Results of the Dover Sole (*Microstomus pacificus*) Biomass Survey Conducted off the West Coast of Vancouver Island February 13-27, 1995

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RESULTS OF THE DOVER SOLE *(Microstomus pacificus)* BIOMASS SURVEY CONDUCTED OFF THE WEST COAST OF VANCOUVER ISLAND FEBRUARY 13-27, 1995

by

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ABSTRACT

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At the request of fishery managers, a Dover sole biomass survey was conducted off the west coast of Vancouver Island (PMFC Area 3CD) in February 1995. Dover sole CPUE differed significantly by depth and location over the survey area. The highest catch-rates occurred at depths of 300-399 fa and catch-rates were higher in Area 3C than Area 3D. The overall mean catch-rate for Dover sole was significantly lower on this survey than it was on a similar survey conducted in 1981. However, the catch-rate data were not directly comparable between the two surveys due to differences in the fishing gear used. The estimate of exploitable biomass, adjusted for the difference in net used, did not differ appreciably between the two surveys. The biomass estimates provided herein provide a relative scale for comparison between the two surveys. Biological data collected were analyzed for differences in length and age composition between the 1995 survey and the 1981 survey and to estimate parameters for the length-maturity and length-weight relationships for this stock. There were significant declines in mean size and age for both sexes of Area 3C-D Dover sole between samples collected on the 1981 and 1995 surveys. Maturity data collected indicated that most of the males sampled (70%) were in spawning condition. Only 1% of the mature females were spawning while most (70%) were still in the ripening stages. The length at 50% maturity, L_{50}, was 25.1 cm for males and 35.7 cm for females.

RÉSUMÉ

Fargo, J. and G.D. Workman. 1995. Results of the Dover sole (*Microstomus pacificus*) biomass survey conducted off the west coast of Vancouver Island February 13-27, 1995. Can. Manuscr. Rep. Fish. Aquat. Sci. 2340: 75 p.

À la demande des autorités responsables des pêches, une étude concernant la biomasse de la sole du Pacifique a été effectuée dans un secteur situé au large de la côte ouest de l'île de Vancouver (secteur 3CD PMFC) en février 1995. Cette étude montre que le nombre de prises par unité d'effort diffère sensiblement selon la profondeur et le secteur observé. Elle montre également que les meilleures pêches surviennent à des profondeurs de 300 à 399 brasses et que le taux de capture est plus élevé dans le secteur 3C que dans le secteur 3D. Le taux de capture moyen total de soles du Pacifique enregistré lors de cette étude est sensiblement moindre que celui enregistré lors d'une étude similaire effectuée en 1981. Toutefois, on ne peut comparer les chiffres obtenus du fait de la différence des engins employés. Mais dès lors qu'on pondère les chiffres de la biomasse exploitable en fonction de la différence des filets employés, il n'y a pas d'écart notable entre les données produites par l'une et l'autre des deux études. Les chiffres de biomasse ainsi obtenus fournissent une échelle de comparaison entre les deux études. Les auteurs ont analysé les données biologiques recueillies pour dégager les différences des deux études en ce qui concerne la distribution de l'âge et de la taille et pour déterminer les paramètres de la corrélation taille-maturité et taille-poids. Les auteurs notent une diminution importante de la taille et de l'âge moyens observés dans le secteur 3C-D, mâles et femelles confondus, en 1995 par rapport à 1981. Les données concernant la maturité indiquent que la plupart des mâles échantillonnés (70 %) étaient en état de frayer, mais que seulement 1 % des femelles arrivées au stade de maturité frayaient effectivement et que 70 % étaient encore en phase de croissance. La taille des individus arrivés à moitié de leur maturité (L_{50}) était de 25,1 cm pour les mâles et de 35,7 cm pour les femelles.

INTRODUCTION

The Dover sole *(Microstomus pacificus)* is one of the most important flatfish species caught in the British Columbia trawl fishery. The fishery for Dover sole takes place in two different geographical areas on two separate stocks. The 'northern' stock occupies Hecate Strait in summer and migrates to waters off the west coast of the Queen Charlotte Islands in winter to spawn (PMFC Area 5C-E). The fishery for this stock began in 1970 and involves mainly depths of 60-80 fa in summer and 200-400 fa depths in winter. The 'southern' stock occupies the area off the west coast of Vancouver Island (PMFC Area 3CD)(Fargo 1994). The Dover sole fishery here began in 1988 and takes place, for the most part, on a spawning aggregation present in deepwater (200-400 fa) in this area during the first quarter of the year.

Since the Area 3CD fishery began, annual coastwide landings of Dover sole have nearly tripled to 3232 t in 1994. Managers have treated this fishery as a developing fishery, applying no quota, but rather monitoring the trend in CPUE since the start of the fishery. With the rapid development of the fishery since 1990 and a coincidental decline in CPUE there has been concern that the current level of harvest is not sustainable. Accordingly, in the fall of 1994, managers requested that a Dover sole survey be conducted off the west coast of Vancouver Island. The purpose of the survey was to provide catch-rate data for the Area 3CD stock that could be compared with similar data collected during an exploratory fishing survey for Dover sole conducted in 1981 when the stock was probably in the pristine state (Carter et al. 1981). In addition, biological data collected could be compared for differences in the size and age structure of the 'southern' stock between 1981-95 and between the 'southern' and 'northern' stocks (Stocker et al. 1980).

In February 1995, a commercial trawler was chartered to repeat the Dover sole survey conducted in 1981. This report summarizes the catch-rate data collected on the 1995 survey and compares it with data from the 1981 survey. Biomass estimates for the stock are derived using the 1981 and 1995 survey data. Parameters are estimated for the length-weight, length-maturity and age-length relationships for the stock and compared with those derived for the 'northern' stock.

METHODS

The F/V OCEAN SELECTOR, a 47.9 m trawler, was chartered to conduct the survey. The survey timing coincided with the period of peak landings for the Area 3CD Dover sole fishery and overlapped with the dates of the 1981 survey.

The net used for the survey was an Atlantic Western III boxtrawl with a 24.1 m headrope and 34.6 m footrope (Figure 1). The groundline consisted of 32, 0.4 m rubber rollers. The mesh sizes (stretched) of the wings, body, intermediate and codend were 12.7 cm, 12.7 cm, 11.4 cm and 10.2 cm, respectively. The net was towed behind a set of Thybron doors weighing 1500 kg each.

The trawl survey design was the same stratified design that was employed for the 1981 survey (Figure 2). Effort was allocated proportionately to 183 m (100 fa) depth intervals over the range of suitable habitat for the adult portion of the Area 3CD Dover sole stock (Figure 3). We planned to repeat tows using locations from the 1981 survey. However, some effort was reallocated from the 200-299 fa depth interval to the 300-399 fa depth interval where Dover sole were most abundant on the 1995 survey. In addition six tows, 8,9,12,26,29 and 37, were added during the survey to increase the evenness of sampling in proportion to depth. Two tows, 49 and 50, were replicates of tows 3 and 2. The average duration of tows on the survey was one hour.

The catch from each tow was dumped into a fish holding bin in the stern of the vessel and moved by conveyor to the sampling area. The catch was then sorted by species and weighed. For catches $\rangle$ 500 kg a subsample of nine baskets ($\approx$ 40 kg capacity) was used to estimate species composition and to collect biological data. To ensure a random sample of the catch three baskets were removed from the beginning, middle and end of the catch as it moved down the conveyor belt from the holding bin. Species weights were measured using a digital scale (Marel M2000 model M-60). Information on length, age, weight and stage of maturity was obtained from random subsamples of the catch of Dover sole. Biological data were also collected for a number of other species.

If the mean CPUE, $\bar{c}_i$, for each depth interval, i, is weighted by the area of each 100 fa depth interval, w_i, and N is the total area, the estimate of the stratified mean catch rate, $\bar{C}_{st}$ is:

$$\bar{C}_{st} = \frac{\sum_{i=1}^{4} w_i \times \bar{c}_i}{N}$$

(Cochran 1977 eq. 5.1)

Using the ratio of the total area surveyed, A (nm^2), to the area swept by the net, a (nm^2/h) (0.0268 and 0.0203 for the 1981 and 1995 surveys respectively) and the stratified mean Dover sole catch rate, $\bar{C}_{st}$ (t/h), adjusted for the catching coefficient of

the net, q (assumed to be=1), Biomass, B (t), can be estimated as:

$$B=\frac{(\bar{C}_{st})\,(A)}{(a)\,(q)}$$

Otoliths for age determinations were collected on both the 1981 and 1995 surveys. Samples were stored in a glycerin and water (1:1) solution to which thymol (5%) was added as a fungicide. In the ageing lab at the Pacific Biological Station, the symmetrical (blind side) otolith from each sample was scored with a Buehler Isomet slow-speed saw to standardize the plane of view. The otolith was then broken and the section was burned to darken the annuli (Chilton and Beamish, 1982).

The burnt sections were aged using a dissecting microscope with reflected light delivered by fibre optics. Only the month that the samples were collected was known by the readers. This information was necessary to make the correct determination of growth at the otolith margin. Ages were determined from two readings. In cases where the two readings did not agree a third reading was used to resolve the age. A random sample of 50% of the otoliths collected was aged for each survey.

Gonad maturity for Dover sole sampled was determined macroscopically according to a maturity index (Appendix Table 12). The length-maturity data for both sexes conformed to the logistic model described by Gunderson (1980). If P_i is the proportion of sexually mature fish in the ith length group, L_i, then the fraction of fish mature in each length group is:

$$P_i=\frac{1}{1+e^{(a+b(L_i))}}$$

The length at which 50% of the fish of each sex were mature, L_{50}, was determined by substituting sigmoidal parameters a and b from equation 3, and solving the following expression (Rickey 1995):

$$L_{50}=-a/b$$

The length-weight relationships for both sexes were determined from a sample of Dover sole taken at trawl stations 49 and 50. Fish were weighed (wet) individually using a digital

scale (MAREL M2000 model M-60) and measured for total length to the nearest mm. The relationship between weight, W (g), and length, L (mm), is given by the following expression:

$$W=a(L^b)$$

RESULTS

CATCH DATA

Trawls were completed at a total of 50 stations on the 1995 survey (Figure 4, Appendix table 1). A summary of the biological data collected during the cruise is contained in Table 1. Dover sole was the first rank species by weight, accounting for 32.6% of the total catch during the survey (Table 2). Arrowtooth flounder which made up 22.4% of the catch and sablefish which accounted for 13.6% were the rank two and three species.

We first compared fishing factors for differences between the 1981 and 1995 surveys (Table 3). There was no significant difference in the mean depth fished during the two surveys. However, tow duration and total catch were significantly greater for the 1981 survey than the 1995 survey. Catch-rates were not directly comparable between the two surveys because of the differences in vessels, captains and fishing gear. The tow duration on the 1995 survey was limited to one hour to facilitate processing and sampling of the entire catch. The vessel captain advised that one hour was adequate fishing time for this type of work.

Secondly we compared the overall Dover sole CPUE between surveys and Dover sole CPUE within surveys by depth and area (Figures 5,6). The overall Dover sole mean CPUE was significantly higher for the 1981 survey (Mann-Whitney test, $p<0.0001$) (Table 3). The mean CPUE of the 1995 survey was somewhat less precise than that for the 1981 survey (higher standard deviation, see Table 3). There were no significant differences in Dover sole CPUE between Areas 3C and 3D for both surveys. There were no significant differences in Dover sole CPUE between sub-areas 23, 24 and 25 for the 1981 data but there were for the 1995 data (Kruskal-Wallis test, $p=0.001$). CPUE was significantly lower in sub-area 24 than in the other sub-areas in 1995. Sub-area 24 was the only one of the three sub-areas fished on the 1995 survey where there were no large catches (maximum=73 kg/h) of Dover sole. There were significant differences in Dover sole CPUE among depth strata for both surveys (Kruskal-Wallis test, $p<0.0001$) (Table 5). Mean CPUE was highest in the 200-299 fa depth interval on the 1981 survey and in the 300-399 depth

interval on the 1995 survey. The difference in CPUE by depth between the two surveys partly reflects interannual variation in the spawning season for the species (Hunter et al. 1992).

BIOMASS

The stratified mean CPUE estimates for the 1981 and 1995 surveys were 234.2 kg/h and 193.8 kg/h, respectively. The estimate of exploitable biomass (fish ≥ 30 cm) based on the 1981 survey CPUE data was 6633 t. The corresponding figure for the 1995 survey was 7246 t. The apparent discrepancy between the stratified mean CPUE estimates and the biomass estimates is due to differences in the fishing gear used on the two surveys. Although the stratified mean catch rate for the 1981 survey was 21% greater than that for the 1995 survey the area swept by the net on the 1981 survey was 32% greater than that for the 1995 survey. Thus, the latter exerted more influence on the estimate of biomass than the former.

SIZE COMPOSITION

The ratio of males to females sampled on the 1995 survey, 1.76, was slightly lower than that for the 1981 survey, 1.93 (Figure 7, Appendix table 2). There were dramatic differences in overall size composition for both sexes between the two surveys (Figure 8). Fish larger than 40 cm accounted for 42% of the males and 68% of the females in samples collected in 1981. In the 1995 samples only 16% of the males and 31% of the females were larger than 40 cm.

There was a significant difference in mean size of both sexes between the 1981 and 1995 surveys as well (t-test, $p<0.0001$). The mean size of males caught on the 1981 survey was 38.7 cm compared to 35.2 cm for the 1995 survey. Similarly, for females, the mean size on the 1981 survey was 41.9 cm compared to 37.3 cm for the 1995 survey.

There were also significant differences in the size composition of fish of both sexes between depth strata in 1995 (t-test, $p<0.0001$)(Figure 9). The smallest mean sizes occurred in the shallowest (100-199 fa) depth interval, 31.1 cm for males and 31.4 cm for females while the largest occurred in the deepest (400-499 fa) depth interval, 37.9 cm for males and 40.3 cm for females. On the 1981 survey length data were collected for the 200-299 fa depth interval only, where Dover sole were most abundant.

AGE COMPOSITION

The precision of the otolith readings for the 1981 samples averaged 70% ± 1 year and 78% ± 2 years while precision for the 1995 samples averaged 85% ± 1 year and 90% ± 2 years. The lower precision for the 1981 samples is due to the length of time that these samples had been stored. Many of the otoliths from samples collected on the 1981 survey had become chalky which made their sections more difficult to interpret.

There were significant differences in the mean age of both sexes between the samples from the 1981 and 1995 surveys (t-test, $p<0.0001$). The mean age of males sampled on the 1981 and 1995 surveys was 19.9 y and 13.6 y, respectively (Figure 10). The mean age of females sampled was 14.8 y for the 1981 samples and 11.9 y for the 1995 samples. Fifty percent of the males sampled on the 1981 survey were older than 17 y compared to only 22% for the 1995 samples (Figure 11). Fifty percent of the females sampled on the 1981 survey were older than 13 y compared to 23% for the 1995 samples. The strong mode for both sexes at age 12, 13 in the 1981 samples may represent the contribution of strong year-class(es) (1967, 68). Additional samples are necessary to confirm this.

Parameter estimates for the von Bertalanffy growth equation (Ricker 1975) for both sexes for each survey are listed as follows:

	1981			1995		
	$L\infty$	k	t_o	$L\infty$	k	t_o
males	42.8	0.12	-3.97	42.3	0.09	-8.25
females	53.0	0.09	-3.50	49.1	0.09	-6.46

The higher proportion of fish aged 15-50 y in the 1981 samples is readily apparent in the age-length relationship (Figure 12). The 1981 data set for females contains a higher proportion of fish aged 15-30 y compared to the 1995 data (Figure 13). However, females older than 35 y are present only in the 1995 samples. This may be due to the survey timing relative to the spawning season. For many marine flatfish species older females spawn earlier than younger ones (Fargo and Tyler 1994). The 1995 survey was conducted earlier in the Dover sole spawning season than the 1981 survey, thus the availability of older females may have been higher on the 1995 survey.

MATURITY

There were significant differences in the stage of maturity for both sexes between the two surveys ($p<0.0001$, Mann-Whitney test). There were significantly more developing males

and fewer spawning males sampled on the 1981 survey than on the 1995 survey. There were significantly fewer immature females and more resting females sampled on the 1981 survey than on the 1995 survey. On the 1995 survey, 71% of the males caught were in spawning condition (See Appendix table 12 for definition of maturity stages) while 54% of the females were in a developing condition (Figure 14, Appendix Table 5). For the 1981 survey 62% of the males and 60% of the females were in a developing condition.

Parameter estimates and regression statistics for the length-maturity relationships are listed in Table 6. The smallest mature male sampled on the 1995 survey was 24 cm while the smallest mature female was 30 cm (Figure 15). The length of 50% maturity, L_{50}, was 25.1 cm for males and 35.7 cm for females. The stage of maturity for females increased with increasing length (stages 1-4) while there was no relationship between length and stage of maturity for males (Figure 16). Approximately 50% of the spawning males (stage 5) were larger than 35 cm while 50% of the ripening females (stage 4) were larger than 44 cm. Maturity ogives could not be produced for the 1981 survey because only one immature male and two immature females were sampled. However in samples taken from the Area 5C-E stock, 50% of the males were mature at 37.1 cm while 50% of the females were mature at 39.5 cm (Stocker et al. 1980).

LENGTH-WEIGHT

The fitted length-weight relationship for both sexes of Dover sole caught on the 1995 survey is shown in Figure 17. Parameter estimates and regression statistics for the length-weight relationships are listed in Table 6. Weight-at-length did not differ appreciably between the sexes until fish reached a size of about 40 cm. No length-weight data were collected on the 1981 survey. A comparison of the length-weight relationship between the Area 3CD stock and Area 5C-E stock could not be made because of the advanced stage of maturity of fish sampled on the 1995 survey compared to Area 5C-E where fish were sampled at a different time of year.

DISCUSSION

CATCH-RATE DATA

The catch rate data for the 1981 and 1995 surveys are not directly comparable since the vessels, captains and fishing gear used differed between the two surveys. The higher stratified mean catch-rate for the 1981 survey is due, in part, to the larger net used on that survey. Differences in tow time,

survey design and skipper/vessel effects embedded in these data make direct comparisons of the CPUE data between the two surveys impossible.

Variation in Dover sole distribution/abundance due to differences related to the spawning process also influences the CPUE data. There is evidence of interannual variation in the time of peak spawning for Dover sole in U.S. studies (Hunter et al. 1992). If peak spawning occurred later in 1995 than in 1981, as indicated by the maturity data, then the CPUE data in 1995 would be biased low relative to the data for 1981. As mentioned earlier, spawning for many marine fish including Dover sole has been shown to be size-dependent with larger females spawning earlier than smaller ones. This affects the catch-rate index and size/age composition of the samples as well.

