 1992 surveys.

## RÉSUMÉ

Yamanaka, K. L., and L. J. Richards. 1993. 1992 Research catch and effort data on nearshore reef-fishes in British Columbia Statistical Area 12. Can. Manuscr. Rep. Fish. Aquat. Sci. 2184: 77 p.

Dans le cadre d'un programme de recherche contribuant à l'évaluation des stocks des poissons de récifs proches du littoral, nous avons mené en juin 1992 une étude utilisant la pêche à la ligne dans le district statistique 12 (détroit de Johnstone). Nous présentons les résultats de l'étude dans ce rapport, et nous comparons les données de 1992 à celles qui ont été fournies par des études similaires effectuées en 1986, 1987 et 1988. Pour recueillir les données sur les CPUE, nous avons pêché avec des cannes et des moulinets de pêche à la traîne, en appâtant avec du hareng congelé. À la plupart des endroits, nous avons pêché à trois intervalles de profondeur (5-40 m, 41-70 m et 71-100 m). Les CPUE du sébaste à dos épineux et de l'ensemble des sébastes étaient plus élevées à la plupart des profondeurs et des endroits dans l'étude de 1992 que dans celles de 1986 à 1988. Le sébaste à dos épineux, le sourcil de varech, le sébaste à queue jaune et le sébaste cuivré les espèces dominantes dans les captures. La longueur du sébaste à dos épineux augmentait avec la profondeur. Les longueurs médianes du sébaste à dos épineux et du sébaste cuivré, du sourcil de varech et de la moruelingue ont diminué entre les études de 1986 à 1988 et celle de 1992. L'âge médian du sébaste à dos épineux a aussi diminué entre les deux séries de relevés, ce qui est dû en partie au recrutement d'une forte classe annuelle en 1985 (âge 7). Cette forte classe annuelle explique l'augmentation des CPUE entre les études de 1986 et 1988 et celle de 1992.

## INTRODUCTION

This report summarizes research catch and effort data on nearshore reef-fishes collected in Johnstone Strait (fisheries statistical area 12) during 1992 as part of a stock assessment program for these fishes. We also compare 1992 research survey data with similar research surveys conducted in area 12 in 1986, 1987 and 1988 (Richards and Cass 1987; Richards and Hand 1987; Richards et al. 1988). Catch and effort data were collected using angling techniques developed during 1984-85 (Richards et al. 1985; Richards and Cass 1985). The objectives of the 1992 angling work were to examine inter-annual variability in angling catch per unit effort (CPUE) among sites, species composition, and size and age of the dominant species (rockfish and lingcod). The commercial hook and line rockfish fishery has expanded rapidly in area 12 (Yamanaka and Richards 1992). If differences in research CPUE have occurred over the 1986-92 period, then it may be possible to estimate rockfish abundance by the depletion method (Seber 1982), in conjunction with commercial catch data.

## METHODS

### FISHING SITES AND DATES

Research fishing in statistical area 12 was conducted at the same sites surveyed during 1986-88 (Fig. 1). These sites had been chosen by dividing the shoreline area accessible by boat within 3/4 h from Telegraph Cove (an area of commercial rockfish fishing) into 1-min-latitude by 1-min-longitude blocks and choosing blocks at random. The sites were surveyed between June 1-11, 1992, slightly earlier in the year than the three previous surveys. Four vessels were used during the survey, two 7-m herring skiffs, a 6-m Boston whaler and a 5-m Dunlop inflatable. Only two vessels were used on any one day, with two or three anglers per vessel.

### SURVEY METHODS

Fishing methods were similar to those described in Richards and Cass

(1985). We used trolling rods and reels and 12-cm, frozen bait herring. The boat was allowed to drift with the motor used occasionally to keep the vessel in position against a strong current. Three depth intervals were surveyed at most sites: 5-40 m, 41-70 m, and 71-100 m. All vessels were equipped with an echo sounder.

Fishing effort was defined as the sum of the fishing times of each angler, measured by stopwatch, from the time that the line was in position near the bottom until a fish was hooked or the line was retrieved. Most records represented a fishing effort of at least 0.3 h. Fishing was terminated sooner if weather or current conditions were unfavourable or if more than 10 individuals of a given rockfish species were caught. We attempted to replicate fishing at a depth interval each day at a site, and to survey each site on at least two different days.

A catch was recorded if the fish was brought to a depth at which species identification could be visually determined. All landed rockfish were measured for fork length, weight, sex and maturity. Otoliths were collected from most species of rockfish for age determination. All other fish were measured for fork length and, in some cases, sex. Ages were later determined from otoliths using the break and burn technique (Chilton and Beamish 1982).

## RESULTS AND DISCUSSION

### RAW DATA

Appendix Table 1 gives common and scientific names for all species caught and describes the species codes used in the remaining tables. Appendix Table 2 describes the fishing and weather codes used in Appendix Table 3. Appendix Table 3 summarizes the data collected on individual record sheets, including time of day, location and depth of fishing, weather conditions and the number of fish caught of each species. Fishing time is recorded as the sum of the fishing times of each angler. Appendix Table 4 describes the rockfish maturity codes. Biological data on individual fish are presented in Appendix Table 5a for rockfish and Appendix Table 5b for other species.

## VARIATION IN CPUE

Tables 1a and 1b provide a summary of fishing effort, catch and CPUE for each depth interval at each site for the combined 1986-88 surveys and the 1992 survey, respectively. CPUE is calculated as the mean catch per effort across replicate records at each depth and site. For all species combined, CPUE ranged from 2.5-53.1 fish h<sup>-1</sup> during 1986-88 and from 8.0-60.7 fish h<sup>-1</sup> in 1992. Total rockfish CPUE ranged from 2.5-15.3 fish h<sup>-1</sup> during 1986-88 and from 5.0-47.6 fish h<sup>-1</sup> in 1992.

For the 1992 survey data, we tested for the effects of weather conditions, sea surface conditions, surface current, tidal phase, vessel, number of anglers, and depth on CPUE. We used Kruskal-Wallis tests or Wilcoxon two-sample tests, where appropriate, on CPUE data from individual records. Tests were repeated for quillback rockfish CPUE, total rockfish CPUE and total CPUE.

The effects of surface current ( $p > 0.10$ ), vessel ( $p > 0.10$ ) and number of anglers ( $p > 0.10$ ) were not significant. Quillback rockfish CPUE was marginally higher for the high slack to ebb tidal phases than the low slack to flood tidal phases ( $p < 0.06$ ). Rockfish ( $p < 0.03$ ) and total CPUE ( $p < 0.02$ ) were significantly higher for overcast or rainy weather than for sunny or variable weather. Total CPUE decreased with depth ( $p < 0.005$ ).

Because of the effect of depth on total CPUE, the 1992 data were compared by site and depth interval with combined 1986-88 data. Quillback rockfish CPUE was significantly higher in 1992 at 85% ( $n = 26$ ) of the site/depth locations (sign test,  $p < 0.001$ ). Similarly, rockfish CPUE was higher in 1992 at 88% of the site/depth locations (sign test,  $p < 0.001$ ). However, there were no significant differences in total CPUE between the 1986-88 and 1992 surveys ( $p > 0.10$ ). Site/depth locations with a high quillback rockfish CPUE in 1986-88 tended to have a high CPUE in 1992 (Spearman rank correlation,  $r = 0.47$ ,  $p < 0.05$ ).

## SPECIES COMPOSITION

Four fish species were caught in the 1992 survey that were not caught in any of the previous 1986-88 surveys (Appendix Table 3). Canary, sharpchin and harlequin rockfish and Greenland halibut were new species in 1992. Dusky rockfish, walleye pollock, Pacific tomcod, rock sole, great sculpin and flathead sole were recorded from previous surveys but were not caught in 1992. Quillback rockfish, kelp greenling, yellowtail rockfish and copper rockfish were the

dominant species caught in 1992. These dominant species were similar to the dominant species in the 1986-88 surveys.

The depth distributions of copper and yelloweye rockfish changed between the 1986-88 surveys and the 1992 survey. In the 1986-88 surveys, copper and yelloweye rockfish were caught in the depth range of 5-40 m and 5-100 m, respectively (Table 2a). In the 1992 survey, however, copper rockfish were caught over an expanded depth range of 5-70 m and yelloweye rockfish over a deeper and more confined depth range of 41-100 m (Table 2b).

## SIZE COMPOSITION

Length-frequency histograms for the 1986-88 and 1992 surveys are displayed for copper rockfish in Fig. 2, yellowtail rockfish in Fig. 3, kelp greenling in Fig. 4, lingcod in Fig. 5 and quillback rockfish by depth in Fig. 6. Weight-frequency histograms for quillback rockfish in the 1986-88 and 1992 surveys are displayed in Fig. 7. Mean lengths and weights corresponding to Fig. 2-6 are given in Table 3. Length versus weight for quillback rockfish is shown in Fig. 8.

We used a Kruskal-Wallis test to compare median forklengths among depth intervals for each species in the 1992 survey. A Wilcoxon two-sample test was used to compare median lengths between the 1986-88 surveys and the 1992 survey. Quillback rockfish length increased with depth ( $p < 0.0001$ ). Because of this depth effect, length comparisons between 1986-88 and 1992 surveys were conducted separately for each depth interval. Median lengths of quillback rockfish were significantly smaller at each depth interval ( $p < 0.0001$ ) in the 1992 survey than in the 1986-88 surveys. Combining data across depths, median lengths of copper rockfish ( $p < 0.001$ ), kelp greenling ( $p < 0.0001$ ) and lingcod ( $p < 0.0001$ ) were significantly smaller in the 1992 survey than in the 1986-88 surveys. Median length of yellowtail rockfish did not differ significantly between the 1992 survey and the 1986-88 surveys ( $p > 0.09$ ).

## AGE COMPOSITION

Age-frequency histograms are shown for the combined 1986-88 surveys and the 1992 survey in Fig. 9A and 9B. The combined 1986-88 survey ages were adjusted to 1987 by adding one year to 1986 ages and subtracting one year from the 1988 ages. Ages were more uniformly distributed across the age range in the 1986-88 surveys than in the 1992 survey. In the 1992 survey, less

than 0.5% were over 40 yr of age, whereas in the 1986-88 surveys, 7.5% were over 40 yr of age and ages ranged to 67 yr. In the 1992 survey, age-7 quillback rockfish (1985 year-class) account for 28.5 % of the aged sample. No comparable strong year-class is evident from the 1986-88 surveys.

Lengths and weights at age for quillback rockfish are shown in Fig. 10-11. Mean age for length and weight intervals are given in Table 4. Because quillback rockfish length or weight at age is highly variable, size is a poor estimator of age.

Quillback rockfish CPUE increased in 1992 because of the strong age-7 year-class recruiting to the fishery. To eliminate this recruitment effect on CPUE, the change in CPUE of older age classes between the 1986-88 surveys and the 1992 survey were examined. Full recruitment appears to occur at an age of 10 or 11 yr. Proportions of quillback rockfish over the age of 11 yr were determined. Ages from the 1986-88 surveys were adjusted to 1987 by adding a year to the 1986 survey ages and subtracting a year from the 1988 survey ages. The proportion of fish older than 11 yr of age in the 1986-88 surveys was 0.709 and in the 1992 survey was 0.314. Multiplying these proportions by the overall CPUE results in an overall older quillback rockfish CPUE of 6.3 fish  $h^{-1}$  for the 1986-88 surveys and 5.0 fish  $h^{-1}$  for the 1992 survey. Overall older quillback rockfish CPUE decreased significantly between the 1986-88 surveys and the 1992 survey (sign test,  $p < 0.001$ , 89% of the 26 site/depth locations).

## QUILLBACK ROCKFISH MATURITY

Quillback rockfish were classed as immature (codes 0-2) and mature (codes 3-7) (Appendix Table 4). For each length, weight, and age interval, the proportion of mature quillback rockfish were plotted against their respective length, weight or age interval (Figure 12). Using the methods of Schnute and Richards (1990), the estimated size at 50% maturity for quillback rockfish is 293 mm in length with a 95% confidence interval of 289-297 mm and 474 g in weight with a 95% confidence interval of 452-499 g. Estimated age at 50% maturity for quillback rockfish is 11 years with a 95% confidence interval of 10-12 yr.

## ACKNOWLEDGEMENTS

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Table 1a. Depth interval, site number, number (N) of records, total number (NF) of fish caught, total fishing time (h), CPUE (fish h<sup>-1</sup>) by species, total rockfish CPUE, and total CPUE for the 1986-88 surveys.

DEP <sup>a</sup>	SITE	N	NF	TIME	CPUE <sup>b</sup>					
					QB	CO	YE	LC	Tot RF	Total
1	4	24	173	6.03	4.48	1.82	-	1.16	6.30	28.67
1	6	24	220	6.12	9.65	0.16	0.16	1.14	9.97	35.96
1	16	31	338	7.02	8.98	2.00	-	1.00	10.97	48.17
1	22	26	238	5.90	12.20	0.17	0.17	0.17	12.54	40.34
1	31	17	79	4.97	6.44	0.40	-	1.61	6.85	15.91
1	36	22	138	5.27	7.03	2.66	-	-	9.68	26.20
1	38	15	81	4.10	13.17	1.22	-	0.49	14.39	19.76
1	42	15	61	4.35	5.52	4.37	-	0.69	9.88	14.02
1	65	31	376	7.08	7.20	0.71	-	0.42	7.91	53.08
1	66	20	125	5.05	8.51	0.79	0.40	1.19	9.70	24.75
2	4	16	120	4.58	13.96	-	-	1.09	13.96	26.18
2	6	16	68	4.52	8.86	-	-	0.22	8.86	15.05
2	16	21	169	5.10	14.90	-	0.39	0.20	15.29	33.14
2	22	32	300	6.52	10.74	-	0.15	0.15	10.90	46.04
2	31	15	83	4.37	12.37	-	0.46	0.92	12.82	19.01
2	36	13	64	3.17	12.63	-	-	-	12.63	20.21
2	38	18	105	4.78	10.66	-	0.42	0.63	11.08	21.95
2	65	24	173	5.67	10.41	-	0.71	0.53	11.12	30.53
2	66	20	73	5.15	5.82	-	0.58	0.19	6.41	14.17
3	6	14	37	3.92	3.57	-	0.26	-	3.83	9.45
3	16	16	93	4.05	10.12	-	-	-	10.12	22.96
3	22	17	60	4.12	6.80	-	0.49	-	7.29	14.58
3	31	14	48	3.92	6.89	-	1.28	0.26	8.17	12.25
3	38	24	161	4.85	13.61	-	1.24	0.41	14.85	33.20
3	65	16	77	4.65	10.32	-	0.22	0.22	10.54	16.56
3	66	4	3	1.20	1.67	-	0.83	-	2.50	2.50

<sup>a</sup>Depth intervals: (1) 5-40 m; (2) 41-70 m; (3) 71-100 m.

<sup>b</sup>Species codes: QB, quillback rockfish; CO, copper rockfish; YE, yelloweye rockfish; LC, lingcod.

Table 1b. Depth interval, site number, number (N) of records, total number (NF) of fish caught, total fishing time (h), CPUE (fish h<sup>-1</sup>) by species, total rockfish CPUE, and total CPUE for the 1992 survey.

DEP <sup>a</sup>	SITE	N	NF	TIME	CPUE <sup>b</sup>					Tot RF	Total
					QB	CO	YE	LC			
1	4	5	67	1.60	13.75	5.63	-	1.25	19.38	41.88	
1	6	7	69	2.35	15.32	-	-	0.43	15.32	29.36	
1	16	5	47	1.70	6.47	11.80	-	0.59	18.24	27.65	
1	22	6	67	2.03	13.28	1.97	-	-	15.25	32.95	
1	31	5	60	1.68	10.10	8.32	-	5.35	18.42	35.65	
1	36	4	22	1.37	13.90	-	-	-	13.90	16.10	
1	38	4	47	0.88	41.89	5.66	-	2.26	47.55	53.21	
1	42	6	89	1.47	35.46	4.09	-	2.05	39.55	60.68	
1	65	4	25	1.42	8.47	0.71	-	0.71	9.18	17.65	
1	66	4	23	1.33	3.75	4.50	-	3.00	8.25	17.25	
2	4	5	34	1.70	10.00	-	-	-	10.00	20.00	
2	6	4	23	1.38	13.74	-	-	0.72	13.74	16.63	
2	16	5	32	1.70	8.82	-	-	-	8.82	18.82	
2	22	6	65	2.12	21.26	0.47	-	0.94	21.73	30.71	
2	31	5	46	1.63	17.76	-	1.22	3.06	18.98	28.17	
2	36	6	41	2.03	12.30	-	-	-	12.30	20.17	
2	38	4	36	1.23	22.71	-	-	0.81	22.71	29.19	
2	65	4	25	1.40	12.86	-	-	0.71	12.86	17.86	
2	66	3	22	1.08	11.08	-	-	1.85	11.08	20.31	
3	6	3	8	1.00	3.00	-	2.00	-	5.00	8.00	
3	16	5	36	1.70	15.88	-	-	0.59	15.88	21.18	
3	22	6	45	2.07	9.68	-	0.48	-	10.16	21.77	
3	31	5	32	1.63	8.57	-	0.61	-	9.18	19.59	
3	38	5	44	1.53	17.61	-	1.30	0.65	18.91	28.70	
3	65	4	24	1.37	13.90	-	-	-	13.90	17.56	
3	66	5	36	1.75	9.71	-	-	-	9.71	20.57	

<sup>a</sup>Depth intervals: (1) 5-40 m; (2) 41-70 m; (3) 71-100 m.

<sup>b</sup>Species codes: QB, quillback rockfish; CO, copper rockfish; YE, yelloweye rockfish; LC, lingcod.

Table 2a. Species composition of the 1986-88 catch, summarized by depth interval and site. N, number of records for that depth and site; NF, number of fish caught.

DEP <sup>a</sup>	SITE	N	NF	Proportion by species <sup>b</sup>				Tot	RF
				QB	CO	YE	LC		
1	4	24	173	0.156	0.064	-	0.040	0.220	
1	6	24	220	0.268	0.005	0.005	0.032	0.277	
1	16	31	338	0.186	0.041	-	0.021	0.228	
1	22	26	238	0.303	0.004	0.004	0.004	0.311	
1	31	17	79	0.405	0.025	-	0.101	0.430	
1	36	22	138	0.268	0.101	-	-	0.370	
1	38	15	81	0.667	0.062	-	0.025	0.728	
1	42	15	61	0.393	0.311	-	0.049	0.705	
1	65	31	376	0.136	0.013	-	0.008	0.149	
1	66	20	125	0.344	0.032	0.016	0.048	0.392	
2	4	16	120	0.533	-	-	0.042	0.533	
2	6	16	68	0.588	-	-	0.015	0.588	
2	16	21	169	0.450	-	0.012	0.006	0.462	
2	22	32	300	0.233	-	0.003	0.003	0.237	
2	31	15	83	0.651	-	0.024	0.048	0.675	
2	36	13	64	0.625	-	-	-	0.625	
2	38	18	105	0.486	-	0.019	0.029	0.505	
2	65	24	173	0.341	-	0.023	0.017	0.364	
2	66	20	73	0.411	-	0.041	0.014	0.452	
3	6	14	37	0.378	-	0.027	-	0.405	
3	16	16	93	0.441	-	-	-	0.441	
3	22	17	60	0.467	-	0.033	-	0.500	
3	31	14	48	0.563	-	0.104	0.021	0.667	
3	38	24	161	0.410	-	0.037	0.012	0.447	
3	65	16	77	0.623	-	0.013	0.013	0.636	
3	66	4	3	0.667	-	0.333	-	1.000	

<sup>a</sup>Depth intervals: (1) 5-40 m; (2) 41-70 m; (3) 71-100 m.