BIOMASS ESTIMATES

Estimation of absolute abundance from fishing survey data is full of difficulties (Doubleday and Rivard 1981). The variation in such data is usually high and the data are non-normally distributed. In addition to this the ratio of the area that is actually sampled to the total habitat area is always minuscule. Estimating the amount of suitable habitat for many species is difficult and extrapolated abundance estimates can vary widely with minor changes in the total habitat area. The ratio of the area sampled to survey area was 0.00326 and 0.00139 for the 1981 and 1995 surveys, respectively. The larger figure for the 1981 survey reflects both longer tows and the larger net used on that survey. More information is needed before an estimate of the amount of suitable habitat area for Dover sole in Area 3CD can be ascertained. Thus, the estimates of biomass herein are useful as relative rather than absolute indicators. The relative comparison of the biomass estimates from the two surveys is preferable to that of the stratified mean (unadjusted) CPUE because the difference in net type between the two surveys is accounted for in the biomass calculations.

Biomass estimates for the stock did not differ appreciably between the 1981 and 1995 surveys. Since the outset of the fishery for this stock the commercial CPUE has declined by 46% (Fargo, 1995). Further analysis is necessary to resolve this discrepancy.

BIOLOGICAL DATA

The changes in size and age composition between the two surveys were highly significant. The mean size and mean age for both sexes was significantly lower for the 1995 samples compared to the 1981 samples. The vessel captain on the 1995 survey noted that there was good fishing for large Dover sole in 1989-90 but

that after that they became scarce. In addition to a fishing effect, strong recruitment coupled with a fixed sample size would also produce this effect on the age composition. Unfortunately, there is no recruitment time series for this stock. However, recruitment for Dover sole stocks in U.S. waters actually declined over this period (Turnock et al. 1994). In the case of the females the changes in age composition were not as dramatic as those for males. The sex ratio of the catch in this fishery favours males nearly 2:1 and males live longer than females. A fishing effect would then presumably be apparent more readily in the data for males than females. The decline in mean age for males between the two surveys was, in fact greater than that for females.

The results of this analysis indicate that the population of Dover sole in Area 3CD is probably a discrete stock from that in Area 5C-E. A significant reduction in the proportion of older fish in the population is apparent between 1981 and 1995. Age composition samples for both sexes suggest that recruitment may have been higher during the 1980s than during the 1990s. The difference in the biomass estimates between the two surveys was negligible. The greatest potential source of error affecting the biomass estimates would arise from differences in Dover sole catchability between the two surveys. The slightly different timing of the surveys or interannual variation in the Dover sole spawning season could have a significant effect on the survey catch/rates. Until more is known about the bathymetric distribution of this stock relative to the spawning process it is unlikely that the survey estimates of biomass can be used for stock assessment.

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Table 1. Inventory of samples collected during the F/V Ocean Selector Dover sole biomass survey off the west coast of Vancouver Island, Feb. 13-27, 1995.

Species	Sample type					
	Length	Sex	Maturity	Otoloiths	Weight	Appendix table(s)
Arrowtooth flounder *(Atheresthes stomias)*	783	-	-	-	-	4
Dover sole *(Microstomus pacificus)*	2893	2893	1245	1245	200	2,5
English sole *(Pleuronectes vetulus)*	49	49	-	-	-	3
Petrale sole *(Eopsetta jordani)*	198	198	163	163	-	3,6
Rex sole *(Glyptocephalus zachirus)*	237	237	-	-	-	3
Pacific hake[1] *(Merluccius productus)*	126	121	93	126	82	-
Sablefish *(Anoplopoma fimbria)*	591	591	591	591	-	11
Longspine thornyhead *(Sebastolobus altivelis)*	50	50	50	50	-	10
Pacific ocean perch *(Sebastes alutus)*	350	350	350	350	-	8
Rougheye rockfish *(Sebastes aleutianus)*	242	240	240	200	-	7
Shortspine thornyhead *(Sebastolobus alascanus)*	50	50	50	50	-	9
Splitnose rockfish *(Sebastes diploproa)*	50	50	50	50	-	10
Sebastolobus spp.	113	-	-	-	-	4
Totals	5732	4829	2832	2825	282	

[1] Data for Pacific hake are not summarized in this report.

Table 2. Species composition by weight for F/V Ocean Selector Dover sole biomass survey off the west coast of Vancouver Island, Feb. 13-27, 1995.

Species	Weight (kg)	Percent
Dover sole	14468	32.6
Arrowtooth flounder	9928	22.4
Sablefish	6035	13.6
Pacific ocean perch	2826	6.4
Rougheye rockfish	2679	6.0
Shortspine thornyhead	2156	4.9
Splitnose rockfish	1398	3.2
Spiny dogfish	728	1.6
Petrale sole	639	1.4
Spotted ratfish	529	1.2
Longnose skate	474	1.1
Rex sole	361	0.8
Pacific halibut	351	0.8
Pacific hake	344	0.8
Shortraker rockfish	323	0.7
Redbanded rockfish	252	0.6
Squid	133	0.3
English sole	129	0.3
Walleye pollock	127	0.3
Slender sole	117	0.3
Sandpaper skate	107	0.2
Darkblotched rockfish	61	0.1
Lingcod	45	0.1
Silvergray rockfish	27	0.1
Chinook salmon	25	0.1
Yellowtail rockfish	18	0.0
Eelpouts	16	0.0
Big skate	11	0.0
Rosethorn rockfish	9	0.0
Aurora rockfish	7	0.0
Brown catshark	4	0.0
Pacific sanddab	4	0.0
Pacific cod	2	0.0
Total	44333	100.0

Table 3. Overall mean and standard deviation for fishing factors on the 1981 and 1995 Dover sole biomass surveys off the west coast of Vancouver Island.

Year	Dover sole CPUE (kg/h)			Effort (h)		Depth (fa)		Total catch (kg)	
	n	$\bar{x}$	σ	$\bar{x}$	σ	$\bar{x}$	σ	$\bar{x}$	σ
1981	42	521.2	862.3	2.18	0.552	295.1	72.1	2560.6	2752.7
1995	50	284.0	951.4	1.04	0.227	296.4	76.8	889.6	1006.4

Table 4. Mean Dover sole CPUE (kg/h) and standard deviation by area (see Figure 3) for the 1981 and 1995 Dover sole biomass surveys off the west coast of Vancouver Island.

Area	1981 n	1995 n	1981 $\bar{x}$	1981 σ	1995 $\bar{x}$	1995 σ
3C	21	31	440.4	681.6	148.4	391.6
3D	21	19	660.7	221.8	508.8	1457.2
23	10	14	424.6	728.3	315.2	546.6
24	10	17	500.3	690.1	11.0	17.6
25	22	19	630.6	1001.8	508.8	1457.2

Table 5. Mean Dover sole CPUE (kg/h) and standard deviation by depth interval (fa) for the 1981 and 1995 Dover sole biomass surveys off the west coast of Vancouver Island.

Depth Interval	Area (nm^2)	1981 n	1995 n	1981 $\bar{x}$	1981 σ	1995 $\bar{x}$	1995 σ
100-199	229	1	6	24.5	-	13.1	22.5
200-299	175	25	17	886.7	8.3	31.5	40.7
300-399	197	11	20	82.4	106.6	666.6	1441.0
400-499	158	5	7	4.7	8.3	45.9	56.1

Table 6. Parameter estimates for length-maturity and length-weight relationships for Area 3C-D Dover sole, F/V OCEAN SELECTOR Dover sole biomass survey, February 13-27, 1995.

	length-maturity					length-weight			
	a	b	L_{50}	n	r^2	a	b	n	r^2
males	24.626	-0.981	25.1	815	0.989	8.203×10^{-6}	3.02	107	0.937
females	13.152	-0.368	35.7	413	0.991	1.930×10^{-6}	3.28	93	0.941

NET DIMENSIONS AND CHARACTERISTICS FOR BOTTOM TRAWL

VESSEL OCEAN SELECTOR NET ATLANTIC WESTERN III

OBSERVATION PERIOD FEBRUARY 13-27, 1995

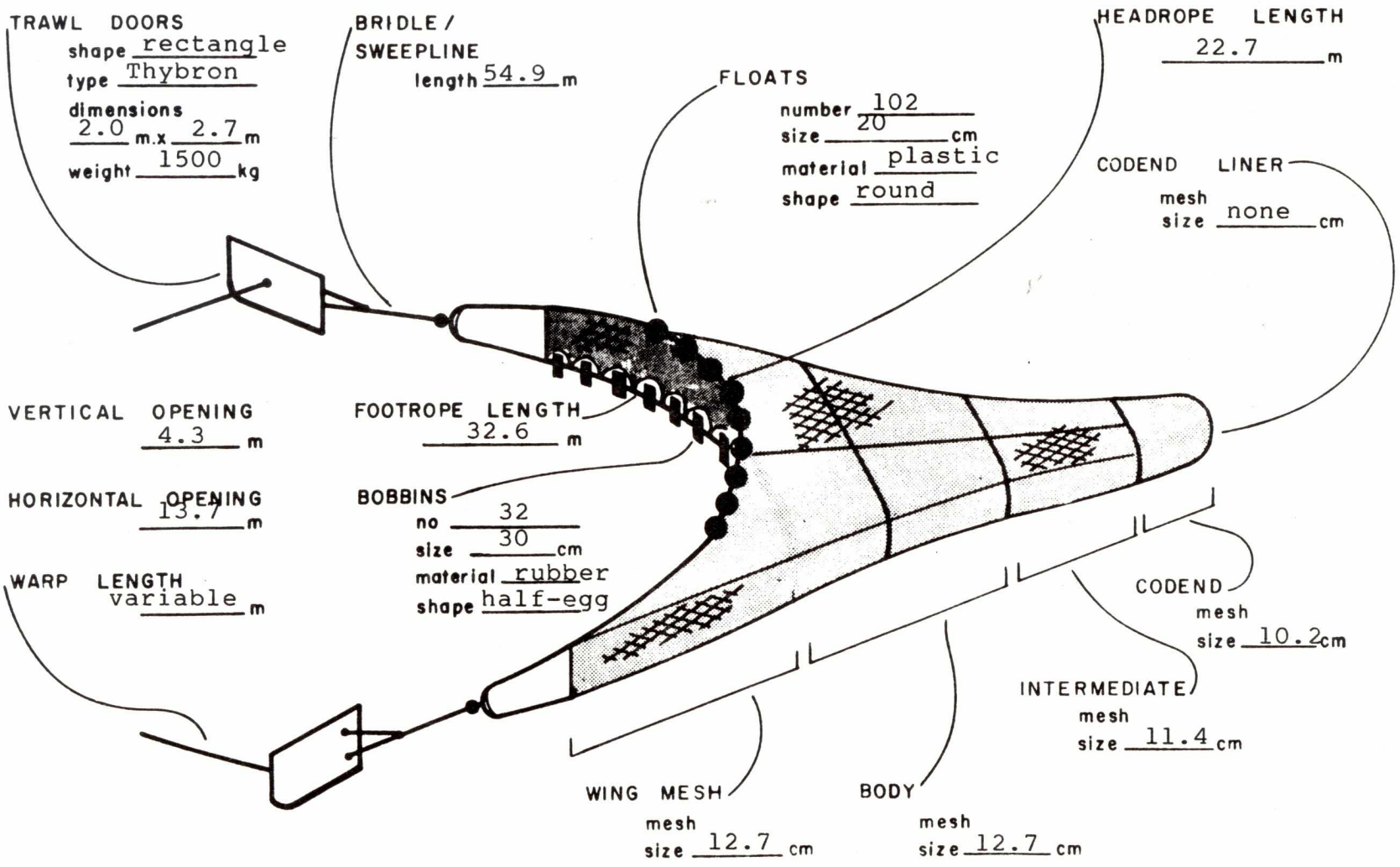


Fig. 1. Dimensions and characteristics for fishing gear used for F/V OCEAN SELECTOR Dover sole biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

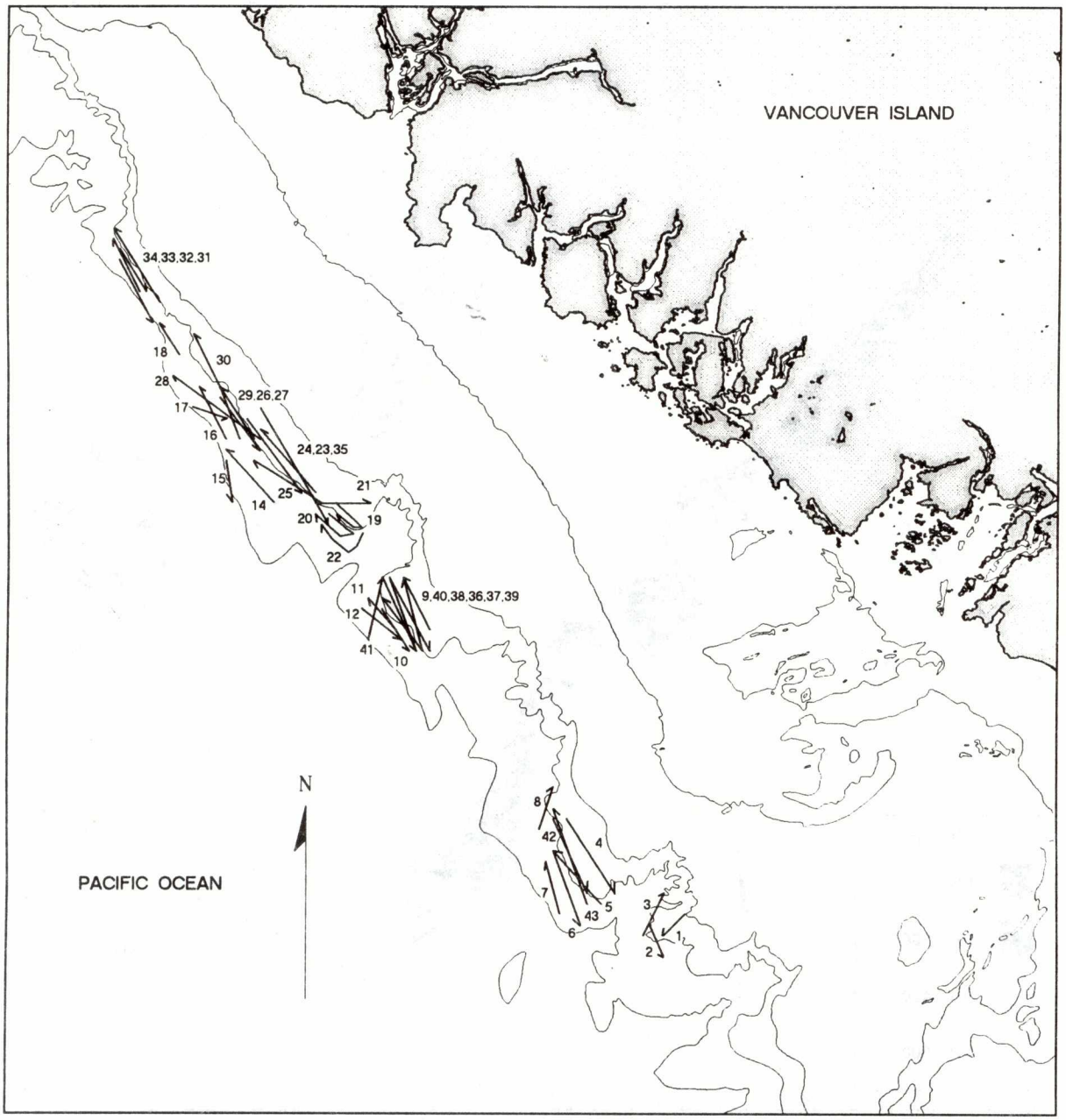


Fig. 2. Trawling stations (usable) for the F/V ARCTIC HARVESTER Dover sole biomass survey off the west coast of Vancouver Island, February-March, 1981.

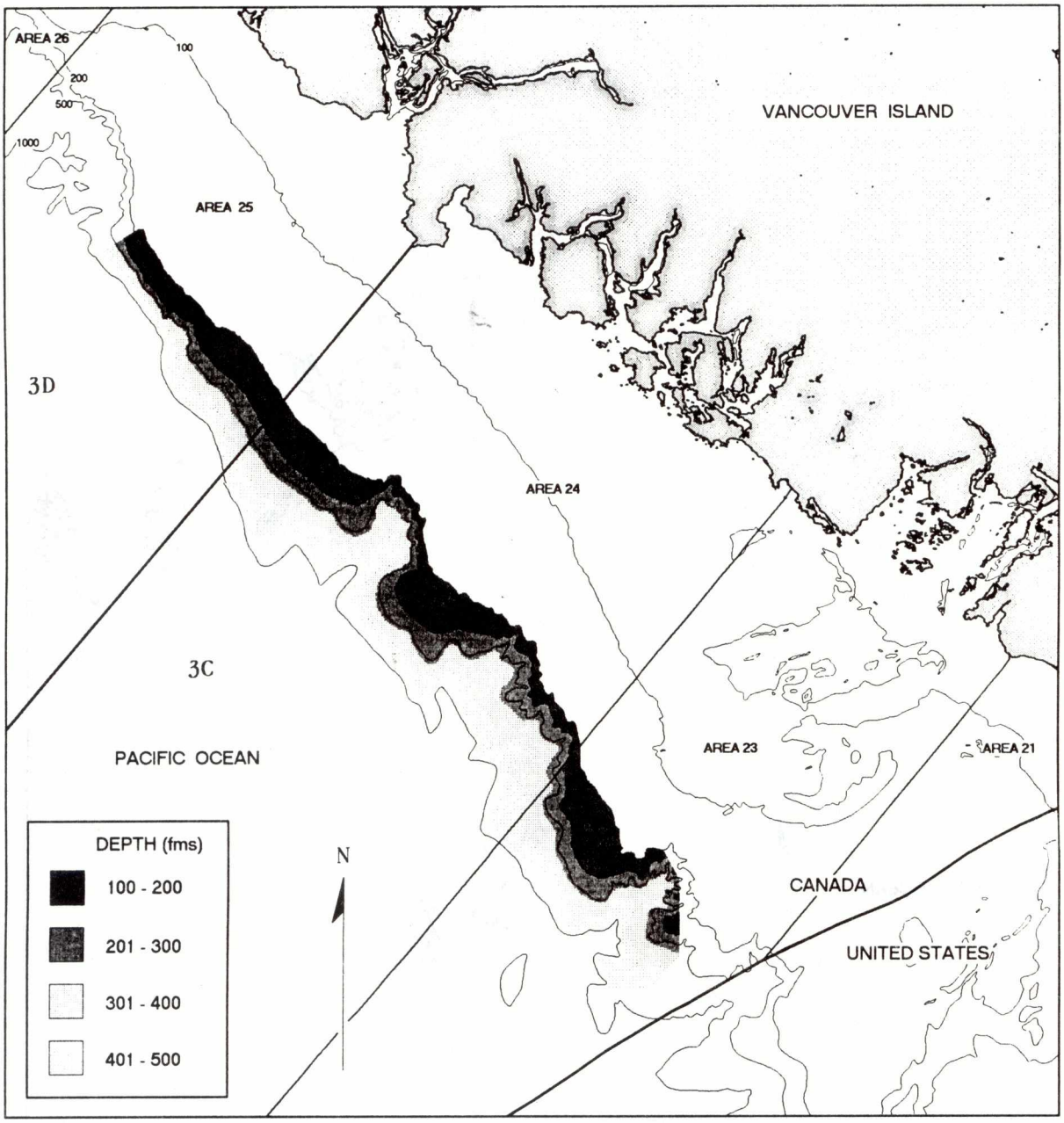


Fig. 3. Total known habitat (shaded by 100 fa depth intervals) for the spawning population of Dover sole off the west coast of Vancouver Island.

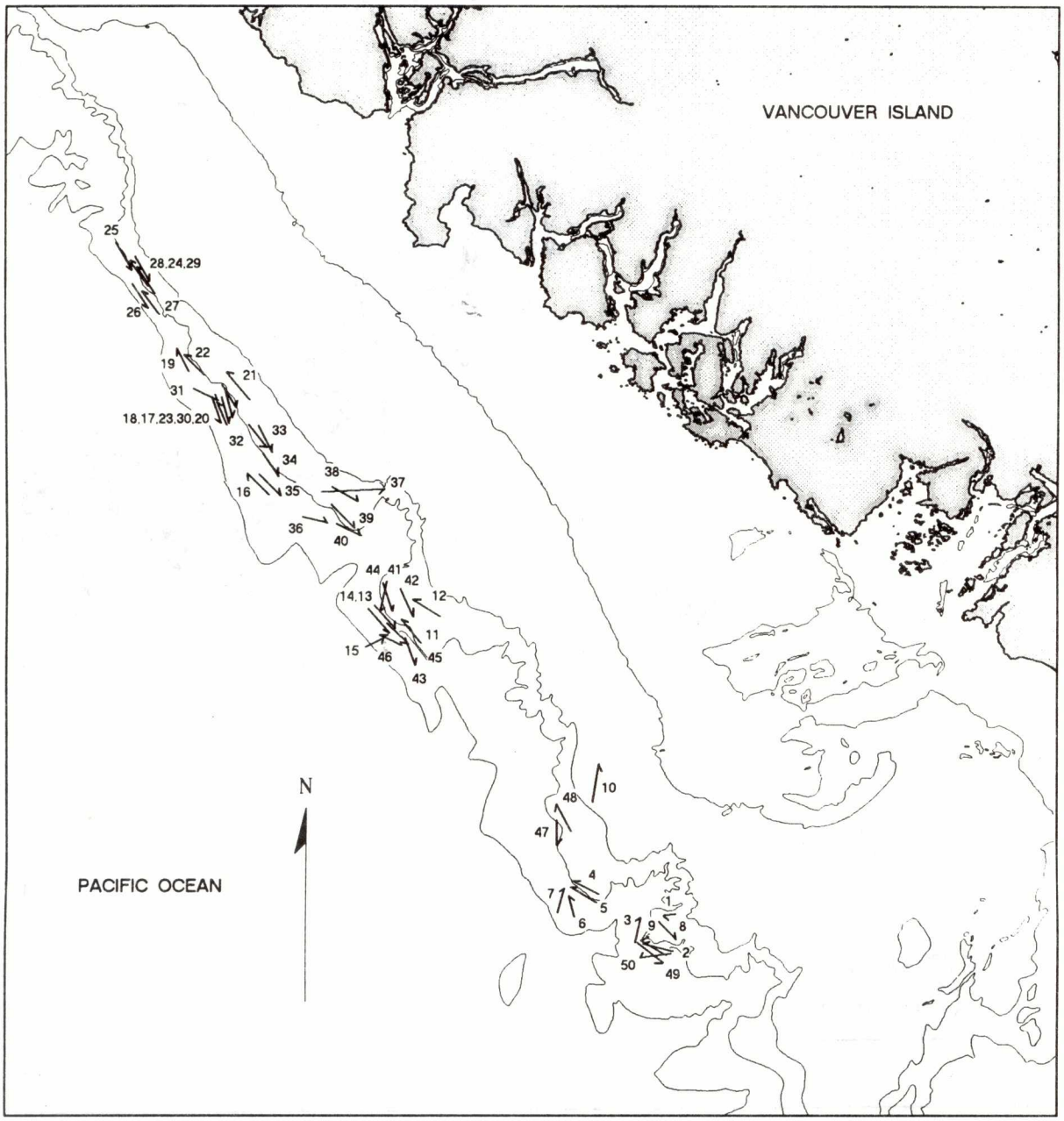


Fig. 4. Trawling stations for the F/V OCEAN SELECTOR Dover sole biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

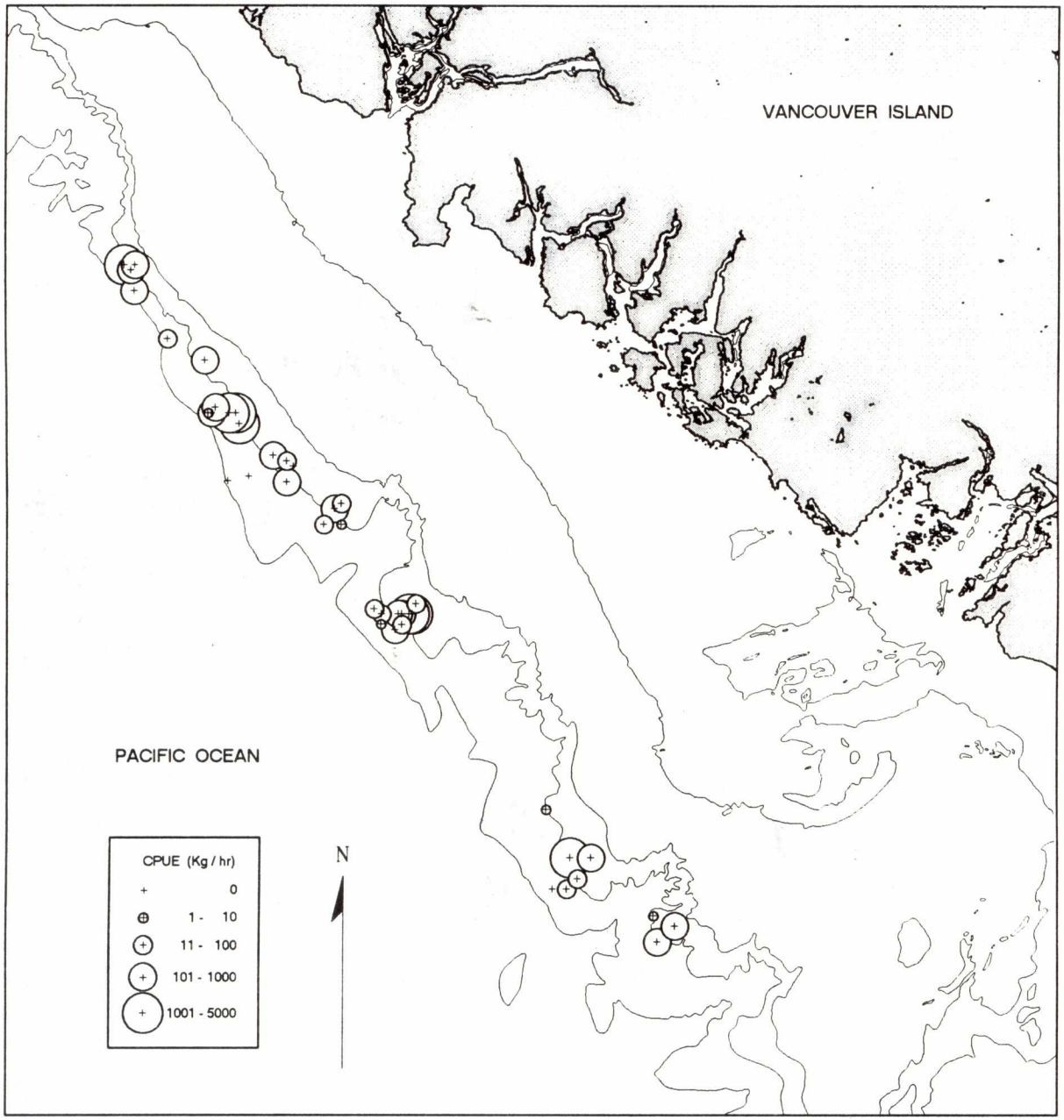


Fig. 5. Dover sole CPUE by haul for the F/V ARCTIC HARVESTER 1981 Dover sole biomass survey off the west coast of Vancouver Island, February-March, 1981.

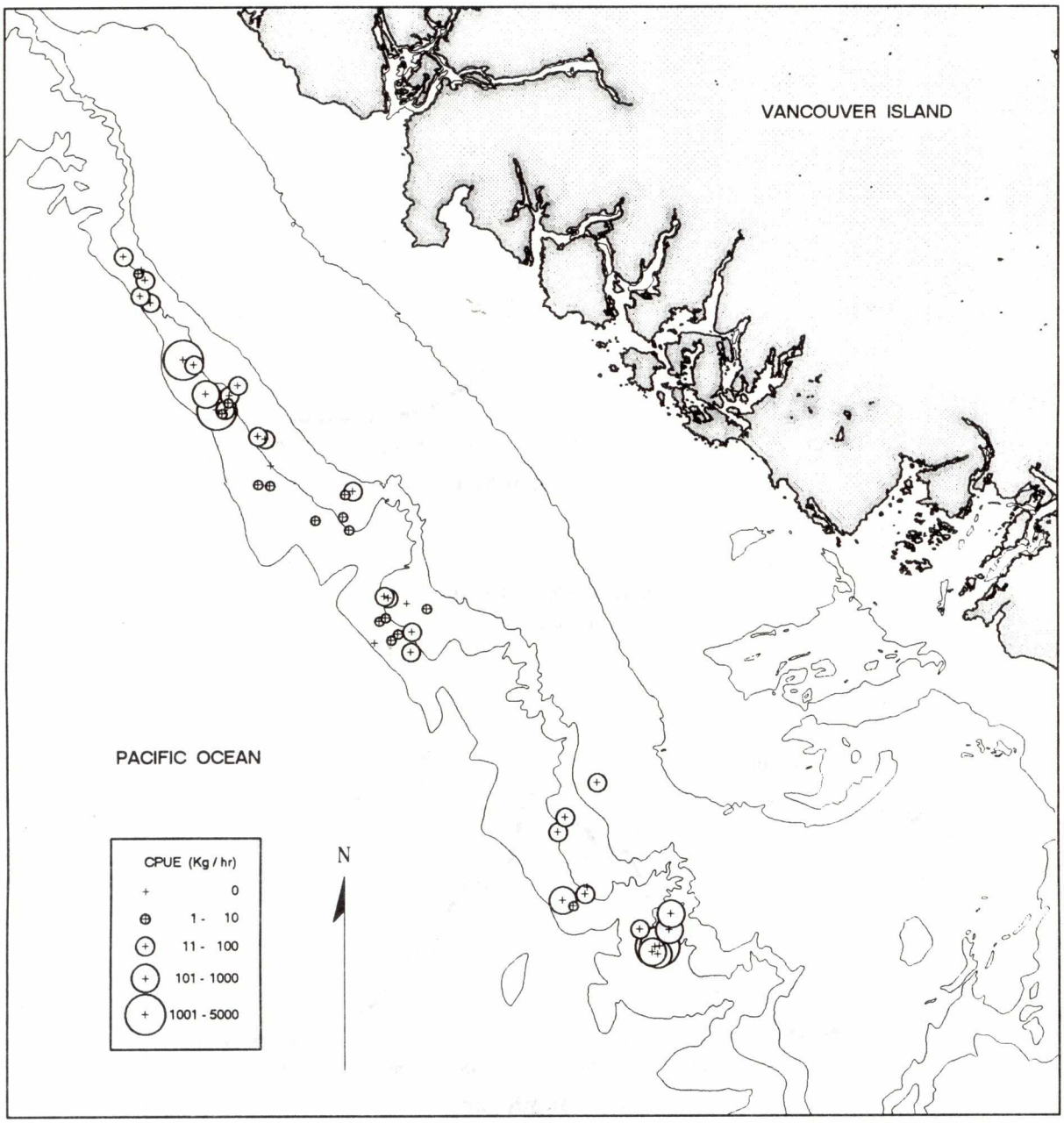


Fig. 6. Dover sole CPUE by haul for the F/V OCEAN SELECTOR 1995 Dover sole biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

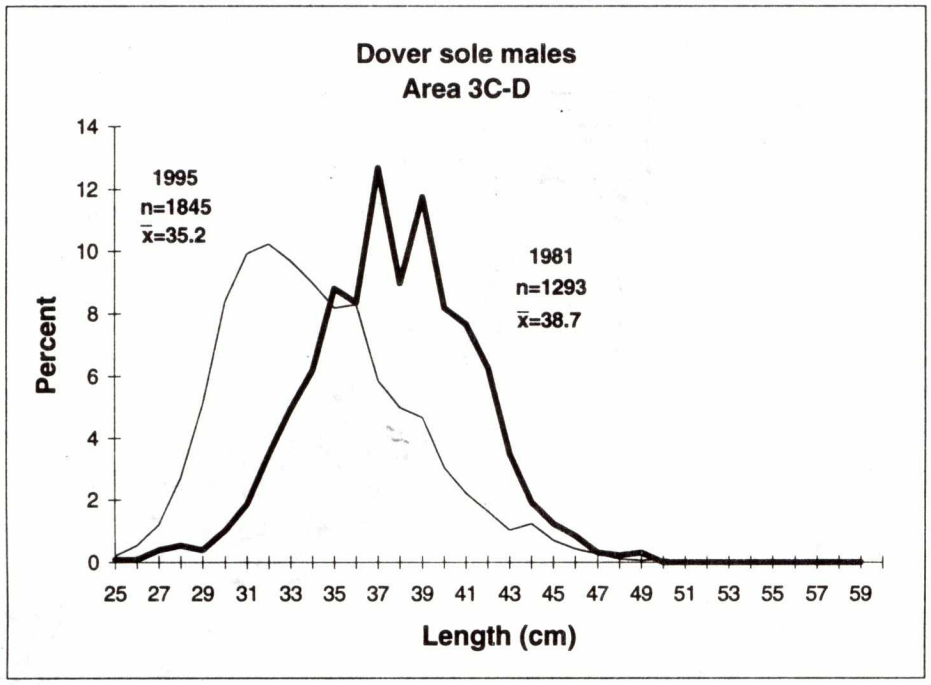


Fig. 7. Percent size composition of Dover sole sampled on biomass surveys conducted off the west coast of Vancouver island in 1981 and 1995.

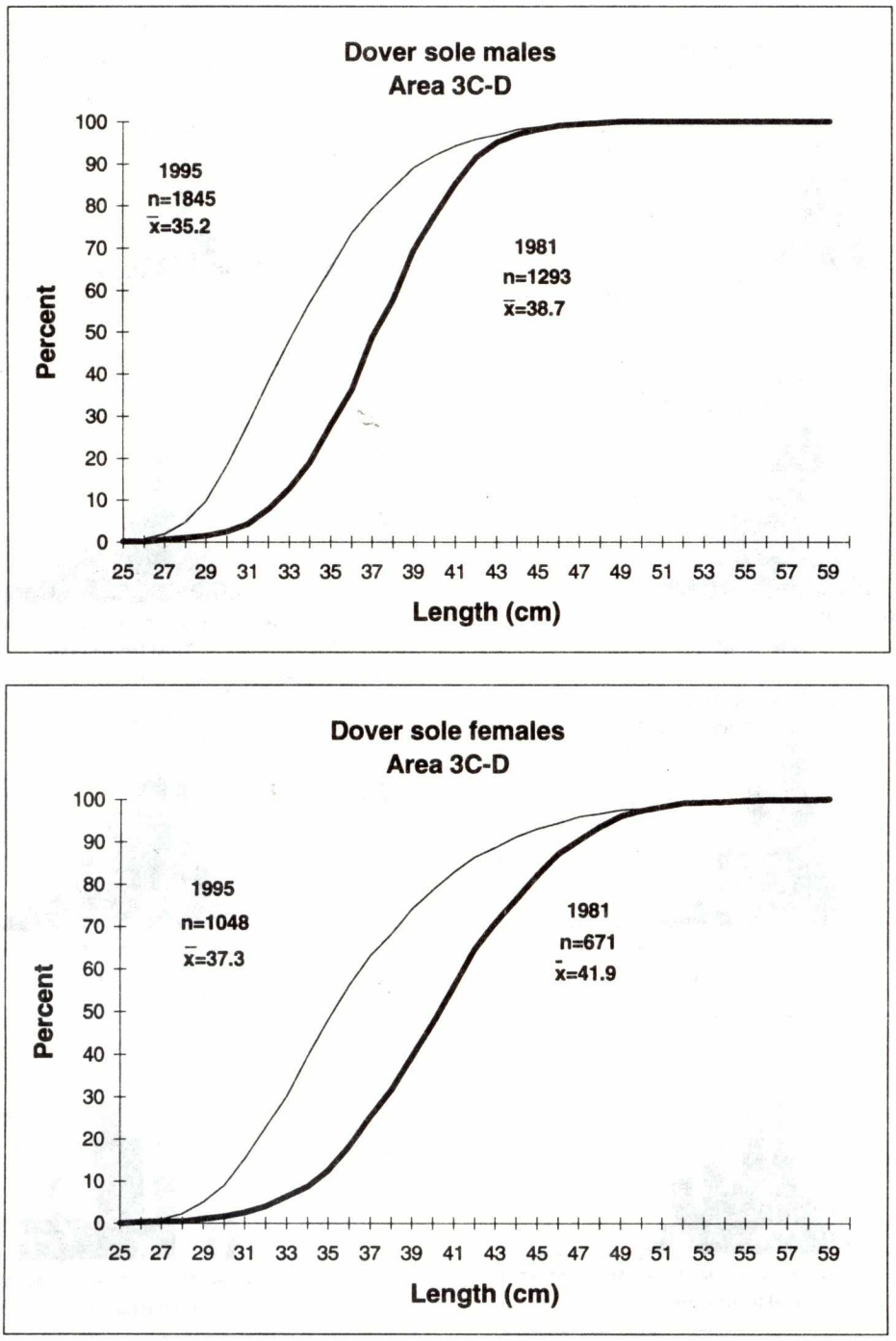


Fig. 8. Cumulative percent size composition of Dover sole sampled on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.