<sup>b</sup>Species codes: QB, quillback rockfish; CO, copper rockfish; YE, yelloweye rockfish; LC, lingcod.

Table 2b. Species composition of the 1992 combined catch, summarized by depth interval and site. N, number of records for that depth and site; NF, number of fish caught.

DEP <sup>a</sup>	SITE	N	NF	Proportion by species <sup>b</sup>				Tot RF
				QB	CO	YE	LC	
1	4	5	67	0.328	0.134	-	0.030	0.463
1	6	7	69	0.522	-	-	0.014	0.522
1	16	5	47	0.234	0.426	-	0.021	0.660
1	22	6	67	0.403	0.060	-	-	0.463
1	31	5	60	0.283	0.233	-	0.150	0.517
1	36	4	22	0.864	-	-	-	0.864
1	38	4	47	0.787	0.106	-	0.043	0.894
1	42	6	89	0.584	0.067	-	0.034	0.652
1	65	4	25	0.480	0.040	-	0.040	0.520
1	66	4	23	0.217	0.261	-	0.174	0.478
2	4	5	34	0.500	-	-	-	0.500
2	6	4	23	0.826	-	-	0.043	0.826
2	16	5	32	0.469	-	-	-	0.469
2	22	6	65	0.692	0.015	-	0.031	0.708
2	31	5	46	0.630	-	0.043	0.109	0.674
2	36	6	41	0.610	-	-	-	0.610
2	38	4	36	0.778	-	-	0.028	0.778
2	65	4	25	0.720	-	-	0.040	0.720
2	66	3	22	0.545	-	-	0.091	0.545
3	6	3	8	0.375	-	0.250	-	0.625
3	16	5	36	0.750	-	-	0.028	0.750
3	22	6	45	0.444	-	0.022	-	0.467
3	31	5	32	0.438	-	0.031	-	0.469
3	38	5	44	0.614	-	0.045	0.023	0.659
3	65	4	24	0.792	-	-	-	0.792
3	66	5	36	0.472	-	-	-	0.472

<sup>a</sup>Depth intervals: (1) 5-40 m; (2) 41-70 m; (3) 71-100 m.

<sup>b</sup>Species codes: QB, quillback rockfish; CO, copper rockfish; YE, yelloweye rockfish; LC, lingcod.

Table 3a. Mean lengths (mm) and weights (gm) with samples sizes (N) and standard errors (SE) for major species caught in the 1986-88 surveys combined.

Species	depth*	N	Length	SE	N	Weight	SE
Copper		76	304	5	76	509	27
Yellowtail		148	323	3	148	518	17
Quillback	1	445	306	3	361	548	14
	2	472	342	3	402	797	17
	3	222	377	3	169	1060	29
Kelp Green		194	376	2			
Lingcod		52	583	16	52	1705	177

\*depth intervals: (1) 5-40 m, (2) 41-70 m, (3) 71-100 m

Table 3b. Mean lengths (mm) and weights (gm) with samples sizes (N) and standard errors (SE) for major species caught in the 1992 survey.

Species	depth*	N	Length	SE	N	Weight	SE
Copper		66	281	4	66	397	26
Yellowtail		89	308	5	89	489	31
Quillback	1	238	272	3	161	408	20
	2	207	293	4	144	518	24
	3	127	342	6	98	884	51
Kelp Green		217	360	2	217	608	14
Lingcod		36	483	18	36	1298	154

\*depth intervals: (1) 5-40 m, (2) 41-70 m, (3) 71-100 m

Table 4. Mean age (yr) with samples sizes (N) and standard errors (SE) for quillback rockfish by length (cm) and weight (kg) interval. All years combined.

Length	N	Age	SE	Weight	N	Age	SE
10 - 15	10	4.9	0.5	0 - 0.25	100	6.8	0.3
16 - 20	154	7.1	0.2	0.26 - 0.50	212	9.5	0.2
21 - 25	222	9.8	0.2	0.51 - 0.75	248	18.8	0.4
26 - 30	330	18.5	0.4	0.76 - 1.00	167	25.2	0.7
31 - 35	277	28.1	0.6	1.01 - 1.25	108	33.5	1.1
36 - 40	99	37.4	1.2	1.26 - 1.50	56	37.8	3.0
41 - 45	11	45.1	3.3	1.51 - 1.75	20	38.7	3.0
				1.75 - 2.40	11	40.5	3.4

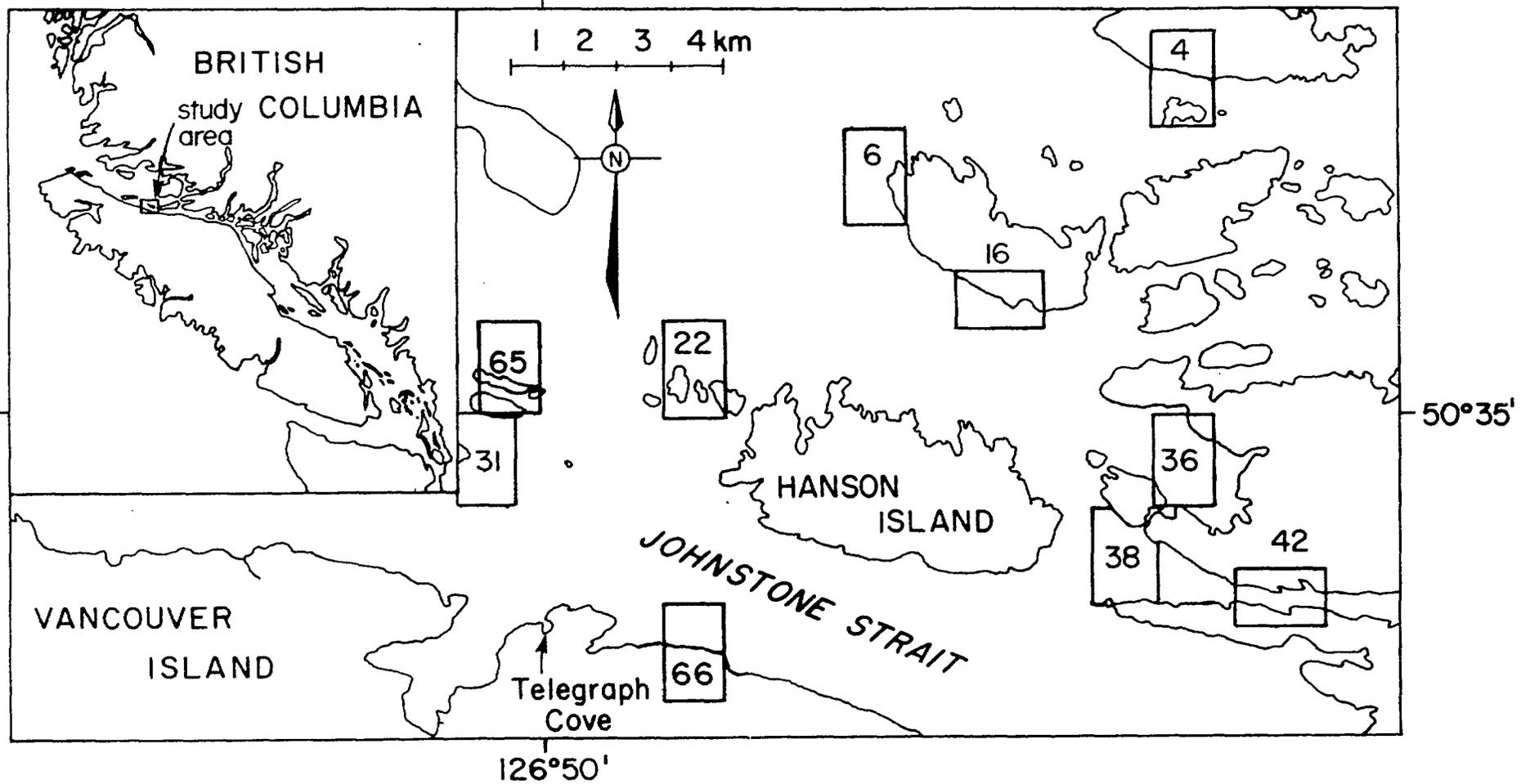


Fig. 1. The location of study sites in area 12. The inset shows the relationship of the study sites to Vancouver Island and the mainland British Columbia.



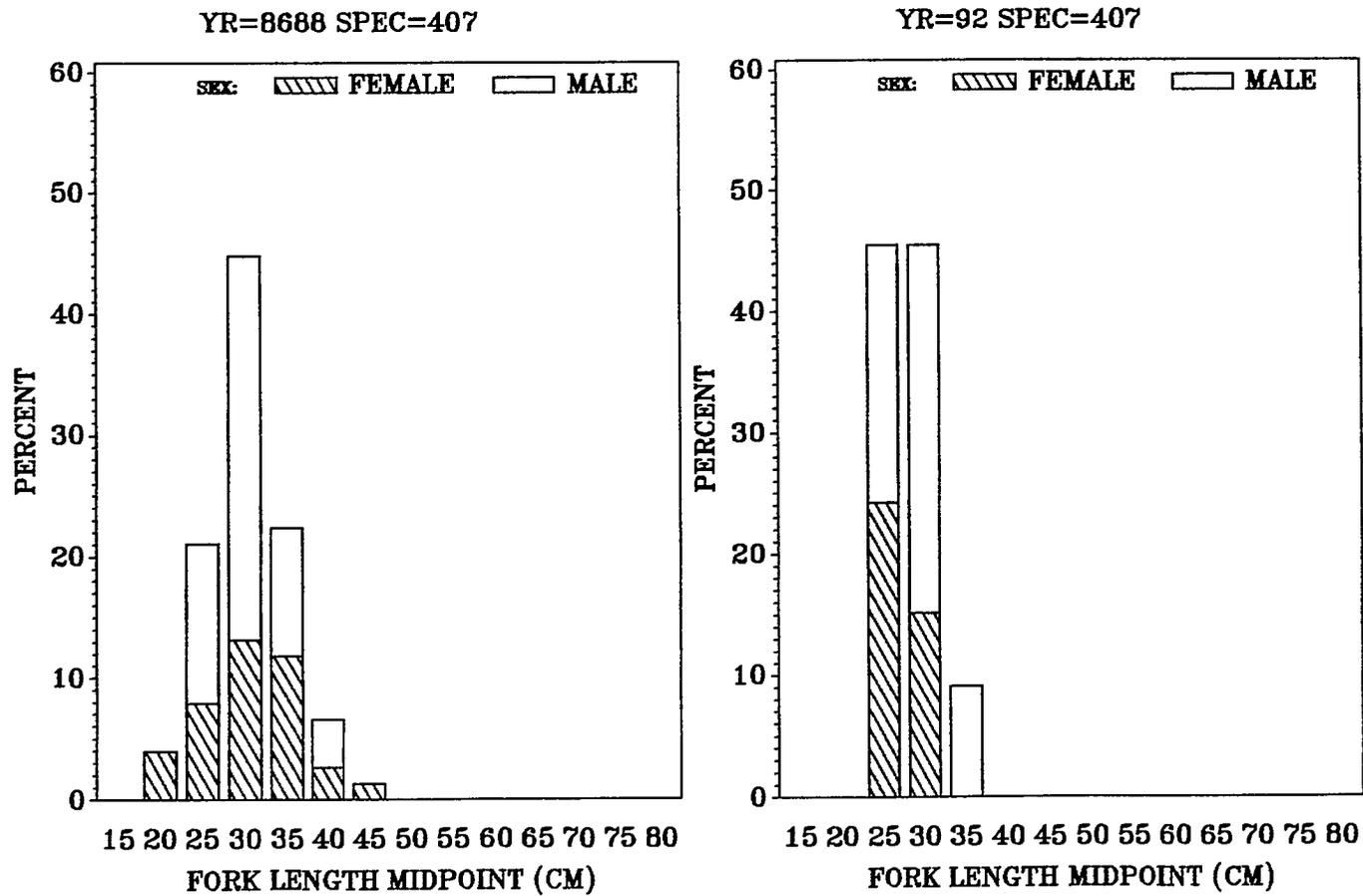
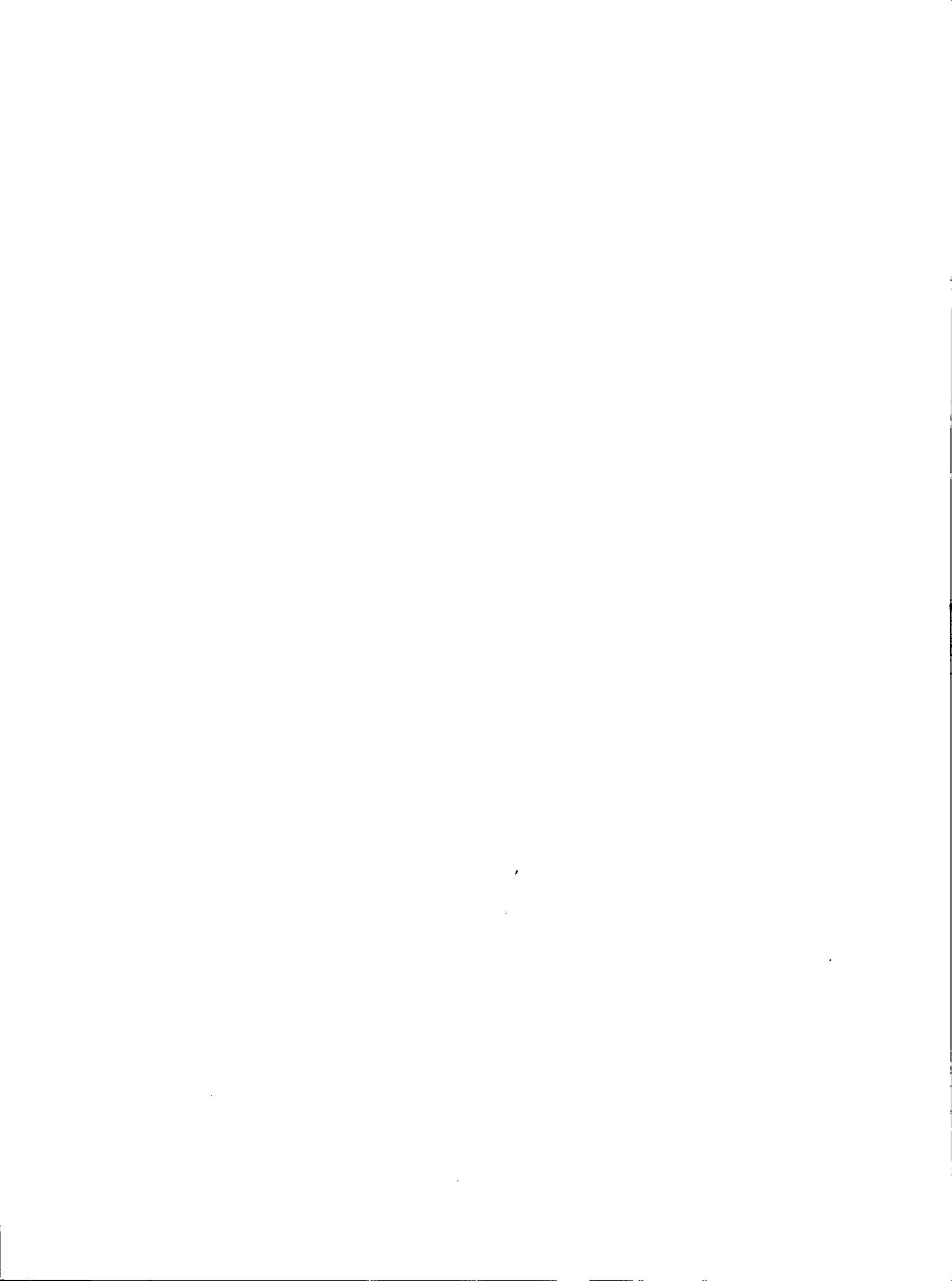


Fig. 2. Length-frequency histograms by sex for copper rockfish caught in area 12 during the 1986-88 surveys (left panel) and the 1992 survey (right panel). Length (cm) is the midpoint of the size interval.