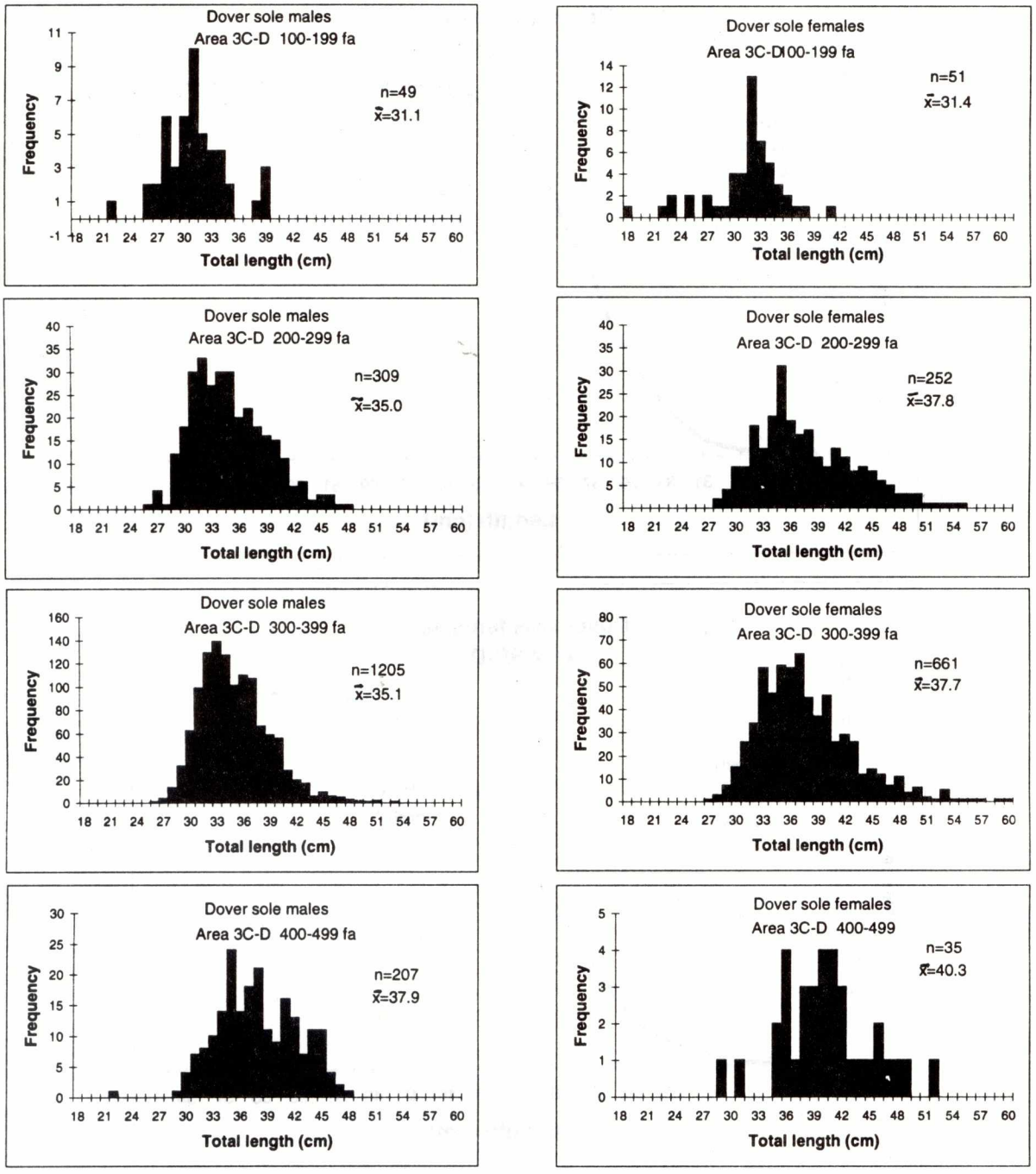
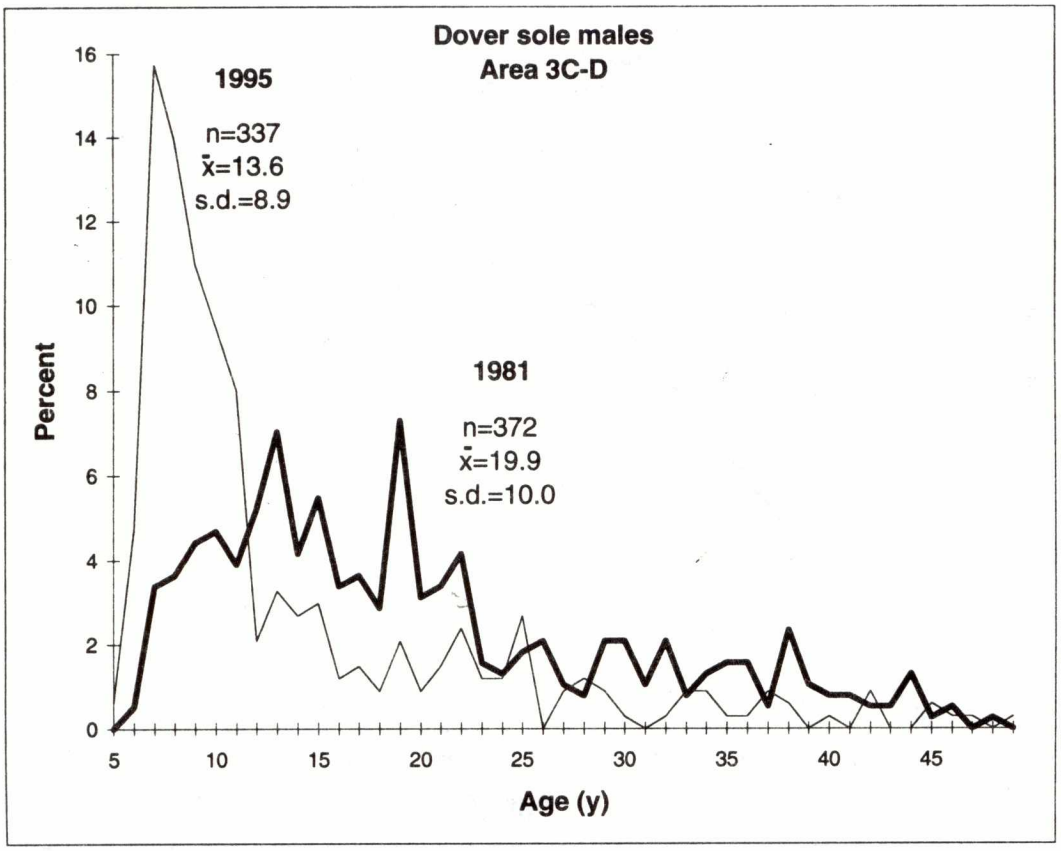


Fig. 9. Size composition of Dover sole sampled by sex by depth for the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, February 13-27, 1995.



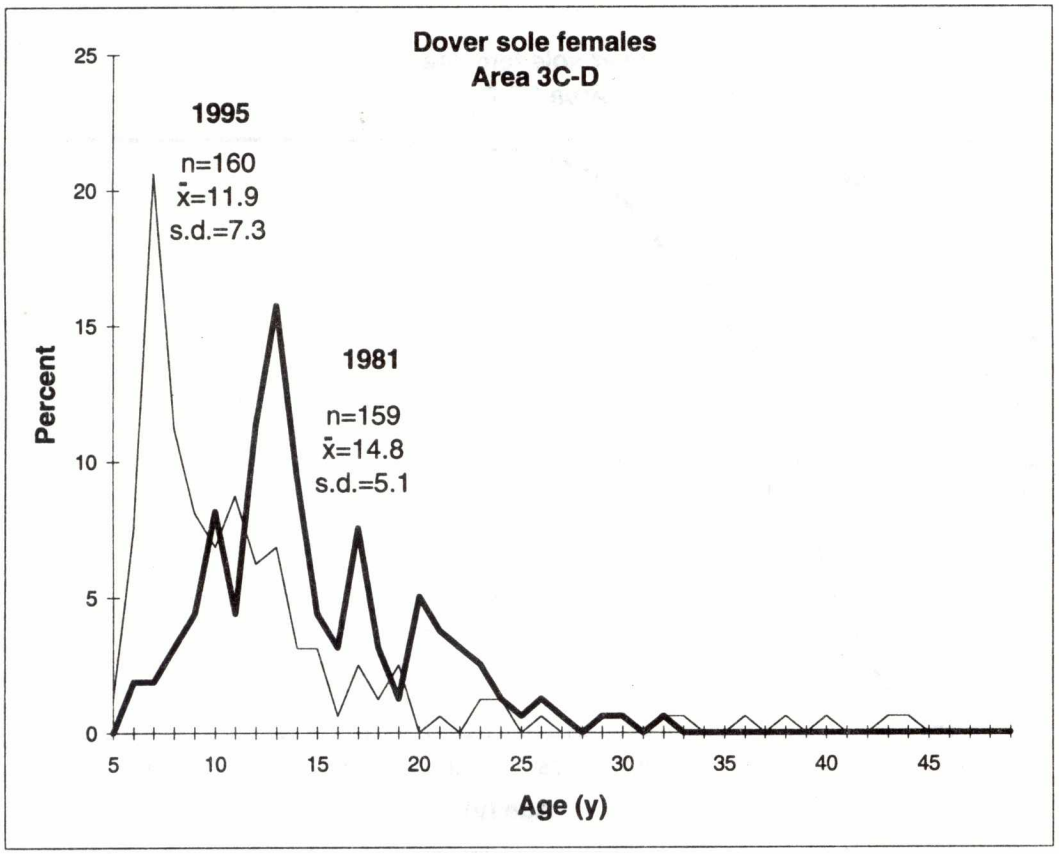
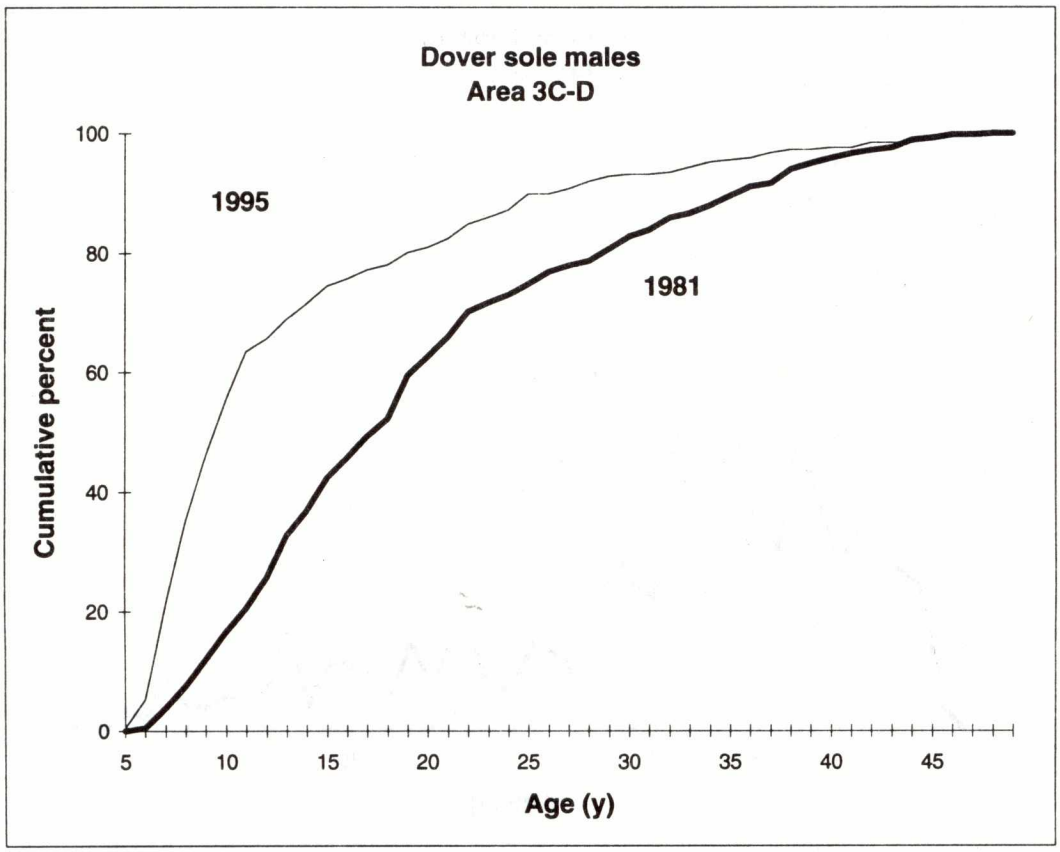


Fig. 10. Percent age composition of Dover sole sampled on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.



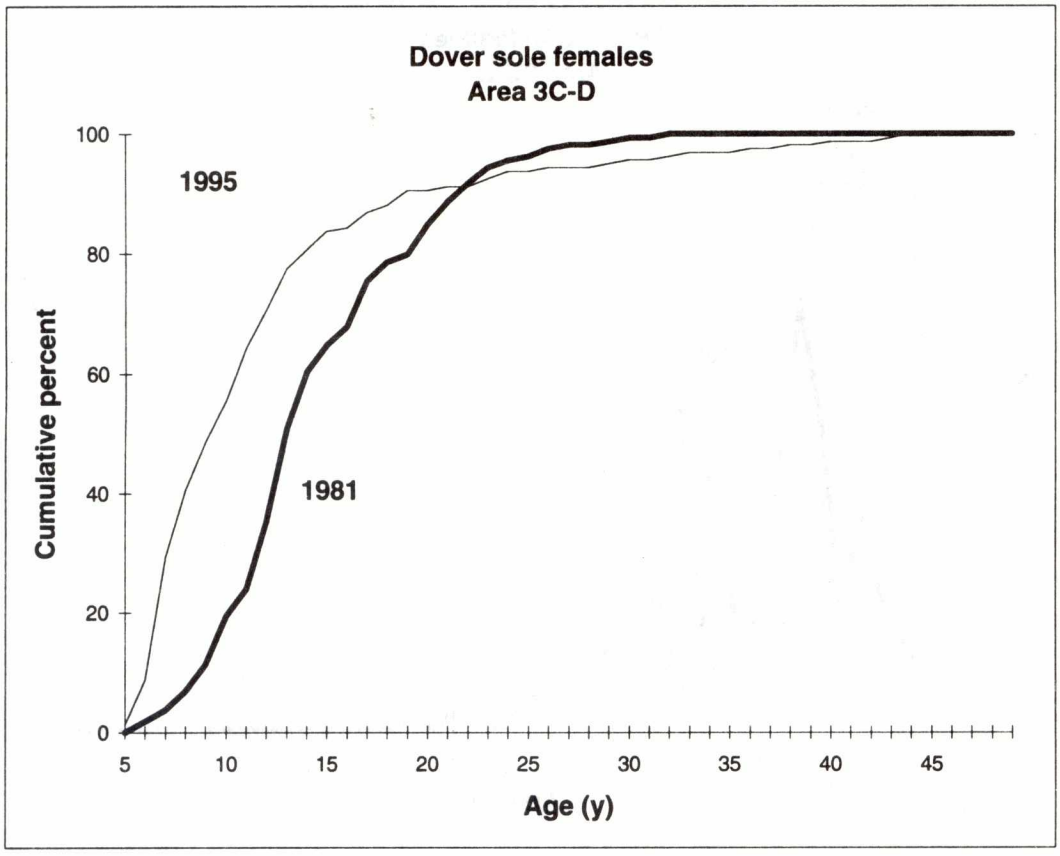


Fig. 11. Cumulative percent age composition of Dover sole samples on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.