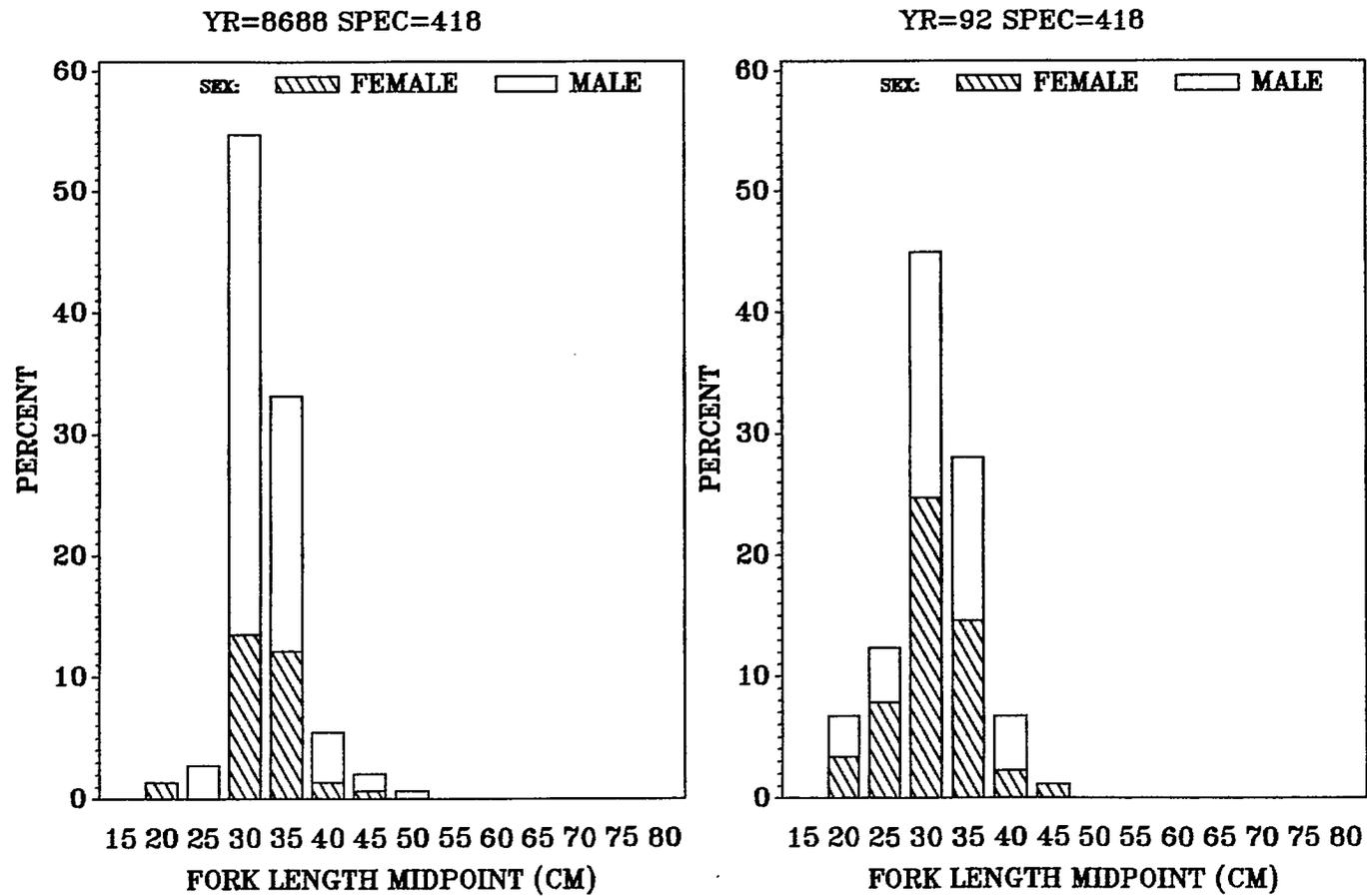
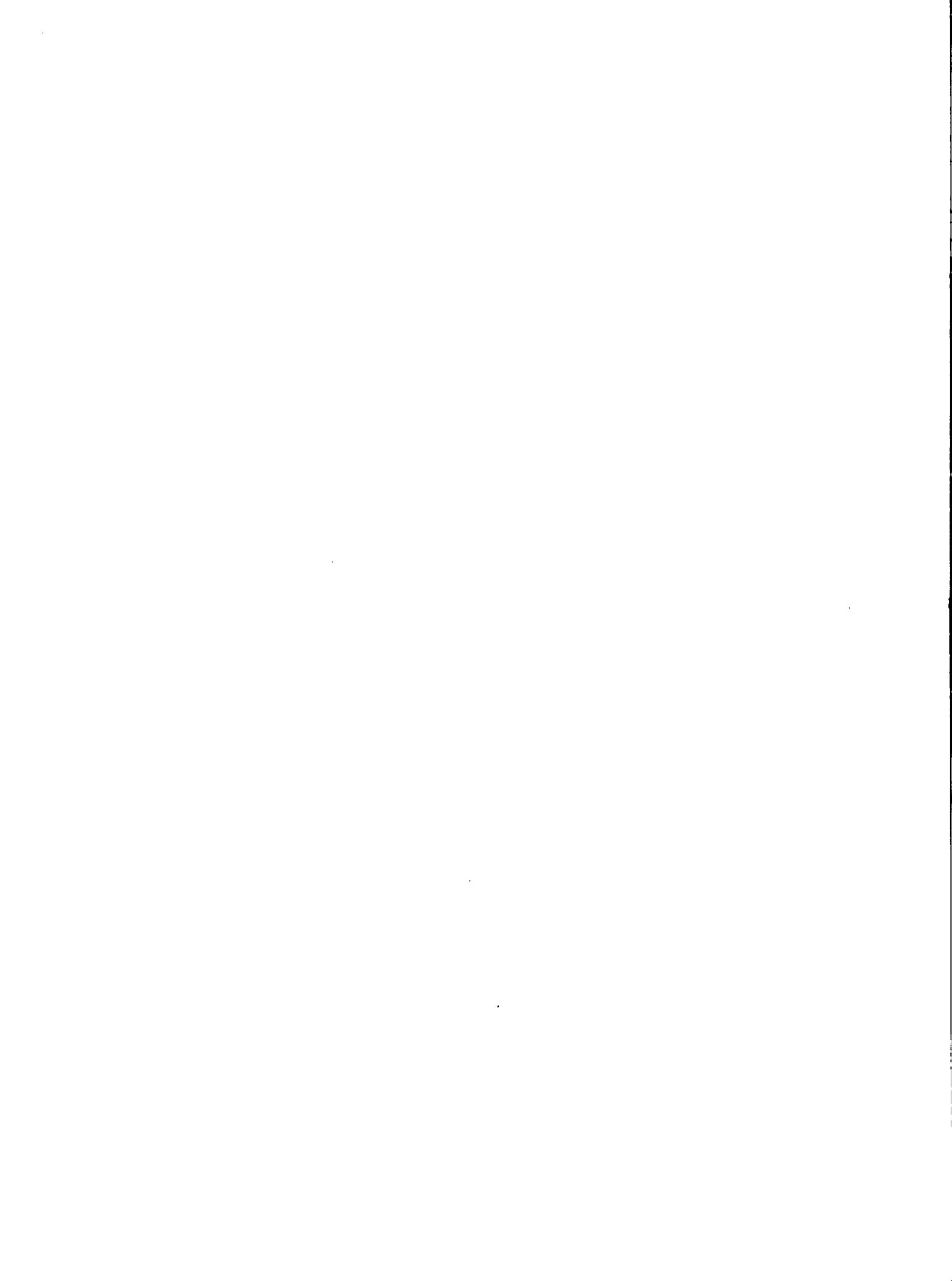


Fig. 3. Length-frequency histograms by sex for yellowtail rockfish caught in area 12 during the 1986-88 surveys (left panel) and the 1992 survey (right panel). Length (cm) is the midpoint of the size interval.



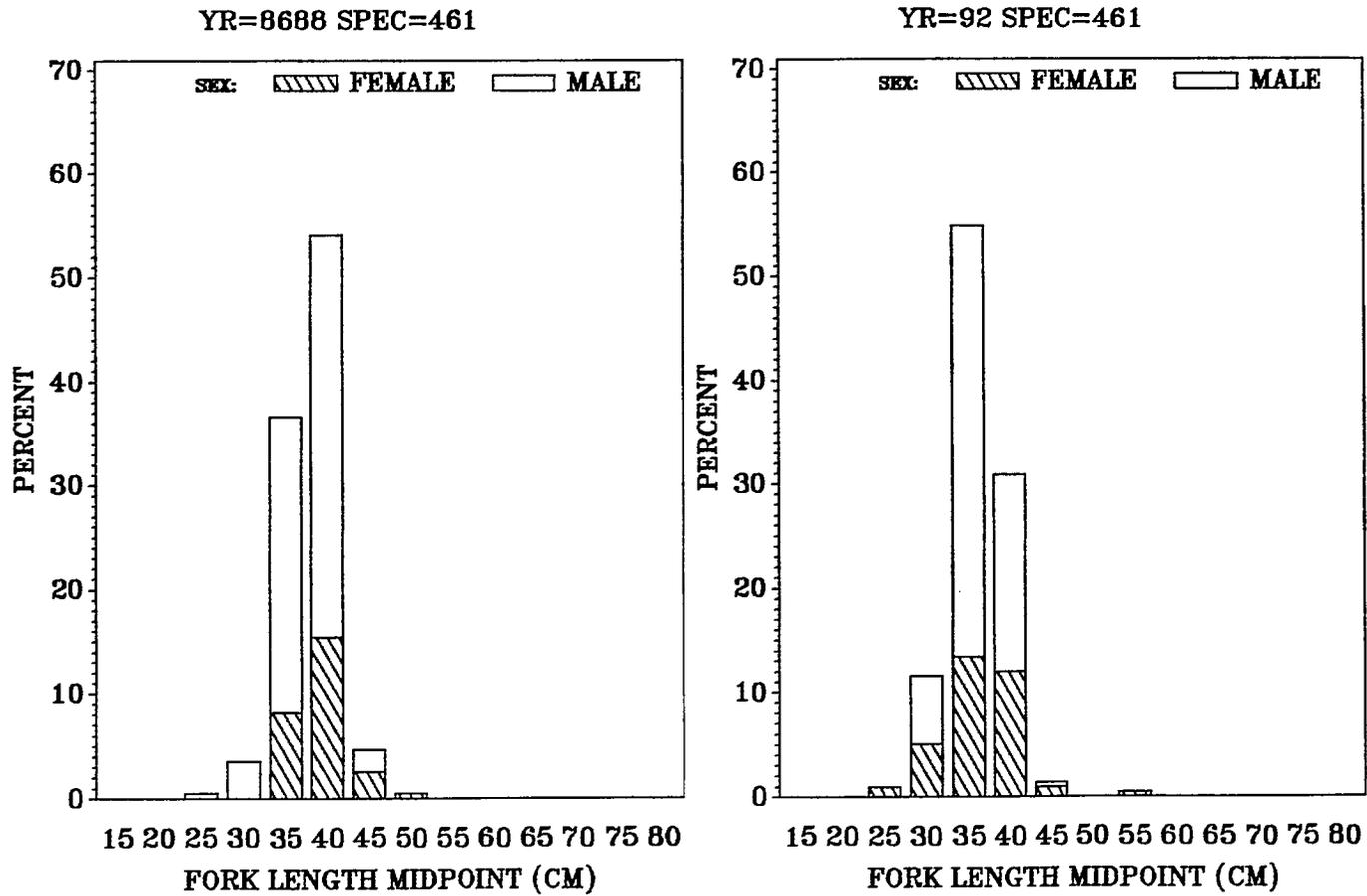


Fig. 4. Length-frequency histograms by sex for kelp greenling caught in area 12 during the 1986-88 surveys (left panel) and the 1992 survey (right panel). Length (cm) is the midpoint of the size interval.



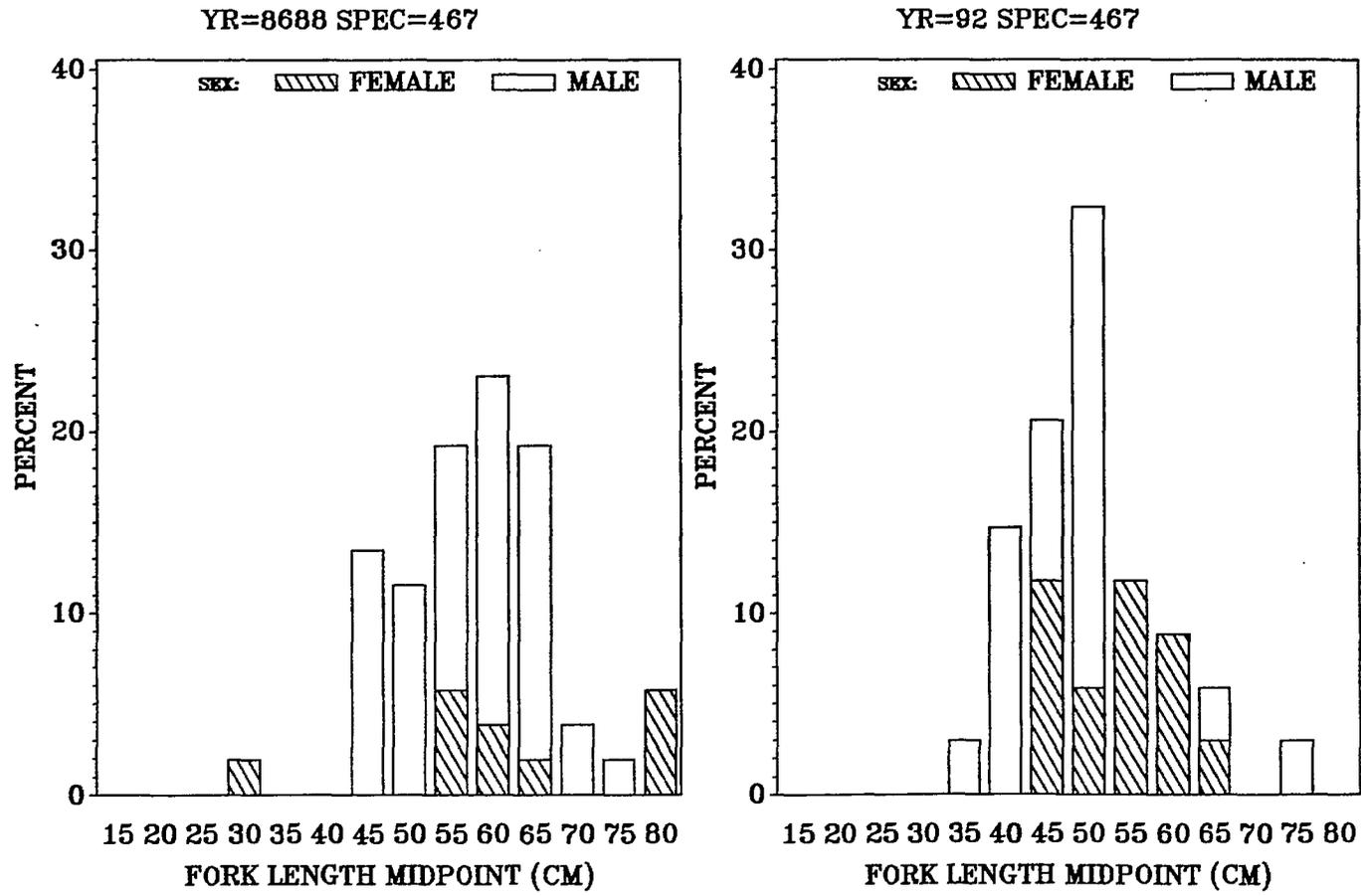


Fig. 5. Length-frequency histograms by sex for lingcod caught in area 12 during the 1986-88 surveys (left panel) and the 1992 survey (right panel). Length (cm) is the midpoint of the size interval.



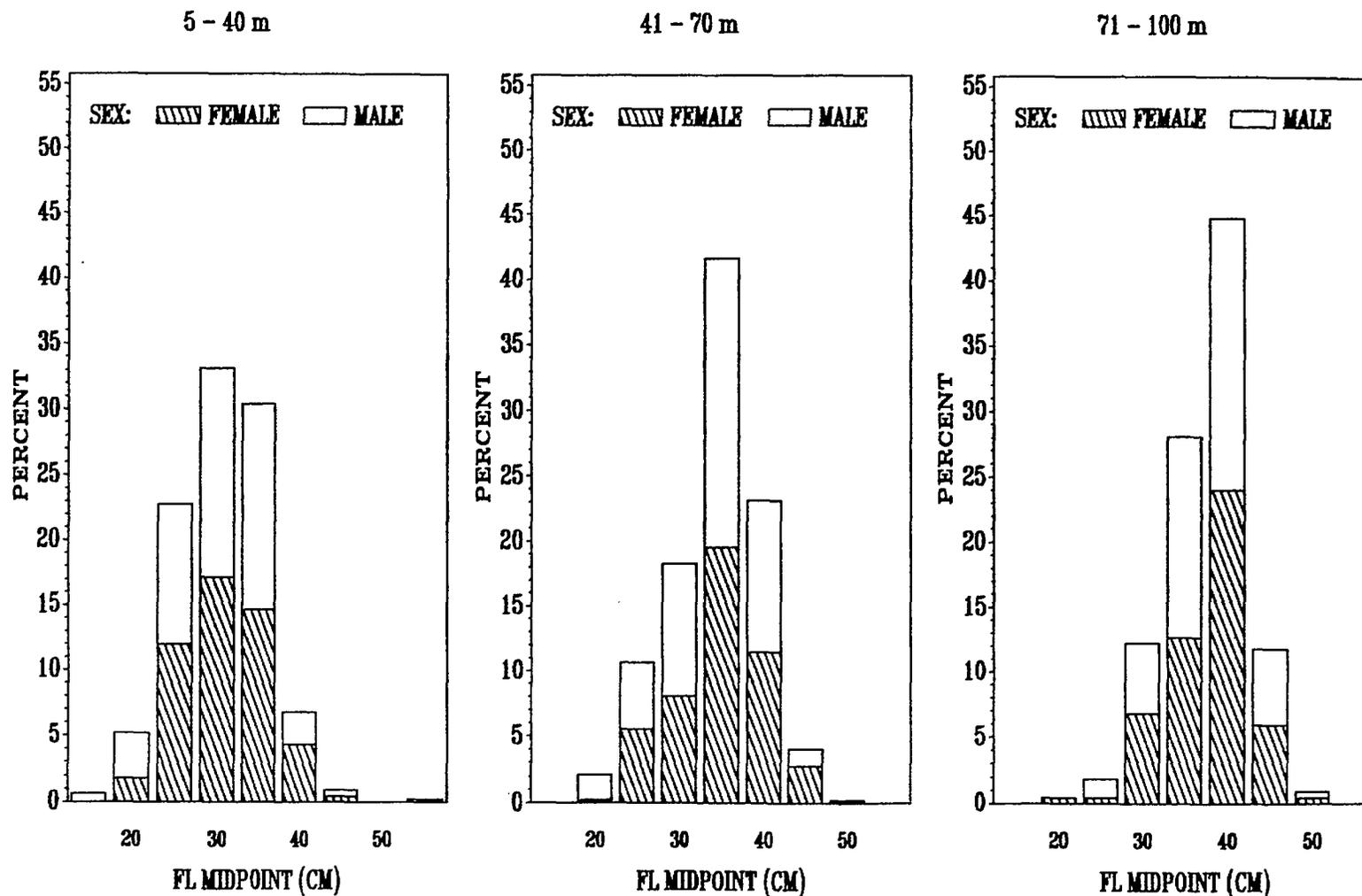


Fig. 6A. Length-frequency histograms by sex and depth interval for quillback rockfish from area 12 during the 1986-88 surveys. Length (cm) is the midpoint of the size interval.



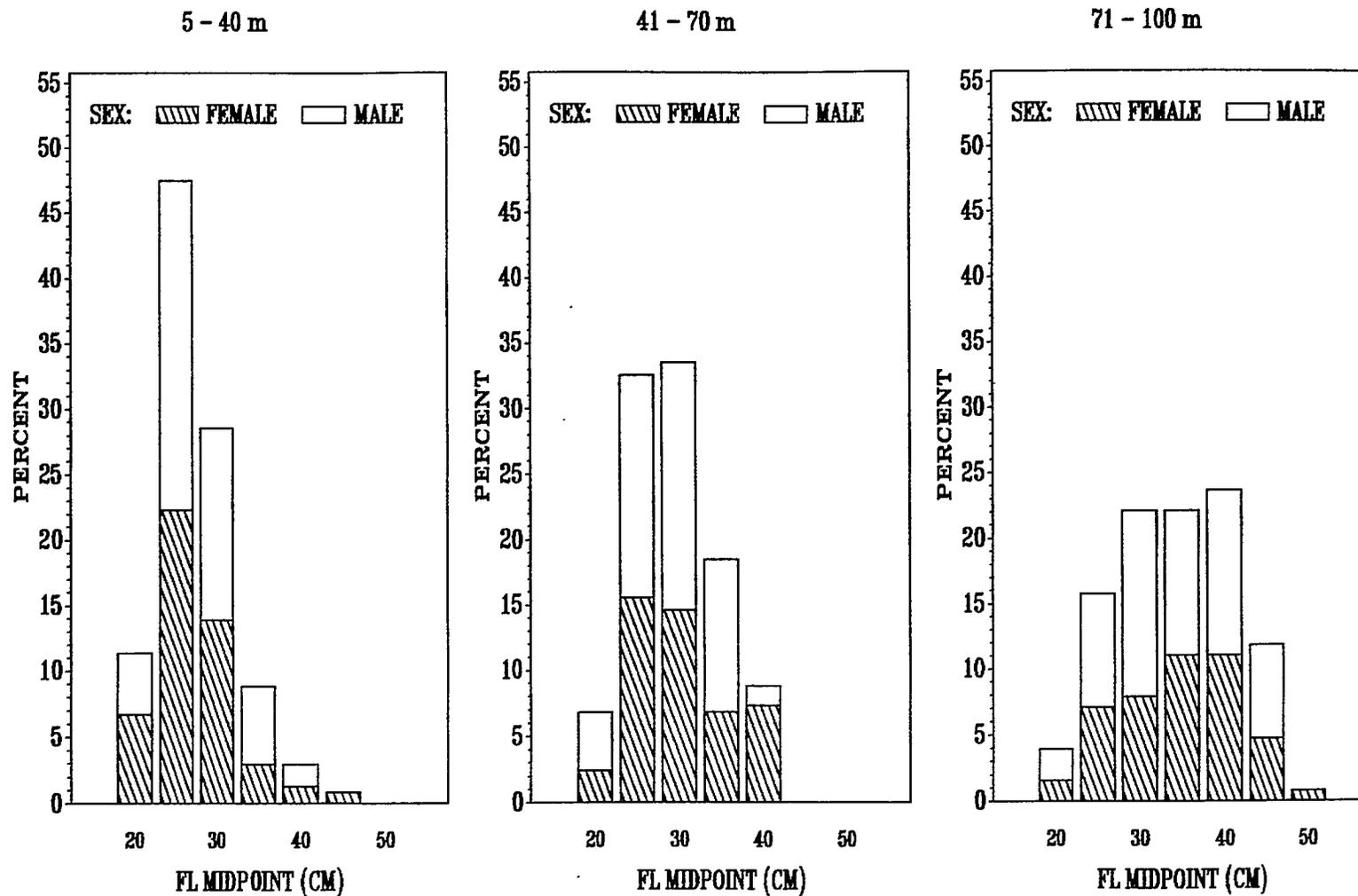


Fig. 6B. Length-frequency histograms by sex and depth interval for quillback rockfish from area 12 during the 1992 survey. Length (cm) is the midpoint of the size interval.