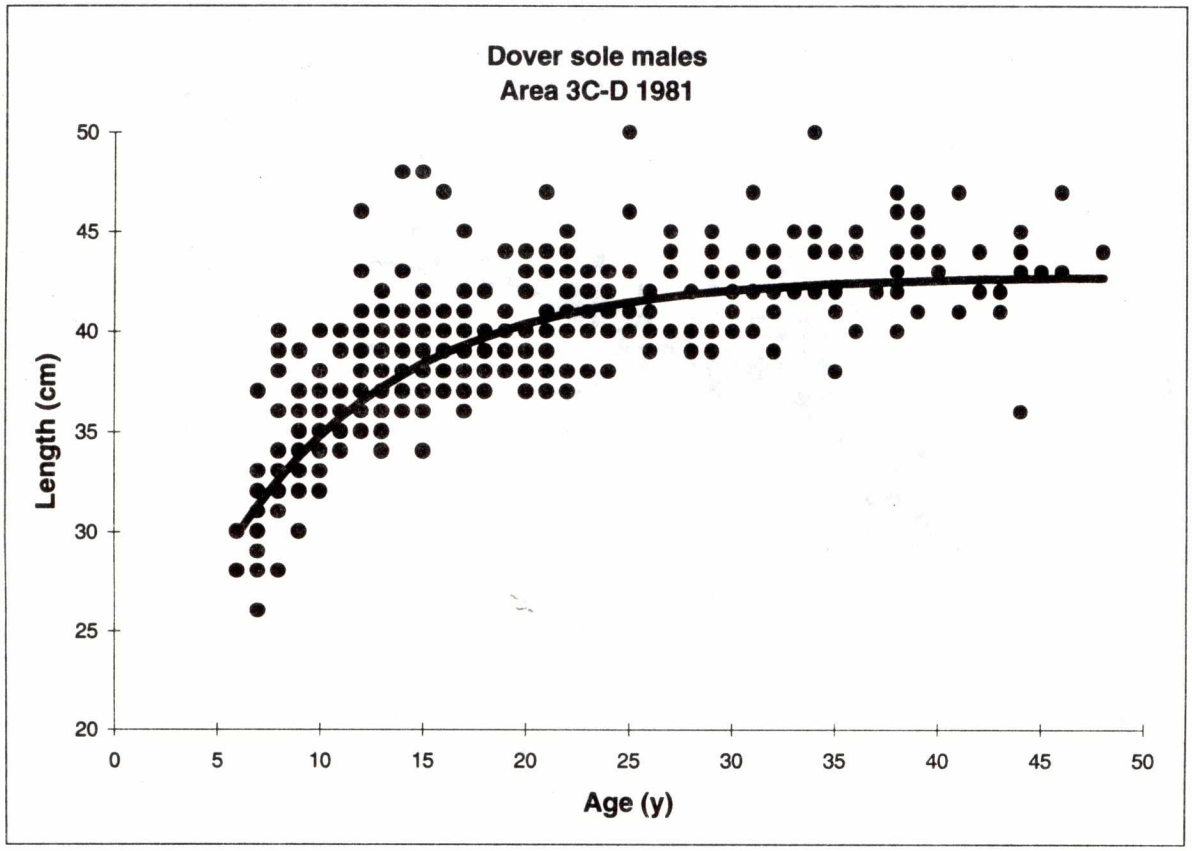
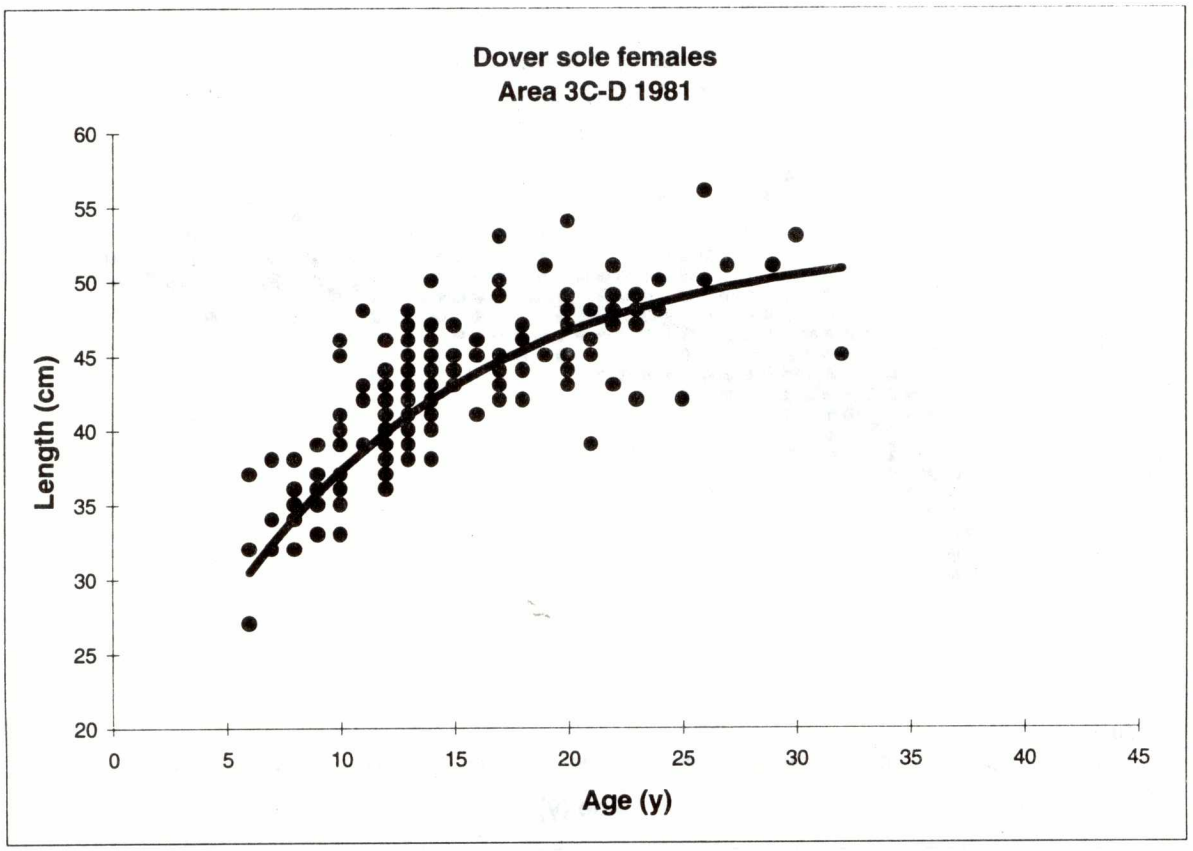


Fig. 12. Age-length relationships for Dover sole males sampled on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.



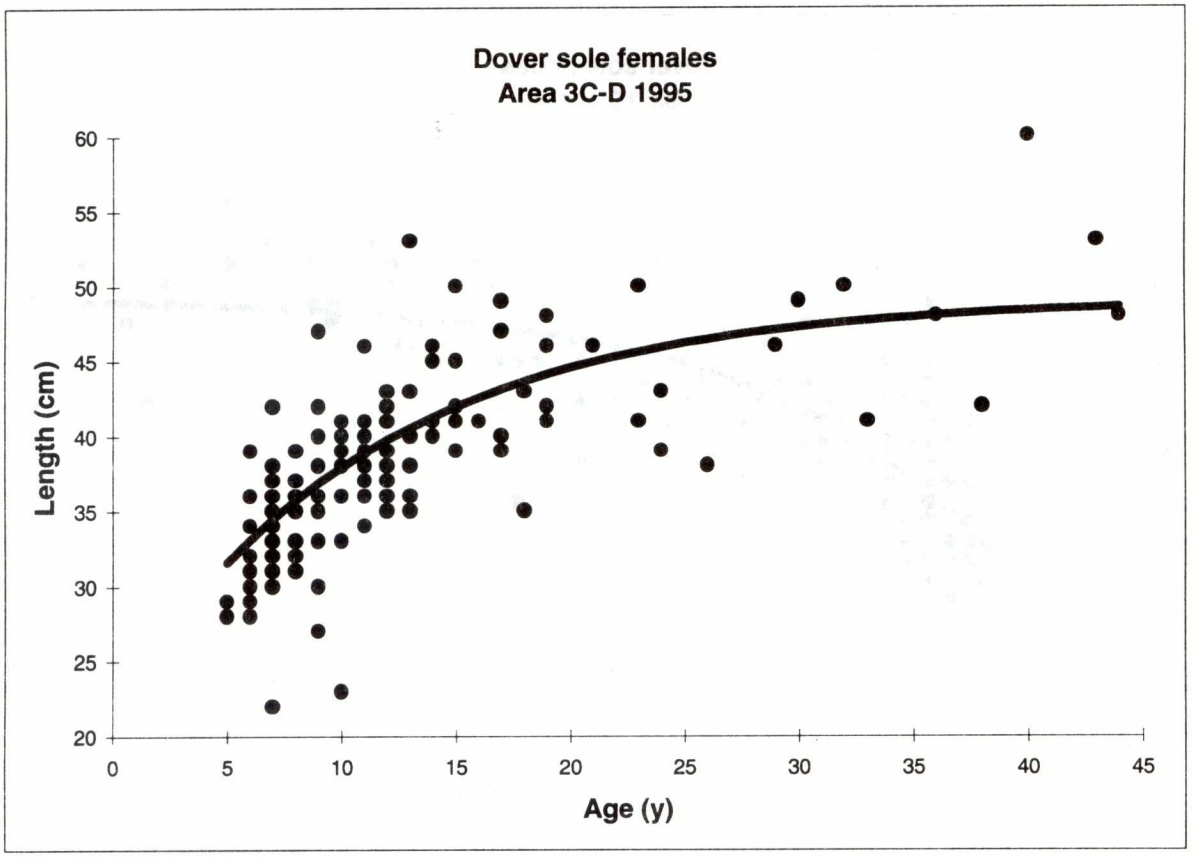
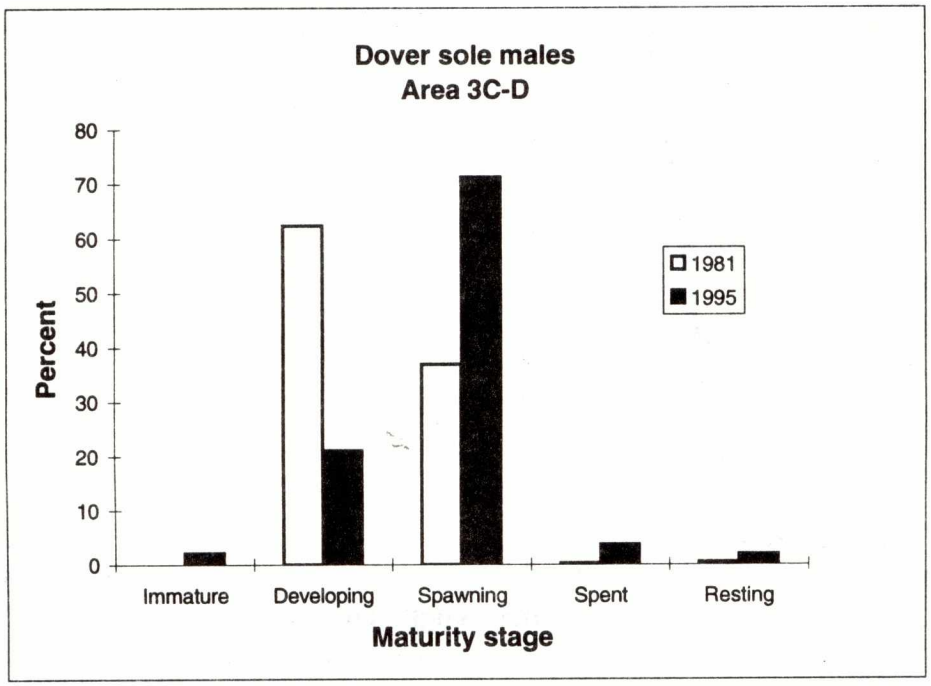


Fig. 13. Age-length relationships for Dover sole females sampled on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.



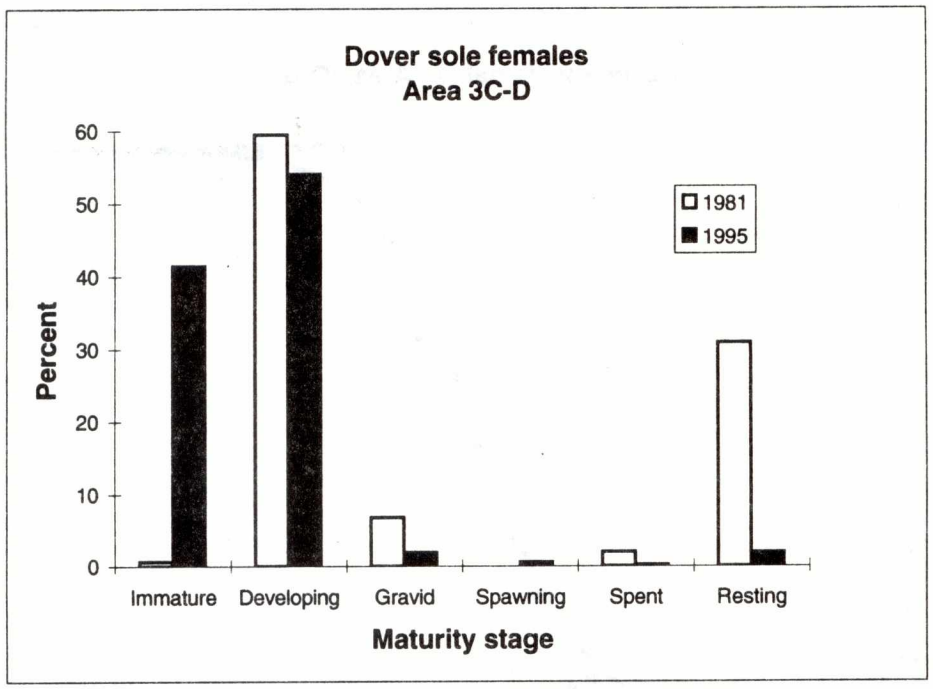
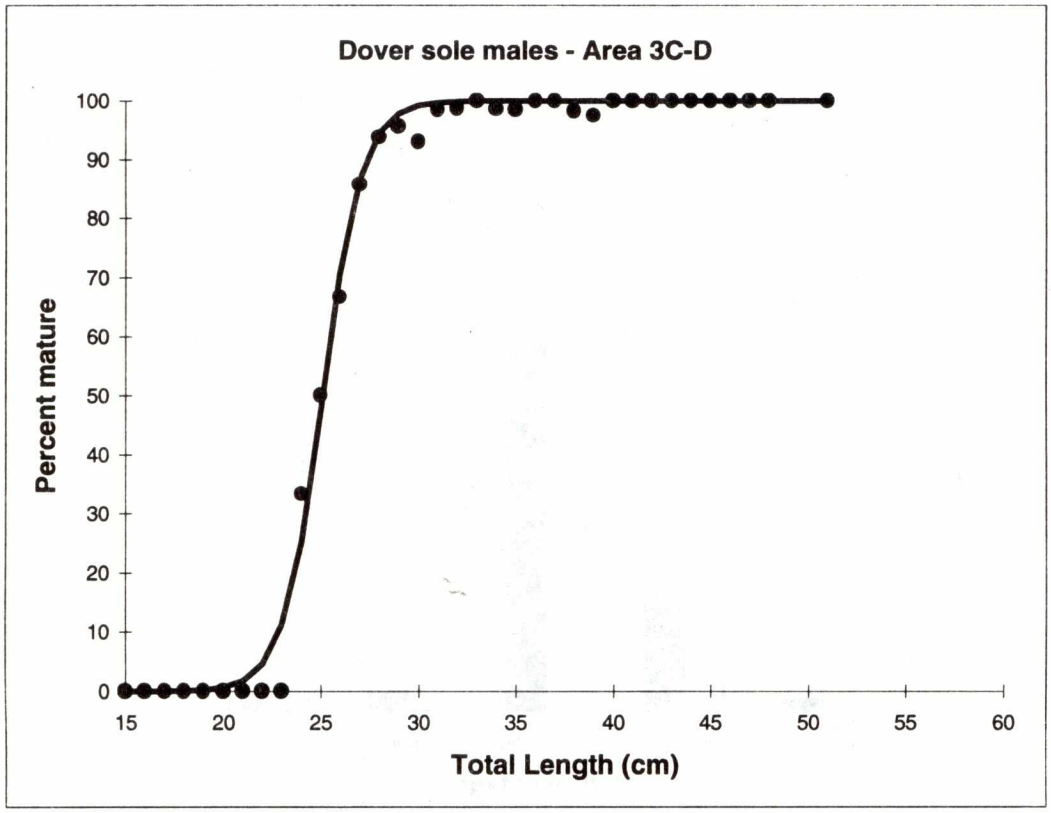


Fig. 14. Stage of maturity for Dover sole sampled on biomass surveys conducted off the west coast of Vancouver Island in 1981 and 1995.



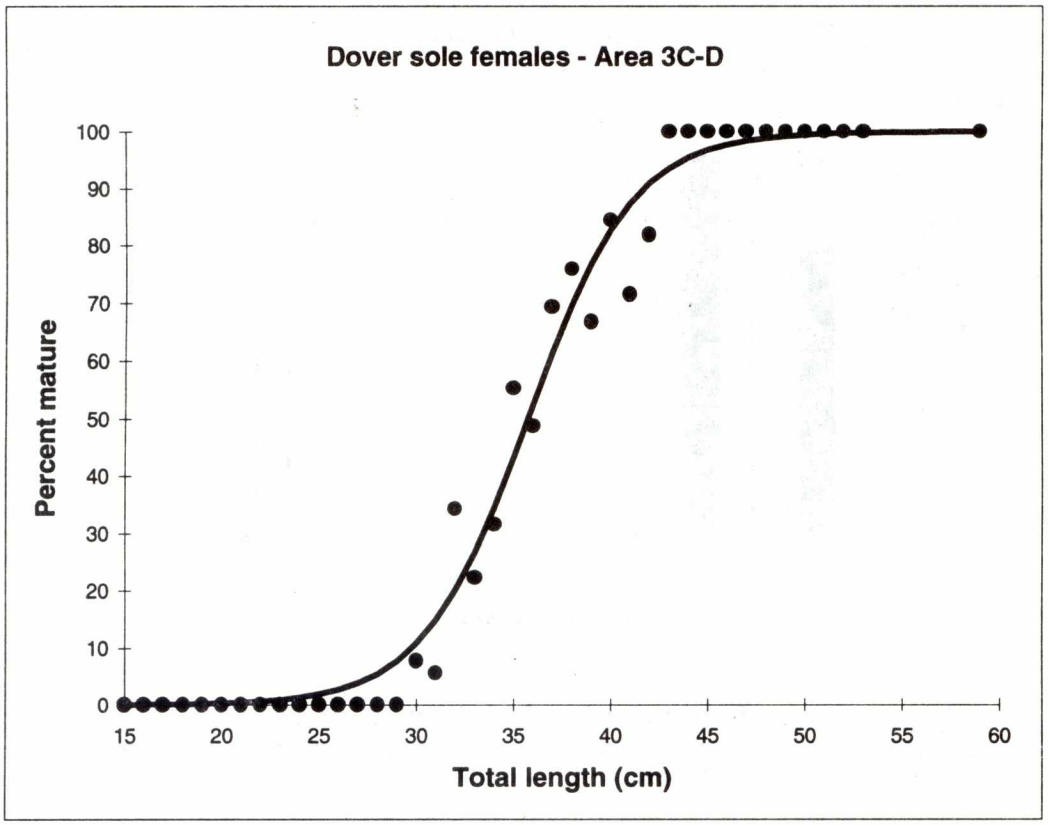
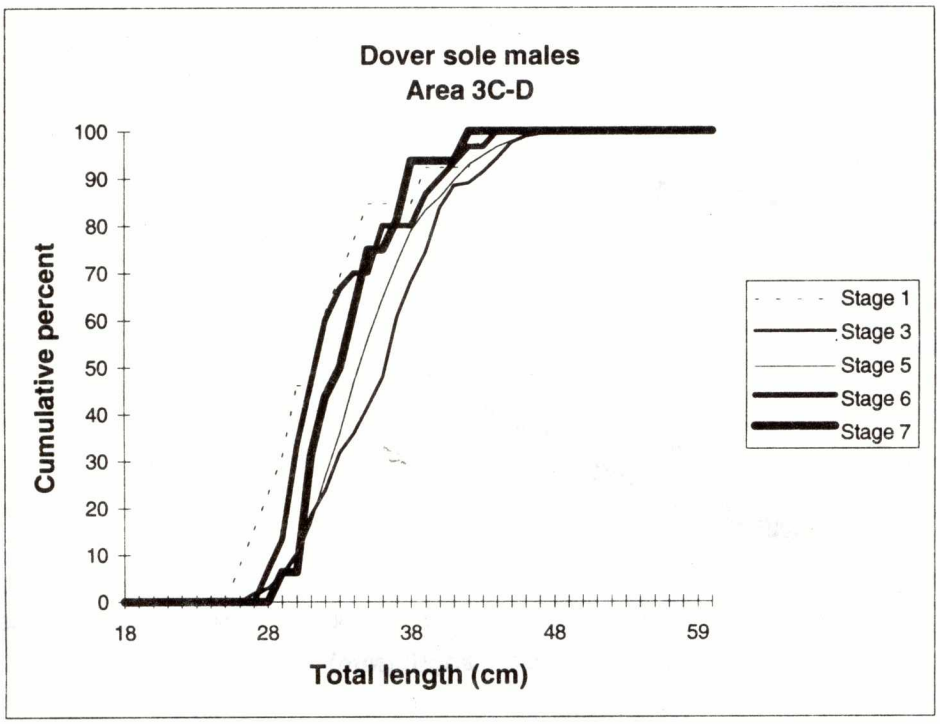


Fig. 15. Length-maturity relationships for Dover sole sampled on the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, February 13-27, 1995.