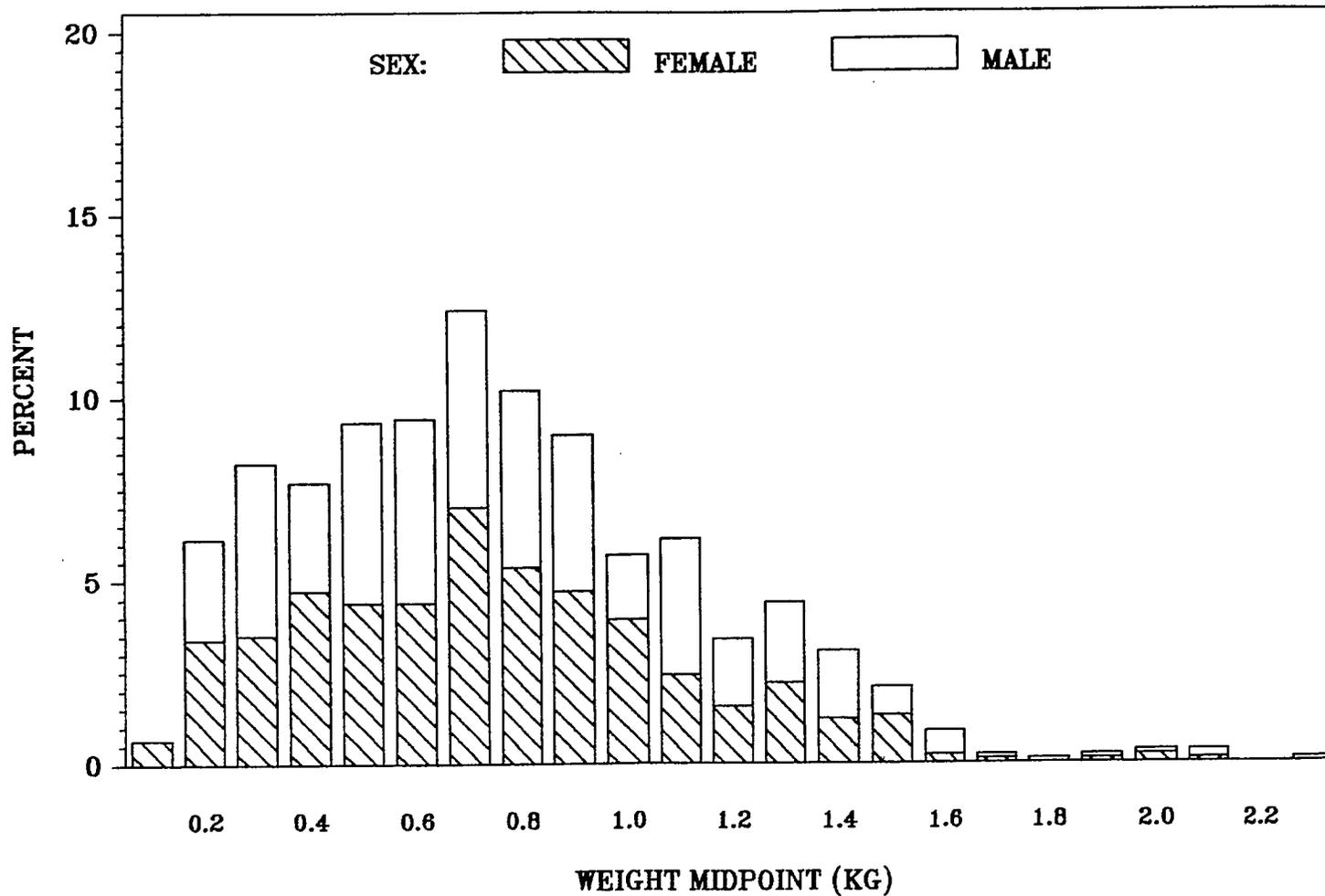
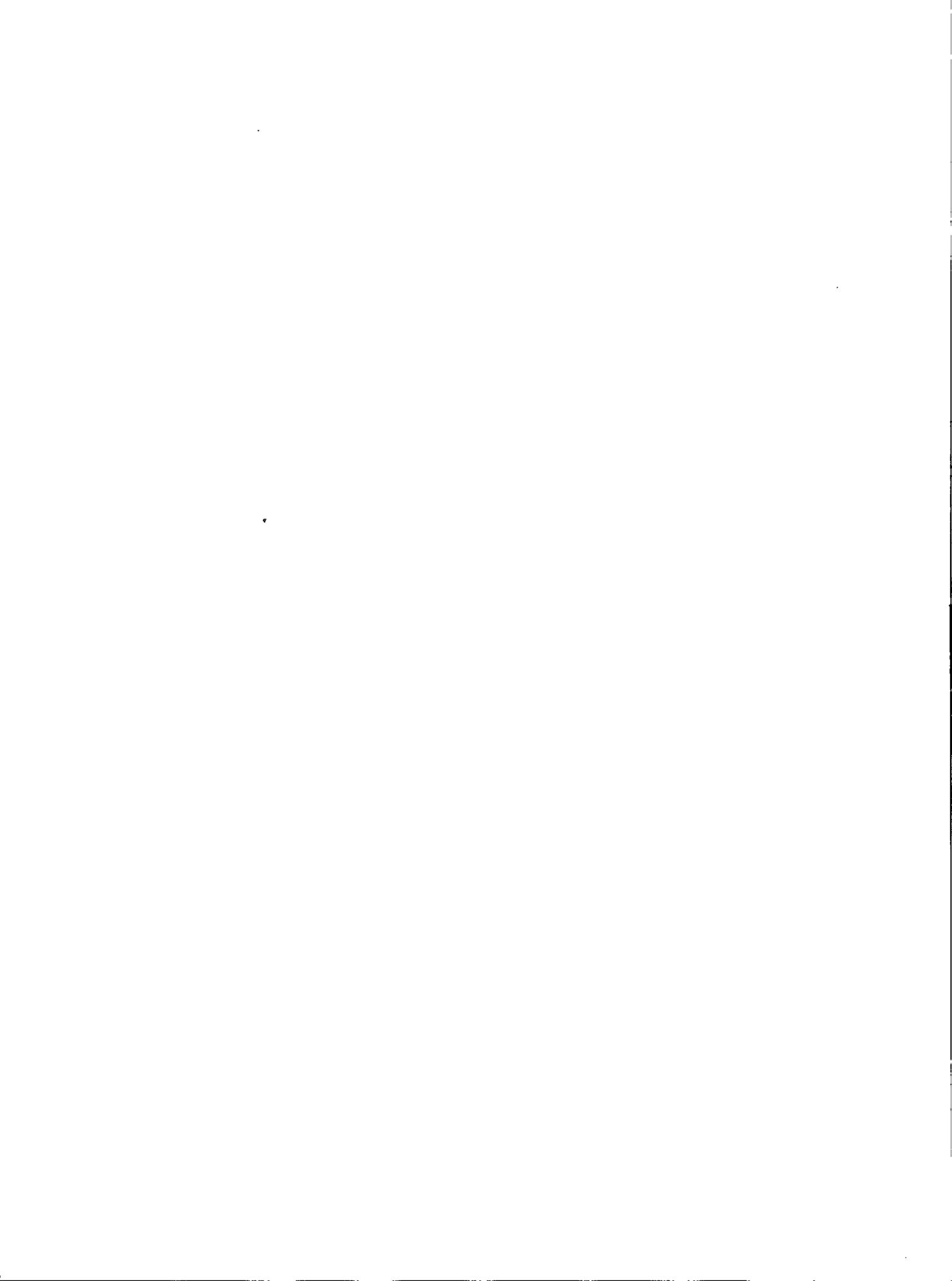


Fig. 7A. Weight-frequency histograms by sex for quillback rockfish caught in area 12 during the 1986-88 surveys. Length (cm) is the midpoint of the size interval.



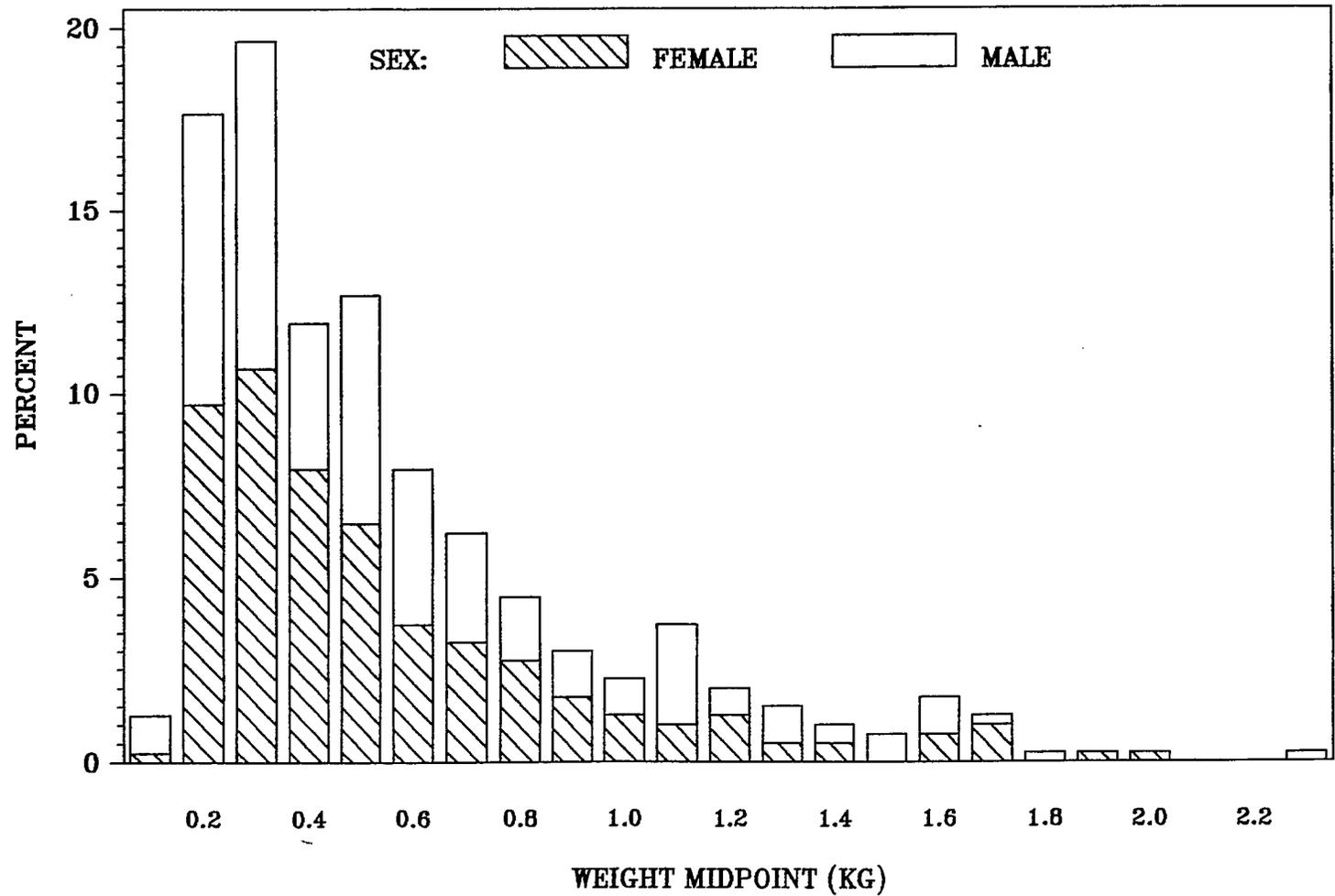
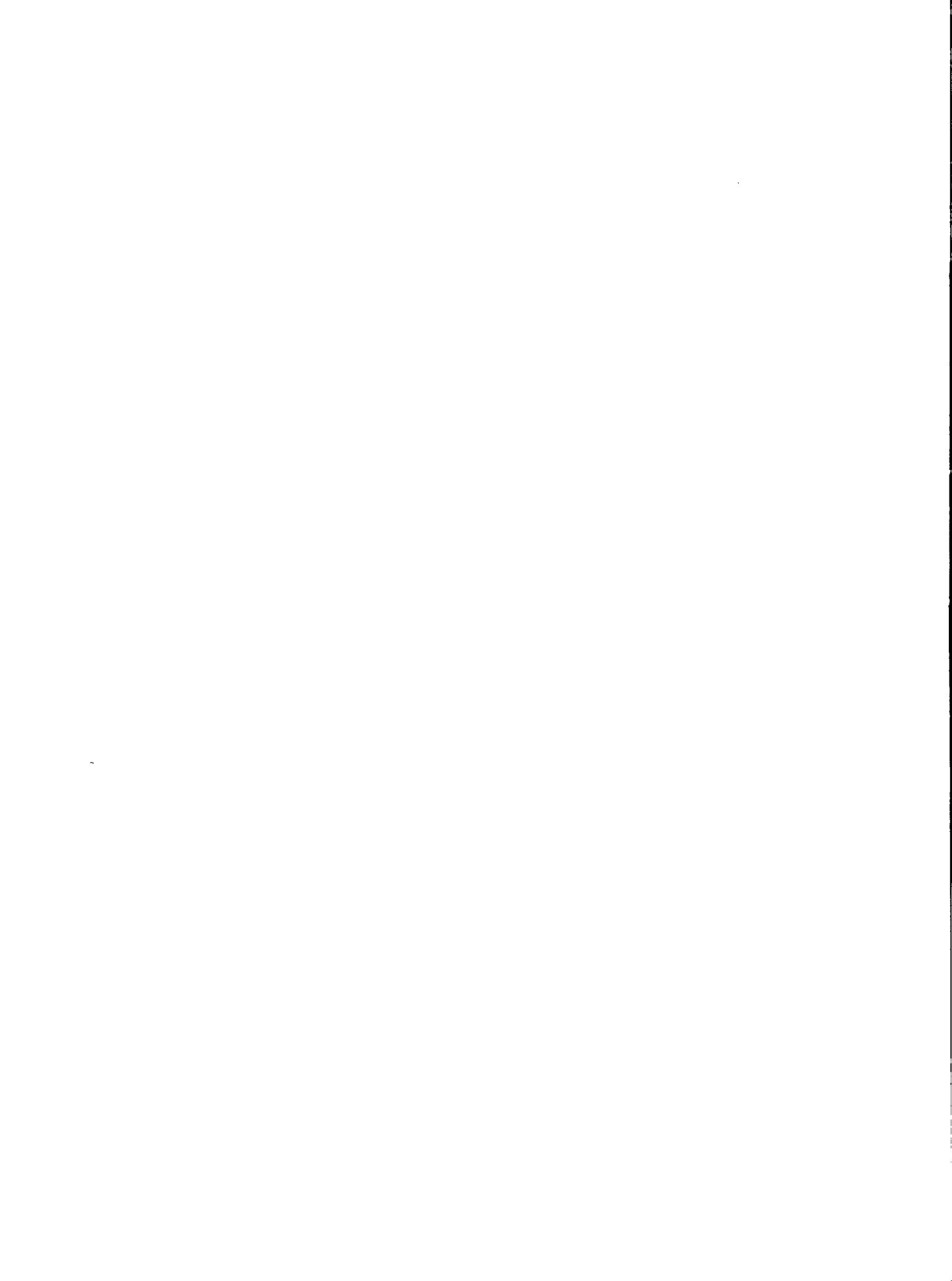


Fig. 7B. Weight-frequency histograms by sex for quillback rockfish caught in area 12 during the 1992 survey. Length (cm) is the midpoint of the size interval.



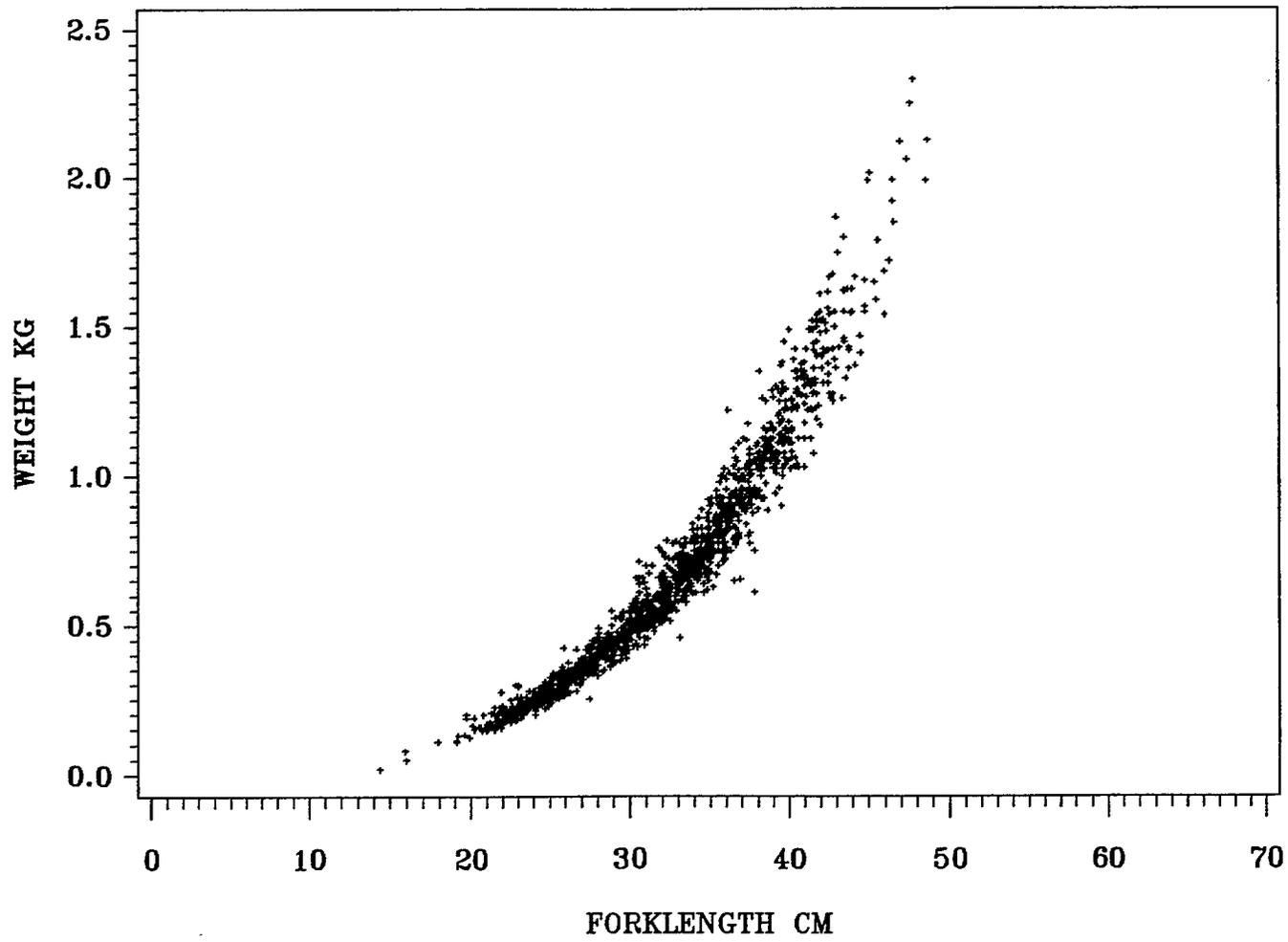
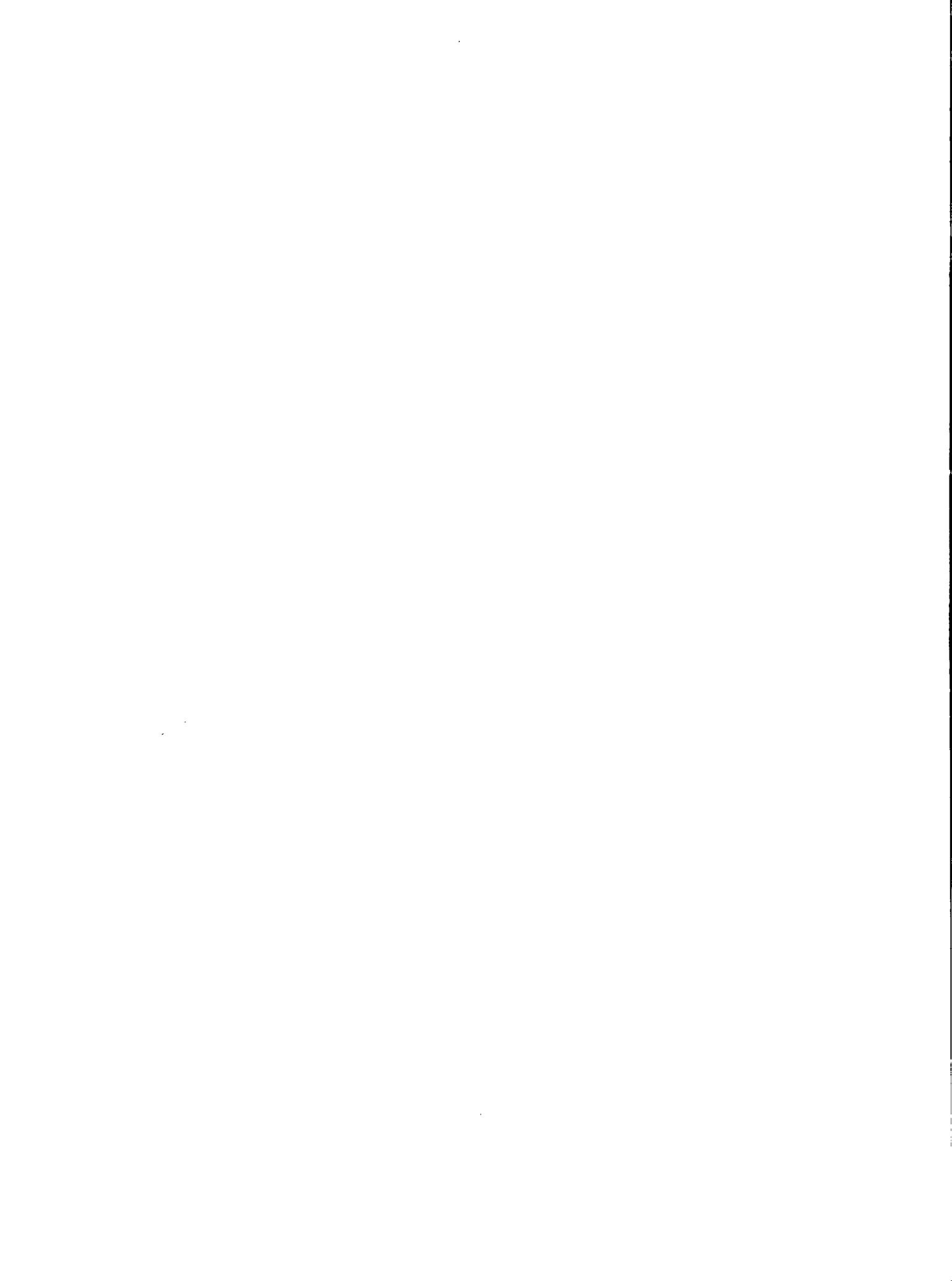