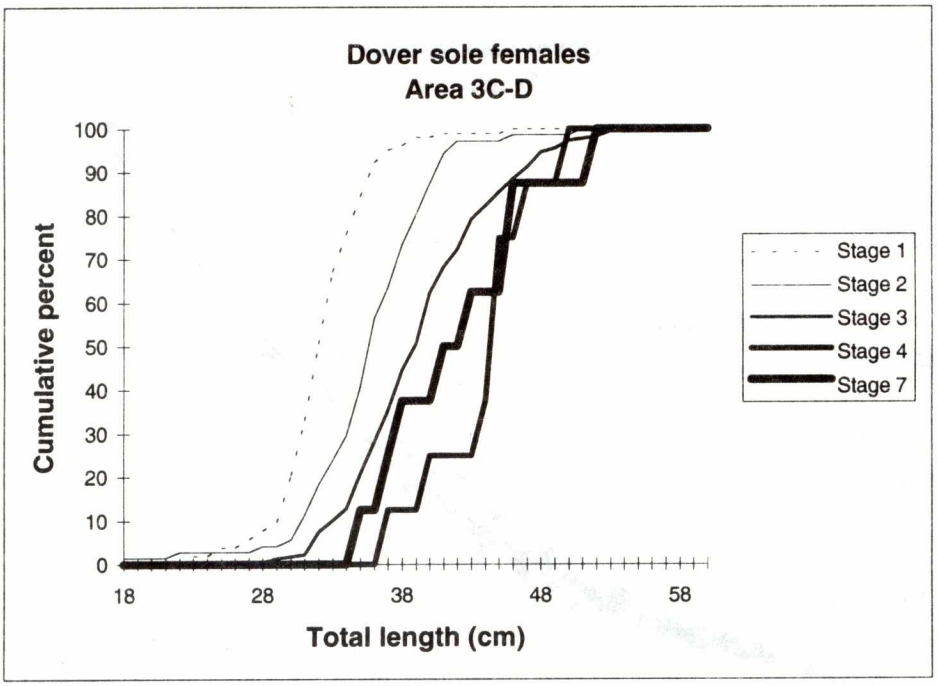
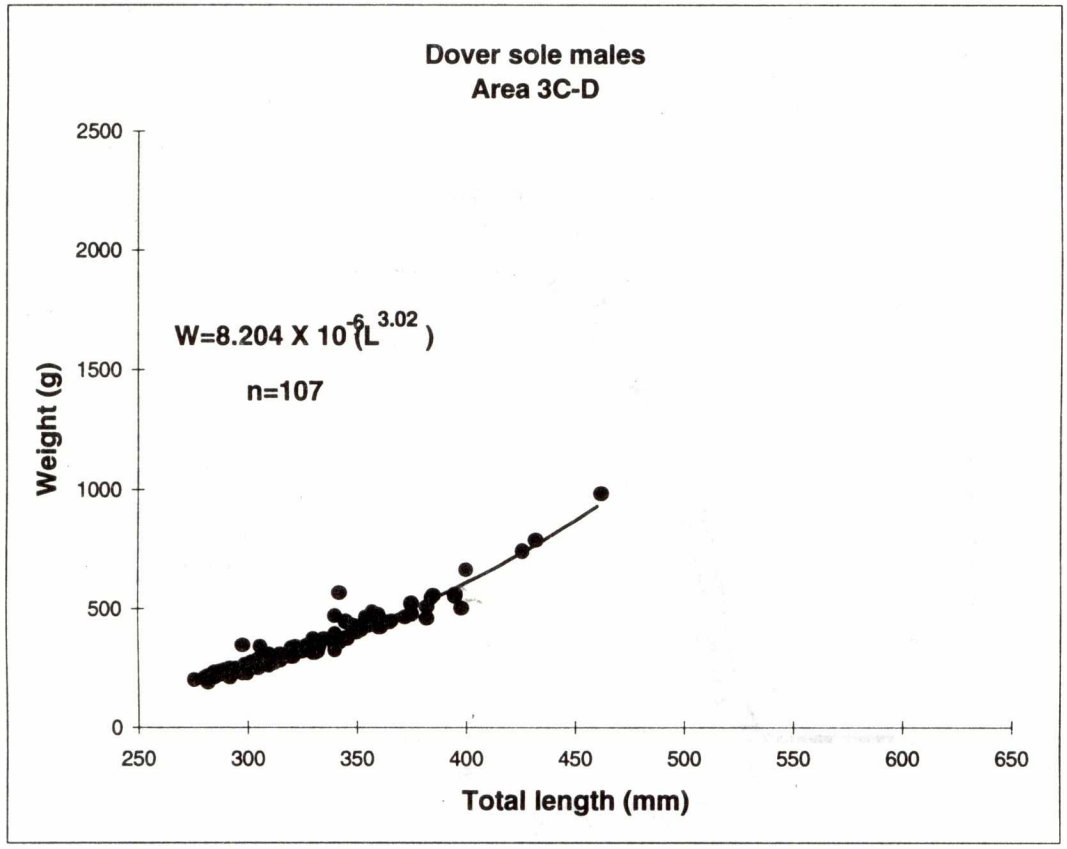


Fig. 16. Cumulative percent frequency by length and maturity stage for male and female Dover sole sampled on the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, February 13-27, 1995.



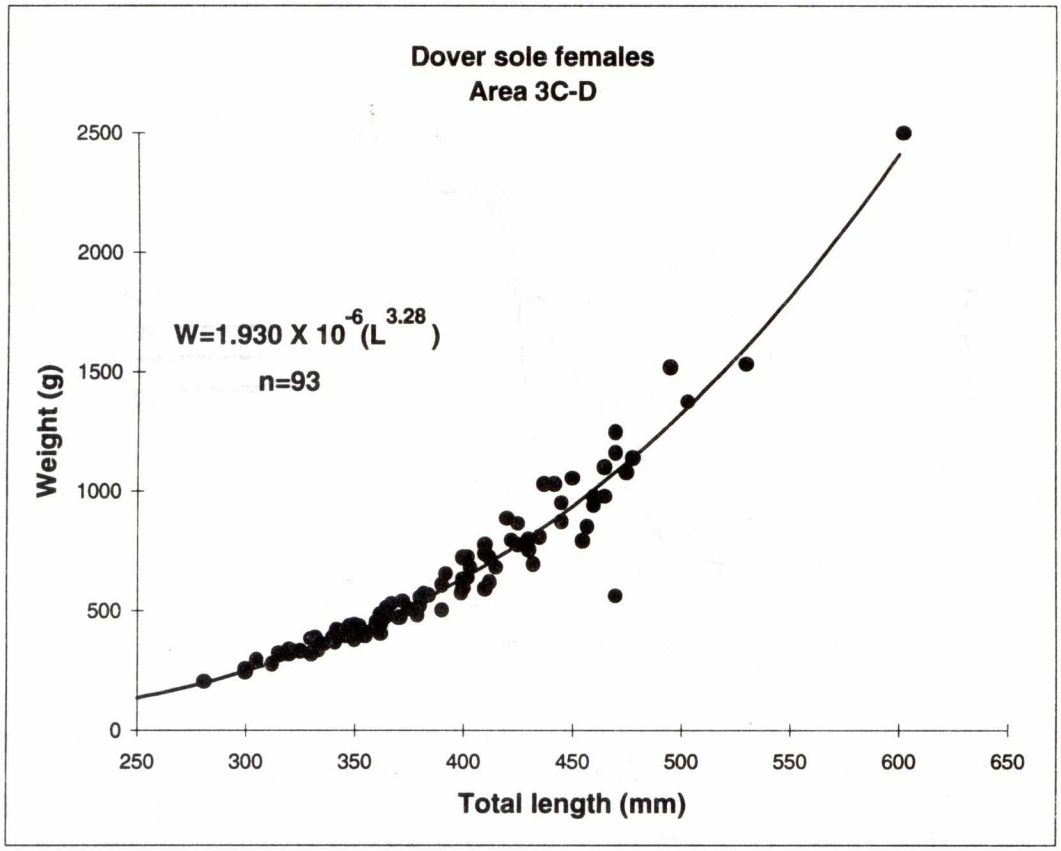


Fig. 17. Length-weight relationships for male and female Dover sole sampled on the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, February 13-27, 1995.

Appendix Table 1. Bridge log and species catch composition for the F/V OCEAN SELECTOR Dover sole biomass survey off the west coast of Vancouver Island February 13-27, 1995