Fig. 8. Scatter plot of weight vs length for quillback rockfish caught in area 12 during the 1986-88 and



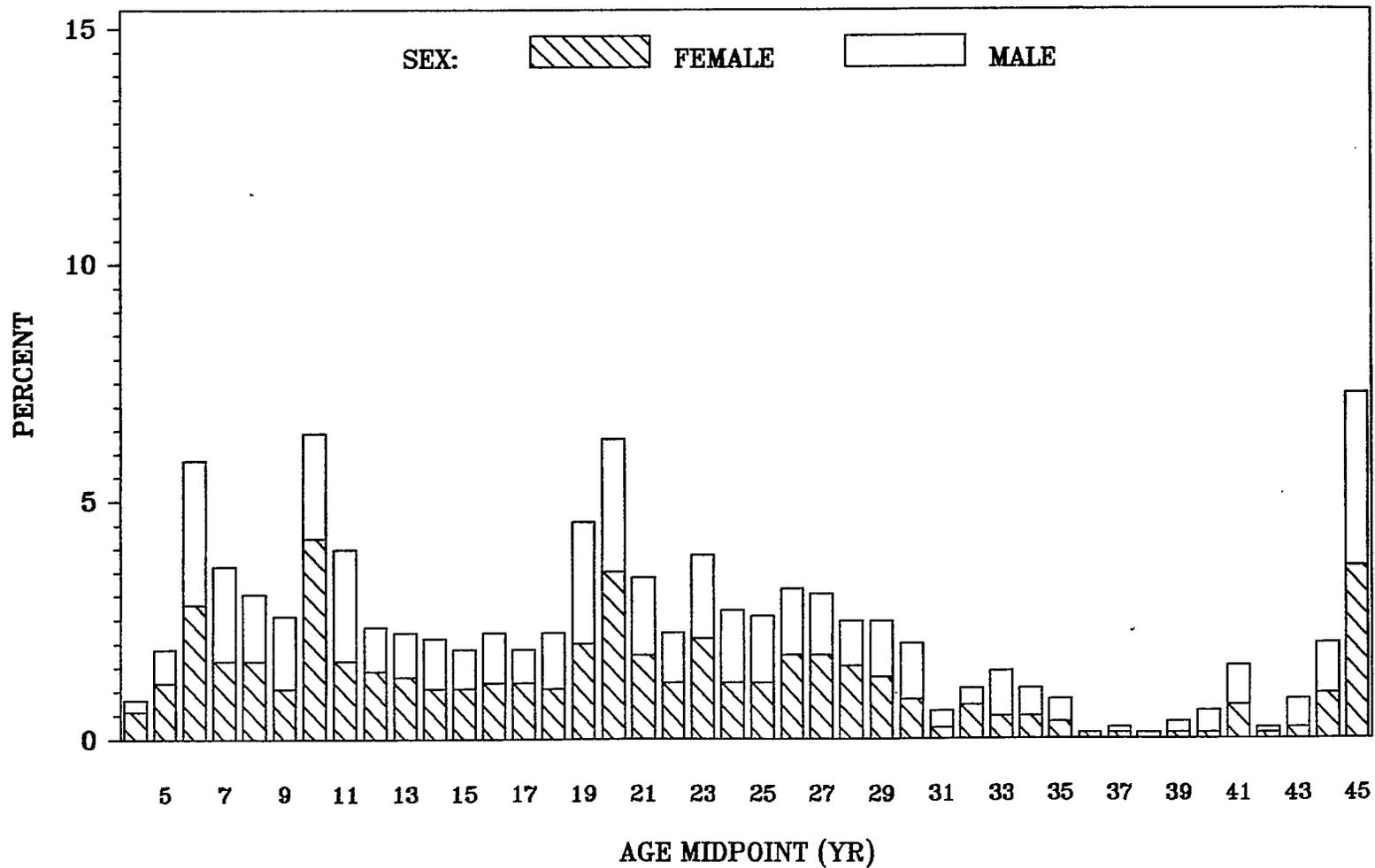
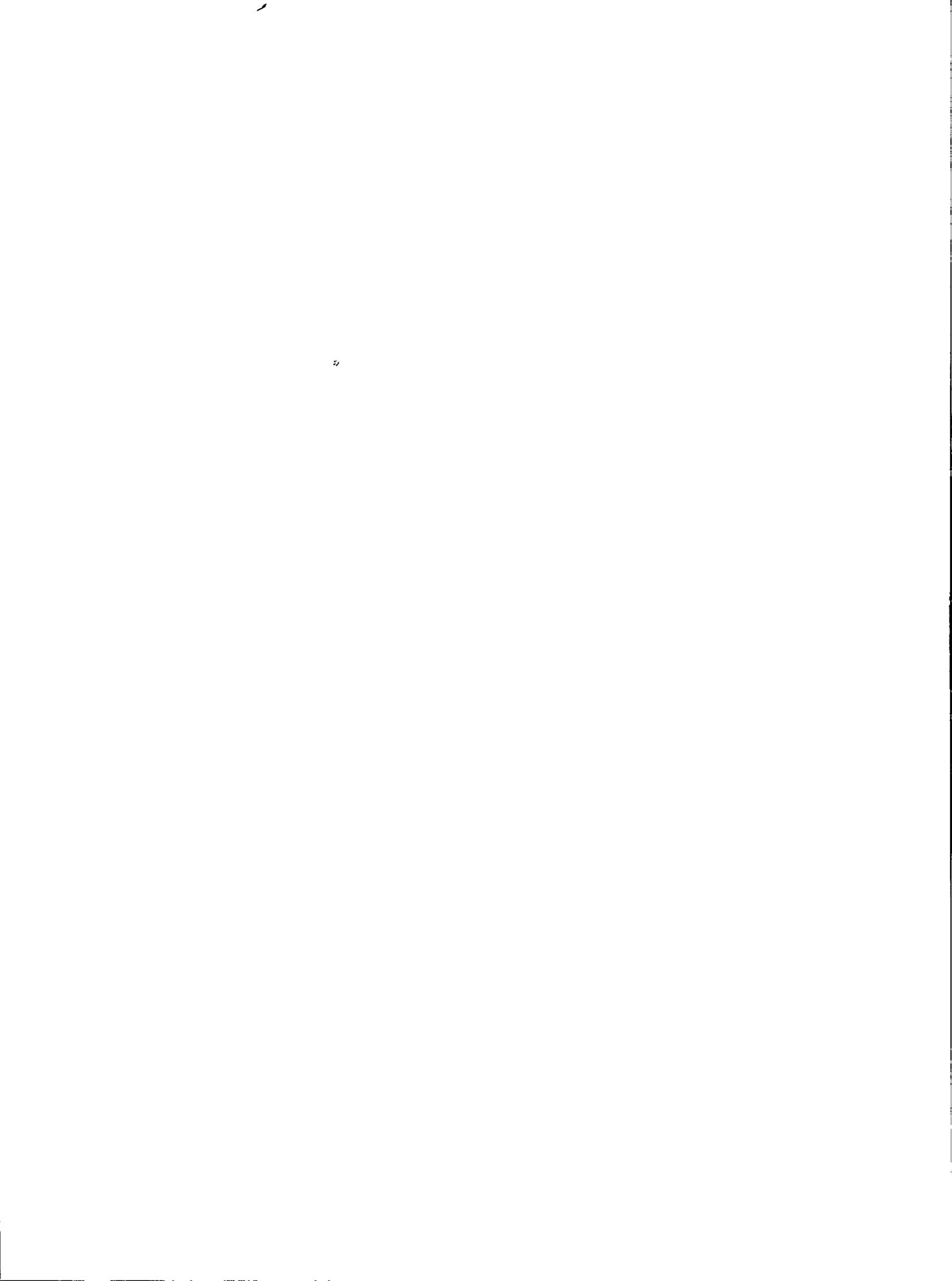


Fig. 9A. Age-frequency histograms by sex for quillback rockfish caught in area 12 during the 1986-88 surveys. The last interval includes ages 45 and older.



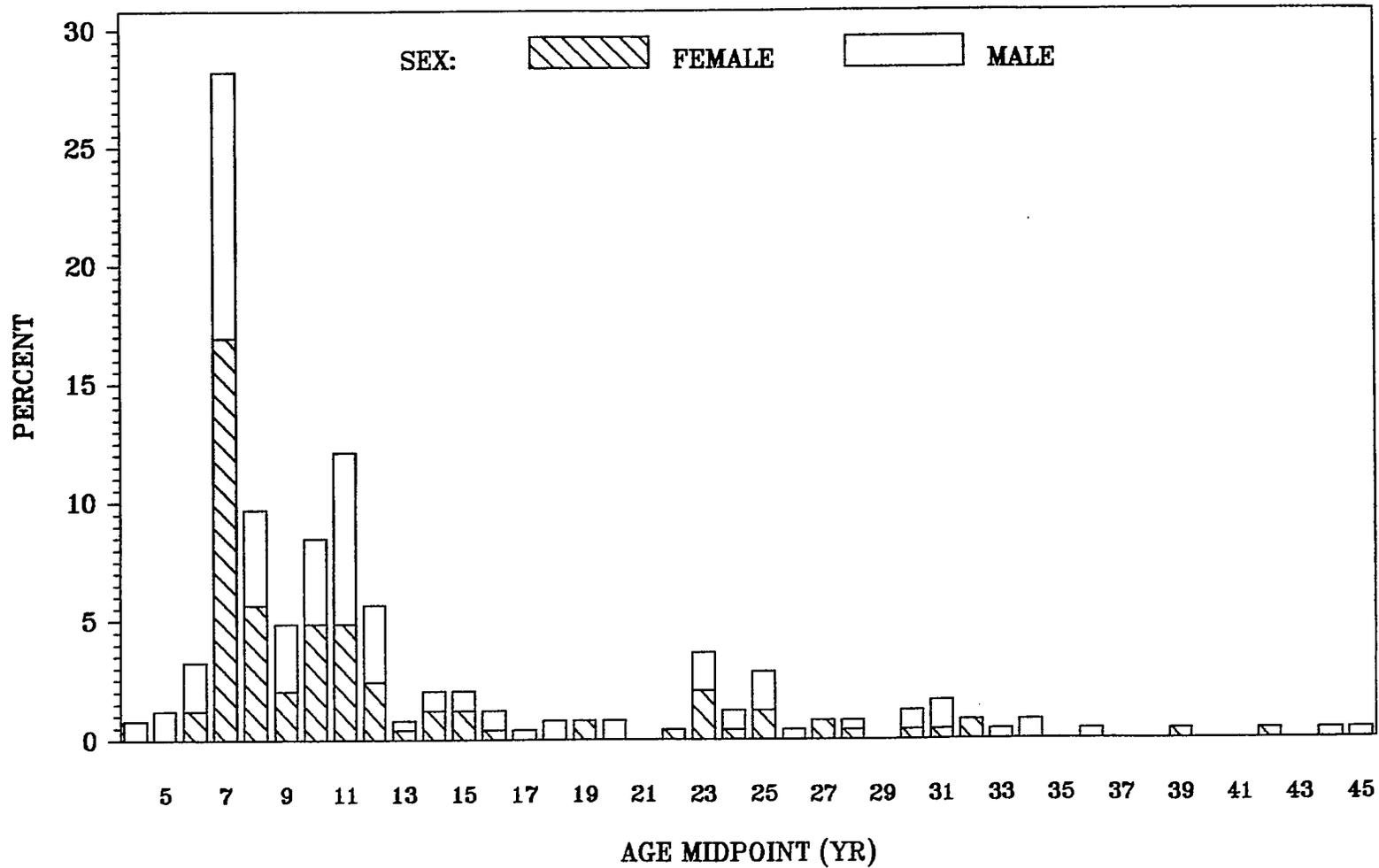
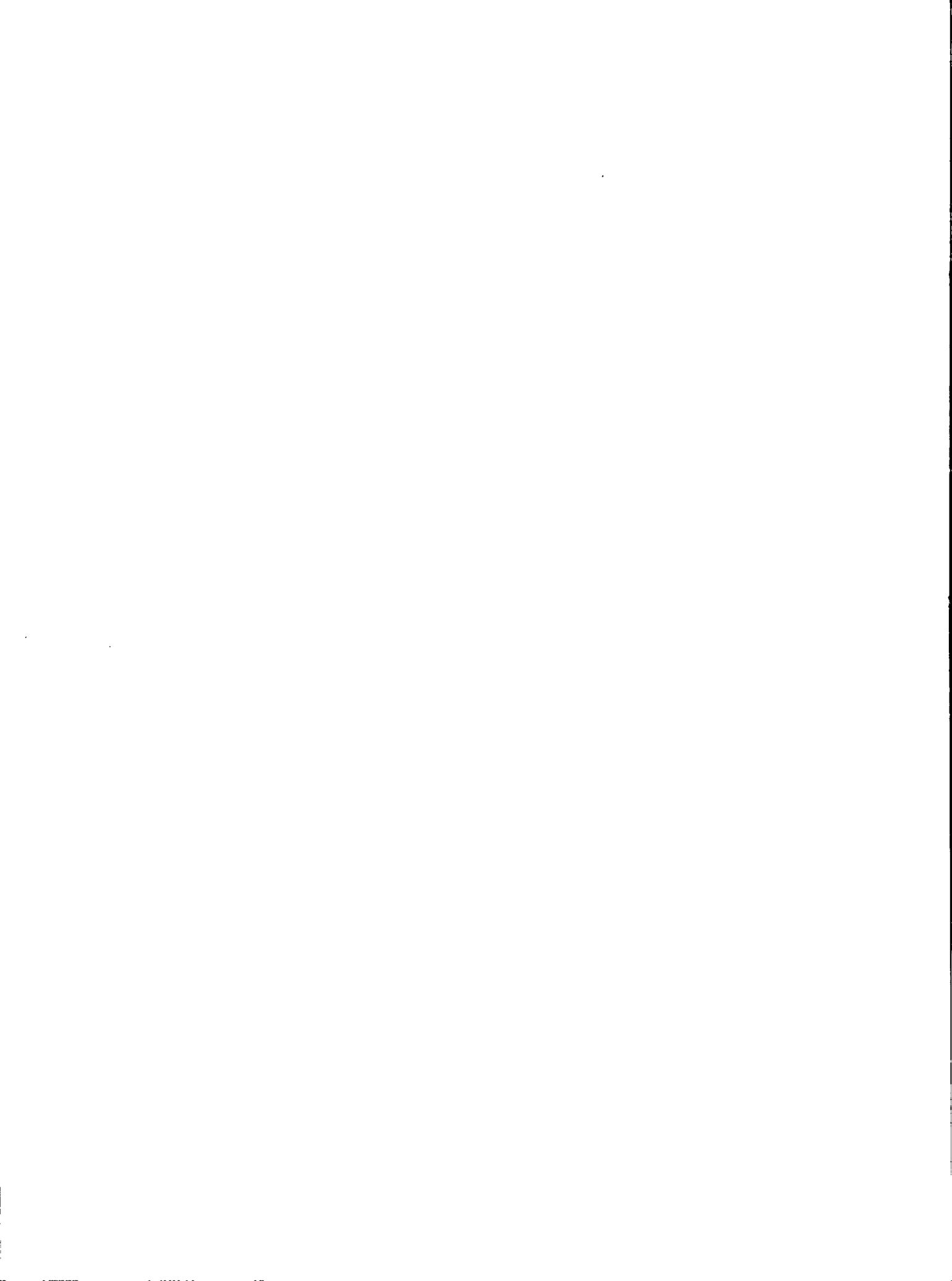


Fig. 9B. Age-frequency histograms by sex for quillback rockfish caught in area 12 during the 1992 survey. The last interval includes ages 45 and older.



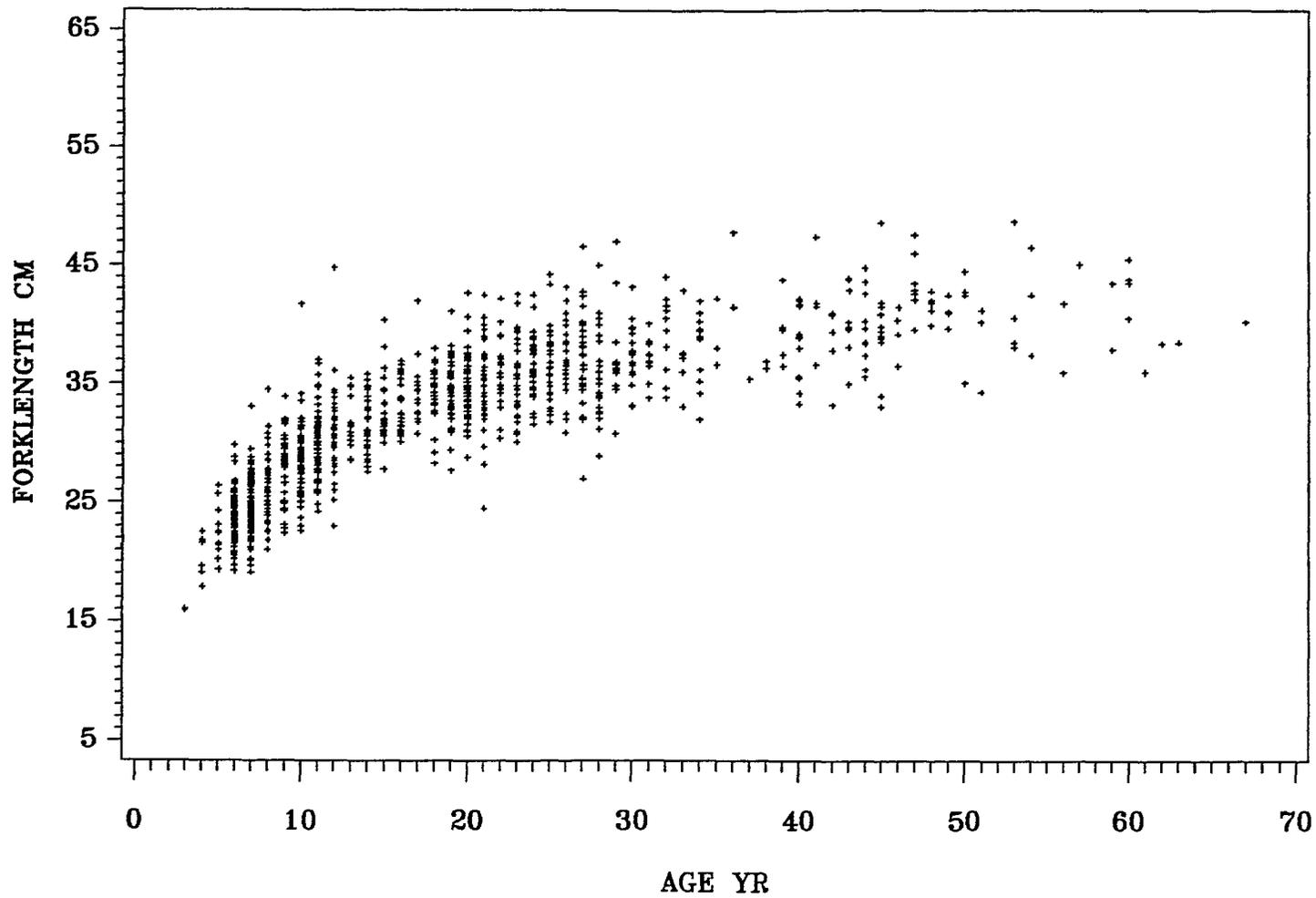


Fig. 10. Scatter plot of length vs age for quillback rockfish caught in area 12 during the 1986-88 and the 1992 surveys.



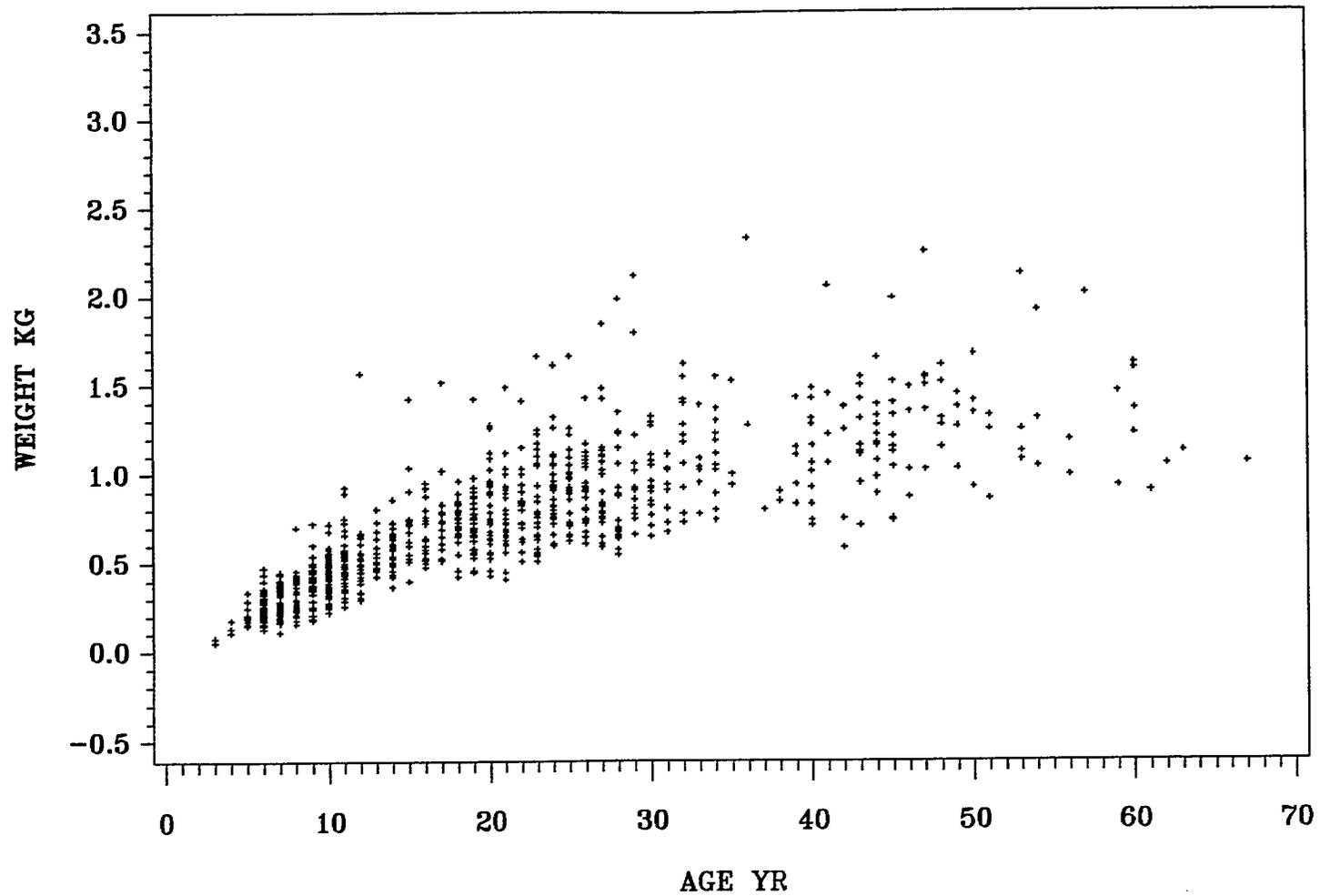


Fig. 11. Scatter plot of weight vs age for quillback rockfish caught in area 12 during the 1986-88 and the 1992 surveys.



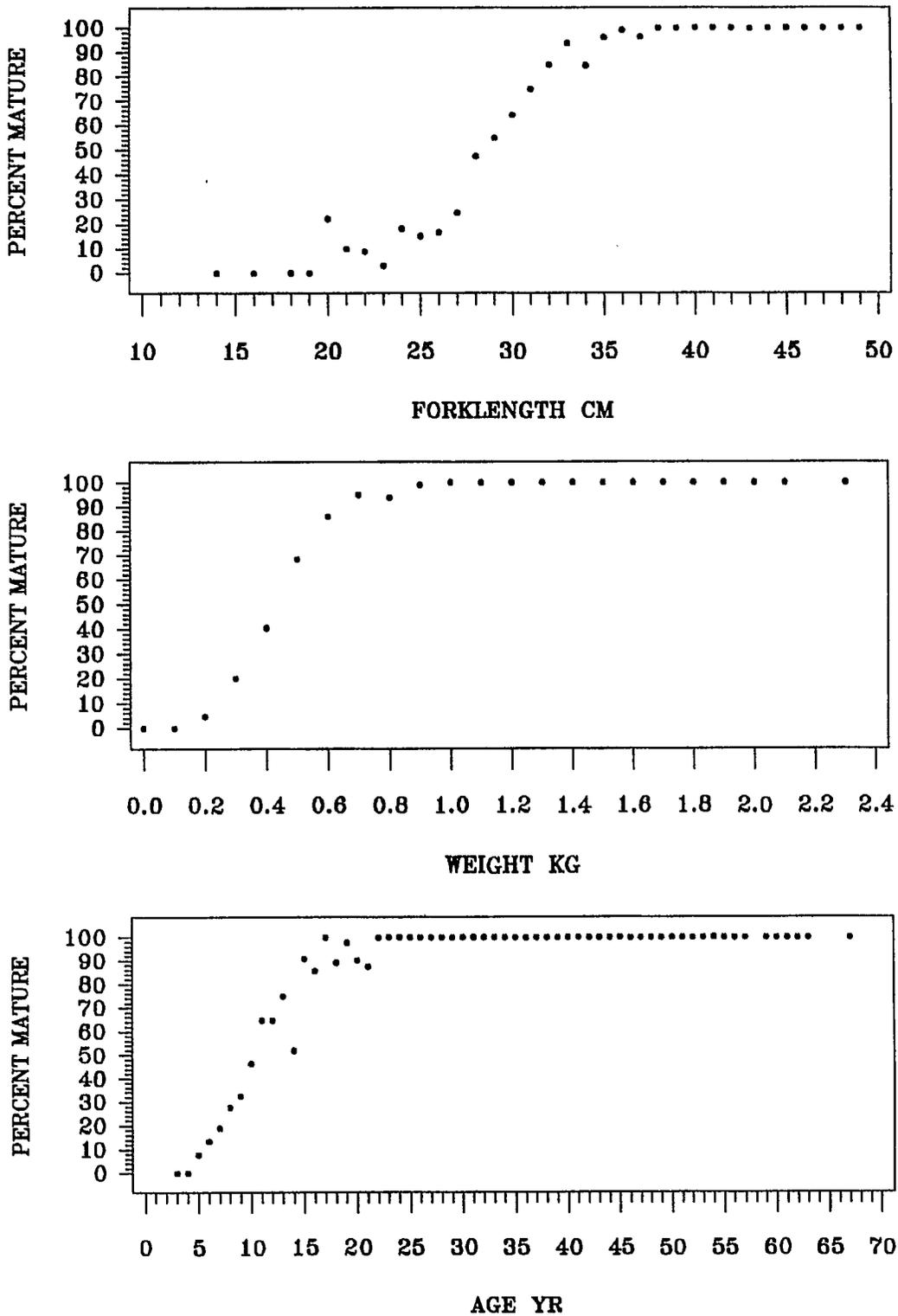


Fig. 12. For quillback rockfish, length at percent maturity (top panel), weight at percent maturity (middle panel), and age at percent maturity (bottom panel).



Appendix Table 1. Common names, two-letter species codes and scientific names of fish species caught during the 1992 survey.

Common name	code	Scientific name
Quillback rockfish	QB	<i>Sebastes maliger</i>
Copper rockfish	CO	<i>S. caurinus</i>
Yelloweye rockfish	YE	<i>S. ruberrimus</i>
Black rockfish	BL	<i>S. melanops</i>
Yellowtail rockfish	YT	<i>S. flavidus</i>
Tiger rockfish	TI	<i>S. nigrocintus</i>
Greenstriped rockfish	GS	<i>S. elongatus</i>
Redstripe rockfish	RS	<i>S. proriger</i>
Widow rockfish	WI	<i>S. entomelas</i>
Canary rockfish	CA	<i>S. pinniger</i>
Harlequin rockfish	HQ	<i>S. variegatus</i>
Sharpchin rockfish	SC	<i>S. zacentrus</i>
Lingcod	LC	<i>Ophiodon elongatus</i>
Kelp Greenling	KG	<i>Hexagrammos decagrammus</i>
Spiny dogfish	DF	<i>Squalus acanthias</i>
Spotted ratfish	RF	<i>Hydrolagus colliei</i>
Pacific cod	PC	<i>Gadus macrocephalus</i>
Sablefish	SF	<i>Anoplopoma fimbria</i>
Red Irish lord	RI	<i>Hemilepidotus hemilepidotus</i>
Brown Irish lord	BI	<i>H. spinosus</i>
Cabazon	CZ	<i>Scorpaenichthys marmoratus</i>
Pacific sanddab	PS	<i>Citharichthys sordidus</i>
Speckled sanddab	SS	<i>C. stigmaeus</i>
Greenland halibut	GH	<i>Reinhardtius hippoglossoides</i>

Appendix Table 2. Descriptions of codes for weather conditions, sea state, surface current, and tide used in Appendix Table 3.

Code	Description
-----	
Weather conditions	
1	bright
2	overcast
3	variable
4	rain
Sea state	
1	calm
2	rippled
3	0.5 m chop
4	1.0 m chop
5	1.5 m chop
Surface current	
1	nil
2	weak
3	moderate
4	strong
Tide	
1	low slack
2	flood
3	high slack
4	ebb
-----	











Appendix Table 4. Codes used to describe rockfish maturity stages, based on maturity stages described by Westrheim (1975).

Maturity Code	Gonad Condition
0	unknown
1	immature
<b>Females</b>	
2	mature (small, yellow eggs; translucent or opaque)
3	mature (large, cream, yellow or orange eggs; opaque)
4	fertilized (large, orange-yellow eggs; translucent)
5	embryos or larvae (include eyed eggs; translucent)
6	spent (large, flaccid, red ovaries. A few larvae may be present)
7	resting (moderate size, firm, orange-grey ovaries: some with dark blotches)
<b>Males</b>	
2	maturing (stringlike, slight swelling, translucent, pink)
3	developing (swelling, brown-white)
4	developed (large, white; easily broken)
5	running (running sperm)
6	spent (flaccid, red)
7	resting (ribbon-like; small, brown)

Appendix Table 5a. Date, site, median depth (m), sex, fork length (mm), weight (g), maturity and fish number for landed rockfish catch. Data are sorted by species, sex and length. A fish number indicates that otoliths were collected.

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Copper rockfish								
	920609	31	18	F	225		7	21744
	920603	16	12	F	229	182	7	21710
	920603	38	17	F	240	222	7	21705
	920603	38	17	F	248	248	7	21707
	920603	16	12	F	252	257	7	21712
	920603	38	17	F	253	276	7	21706
	920605	66	14	F	254	268	1	21715
	920609	16	18	F	254		7	21749
	920609	31	18	F	255		7	21743
	920602	22	50	F	259	293	1	21703
	920609	16	18	F	260		7	21748
	920609	31	18	F	262		7	21740
	920610	22	15	F	264		7	21756
	920605	66	14	F	265	203	7	21717
	920603	16	12	F	268	299	7	21711
	920609	16	18	F	272		7	21750
	920609	16	18	F	276		7	21752
	920607	16	15	F	288	352	7	21730
	920609	4	20	F	290		7	21745
	920603	38	26	F	296	380	7	21704
	920605	31	20	F	297	497	4	21719
	920606	38	20	F	298	422	7	21724
	920605	31	20	F	300		7	21720
	920611	31	13	F	300		7	21766
	920609	16	18	F	311		7	21751
	920607	4	18	F	322	509	7	21734
	920605	31	20	M	231		1	21723
	920610	42	13	M	231		7	21759
	920609	31	18	M	234		7	21742
	920603	16	12	M	239	204	7	21709
	920609	4	20	M	247		7	21747
	920605	66	14	M	252	293	7	21716
	920607	16	15	M	256	262	7	21729
	920608	31	22	M	258	335	7	21735
	920607	16	15	M	260	287	7	21732
	920610	42	13	M	270		7	21758
	920610	66	15	M	270		7	21763
	920603	16	12	M	272	239	7	21713
	920605	31	20	M	274		1	21721

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Copper rockfish								
	920609	16	18	M	274		7	21753
	920609	31	18	M	276		7	21741
	920610	42	13	M	280		7	21761
	920611	31	13	M	280		7	21765
	920610	22	15	M	281		7	21755
	920607	4	17	M	287	365	7	21727
	920607	16	15	M	287	417	7	21731
	920610	42	12	M	288		7	21757
	920610	42	13	M	288		7	21760
	920610	22	17	M	293		1	21754
	920605	31	20	M	296		7	21722
	920605	66	14	M	296	446	7	21718
	920603	16	12	M	297	403	7	21708
	920608	16	22	M	300	508	7	21738
	920608	16	22	M	302	458	7	21739
	920606	4	22	M	305	470	7	21726
	920609	4	20	M	305		7	21746
	920602	65	31	M	307	467	7	21702
	920607	4	18	M	313	448	7	21733
	920608	31	22	M	316	550	7	21736
	920603	16	12	M	319	484	7	21714
	920610	42	13	M	325		7	21762
	920610	66	15	M	325		7	21764
	920608	16	22	M	335	657	7	21737
	920607	4	17	M	344	715	7	21728
	920606	4	22	M	347	722	7	21725
	920602	22	25	M	358	744	7	21701
Greenstriped rockfish								
	920608	66	100	F	315	405	7	
	920607	66	91	F	335	497	7	
Widow rockfish								
	920606	38	80	F	445	1230	1	
	920606	38	80	F	506	2083	7	
	920606	38	80	F	523	2340	7	
	920603	38	17	M	368	917	7	
	920604	38	92	M	438	1496	7	2
	920604	38	92	M	464	1530	1	1

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Yellowtail rockfish								
	920610	22	84	F	215		1	21680
	920610	22	84	F	215		1	21681
	920607	4	55	F	216	127	1	21634
	920609	65	78	F	233		1	21672
	920610	22	15	F	235		1	21682
	920610	36	53	F	235		1	21685
	920607	16	15	F	237	195	1	21636
	920608	31	80	F	237	190	1	21642
	920604	36	58	F	238	193	1	21614
	920610	36	53	F	240		1	21686
	920604	6	28	F	277	313	1	21611
	920606	16	55	F	281	314	1	21630
	920607	16	30	F	291	368	1	21641
	920609	31	85	F	296		1	21664
	920604	36	58	F	297	363	1	21613
	920608	31	55	F	298	407	1	21648
	920609	31	85	F	298		1	21662
	920608	22	94	F	301	402	1	21653
	920604	6	84	F	302	370	1	21607
	920609	4	20	F	302		1	21674
	920610	36	53	F	302		1	21684
	920609	31	85	F	303		1	21668
	920611	22	85	F	303		3	21687
	920609	31	51	F	305		1	21660
	920606	4	30	F	306	469	1	21625
	920609	31	85	F	310		1	21667
	920605	66	78	F	312	396	1	21620
	920608	66	100	F	318	437	1	21644
	920604	6	15	F	320	459	1	21616
	920608	22	94	F	321	534	1	21655
	920608	31	55	F	321	442	1	21647
	920609	4	20	F	323		1	21675
	920604	36	25	F	330	487	1	21617
	920609	31	85	F	330		1	21669
	920608	31	22	F	331	599	1	21651
	920610	22	84	F	335		1	21679
	920607	4	18	F	337	596	1	21639
	920604	6	84	F	339	551	1	21606
	920607	16	15	F	342	552	1	21638
	920608	31	22	F	342	619	1	21650
	920608	31	55	F	343	618	1	21649
	920605	66	80	F	346	532	1	21619
	920606	38	80	F	356	630	1	21623
	920609	65	78	F	361		1	21671