HAUL NO.	1		2		3		4	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	23		23		23		23	
DATE	FEB 14		FEB 14		FEB 14		FEB 15	
DEPTH MODE (FA)	250		300		390		250	
DURATION (H)	0.45		1.08		1.00		1.00	
DIRECTION (DEG. TRUE)	238		230		280		280	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	11:58	12:25	15:25	16:30	18:30	19:30	8:00	9:00
LAT.(DEG,MIN)	48 19.2	48 19.1	48 15.7	48 16.4	48 16.5	48 18.9	48 21.1	48 22.3
LONG.(DEG,MIN)	125 54.4	125 56.1	125 54.7	125 59	126 00.1	125 59.3	126 05.4	126 09.1
LC-5990-X	14619.0	14620.0	14619.0	14621.0	14621.0	14610.0	14620.1	14605.5
LC-5990-Y	28946.2	28947.9	28918.0	28922.0	28923.0	28942.0	28979	28993.2
DEPTH (FA)	270	236	293	318	366	319	246	240
SPECIES CATCH(KG.)								
Arrowtooth flounder	41		12		5		-	
Dover sole	67		1213		28		-	
English sole	-		-		-		-	
Flatfish	-		-		1		-	
Pacific halibut	23		-		10		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	2		TRACE		-		5	
Slender sole	TRACE		TRACE		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	395		39		-		207	
Redbanded rockfish	2		-		-		-	
Rosethorn rockfish	2		-		-		-	
Rougheye rockfish	10		-		-		80	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	52		3		-		14	
Shortspine thornyhead	54		12		85		10	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	56		2		-		2	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	2		-		-		-	
Lingcod	3		-		-		-	
Misc. species	-		-		6		-	
Pacific cod	-		-		-		-	
Pacific hake	3		2		-		16	
Sablefish	66		95		124		-	
Walleye pollock	2		-		-		-	
Big skate	11		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	-		-		-		19	
Sandpaper skate	-		-		-		1	
Spiny dogfish	4		-		-		-	
Spotted ratfish	468		-		-		-	
Crabs	-		-		-		-	
Octopus	-		2		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		2		-		-	
TOTAL CATCH (KG.)	1263		1382		259		354	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	5		6		7		8	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	23		23		23		23	
DATE	FEB 15		FEB 15		FEB 15		FEB 19	
DEPTH MODE (FA)	300		385		420		200	
DURATION (H)	1.13		1.02		1.08		1.02	
DIRECTION (DEG. TRUE)	270		270		330		140	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	10:10	11:18	12:26	13:27	14:31	15:36	12:50	13:51
LAT.(DEG,MIN)	48 20.3	48 21.8	48 18.9	48 20.9	48 19.3	48 21.6	48 18.5	48 16.8
LONG.(DEG,MIN)	126 05.7	126 09.4	126 08.9	126 09.7	126 11.3	126 10.3	125 56.7	125 54.3
LC-5990-X	14619.1	14604.1	14608	14063.8	14598.6	14600.9	14647.0	14663.5
LC-5990-Y	28974.1	28991.1	28971.1	28985.1	28977.2	28991.4	28938.0	28929.1
DEPTH (FA)	270	293	374	394	435	390	200	200
SPECIES CATCH(KG.)								
Arrowtooth flounder	85		2		-		204	
Dover sole	53		8		142		128	
English sole	-		-		-		16	
Flatfish	-		-		-		-	
Pacific halibut	7		-		-		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		3	
Rex sole	1		-		-		22	
Slender sole	TRACE		-		-		14	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		2	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	29		3		-		129	
Redbanded rockfish	-		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	-		-		-		-	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	10		-		-		7	
Shortspine thornyhead	19		101		124		26	
Silvergray rockfish	-		-		-		5	
Splitnose rockfish	-		-		-		85	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		-		-		-	
Lingcod	-		-		-		-	
Misc. species	-		3		13		-	
Pacific cod	-		-		-		2	
Pacific hake	49		-		-		-	
Sablefish	28		469		314		5	
Walleye pollock	-		-		-		TRACE	
Big skate	-		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	17		-		6		16	
Sandpaper skate	-		-		-		-	
Spiny dogfish	3		-		-		3	
Spotted ratfish	-		-		-		14	
Crabs	-		-		5		-	
Octopus	1		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	6		TRACE		-		-	
TOTAL CATCH (KG.)	308		586		604		680	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	9		10		11		12	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	23		23		24		24	
DATE	FEB 19		FEB 19		FEB 19		FEB 20	
DEPTH MODE (FA)	330		290		246		150	
DURATION (H)	1.00		1.03		1.05		1.10	
DIRECTION (DEG. TRUE)	242		293		302		255	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	14:35	15:35	17:29	18:31	20:45	21:48	7:12	8:18
LAT.(DEG,MIN)	48 15.3	48 16.7	48 29.8	48 33.4	48 44.8	48 47.1	48 47.4	48 49
LONG.(DEG,MIN)	125 55.7	125 59.3	126 06.3	126 05.4	126 31.2	126 34.1	126 28.5	126 32.5
LC-5990-X	14657.7	14644.3	14612.1	14613.7	14503.3	14489.9	14512.1	14494.3
LC-5990-Y	28922.4	28938.4	29039.2	29062.5	29180.5	29199.3	29193.8	29210
DEPTH (FA)	344	320	266	370	252	239	143	148
SPECIES CATCH(KG.)								
Arrowtooth flounder	76		44		437		1329	
Dover sole	1898		21		73		6	
English sole	TRACE		-		-		6	
Flatfish	-		-		-		-	
Pacific halibut	-		17		52		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		2		28	
Rex sole	-		TRACE		15		11	
Slender sole	-		TRACE		1		TRACE	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		23	
Greenstriped rockfish	-		-		-		TRACE	
Pacific ocean perch	-		5		14		554	
Redbanded rockfish	-		-		-		11	
Rosethorn rockfish	-		-		-		TRACE	
Rougheye rockfish	-		-		10		-	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	-		15		3		-	
Shortspine thornyhead	43		45		14		6	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	TRACE		-		-		-	
Widow rockfish	-		-		-		TRACE	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		6	
Chinook salmon	-		-		-		11	
Eelpouts	-		TRACE		-		-	
Lingcod	-		-		-		-	
Misc. species	-		-		-		-	
Pacific cod	-		-		-		-	
Pacific hake	-		13		30		-	
Sablefish	19		25		37		28	
Walleye pollock	-		-		-		6	
Big skate	-		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	-		20		-		-	
Sandpaper skate	5		-		9		-	
Spiny dogfish	-		15		2		11	
Spotted ratfish	-		1		1		6	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		5		3		-	
TOTAL CATCH (KG.)	2041		226		703		2041	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	13		14		15		16	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	24		24		24		24	
DATE	FEB 20		FEB 20		FEB 20		FEB 20	
DEPTH MODE (FA)	300		350		400		410	
DURATION (H)	1.00		1.07		1.00		1.03	
DIRECTION (DEG. TRUE)	110		150		117		278	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	9:10	10:10	11:11	12:15	13:20	14:20	16:52	17:54
LAT.(DEG,MIN)	48 48.4	48 46.2	48 48.1	48 45.8	48 34.4	48 45.3	48 58.8	49 00.8
LONG.(DEG,MIN)	126 38	126 35	126 38.9	126 35.8	126 39.3	126 36.7	126 53.6	126 56.7
LC-5990-X	14472.8	14486.8	14469.3	14483.8	14479.0	14480.8	14396.7	14381.2
LC-5990-Y	29212.6	29194.9	29212.3	29193.8	29125.0	29191.1	29301.3	29317.5
DEPTH (FA)	308	302	357	329	405	403	414	408
SPECIES CATCH(KG.)								
Arrowtooth flounder	55		6		-		-	
Dover sole	3		3		TRACE		4	
English sole	-		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	4		-		-		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	-		-		-		-	
Slender sole	TRACE		-		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	TRACE		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	-		-		-		-	
Redbanded rockfish	-		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	TRACE		2		-		-	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	8		-		-		-	
Shortspine thornyhead	37		45		15		16	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	-		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	1		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		TRACE		4		1	
Lingcod	7		-		-		-	
Misc. species	-		7		8		6	
Pacific cod	-		-		-		-	
Pacific hake	6		1		-		-	
Sablefish	34		207		1319		384	
Walleye pollock	-		-		-		-	
Big skate	-		-		-		-	
Brown catshark	-		3		-		-	
Longnose skate	16		-		12		-	
Sandpaper skate	6		1		-		-	
Spiny dogfish	-		-		-		-	
Spotted ratfish	-		-		-		-	
Crabs	-		-		-		22	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		1		4		1	
TOTAL CATCH (KG.)	177		276		1361		434	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	17		18		19		20	
MAJOR AREA	3D		3D		3D		3D	
MINOR AREA	25		25		25		25	
DATE	FEB 20		FEB 21		FEB 21		FEB 21	
DEPTH MODE (FA)	377		390		360		250	
DURATION (H)	1.00		1.02		1.00		1.03	
DIRECTION (DEG. TRUE)	316		130		285		76	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	18:55	19:55	7:16	8:17	9:37	10:37	11:47	12:49
LAT.(DEG,MIN)	49 05.4	49 07.6	49 08.1	49 05.6	49 10.5	49 12.7	49 09.3	49 07.1
LONG.(DEG,MIN)	126 59.8	127 01.2	127 02	127 00.6	127 05.4	127 07.1	127 00.5	126 58.4
LC-5990-X	14361.9	14353.3	14348.5	14358.7	14331	14320	14353.8	14369.0
LC-5990-Y	29351.5	29366.9	29371.1	29353.3	29390.1	29406	29378.4	29360.0
DEPTH (FA)	372	381	399	409	356	356	277	256
SPECIES CATCH(KG.)								
Arrowtooth flounder	TRACE		-		-		247	
Dover sole	4		4946		4319		23	
English sole	-		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	-		-		-		8	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	-		-		-		3	
Slender sole	-		-		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	-		-		-		TRACE	
Redbanded rockfish	-		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	-		-		-		85	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	-		-		-		25	
Shortspine thornyhead	24		138		80		15	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	-		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		TRACE		-		TRACE	
Lingcod	-		-		-		-	
Misc. species	2		TRACE		-		-	
Pacific cod	-		-		-		-	
Pacific hake	-		-		-		17	
Sablefish	129		359		137		19	
Walleye pollock	-		-		-		-	
Big skate	-		-		-		-	
Brown catshark	1		-		-		-	
Longnose skate	-		-		-		30	
Sandpaper skate	-		-		-		-	
Spiny dogfish	-		-		-		6	
Spotted ratfish	-		-		-		5	
Crabs	2		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	9		-		-		-	
TOTAL CATCH (KG.)	171		5443		4536		483	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	21		22		23		24	
MAJOR AREA	3D		3D		3D		3D	
MINOR AREA	25		25		25		25	
DATE	FEB 21		FEB 21		FEB 21		FEB 22	
DEPTH MODE (FA)	195		300		345		245	
DURATION (H)	1.00		1.00		1.00		1.00	
DIRECTION (DEG. TRUE)	325		300		121		294	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	13:35	14:35	15:22	16:22	17:30	18:30	7:08	8:08
LAT. (DEG,MIN)	49 07.9	49 10.5	49 01.1	49 12.1	49 08.1	49 05.6	49 17.9	49 20.4
LONG. (DEG,MIN)	126 56.5	126 59.9	127 03.2	127 06.1	127 00.6	127 59.5	127 10.5	127 13.2
LC-5990-X	14368	14354.6	14340	14325.6	14355.3	14363.5	14297.8	14281.9
LC-5990-Y	29366	29385.3	29385	29401.1	29369.4	29352.5	29443.1	29461
DEPTH (FA)	210	181	283	312	336	347	240	220
SPECIES CATCH(KG.)								
Arrowtooth flounder	708		387		-		612	
Dover sole	12		15		29		16	
English sole	8		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	16		-		-		42	
Pacific sanddab	-		-		-		-	
Petrale sole	TRACE		-		-		-	
Rex sole	90		3		-		6	
Slender sole	31		3		-		1	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	82		-		-		2	
Redbanded rockfish	78		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	192		-		-		10	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	-		25		-		11	
Shortspine thornyhead	66		16		25		8	
Silvergray rockfish	8		-		-		-	
Splitnose rockfish	23		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		2		TRACE		TRACE	
Lingcod	-		-		-		-	
Misc. species	-		-		3		-	
Pacific cod	-		-		-		-	
Pacific hake	4		10		-		21	
Sablefish	8		60		51		13	
Walleye pollock	12		-		-		-	
Big skate	-		-		-		-	
Brown catshark	-		-		TRACE		-	
Longnose skate	-		19		-		35	
Sandpaper skate	-		5		1		-	
Spiny dogfish	12		6		-		2	
Spotted ratfish	12		-		-		-	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		TRACE	
Squid	-		4		2		4	
TOTAL CATCH (KG.)	1361		555		111		783	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	25		26		27		28	
MAJOR AREA	3D		3D		3D		3D	
MINOR AREA	25		25		25		25	
DATE	FEB 22		FEB 22		FEB 22		FEB 22	
DEPTH MODE (FA)	300		420		360		230	
DURATION (H)	1.02		1.05		1.00		1.00	
DIRECTION (DEG. TRUE)	147		131		321		308	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	9:09	10:10	10:55	11:58	12:50	13:50	14:40	15:40
LAT.(DEG,MIN)	49 22.7	49 20.1	49 18.8	49 16.5	49 15.9	49 18.1	49 18.6	49 21
LONG.(DEG,MIN)	127 16.3	127 13.9	127 13.8	127 11.4	127 09.8	127 12.4	127 11.5	127 14.2
LC-5990-X	14264	14279	14282	14296.2	14303	14289	14291	14276
LC-5990-Y	29477	29460	29450	29434.4	29078	29445	29448	29465
DEPTH (FA)	287	317	400	440	355	364	227	238
SPECIES CATCH(KG.)								
Arrowtooth flounder	198		-		24		1155	
Dover sole	26		75		31		10	
English sole	-		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	25		-		-		59	
Pacific sanddab	4		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	9		TRACE		-		10	
Slender sole	-		-		-		TRACE	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	-		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	-		-		-		7	
Redbanded rockfish	-		-		-		7	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	2		-		-		17	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	23		-		-		-	
Shortspine thornyhead	30		124		76		10	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	-		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	TRACE		TRACE		TRACE		-	
Lingcod	-		-		-		-	
Misc. species	-		TRACE		12		-	
Pacific cod	-		-		-		-	
Pacific hake	6		TRACE		-		10	
Sablefish	33		75		107		21	
Walleye pollock	-		-		-		-	
Big skate	-		-		-		-	
Brown catshark	TRACE		-		-		-	
Longnose skate	49		-		4		28	
Sandpaper skate	-		-		-		-	
Spiny dogfish	-		-		-		14	
Spotted ratfish	-		-		-		7	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	15		5		7		3	
TOTAL CATCH (KG.)	420		279		261		1361	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	29		30		31		32	
MAJOR AREA	3D		3D		3D		3D	
MINOR AREA	25		25		25		25	
DATE	FEB 22		FEB 22		FEB 23		FEB 23	
DEPTH MODE (FA)	165		296		400		230	
DURATION (H)	1.00		1.00		1.03		1.00	
DIRECTION (DEG. TRUE)	164		132		139		126	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	16:15	17:15	18:56	19:56	7:14	8:16	9:25	10:25
LAT.(DEG,MIN)	49 21.4	49 19	49 08.9	49 06.1	49 08.9	49 07.8	49 05.5	49 03.3
LONG.(DEG,MIN)	127 13.5	127 11.3	127 00.1	126 59	127 04.7	127 01.1	126 56.6	126 53.9
LC-5990-X	14279	14292	14356	14365	14336	14353	14375	14390
LC-5990-Y	29467	29451	29374	29355	29379	29368	29348	29331
DEPTH (FA)	153	175	285	307	398	384	242	220
SPECIES CATCH(KG.)								
Arrowtooth flounder	17		168		-		410	
Dover sole	-		9		106		20	
English sole	-		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	-		3		-		40	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		TRACE	
Rex sole	-		-		-		20	
Slender sole	-		2		-		5	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	TRACE		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	451		14		-		85	
Redbanded rockfish	46		-		-		55	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	23		2		-		984	
Sharpchin rockfish	TRACE		-		-		-	
Shortraker rockfish	-		11		-		-	
Shortspine thornyhead	-		8		40		100	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	1080		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	12		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		-		1		-	
Lingcod	35		-		-		-	
Misc. species	-		-		2		-	
Pacific cod	-		-		-		-	
Pacific hake	-		5		-		25	
Sablefish	12		11		295		70	
Walleye pollock	98		-		-		-	
Big skate	-		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	-		22		-		-	
Sandpaper skate	-		-		-		-	
Spiny dogfish	40		1		-		-	
Spotted ratfish	-		-		-		-	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		2		2		-	
TOTAL CATCH (KG.)	1814		258		446		1814	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	33		34		35		36	
MAJOR AREA	3D		3D		3D		3C	
MINOR AREA	25		25		25		24	
DATE	FEB 23		FEB 23		FEB 23		FEB 23	
DEPTH MODE (FA)	210		275		365		410	
DURATION (H)	1.00		1.00		1.00		1.00	
DIRECTION (DEG. TRUE)	122		129		122		120	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	11:20	12:20	13:00	14:00	14:55	15:55	16:45	17:45
LAT.(DEG,MIN)	49 05.4	49 02.8	49 02.7	49 00.5	49 00.7	48 58.7	48 56.7	48 56.2
LONG.(DEG,MIN)	126 55.2	126 53.2	126 54.5	126 52.1	126 55	126 51.9	126 48.6	128 45
LC-5990-X	14381	14394	14388	14401	14388	14403	14420	14436
LC-5990-Y	29346	29327	29327	29311	29315	29299	29281	29274
DEPTH (FA)	200	220	260	288	350	383	405	359
SPECIES CATCH(KG.)								
Arrowtooth flounder	387		311		2		-	
Dover sole	19		TRACE		7		1	
English sole	-		-		-		-	
Flatfish	-		-		-		-	
Pacific halibut	8		-		-		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	41		TRACE		-		-	
Slender sole	30		4		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	5		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	142		-		-		-	
Redbanded rockfish	35		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	153		235		36		-	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	-		-		4		-	
Shortspine thornyhead	33		28		34		28	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	14		-		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		-		TRACE		1	
Lingcod	-		-		-		-	
Misc. species	-		-		6		11	
Pacific cod	-		-		-		-	
Pacific hake	3		10		-		-	
Sablefish	27		55		431		65	
Walleye pollock	-		-		-		-	
Big skate	-		-		-		-	
Brown catshark	-		-		TRACE		-	
Longnose skate	-		14		3		-	
Sandpaper skate	-		16		-		4	
Spiny dogfish	11		-		-		-	
Spotted ratfish	-		8		2		-	
Crabs	-		TRACE		11		3	
Octopus	-		-		TRACE		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		-		6		-	
TOTAL CATCH (KG.)	907		680		542		113	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	37		38		39		40	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	24		24		24		24	
DATE	FEB 24		FEB 24		FEB 24		FEB 24	
DEPTH MODE (FA)	205		182		240		300	
DURATION (H)	2.50		1.00		1.07		1.00	
DIRECTION (DEG. TRUE)	114		127		110		106	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	18:42	21:12	7:23	8:23	9:17	10:21	11:15	12:15
LAT.(DEG,MIN)	48 59.1	48 59.4	48 59.6	48 58.2	48 57.9	48 55.7	48 56.1	48 55
LONG.(DEG,MIN)	126 46	126 36.8	126 44.4	126 40.6	126 44.5	126 41.1	126 43.7	126 40.1
LC-5990-X	14428	14466	14435	14452	14436	14452	14441	14457
LC-5990-Y	29295	29286	29296	29283	29284	29267	29271	29260
DEPTH (FA)	213	206	172	192	226	254	286	320
SPECIES CATCH(KG.)								
Arrowtooth flounder	1095		558		607		136	
Dover sole	42		3		11		3	
English sole	17		73		-		-	
Flatfish	-		-		-		-	
Pacific halibut	-		-		-		-	
Pacific sanddab	-		-		-		-	
Petrale sole	405		192		-		-	
Rex sole	25		6		TRACE		-	
Slender sole	-		-		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	TRACE		18		7		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	8		95		196		10	
Redbanded rockfish	-		-		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	21		24		414		25	
Sharpchin rockfish	-		-		-		-	
Shortraker rockfish	-		-		-		31	
Shortspine thornyhead	17		12		64		37	
Silvergray rockfish	-		-		-		-	
Splitnose rockfish	TRACE		76		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	8		-		-		-	
Eelpouts	-		-		-		-	
Lingcod	-		-		-		-	
Misc. species	-		-		-		TRACE	
Pacific cod	-		-		-		-	
Pacific hake	8		-		25		14	
Sablefish	25		9		29		35	
Walleye pollock	TRACE		TRACE		-		-	
Big skate	-		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	-		24		-		21	
Sandpaper skate	38		3		-		-	
Spiny dogfish	104		34		TRACE		-	
Spotted ratfish	-		6		-		-	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	-		-		7		9	
TOTAL CATCH (KG.)	1814		1134		1361		321	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	41		42		43		44	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	24		24		24		24	
DATE	FEB 24		FEB 24		FEB 24		FEB 25	
DEPTH MODE (FA)	250		175		335		244	
DURATION (H)	1.00		1.02		1.00		1.00	
DIRECTION (DEG. TRUE)	188		138		154		149	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	13:25	14:25	15:20	16:21	17:00	18:00	7:22	8:22
LAT.(DEG,MIN)	48 50.7	48 48	48 50	48 47.3	48 45.3	48 42.7	48 50.5	48 47.8
LONG.(DEG,MIN)	126 36.3	126 37.1	126 34.3	126 32.4	126 33.5	126 32	126 36.8	126 35.4
LC-5990-X	14476	14477	14486	14497	14493	14502	14475	14484
LC-5990-Y	29226	29210	29218	29199	29186	29168	29226	29206
DEPTH (FA)	232	282	162	186	334	346	244	243
SPECIES CATCH(KG.)								
Arrowtooth flounder	169		116		16		99	
Dover sole	15		-		14		27	
English sole	-		5		-		-	
Flatfish	-		-		-		-	
Pacific halibut	20		-		-		13	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		-	
Rex sole	3		-		-		12	
Slender sole	-		-		-		-	
Aurora rockfish	-		-		-		-	
Darkblotched rockfish	TRACE		6		TRACE		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	2		263		18		3	
Redbanded rockfish	-		8		-		-	
Rosethorn rockfish	-		-		-		-	
Rougheye rockfish	155		22		2		88	
Sharpchin rockfish	-		-		-		TRACE	
Shortraker rockfish	-		8		-		16	
Shortspine thornyhead	69		13		87		31	
Silvergray rockfish	-		6		-		-	
Splitnose rockfish	-		38		-		-	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		-	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		-	
Eelpouts	-		-		-		-	
Lingcod	-		-		-		-	
Misc. species	-		-		5		TRACE	
Pacific cod	-		-		-		-	
Pacific hake	14		-		TRACE		27	
Sablefish	40		5		177		13	
Walleye pollock	-		-		-		TRACE	
Big skate	-		-		-		-	
Brown catshark	-		-		-		-	
Longnose skate	25		24		-		9	
Sandpaper skate	TRACE		-		-		3	
Spiny dogfish	10		31		-		14	
Spotted ratfish	-		-		-		TRACE	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	5		-		2		3	
TOTAL CATCH (KG.)	527		544		321		358	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	45		46		47		48	
MAJOR AREA	3C		3C		3C		3C	
MINOR AREA	24		24		23		23	
DATE	FEB 25		FEB 25		FEB 25		FEB 25	
DEPTH MODE (FA)	310		405		260		180	
DURATION (H)	1.03		1.00		1.00		1.05	
DIRECTION (DEG. TRUE)	137		327		220		339	
	START	STOP	START	STOP	START	STOP	START	STOP
TIME (PDT)	9:06	10:08	10:56	11:56	15:07	16:07	16:50	17:53
LAT.(DEG,MIN)	48 46.7	48 44.8	48 44.6	48 45.6	48 28.1	48 25.7	48 27	48 29.6
LONG.(DEG,MIN)	126 36.2	126 33.1	126 34	126 37.3	126 11.5	126 11.5	126 09.4	126 11.5
LC-5990-X	14428	14496	14492	14478	14593	14595	14601	14592
LC-5990-Y	29199	29183	29182	29194	29038	29021	29027	29048
DEPTH (FA)	300	326	400	408	250	270	170	185
SPECIES CATCH(KG.)								
Arrowtooth flounder	6		-		99		60	
Dover sole	3		6		14		58	
English sole	-		-		-		6	
Flatfish	-		-		-		-	
Pacific halibut	-		-		-		-	
Pacific sanddab	-		-		-		-	
Petrale sole	-		-		-		7	
Rex sole	-		-		2		71	
Slender sole	-		-		-		26	
Aurora rockfish	-		-		7		-	
Darkblotched rockfish	-		-		-		-	
Greenstriped rockfish	-		-		-		-	
Pacific ocean perch	-		-		13		60	
Redbanded rockfish	-		-		-		9	
Rosethorn rockfish	-		-		-		7	
Rougheye rockfish	2		-		34		50	
Sharpchin rockfish	-		-		-		TRACE	
Shortraker rockfish	6		-		25		21	
Shortspine thornyhead	51		51		21		65	
Silvergray rockfish	-		-		-		7	
Splitnose rockfish	-		-		-		22	
Widow rockfish	-		-		-		-	
Yellowmouth rockfish	-		-		-		TRACE	
Yellowtail rockfish	-		-		-		-	
Chinook salmon	-		-		-		4	
Eelpouts	TRACE		2		1		TRACE	
Lingcod	-		-		-		-	
Misc. species	4		8		TRACE		TRACE	
Pacific cod	-		-		-		-	
Pacific hake	3		-		18		4	
Sablefish	98		381		16		-	
Walleye pollock	-		-		-		9	
Big skate	-		-		-		-	
Brown catshark	TRACE		TRACE		-		-	
Longnose skate	13		7		18		6	
Sandpaper skate	2		1		-		-	
Spiny dogfish	-		-		-		434	
Spotted ratfish	-		-		-		-	
Crabs	-		-		-		-	
Octopus	-		-		-		-	
Shrimp (sidestripe)	-		-		-		-	
Squid	10		7		4		2	
TOTAL CATCH (KG.)	198		463		272		907	
REMARKS	USABLE		USABLE		USABLE		USABLE	

HAUL NO.	49		50	
MAJOR AREA	3C		3C	
MINOR AREA	23		23	
DATE	FEB 26		FEB 26	
DEPTH MODE (FA)	320		320	
DURATION (H)	1.17		1.02	
DIRECTION (DEG. TRUE)	121		307	
	START	STOP	START	STOP
TIME (PDT)	7:11	8:21	9:16	10:17
LAT.(DEG,MIN)	48 16.5	48 14.6	48 15.5	48 15.1
LONG.(DEG,MIN)	125 59.8	125 56.1	125 55	125 59.3
LC-5990-X	14643	14657	14661	14645
LC-5990-Y	28957	28918	29921	28934
DEPTH (FA)	347	352	319	383
SPECIES CATCH(KG.)				
Arrowtooth flounder	18		27	
Dover sole	682		276	
English sole	-		-	
Flatfish	-		-	
Pacific halibut	-		4	
Pacific sanddab	-		-	
Petrale sole	-		-	
Rex sole	3		TRACE	
Slender sole	TRACE		TRACE	
Aurora rockfish	TRACE		-	
Darkblotched rockfish	-		-	
Greenstriped rockfish	-		-	
Pacific ocean perch	TRACE		-	
Redbanded rockfish	TRACE		-	
Rosethorn rockfish	TRACE		-	
Rougheye rockfish	TRACE		-	
Sharpchin rockfish	-		-	
Shortraker rockfish	6		-	
Shortspine thornyhead	77		26	
Silvergray rockfish	-		-	
Splitnose rockfish	-		-	
Widow rockfish	-		-	
Yellowmouth rockfish	-		-	
Yellowtail rockfish	-		-	
Chinook salmon	2		-	
Eelpouts	2		-	
Lingcod	-		-	
Misc. species	2		1	
Pacific cod	-		-	
Pacific hake	-		-	
Sablefish	41		34	
Walleye pollock	-		-	
Big skate	-		-	
Brown catshark	-		-	
Longnose skate	11		8	
Sandpaper skate	2		3	
Spiny dogfish	-		-	
Spotted ratfish	-		-	
Crabs	-		-	
Octopus	-		-	
Shrimp (sidestripe)	-		-	
Squid	3		-	
TOTAL CATCH (KG.)	849		379	
REMARKS	USABLE		USABLE	

Appendix table 2. Length frequencies by haul and sex for Dover sole sampled during the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, Feb 13 - Feb 27.