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Yellowtail rockfish								
	920607	4	17	F	371	738	1	21633
	920606	38	80	F	388	825	1	21622
	920608	31	55	F	393	938	1	21646
	920607	66	91	F	452	1556	1	21632
	920608	31	55	M	205	114	1	21645
	920609	16	18	M	210		1	21677
	920607	16	15	M	219	161	1	21635
	920603	16	12	M	225	166	1	21604
	920607	16	15	M	232	201	1	21637
	920610	36	56	M	247		1	21683
	920606	4	65	M	250	209	1	21627
	920602	65	60	M	281	337	1	21602
	920611	31	55	M	281		1	21688
	920605	31	80	M	294	355	1	21621
	920607	4	52	M	294	353	1	21640
	920607	66	91	M	297	393	1	21631
	920608	22	94	M	297	379	1	21658
	920608	22	94	M	299	395	1	21656
	920604	38	55	M	303	434	1	21612
	920602	22	25	M	305	357	7	21601
	920604	6	84	M	305	393	1	21608
	920609	4	53	M	305		1	21673
	920609	31	85	M	306		1	21666
	920604	6	28	M	307	421	1	21609
	920605	66	80	M	308	403	1	21618
	920608	22	94	M	315	479	1	21657
	920606	16	82	M	318	487	1	21629
	920609	31	85	M	319		1	21665
	920606	16	82	M	320	492	1	21628
	920610	22	84	M	326		1	21678
	920608	66	57	M	327	516	1	21643
	920602	65	92	M	328	484	1	21604
	920609	16	18	M	328		1	21676
	920608	16	50	M	337	587	1	21659
	920609	31	85	M	339		1	21670
	920604	22	35	M	349	705	1	21615
	920608	22	94	M	354	724	1	21654
	920609	31	85	M	354		1	21663
	920604	6	28	M	355	652	7	21610
	920606	4	22	M	365	676	1	21624
	920608	22	94	M	374	867	1	21652
	920606	4	65	M	375	765	1	21626
	920601	38	52	M	378	754	1	
	920602	65	60	M	392	829	7	21603

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Yellowtail rockfish								
	920609	31	85	M	392		1	21661
Quillback rockfish								
	920609	31	18	F	193		1	21435
	920602	22	19	F	196	134	1	21056
	920604	6	58	F	199	125	1	21153
	920610	22	50	F	202		1	21503
	920609	16	18	F	204		7	21476
	920603	38	26	F	206	159	1	21113
	920604	31	45	F	207	147	1	21247
	920601	36	30	F	210	149	1	21002
	920603	38	26	F	210	159	1	21110
	920605	31	20	F	210		1	21257
	920607	42	10	F	210	171	1	21335
	920609	16	18	F	210		7	21478
	920604	6	85	F	213	158	1	21167
	920610	22	84	F	214		1	21486
	920610	42	12	F	214		7	21548
	920605	66	50	F	215	150	1	21237
	920609	31	18	F	215		7	21437
	920605	31	43	F	217		1	21261
	920610	42	13	F	217		2	21561
	920601	36	30	F	219	157	1	21001
	920609	31	18	F	219		7	21436
	920610	6	24	F	221		1	21535
	920604	36	25	F	224	190	1	21226
	920605	31	20	F	225		1	21252
	920610	6	24	F	225		1	21531
	920610	42	13	F	225		1	21559
	920609	16	18	F	227		1	21479
	920601	36	30	F	228	181	1	21004
	920603	16	52	F	228	195	1	21143
	920606	42	14	F	228	197	1	21308
	920604	6	58	F	229	185	1	21156
	920604	22	35	F	229	205	1	21218
	920611	31	13	F	231		2	21573
	920603	38	17	F	232	222	1	21127
	920604	38	55	F	232	211	1	21187
	920604	22	35	F	232	190	1	21211
	920608	31	22	F	232	241	1	21408
	920604	22	50	F	233	212	1	21208
	920604	31	45	F	234	228	1	21250
	920609	16	18	F	234		1	21477

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920610	22	56	F	234		1	21496
	920606	4	65	F	235	214	1	21324
	920609	4	20	F	235		7	21457
	920609	31	51	F	235		1	21430
	920610	22	50	F	235		1	21501
	920601	36	30	F	236	218	1	21003
	920604	36	23	F	236	222	1	21199
	920607	4	18	F	237	238	7	21366
	920605	31	43	F	238		1	21268
	920605	31	20	F	238		1	21255
	920607	66	91	F	238	249	1	21359
	920610	42	12	F	238		7	21551
	920609	16	18	F	239		3	21482
	920609	31	51	F	239		1	21431
	920603	38	26	F	240	236	7	21106
	920604	38	18	F	240	236	1	21169
	920602	65	25	F	241	227	1	21024
	920602	65	41	F	241	213	1	21050
	920605	31	43	F	241		1	21263
	920610	42	13	F	241		7	21563
	920603	6	50	F	243	265	1	21089
	920604	22	50	F	243	240	1	21207
	920603	38	50	F	244	241	1	21119
	920608	31	22	F	244	263	1	21404
	920603	6	55	F	245	249	1	21082
	920610	42	12	F	245		7	21555
	920607	4	18	F	246	301	7	21371
	920605	31	43	F	247		1	21266
	920604	22	50	F	248	261	1	21210
	920604	36	25	F	249	256	1	21229
	920610	42	12	F	249		7	21554
	920603	38	26	F	250	300	7	21109
	920604	6	58	F	250	242	1	21154
	920604	22	50	F	250	280	1	21204
	920603	6	26	F	251	284	1	21070
	920607	66	91	F	251	268	1	21361
	920610	42	13	F	251		1	21556
	920610	6	22	F	252		1	21522
	920606	4	22	F	253	265	7	21310
	920610	6	24	F	253		2	21534
	920610	36	53	F	253		1	21542
	920610	22	56	F	254		7	21495
	920604	38	18	F	255	289	1	21173
	920604	6	58	F	255	278	1	21160

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920605	31	43	F	255		7	21262
	920606	42	14	F	255	271	1	21302
	920603	6	26	F	256	293	1	21076
	920603	42	17	F	256	255	6	21136
	920606	38	20	F	256	326	1	21285
	920602	65	80	F	257	325	1	21047
	920602	22	25	F	258	284	1	21011
	920603	38	52	F	258	320	1	21096
	920603	6	55	F	259	283	1	21083
	920604	36	23	F	259	264	1	21198
	920606	38	80	F	260	322	1	21275
	920606	16	55	F	260	343	1	21331
	920607	4	18	F	260	329	7	21370
	920608	22	94	F	260	331	1	21419
	920608	31	22	F	261	338	1	21407
	920603	6	26	F	262	299	1	21069
	920606	4	30	F	263	311	7	21317
	920603	6	26	F	265	343	1	21075
	920609	16	88	F	265		1	21461
	920607	4	18	F	266	334	7	21369
	920610	22	15	F	267		7	21519
	920607	66	91	F	268	376	1	21360
	920609	65	58	F	268		1	21444
	920602	22	50	F	269	329	7	21059
	920610	22	17	F	269		7	21513
	920604	22	35	F	270	346	1	21217
	920607	4	18	F	271	334	7	21372
	920608	22	94	F	272	369	1	21418
	920610	22	17	F	272		7	21510
	920606	42	14	F	273	343	7	21301
	920609	4	53	F	273		1	21455
	920606	38	80	F	274	359	7	21277
	920610	22	56	F	274		7	21488
	920602	65	25	F	275	342	7	21023
	920606	42	14	F	275	420	7	21306
	920607	42	10	F	275	406	7	21332
	920611	31	55	F	277		7	21569
	920610	42	13	F	278		7	21557
	920603	38	17	F	279	357	1	21125
	920609	4	20	F	279		7	21459
	920603	38	52	F	280	421	1	21097
	920610	22	50	F	282		7	21500
	920604	38	18	F	283	344	7	21176
	920607	36	27	F	284	425	1	21348

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920603	38	50	F	285	452	7	21116
	920606	4	30	F	285	395	7	21315
	920605	31	20	F	287		7	21256
	920609	16	58	F	287		1	21472
	920610	22	56	F	287		7	21489
	920610	6	24	F	287		7	21529
	920603	38	52	F	288	366	1	21093
	920604	36	60	F	288	363	1	21223
	920604	6	28	F	288	379	7	21163
	920602	65	60	F	289	452	7	21041
	920609	65	78	F	289		7	21447
	920611	31	13	F	290		7	21572
	920608	31	55	F	291	452	7	21402
	920602	65	55	F	292	476	7	21029
	920604	6	28	F	294	381	1	21162
	920608	31	80	F	295	399	1	21390
	920603	6	26	F	296	451	7	21074
	920607	4	55	F	296	420	7	21365
	920610	42	12	F	296		7	21546
	920606	16	55	F	297	485	7	21330
	920610	6	22	F	297		7	21523
	920603	38	50	F	298	507	7	21120
	920604	6	58	F	299	450	1	21159
	920604	38	55	F	300	471	7	21184
	920604	36	25	F	300	482	1	21228
	920605	66	50	F	300	486	1	21233
	920606	42	14	F	300	455	7	21296
	920602	65	41	F	301	452	7	21048
	920606	42	14	F	301	525	7	21300
	920609	31	51	F	303		7	21432
	920602	22	50	F	304	501	7	21058
	920606	42	14	F	304	501	7	21297
	920610	22	56	F	304		7	21490
	920604	6	58	F	305	428	1	21151
	920606	38	80	F	306		7	21292
	920610	22	15	F	307		7	21516
	920603	38	50	F	308	488	7	21122
	920604	6	28	F	308	516	7	21166
	920607	42	10	F	309	574	7	21336
	920611	31	55	F	309		7	21570
	920604	22	50	F	310	488	7	21202
	920606	38	20	F	310	623	7	21284
	920602	65	31	F	311	456	7	21055
	920603	38	52	F	311	534	7	21098

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920603	38	17	F	311	604	7	21130
	920606	4	30	F	314	506	7	21316
	920602	22	85	F	315	495	7	21015
	920611	31	100	F	315		1	21567
	920602	65	82	F	316	594	7	21033
	920602	65	31	F	316	589	7	21053
	920603	16	52	F	316	540	7	21142
	920607	66	91	F	317	605	7	21356
	920603	38	50	F	318	547	7	21117
	920608	16	50	F	318	583	7	21421
	920604	38	18	F	319	556	7	21172
	920608	22	94	F	319	605	7	21412
	920603	38	50	F	320	574	7	21118
	920607	42	10	F	321	627	7	21337
	920610	22	15	F	321		7	21515
	920604	6	84	F	322	578	7	21158
	920604	22	35	F	323	593	7	21213
	920609	65	78	F	324		7	21450
	920609	16	88	F	325		3	21462
	920607	16	30	F	326	563	7	21379
	920608	66	18	F	327	660	7	21393
	920606	16	82	F	329	733	7	21328
	920604	22	35	F	331	633	7	21212
	920610	22	17	F	332		7	21509
	920607	16	83	F	334	619	7	21383
	920603	16	91	F	335	721	7	21146
	920607	42	10	F	336	734	7	21333
	920602	22	55	F	338	613	7	21021
	920603	6	26	F	338	718	7	21077
	920608	22	94	F	338	684	7	21416
	920609	16	58	F	339		7	21471
	920605	66	78	F	340	704	7	21243
	920606	4	55	F	344	671	7	21318
	920607	4	52	F	344	689	7	21377
	920604	36	58	F	345	704	7	21191
	920610	36	53	F	346		7	21540
	920608	66	100	F	347	751	7	21398
	920605	31	43	F	350		7	21258
	920608	31	80	F	350	795	7	21386
	920609	65	58	F	352		7	21441
	920604	36	60	F	354	830	7	21222
	920607	66	91	F	355	807	7	21358
	920602	65	60	F	358	927	7	21038
	920602	65	80	F	358	742	7	21046

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920602	22	55	F	350	725	7	21018
	920603	16	52	F	358	878	7	21141
	920604	38	92	F	360	858	7	21180
	920605	31	80	F	360	814	7	21245
	920609	16	88	F	360		7	21464
	920605	66	78	F	362	885	7	21242
	920607	4	52	F	364	873	7	21374
	920602	65	30	F	368	807	7	21035
	920602	22	64	F	368	792	7	21064
	920604	36	58	F	375	1047	7	21189
	920609	65	58	F	377		7	21442
	920609	65	78	F	377		7	21451
	920604	36	58	F	378	1055	7	21190
	920609	65	78	F	379		7	21452
	920605	66	50	F	380	1022	7	21234
	920608	16	88	F	381	1037	7	21423
	920602	65	60	F	383	1062	7	21040
	920604	38	18	F	383		7	21168
	920602	65	92	F	384	1096	7	21042
	920610	36	56	F	385		7	21537
	920602	65	60	F	386	1152	7	21039
	920603	6	55	F	386	1116	7	21086
	920604	36	58	F	387	1108	7	21193
	920606	4	65	F	388	1048	7	21320
	920607	66	91	F	388	1089	7	21353
	920602	65	60	F	389	1286	7	21037
	920603	6	55	F	390	1058	7	21080
	920607	36	53	F	390	1264	7	21352
	920609	31	85	F	392		7	21434
	920608	31	80	F	394	1136	7	21392
	920602	65	80	F	395	1115	7	21044
	920604	36	60	F	397	1078	7	21220
	920602	65	82	F	398	1227	7	21032
	920602	65	82	F	402	1080	7	21030
	920604	36	25	F	405	1234	7	21225
	920610	6	22	F	406		7	21524
	920607	66	91	F	418	1408	7	21355
	920607	66	91	F	418	1539	7	21357
	920608	16	88	F	420	1550	7	21426
	920606	38	80	F	425	1615	7	21282
	920603	16	91	F	426	1541	7	21150
	920601	36	30	F	430	1361	7	21005
	920606	16	82	F	435	1621	7	21325
	920604	38	92	F	445	1469	7	21179

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920606	38	80	F	408	1270	7	21279
	920603	16	52	F	417	1323	7	21140
	920604	38	92	F	448	1653	7	21178
	920603	6	28	F	454	1648	7	21091
	920603	16	91	F	456	1789	7	21149
	920606	38	80	F	478	2330	7	21272
	920603	38	26	M	191	114	1	21114
	920608	31	22	M	201	165	1	21406
	920610	22	56	M	207		1	21494
	920604	22	50	M	209	157	1	21203
	920603	38	17	M	211	165	1	21128
	920608	16	50	M	211	155	1	21422
	920608	31	22	M	213	206	1	21405
	920609	16	88	M	216		1	21465
	920605	66	50	M	217	170	1	21231
	920610	22	15	M	217		1	21521
	920610	42	13	M	217		1	21565
	920604	38	18	M	218	179	1	21171
	920606	38	20	M	218	181	1	21286
	920607	38	107	M	218	177	1	21344
	920610	22	50	M	218		1	21507
	920604	38	18	M	219	173	1	21177
	920610	22	50	M	219		1	21502
	920602	65	41	M	220	170	1	21051
	920607	42	10	M	221	199	1	21334
	920607	42	10	M	221	221	1	21340
	920608	31	55	M	221	200	1	21401
	920606	38	80	M	223	182	1	21293
	920608	66	57	M	224	190	1	21396
	920603	38	26	M	225	194	1	21108
	920606	38	20	M	225	202	1	21288
	920609	16	18	M	225		1	21480
	920605	31	43	M	226		1	21265
	920605	31	20	M	226		1	21254
	920603	16	52	M	227	214	1	21145
	920607	4	18	M	230	230	1	21367
	920607	36	27	M	231	209	1	21347
	920610	66	15	M	231		1	21566
	920603	38	26	M	232	226	1	21111
	920610	22	17	M	232		1	21514
	920610	42	13	M	232		7	21562
	920602	22	50	M	233	217	1	21060
	920603	6	26	M	233	208	1	21079
	920603	38	26	M	233	200	1	21112

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920605	66	14	M	227	209	1	21230
	920603	38	26	M	228	188	1	21115
	920601	38	52	M	229		2	21007
	920607	42	10	M	233	222	1	21339
	920610	42	13	M	233		1	21560
	920606	42	14	M	234	239	1	21307
	920607	4	18	M	234	215	1	21368
	920604	6	28	M	235	210	1	21165
	920609	16	18	M	235		1	21475
	920609	16	88	M	237		1	21470
	920609	31	51	M	238		1	21429
	920607	66	91	M	239	234	1	21354
	920602	22	50	M	240	241	1	21063
	920603	6	26	M	240	223	1	21072
	920607	36	53	M	240	237	1	21351
	920609	65	78	M	240		1	21448
	920602	22	50	M	241	251	1	21062
	920610	42	12	M	241		7	21550
	920605	31	43	M	242		1	21267
	920604	6	15	M	243	256	1	21219
	920603	6	50	M	244	235	1	21090
	920604	6	28	M	244	254	1	21164
	920602	22	64	M	245	274	1	21065
	920606	38	20	M	245	265	1	21287
	920606	4	65	M	245	239	1	21323
	920607	36	53	M	245	240	1	21350
	920610	22	84	M	245		1	21487
	920610	22	50	M	245		1	21498
	920604	6	58	M	246	258	1	21152
	920609	4	20	M	246		1	21458
	920602	65	41	M	247	256	1	21049
	920604	38	18	M	247	222	1	21170
	920608	22	94	M	247	284	1	21414
	920603	38	17	M	248	275	7	21123
	920604	38	18	M	251	264	1	21174
	920606	42	14	M	251	276	7	21303
	920611	31	55	M	251		1	21571
	920602	22	50	M	252	287	1	21061
	920609	16	58	M	252		1	21473
	920610	22	56	M	252		1	21491
	920606	42	14	M	253	263	1	21309
	920607	16	30	M	253	274	1	21380
	920610	6	24	M	253		1	21532
	920602	22	25	M	254	256	7	21013

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920605	31	20	M	250		1	21253
	920607	36	27	M	250	266	1	21349
	920607	4	17	M	250	326	7	21363
	920603	6	26	M	251	282	1	21073
	920604	6	58	M	254	277	1	21155
	920607	4	17	M	255	273	7	21364
	920610	22	15	M	255		2	21520
	920610	6	22	M	255		1	21525
	920610	6	24	M	255		1	21533
	920604	22	50	M	258	300	1	21205
	920607	4	52	M	258	272	1	21378
	920603	42	17	M	259	306	1	21137
	920603	42	17	M	259	316	7	21139
	920604	36	23	M	259	300	1	21196
	920601	38	52	M	260	287	1	21008
	920605	31	43	M	260		1	21264
	920607	16	30	M	260	312	1	21381
	920610	22	17	M	260		7	21511
	920610	22	15	M	260		2	21518
	920610	42	12	M	260		1	21552
	920609	4	53	M	261		1	21454
	920607	42	10	M	262	329	7	21341
	920610	36	53	M	263		1	21545
	920607	38	107	M	265	332	1	21342
	920607	66	91	M	265	320	1	21362
	920609	4	53	M	265		1	21456
	920604	31	45	M	266	309	1	21248
	920602	22	25	M	267	335	2	21010
	920609	4	20	M	267		7	21460
	920610	22	50	M	267		1	21504
	920605	31	100	M	268		1	21269
	920605	66	30	M	268	361	1	21241
	920604	22	35	M	269	320	1	21216
	920603	38	26	M	271	318	7	21107
	920604	36	23	M	272	340	1	21197
	920608	22	94	M	272	393	1	21410
	920608	66	57	M	272	341	1	21395
	920605	66	50	M	273	344	1	21238
	920610	22	56	M	273		1	21493
	920605	66	50	M	274	346	1	21239
	920606	4	65	M	274	333	1	21319
	920607	4	18	M	274	336	1	21373
	920608	31	80	M	274	352	1	21389
	920603	6	23	M	275	377	7	21068

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920610	22	50	M	269		2	21505
	920610	42	12	M	269		2	21553
	920606	42	14	M	270	390	7	21304
	920609	16	88	M	270		1	21466
	920610	22	17	M	270		1	21508
	920603	38	17	M	275	384	7	21131
	920603	42	17	M	275	377	7	21138
	920607	16	83	M	275	345	1	21384
	920610	22	17	M	275		1	21512
	920608	16	88	M	276	357	1	21425
	920610	36	53	M	276		1	21539
	920603	16	52	M	277	338	1	21144
	920603	38	17	M	277	428	7	21132
	920609	4	53	M	277		1	21453
	920610	22	50	M	278		1	21499
	920608	22	94	M	279	368	1	21415
	920608	31	80	M	279	387	7	21391
	920609	31	51	M	279		7	21428
	920603	38	52	M	280	366	1	21100
	920605	66	78	M	280	331	1	21244
	920609	65	78	M	280		1	21445
	920610	22	15	M	280		2	21517
	920604	38	18	M	281	389	7	21175
	920604	22	35	M	282	404	1	21214
	920604	22	50	M	282	407	1	21209
	920606	38	20	M	282	400	7	21289
	920610	6	24	M	282		1	21530
	920610	36	53	M	282		2	21538
	920608	31	80	M	283	395	1	21388
	920610	42	12	M	283		7	21549
	920602	65	31	M	285	447	7	21054
	920603	6	55	M	285	399	7	21084
	920604	38	55	M	289	419	7	21181
	920604	38	55	M	289	455	1	21185
	920605	31	20	M	289		7	21251
	920606	42	14	M	289	394	7	21299
	920606	38	80	M	289	430	1	21276
	920604	36	58	M	290	440	7	21188
	920604	36	60	M	290	383	1	21221
	920609	16	18	M	290		7	21481
	920610	42	13	M	291		7	21558
	920603	38	52	M	293	429	7	21101
	920604	36	60	M	293	442	1	21224
	920610	6	22	M	293		7	21526

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920604	6	28	M	285	385	7	21161
	920605	31	100	M	285		7	21270
	920609	65	78	M	285		2	21446
	920610	42	12	M	285		2	21547
	920604	38	55	M	288	430	1	21182
	920610	22	50	M	288		1	21506
	920603	6	26	M	295	465	7	21078
	920603	42	17	M	295	465	7	21133
	920603	6	26	M	296	448	1	21071
	920603	38	52	M	298	415	7	21095
	920604	36	58	M	298	456	1	21194
	920604	38	55	M	298	433	1	21186
	920606	42	14	M	300	544	7	21298
	920606	4	65	M	300	509	7	21321
	920604	22	35	M	301	509	7	21215
	920601	38	52	M	302	513	2	21009
	920604	31	45	M	302	484	7	21249
	920603	16	91	M	303	483	7	21147
	920603	38	50	M	304	515	7	21121
	920605	66	50	M	304	522	7	21232
	920605	66	30	M	305	531	7	21240
	920610	6	24	M	305		7	21528
	920604	31	45	M	306	537	7	21246
	920608	22	94	M	306	549	1	21420
	920607	42	10	M	307	562	7	21338
	920609	31	51	M	308		7	21427
	920610	36	53	M	308		1	21541
	920602	65	55	M	309	458	7	21028
	920608	66	57	M	309	434	1	21397
	920603	6	23	M	310	519	7	21067
	920603	42	17	M	310	560	7	21134
	920608	66	100	M	316	553	1	21400
	920610	36	53	M	317		7	21543
	920604	36	58	M	318	518	7	21192
	920604	22	50	M	318	509	7	21206
	920602	22	25	M	320	592	7	21012
	920602	65	25	M	320	548	7	21022
	920603	6	50	M	320	559	7	21087
	920603	38	52	M	320	534	7	21102
	920604	38	55	M	320	614	7	21183
	920606	38	80	M	320	636	7	21294
	920609	31	51	M	321		7	21433
	920610	22	84	M	321		7	21483
	920604	36	25	M	323	540	7	21227

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920605	31	100	M	310		7	21271
	920602	65	82	M	311	489	1	21034
	920603	6	50	M	312	533	7	21088
	920606	42	14	M	313	520	7	21305
	920610	22	84	M	314		1	21484
	920610	6	22	M	314		7	21527
	920602	22	50	M	315	544	7	21057
	920606	4	30	M	324	585	7	21313
	920603	38	17	M	326	624	7	21124
	920605	31	43	M	326		7	21260
	920609	16	58	M	328		7	21474
	920606	4	30	M	330	636	7	21312
	920609	65	28	M	330		7	21439
	920603	38	52	M	331	674	7	21099
	920609	16	88	M	331		1	21463
	920603	38	52	M	332	587	7	21094
	920608	31	55	M	332	741	7	21403
	920610	22	56	M	332		7	21492
	920602	22	72	M	333	649	7	21066
	920604	22	50	M	333	599	7	21201
	920606	42	14	M	333	663	7	21295
	920610	22	84	M	334		7	21485
	920603	42	17	M	335	703	7	21135
	920607	4	52	M	335	577	7	21375
	920608	22	94	M	337	705	7	21413
	920610	42	13	M	337		7	21564
	920601	38	52	M	338	630	2	21006
	920602	65	80	M	338	674	7	21045
	920609	16	88	M	338		7	21469
	920602	22	55	M	339	712	7	21019
	920610	36	56	M	345		7	21536
	920609	65	28	M	347		7	21438
	920602	38	95	M	348	686	1	21105
	920602	65	55	M	352	844	7	21027
	920606	4	65	M	353	812	7	21322
	920602	22	55	M	355	777	7	21016
	920602	22	55	M	356	834	7	21017
	920603	38	17	M	357	895	7	21126
	920607	16	83	M	357	809	7	21385
	920608	66	57	M	357	845	7	21394
	920610	22	50	M	357		7	21497
	920602	65	31	M	358	754	7	21052
	920607	4	52	M	358	907	7	21376
	920602	65	30	M	360	744	7	21036

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Quillback rockfish								
	920603	38	17	M	339	725	7	21129
	920609	65	28	M	341		7	21440
	920608	22	94	M	342	753	1	21417
	920610	36	53	M	342		2	21544
	920603	16	91	M	344	724	7	21148
	920611	31	100	M	344		7	21568
	920602	65	82	M	345	742	7	21031
	920606	4	30	M	345	722	7	21314
	920602	65	55	M	361	825	7	21025
	920602	65	55	M	365	1032	7	21026
	920606	4	22	M	365	785	7	21311
	920603	6	55	M	366	798	7	21081
	920608	16	88	M	367	870	7	21424
	920605	31	43	M	368		7	21259
	920607	16	52	M	368	984	7	21382
	920606	38	80	M	372	929	7	21291
	920606	38	20	M	375	1073	7	21283
	920606	16	82	M	375	1049	7	21329
	920602	22	55	M	376	902	7	21020
	920608	31	80	M	376	1006	7	21387
	920605	66	80	M	378	934	7	21235
	920609	65	58	M	378		7	21443
	920609	16	88	M	384		7	21467
	920602	22	85	M	386	884	7	21014
	920608	22	94	M	392	1301	7	21411
	920603	6	28	M	395	1180	7	21092
	920606	16	82	M	395	1135	7	21326
	920604	36	23	M	396	1107	7	21200
	920605	66	50	M	398	1122	7	21236
	920609	65	78	M	424		7	21449
	920606	38	80	M	426	1666	7	21278
	920608	22	94	M	430	1867	7	21409
	920606	38	80	M	431	1746	7	21274
	920606	38	80	M	437	1625	7	21281
	920606	38	80	M	440	1625	7	21290
	920607	38	107	M	442	1666	7	21346
	920602	38	95	M	448	1568	7	21104
	920602	38	95	M	460	1686	7	21103
	920606	38	80	M	465	1992	7	21273
Black rockfish								
	920608	31	22	F	243	233	1	6
	920602	65	30	F	351	720	7	4

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Black rockfish								
	920602	65	30	F	363	742	7	3
	920604	36	23	M	402	1222	7	21195
	920606	16	82	M	402	1257	7	21327
	920608	66	100	M	404	1032	7	21399
	920606	38	80	M	408	1353	7	21280
	920607	38	107	M	414	1223	7	21345
	920607	38	107	M	416	1443	7	21343
	920609	16	88	M	416		7	21468
	920602	65	92	M	417	1226	7	21043
	920604	6	84	M	419	1234	7	21157
	920608	31	22	F	393	1051	7	7
	920609	4	20	F	401		1	9
	920602	22	25	M	281	349	7	1
	920603	6	23	M	356	763	7	5
	920608	31	22	M	421	1138	7	8
	920601	38	52	M	482	1966	7	
Tiger rockfish								
	920603	6	50	M	388	1012	7	
Canary rockfish								
	920607	66	91	M	489	1765	7	
	920607	66	91	M	580	3296	7	
Redstripe rockfish								
	920601	38	52	F	192	93	3	
	920608	22	94	F	193	96	1	
	920601	38	52	F	205	118	3	
	920603	16	91	F	296	355	4	
	920608	22	94	F	323	415	4	
	920603	16	52	F	325	496	4	
	920610	22	50	F	329		4	
	920606	16	55	F	350	657	4	
	920606	38	80	M	284	310	7	
	920608	66	100	M	300	151	1	
Yelloweye rockfish								
	920608	31	55	F	399	1218	1	7
	920608	31	80	F	468	1705	7	5
	920604	38	92	F	515	2600	7	3

Appendix Table 5a. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN	WGT	MAT <sup>a</sup>	FISH NO.
Yelloweye rockfish								
	920608	31	55	F	730	7850	7	6
	920611	22	85	M	445		1	8
	920604	6	85	M	644	4742	7	2
	920606	38	80	M	695	5896	7	4
	920604	6	84	M	730	8090	7	1
Harlequin rockfish								
	920603	16	52	F	223	139	3	
Sharpchin rockfish								
	920610	22	50	F	180		3	
	920609	4	53	F	190		4	
	920608	31	80	F	222	177	5	
	920605	66	80	F	242	245	5	
	920605	66	78	F	265	255	7	
	920608	66	100	F	271	315	5	
	920605	66	78	F	275	277	1	
	920604	22	50	F	288	394	4	
	920605	66	80	M	255	225	1	

<sup>a</sup>maturity codes are described in

Appendix Table 5b. Date, site, depth, sex and fork length (mm) for landed catch excluding rockfish. Data are sorted by species, sex and length.

SPECIES	DATE	SITE	DEP	SEX	LEN
Spiny dogfish					
	920610	36	56	-	800
	920607	4	55	F	580
	920603	16	91	F	790
	920610	36	56	F	800
	920608	22	85	M	691
	920604	36	58	M	789
	920607	36	47	M	794
	920607	36	47	M	802
	920608	22	85	M	807
	920605	31	100	M	823
	920607	38	107	M	840
	920610	36	56	M	857
	920605	31	100	M	858
	920605	31	100	M	889
Spotted ratfish					
	920604	36	58	F	595
Pacific cod					
	920602	65	92	-	363
	920603	16	52	-	365
	920607	4	52	-	382
	920609	16	88	-	388
	920606	16	55	-	420
	920608	16	88	-	444
	920609	16	88	-	469
	920602	65	80	-	475
	920603	16	52	-	504
	920611	22	85	F	532
Sablefish					
	920608	22	85	-	449
	920608	22	85	-	455
Kelp greenling					
	920607	66	91	F	248
	920607	66	91	F	248

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Kelp greenling					
	920611	31	55	F	251
	920602	22	19	F	278
	920605	31	43	F	299
	920605	31	20	F	300
	920602	22	19	F	311
	920604	22	35	F	312
	920602	22	50	F	316
	920610	66	15	F	316
	920610	22	17	F	317
	920610	22	15	F	319
	920609	65	58	F	320
	920605	66	14	F	324
	920605	31	20	F	325
	920610	22	50	F	326
	920602	22	13	F	327
	920610	6	22	F	328
	920602	65	25	F	330
	920610	22	84	F	330
	920609	16	18	F	331
	920604	6	58	F	332
	920610	22	50	F	334
	920604	6	28	F	336
	920608	66	57	F	337
	920602	65	31	F	341
	920610	22	50	F	343
	920604	22	35	F	344
	920608	66	57	F	344
	920607	16	15	F	345
	920609	65	28	F	349
	920602	65	25	F	350
	920606	16	55	F	350
	920605	31	20	F	351
	920608	66	57	F	351
	920609	31	51	F	352
	920601	38	52	F	355
	920604	6	15	F	358
	920604	22	35	F	360
	920606	4	30	F	367
	920607	4	55	F	368
	920602	22	25	F	370
	920609	65	58	F	372
	920605	66	14	F	375
	920604	6	15	F	376
	920610	22	84	F	380

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Kelp greenling					
	920606	16	55	F	381
	920603	6	26	F	384
	920610	42	13	F	384
	920602	22	25	F	385
	920610	42	13	F	386
	920607	66	91	F	387
	920610	36	56	F	387
	920602	22	50	F	388
	920602	65	60	F	389
	920607	4	55	F	391
	920603	6	23	F	392
	920607	66	91	F	392
	920606	16	55	F	394
	920603	38	17	F	398
	920602	22	25	F	400
	920610	6	24	F	400
	920610	22	17	F	401
	920606	4	22	F	402
	920610	42	13	F	402
	920607	16	30	F	403
	920606	38	80	F	407
	920607	4	17	F	415
	920604	38	55	F	418
	920611	22	85	F	452
	920609	31	18	F	468
	920602	22	25	F	531
	920606	16	55	M	297
	920609	16	18	M	301
	920610	22	56	M	305
	920602	22	13	M	306
	920611	31	13	M	309
	920604	22	50	M	315
	920605	66	14	M	315
	920602	65	30	M	317
	920605	66	14	M	318
	920608	31	22	M	318
	920610	22	50	M	318
	920607	4	17	M	323
	920610	22	17	M	323
	920602	22	13	M	324
	920605	31	20	M	326
	920602	22	13	M	327
	920608	31	22	M	327
	920610	6	22	M	328

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Kelp greenling					
	920604	22	50	M	330
	920610	6	22	M	330
	920603	6	26	M	331
	920610	22	56	M	331
	920604	6	28	M	332
	920610	22	50	M	332
	920608	66	18	M	333
	920610	22	17	M	333
	920602	65	31	M	335
	920610	22	17	M	335
	920610	6	22	M	335
	920603	6	26	M	336
	920608	31	22	M	336
	920610	6	24	M	336
	920602	22	13	M	337
	920604	6	28	M	337
	920607	4	18	M	338
	920610	22	56	M	339
	920602	22	13	M	340
	920603	6	23	M	340
	920604	22	50	M	340
	920607	42	10	M	341
	920607	4	18	M	342
	920607	4	18	M	343
	920610	6	24	M	343
	920607	4	18	M	344
	920607	4	52	M	344
	920610	42	12	M	344
	920604	6	15	M	345
	920608	31	22	M	345
	920608	31	22	M	346
	920605	66	50	M	347
	920609	4	53	M	347
	920610	36	53	M	348
	920605	66	50	M	350
	920610	6	22	M	350
	920607	42	10	M	351
	920610	22	15	M	351
	920602	22	19	M	352
	920605	31	20	M	352
	920606	38	80	M	352
	920606	4	30	M	355
	920609	4	20	M	355
	920609	65	28	M	355

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Kelp greenling					
	920610	6	22	M	357
	920610	36	53	M	357
	920605	66	30	M	358
	920602	22	25	M	359
	920607	4	55	M	359
	920607	4	18	M	360
	920610	42	12	M	360
	920611	31	13	M	360
	920609	4	20	M	361
	920610	6	24	M	361
	920603	6	50	M	362
	920607	4	17	M	362
	920607	4	18	M	362
	920610	6	22	M	362
	920604	22	50	M	363
	920607	4	18	M	363
	920608	66	57	M	363
	920602	65	31	M	364
	920607	42	10	M	364
	920602	22	25	M	365
	920605	66	14	M	365
	920607	42	10	M	365
	920609	4	20	M	365
	920610	22	56	M	365
	920610	6	24	M	365
	920610	6	22	M	366
	920605	66	50	M	367
	920607	4	17	M	367
	920609	4	20	M	367
	920610	22	17	M	367
	920607	42	10	M	368
	920607	4	18	M	368
	920610	42	13	M	368
	920607	4	18	M	369
	920606	16	55	M	371
	920607	36	27	M	371
	920608	31	22	M	371
	920608	31	22	M	371
	920607	42	10	M	372
	920610	22	56	M	373
	920609	4	20	M	374
	920610	42	13	M	374
	920606	42	14	M	375
	920607	42	10	M	375

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Kelp greenling					
	920609	31	51	M	375
	920607	42	10	M	376
	920607	4	18	M	378
	920603	38	17	M	380
	920609	4	53	M	380
	920609	4	20	M	380
	920610	22	15	M	380
	920602	22	50	M	381
	920606	4	30	M	381
	920610	22	15	M	381
	920606	42	14	M	382
	920607	42	10	M	382
	920610	42	12	M	383
	920610	42	12	M	383
	920607	4	17	M	386
	920602	65	25	M	387
	920607	16	30	M	387
	920608	31	22	M	388
	920609	4	20	M	388
	920603	6	26	M	390
	920604	36	23	M	390
	920607	42	10	M	390
	920610	42	13	M	390
	920607	16	30	M	392
	920607	16	30	M	393
	920607	42	10	M	395
	920602	65	41	M	397
	920604	6	28	M	397
	920606	42	14	M	397
	920610	6	22	M	397
	920606	42	14	M	398
	920606	4	55	M	398
	920606	16	55	M	401
	920607	4	17	M	401
	920606	42	14	M	404
	920610	22	17	M	406
	920603	42	17	M	408
	920603	42	17	M	410
	920610	22	15	M	415
	920610	22	15	M	445
Lingcod					
	920608	31	55	-	1000

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Lingcod					
	920609	31	51	F	440
	920605	31	20	F	448
	920610	42	13	F	460
	920605	66	14	F	471
	920609	31	51	F	510
	920605	66	50	F	523
	920610	22	56	F	526
	920605	31	20	F	545
	920605	66	50	F	563
	920605	66	30	F	565
	920607	16	30	F	580
	920603	6	55	F	585
	920610	42	12	F	592
	920604	38	92	F	645
	920602	22	50	M	-
	920609	4	20	M	360
	920610	66	15	M	391
	920610	42	12	M	398
	920606	38	20	M	400
	920609	31	51	M	423
	920611	31	13	M	423
	920602	65	55	M	455
	920605	66	30	M	463
	920605	31	20	M	470
	920609	31	18	M	477
	920604	38	18	M	484
	920605	31	20	M	489
	920608	31	22	M	490
	920609	31	18	M	496
	920608	31	22	M	505
	920604	38	55	M	506
	920602	65	30	M	515
	920604	31	45	M	519
	920603	6	26	M	631
	920609	4	20	M	740
	920607	4	17	-	313
Red Irish lord					
	920607	4	17	-	255
Brown Irish lord					
	920610	6	22	-	192

Appendix 5b. (cont'd.)

SPECIES	DATE	SITE	DEP	SEX	LEN
Cabazon					
	920607	16	15	-	335
Pacific sanddab					
	920603	16	52	-	295
	920603	16	52	-	307
Speckled sanddab					
	920608	22	85	-	295
	920608	22	85	-	309
Greenland halibut					
	920603	16	91	F	538