	Haul no.									
	1		3		4		8		9	
Length (cm)	M	F	M	F	M	F	M	F	M	F
26	-	-	-	-	1	-	-	-	-	-
27	-	-	-	-	0	-	-	-	-	-
28	2	1	-	-	0	-	-	-	1	-
29	2	1	-	-	0	-	3	1	1	-
30	4	0	-	-	1	2	5	2	3	1
31	9	0	2	-	0	0	9	0	9	4
32	8	2	3	-	3	1	9	7	12	6
33	9	3	4	2	2	3	8	0	14	7
34	4	2	8	2	0	2	5	5	9	6
35	9	9	6	1	1	3	5	5	12	8
36	7	2	5	0	2	2	6	6	16	6
37	6	5	3	1	4	1	2	3	10	11
38	2	4	2	0	2	3	2	2	8	5
39	3	1	1	4	1	0	7	4	3	6
40	6	2	1	0	0	1	8	0	5	6
41	1	5	1	2	2	0	3	4	3	2
42	3	4	1	1	1	1	1	1	1	2
43	-	2	-	0	-	1	3	2	2	2
44	-	6	-	1	-	-	0	1	0	0
45	-	1	-	1	-	-	1	3	0	1
46	-	2	-	1	-	-	1	2	1	1
47	-	2	-	-	-	-	0	2	1	0
48	-	2	-	-	-	-	1	1	-	2
49	-	2	-	-	-	-	-	0	-	-
50	-	-	-	-	-	-	-	2	-	-
51	-	-	-	-	-	-	-	0	-	-
52	-	-	-	-	-	-	-	0	-	
53	-	-	-	-	-	-	-	1	-	-
54	-	-	-	-	-	-	-	1	-	-
55	-	-	-	-	-	-	-	1	-	-
56	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
Total	75	58	37	16	20	20	79	56	111	76

Appendix table 2. Dover sole length frequencies (cont'd).

	Haul no.									
	10		18		19		20		22	
Length (cm)	M	F	M	F	M	F	M	F	M	F
26	-	-	-	-	-	-	-	-	-	-
27	-	-	1	-	-	-	-	-	-	-
28	-	-	0	-	-	1	-	-	-	-
29	4	-	0	-	-	3	2	-	-	-
30	2	-	1	1	5	0	5	2	-	-
31	4	-	4	2	10	2	3	2	-	-
32	3	1	6	3	10	2	5	1	4	-
33	1	0	16	1	13	5	3	2	0	1
34	4	4	10	2	10	5	4	1	2	0
35	3	4	2	0	14	4	8	2	0	2
36	0	2	16	0	12	3	4	2	0	2
37	3	2	16	0	16	7	3	1	0	0
38	0	4	9	0	6	2	1	0	1	0
39	0	1	12	2	10	2	4	0	0	1
40	1	3	10	1	10	1	1	0	0	0
41	1	1	5	0	3	0	1	0	0	0
42	0	2	4	1	4	4	0	0	1	0
43	0	0	1	2	1	1	0	1	1	0
44	1	1	-	0	0	2	0	-	0	0
45	-	-	-	1	0	0	0	-	1	0
46	-	-	-	-	1	0	1	-	0	0
47	-	-	-	-	0	0	1	-	0	0
48	-	-	-	-	0	1	-	-	0	0
49	-	-	-	-	0	1	-	-	1	2
50	-	-	-	-	0	1	-	-	-	0
51	-	-	-	-	0	0	-	-	-	1
52	-	-	-	-	0	0	-	-	-	0
53	-	-	-	-	1	0	-	-	-	0
54	-	-	-	-	-	0	-	-	-	1
55	-	-	-	-	-	1	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
Total	27	25	113	16	126	48	46	14	11	10

Appendix table 2. Dover sole length frequencies (cont'd).

	Dover sole									
	Haul no.									
	24		25		27		30		41	
Length (cm)	M	F	M	F	M	F	M	F	M	F
26	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	1	-	-	-	-	-
28	-	-	-	-	1	1	-	-	-	-
29	-	1	1	1	1	1	1	-	1	-
30	-	1	1	1	7	1	0	1	1	1
31	-	0	3	2	6	2	1	0	0	0
32	1	1	2	1	6	3	3	0	0	1
33	1	2	2	4	5	4	1	1	0	0
34	1	3	3	1	6	5	2	1	3	0
35	2	2	0	4	5	2	1	0	0	0
36	0	1	1	1	3	3	0	0	1	1
37	1	1	1	2	4	0	1	1	1	1
38	1	2	0	1	3	3	2	1	4	2
39	0	1	0	0	3	1	0	0	0	1
40	0	0	1	1	2	-	1	0	0	1
41	0	1	0	0	0	-	0	0	1	0
42	0	2	0	2	0	-	0	0	1	1
43	0	0	1	1	0	-	1	0	1	1
44	0	0	0	0	0	-	-	0	0	0
45	1	1	0	2	2	-	-	1	1	1
46	-	1	1	0	-	-	-	-	-	0
47	-	0	1	1	-	-	-	-	-	1
48	-	0	-	1	-	-	-	-	-	-
49	-	0	-	1	-	-	-	-	-	-
50	-	1	-	0	-	-	-	-	-	-
51	-	0	-	0	-	-	-	-	-	-
52	-	1	-	0	-	-	-	-	-	-
53	-	-	-	0	-	-	-	-	-	-
54	-	-	-	0	-	-	-	-	-	-
55	-	-	-	0	-	-	-	-	-	-
56	-	-	-	1	-	-	-	-	-	-
57	-	-	-	0	-	-	-	-	-	-
58	-	-	-	0	-	-	-	-	-	-
59	-	-	-	1	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
Total	8	22	18	29	55	26	14	6	15	12

Appendix table 2. Dover sole length frequencies (cont'd).

	Dover sole										
	Haul no.										
	44		47		49		50		Totals		
Length (cm)	M	F	M	F	M	F	M	F	M	F	Total
26	-	-	-	-	-	-	-	-	1	-	1
27	1	-	-	-	-	-	-	-	3	-	3
28	0	-	-	-	-	-	2	-	6	4	9
29	1	1	-	-	1	-	7	1	25	10	35
30	2	0	2	-	3	-	10	3	52	20	68
31	2	2	1	-	8	2	20	6	91	28	115
32	4	0	0	-	9	1	19	1	107	39	138
33	2	0	2	1	7	4	27	12	117	63	169
34	3	4	1	0	12	3	16	11	103	65	160
35	5	4	1	1	5	3	19	8	98	81	160
36	1	4	2	2	4	4	7	12	87	70	140
37	3	1	3	0	1	5	9	16	87	69	145
38	2	4	2	0	2	4	2	5	51	57	93
39	1	0	1	2	3	3	1	4	52	39	85
40	2	1	2	1	2	6	2	6	53	46	83
41	2	3	1	1	0	4	1	4	26	37	53
42	1	0	0	0	0	4	2	8	19	38	52
43	-	1	0	0	1	3	-	3	14	27	34
44	-	2	1	0	0	1	-	2	2	20	18
45	-	1	-	0	4	2	-	0	10	20	25
46	-	-	-	1	1	1	-	1	6	14	16
47	-	-	-	-	1	0	-	1	4	12	11
48	-	-	-	-	0	0	-	0	1	10	8
49	-	-	-	-	1	0	-	0	2	6	8
50	-	-	-	-	1	0	-	0	1	7	5
51	-	-	-	-	1	0	-	0	1	1	2
52	-	-	-	-	-	0	-	0	0	1	1
53	-	-	-	-	-	0	-	2	1	4	4
54	-	-	-	-	-	0	-	-	-	2	2
55	-	-	-	-	-	0	-	-	-	2	2
56	-	-	-	-	-	0	-	-	-	1	1
57	-	-	-	-	-	1	-	-	-	1	1
58	-	-	-	-	-	-	-	-	-	0	0
59	-	-	-	-	-	-	-	-	-	1	1
60	-	-	-	-	-	-	-	-	-	-	0
Total	32	28	19	9	67	51	147	106	1020	628	1648

Appendix table 3. Length frequencies by haul and sex for English sole, Petrale sole and Rex sole sampled during the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, Feb 13 - Feb 27.

	English sole		Petrale sole		Rex sole			
	Haul no.							
	38		38		44		48	
Length (cm)	M	F	M	F	M	F	M	F
23	-	-	-	-	1	-	-	-
24	-	-	-	-	3	-	-	-
25	-	-	-	-	1	-	1	-
26	-	-	-	-	2	-	1	-
27	-	-	-	-	4	1	4	-
28	-	-	-	-	4	1	5	-
29	-	-	-	-	5	1	16	-
30	-	-	-	-	7	0	19	3
31	-	-	2	-	7	4	18	5
32	1	-	1	-	2	4	20	11
33	0	-	1	-	3	5	19	5
34	1	-	1	-	1	3	15	2
35	3	1	5	1	-	3	9	3
36	0	2	5	0	-	2	2	6
37	3	3	0	2	-	1	2	1
38	3	1	3	0	-	1	-	0
39	5	3	0	3	-	0	-	1
40	3	2	1	1	-	1	-	1
41	4	3	0	1	-	-	-	0
42	1	5	2	1	-	-	-	1
43	1	2	-	2	-	-	-	-
44	-	1	-	2	-	-	-	-
45	-	1	-	0	-	-	-	-
46	-	-	-	0	-	-	-	-
47	-	-	-	0	-	-	-	-
48	-	-	-	0	-	-	-	-
49	-	-	-	1	-	-	-	-
Total	25	24	21	14	40	27	131	39

Appendix table 4. Length frequencies by haul for Arrowtooth founder and *Sebastolobus spp.* sampled during the F/V OCEAN SELECTOR Dover sole biomass survey, west coast Vancouver Island, Feb 13 - Feb 27.

Arrowtooth flounder					
	Haul no.				
Length (cm)	12	20	22	24	28
26	2	-	-	-	-
27	0	-	-	-	-
28	0	-	-	-	-
29	0	-	-	-	-
30	1	-	-	-	-
31	1	-	-	-	-
32	2	-	1	-	-
33	3	-	1	-	-
34	1	-	1	-	-
35	9	-	4	-	-
36	6	-	2	1	-
37	4	-	4	2	1
38	8	-	1	0	0
39	4	4	5	3	3
40	6	2	3	3	2
41	6	3	3	0	2
42	7	7	10	14	6
43	7	10	13	12	11
44	6	10	17	13	6
45	3	11	12	13	15
46	9	9	14	12	12
47	3	5	11	6	8
48	2	10	8	9	6
49	2	7	5	5	6
50	0	5	5	6	5
51	3	10	9	5	5
52	3	7	7	8	2
53	3	6	6	5	7
54	0	15	3	1	4
55	6	13	7	7	5
56	2	8	1	5	6
57	2	5	3	5	2
58	3	5	4	4	5
59	2	7	4	1	2
60	0	10	5	6	3
61	0	6	2	4	3
62	1	1	3	3	2
63	-	4	1	0	4
64	-	3	1	0	1
65	-	3	1	0	0
66	-	2	1	1	0
67	-	2	0	-	0
68	-	0	0	-	1
69	-	0	1	-	0
70	-	1	2	-	2
71	-	1	1	-	0
72	-	-	-	-	0
73	-	-	-	-	0
74	-	-	-	-	0
75	-	-	-	-	1
76	-	-	-	-	-
Total	117	192	182	154	138

Sebastolobus spp.	
	Haul no.
Length (cm)	17
13	3
14	3
15	4
16	1
17	5
18	6
19	6
20	8
21	5
22	5
23	3
24	3
25	2
26	8
27	7
28	3
29	8
30	7
31	6
32	3
33	4
34	0
35	6
36	1
37	3
38	2
39	0
40	1
Total	113

Appendix table 5. Length frequencies by haul, sex and maturity stage for Dover sole sampled during the F/V Ocean Selector 1995 Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27. See Appendix table 11 for a definition of flatfish maturity stages.

	Haul 2						Haul 5						
	M		F				M				F		
	Maturity stage												
Length (cm)	4	5	1	2	3	4	2	3	4	5	1	2	3
18	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	1	-	-	-
27	-	1	-	-	-	-	-	-	-	-	-	-	1
28	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1	-	-	-	-	-	-	-	1	2	1	-	-
30	-	3	2	-	1	-	1	-	-	2	1	-	-
31	-	2	-	-	-	-	-	-	-	5	2	-	-
32	-	5	1	-	2	-	-	-	2	6	3	1	-
33	-	4	1	-	1	-	-	1	-	10	2	1	1
34	-	9	1	1	-	-	1	-	-	8	1	-	-
35	1	3	-	-	4	-	-	-	-	5	-	1	1
36	1	3	-	1	3	-	-	-	-	5	-	1	2
37	-	7	-	1	3	-	-	-	-	-	-	1	3
38	-	2	-	1	7	-	-	-	-	3	-	-	1
39	-	1	-	-	4	-	-	-	-	2	-	-	2
40	-	-	-	-	4	-	-	-	-	-	-	-	3
41	-	1	-	-	1	-	-	-	-	3	-	-	2
42	-	-	-	-	-	-	-	-	-	-	-	-	1
43	-	1	-	-	5	-	-	-	-	1	-	-	1
44	-	-	-	-	2	-	-	-	-	2	-	-	-
45	-	-	-	-	1	1	-	-	-	1	-	-	-
46	-	-	-	-	2	-	-	-	-	-	1	1	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	1	-	-	-	-	-	-	-	-	-	-	2
49	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	2	-	-	-	-	-	-	-	-
51	-	1	-	-	1	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	1
53	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3	44	5	4	43	1	2	1	3	56	11	6	21

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 7							Haul 9					
	M				F			M		F			
	Maturity stage												
Length (cm)	3	5	6	7	1	2	3	3	5	1	2	3	7
18	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	1	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	3	2	-	-	-	-
31	-	-	-	-	-	-	-	2	4	1	-	-	-
32	-	-	-	-	-	-	-	1	9	-	-	3	-
33	1	-	-	-	-	-	-	4	8	2	-	-	-
34	-	1	-	1	-	-	-	-	7	-	-	2	-
35	-	1	-	1	-	1	-	1	5	2	-	3	-
36	2	-	1	-	-	1	-	-	4	1	-	2	-
37	2	5	-	1	-	-	-	-	2	-	-	2	-
38	2	4	-	1	-	-	-	1	5	-	1	2	1
39	1	2	1	-	1	-	-	-	2	-	-	1	-
40	-	3	-	-	-	3	1	1	1	-	-	4	-
41	3	3	-	-	-	2	2	-	1	-	-	2	-
42	-	2	1	-	-	2	-	-	1	-	-	1	-
43	2	2	-	-	-	-	1	-	-	-	-	1	-
44	3	6	-	-	-	-	1	-	-	-	-	-	-
45	5	5	-	-	-	-	1	-	-	-	-	2	-
46	1	3	-	-	-	-	1	-	-	-	-	-	-
47	1	1	-	-	-	-	-	-	-	-	-	-	-
48	1	-	-	-	-	-	-	-	-	-	-	1	-
49	-	-	-	-	-	-	1	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	1	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	24	38	3	4	1	9	8	14	51	6	1	27	1

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 11						Haul 18							
	M			F			M				F			
	Maturity stage													
Length (cm)	2	3	5	1	2	3	1	3	5	7	1	2	3	5
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	3	-	-	-	-	-	-	-	-	-	-	-	-
28	-	1	-	1	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	1	-	-	1	-	-	-	-	-
30	-	-	-	-	1	-	-	-	1	-	1	-	-	-
31	-	8	2	3	4	-	1	-	1	-	-	-	-	-
32	-	-	5	3	-	2	-	1	4	-	1	-	-	-
33	-	4	3	1	-	1	-	1	1	-	2	-	-	-
34	-	1	6	2	-	-	-	1	1	-	-	-	-	-
35	-	1	3	2	1	3	-	-	3	-	2	-	1	-
36	-	1	3	1	3	-	-	-	7	-	1	-	1	1
37	-	-	1	-	-	2	-	-	16	1	-	1	-	-
38	1	-	1	-	-	1	-	-	8	-	-	2	-	-
39	-	-	2	-	1	3	-	1	10	-	-	-	-	-
40	-	-	-	-	1	2	-	-	13	-	-	-	1	-
41	-	-	-	-	1	1	-	-	4	-	1	-	1	-
42	-	-	1	-	-	1	-	-	1	-	-	-	-	-
43	-	-	1	-	-	2	-	1	2	-	-	-	-	-
44	-	-	-	-	-	1	-	-	2	-	-	-	1	-
45	-	-	-	-	-	2	-	-	-	-	-	-	-	-
46	-	-	1	-	-	1	-	-	1	-	-	-	-	-
47	-	-	-	-	-	1	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	1	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	1	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	19	29	13	13	25	1	5	76	1	8	3	5	1

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 19						Haul 23				
	M			F			M			F	
	Maturity stage										
Length (cm)	1	3	5	1	2	3	1	3	5	1	3
18	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-
28	-	-	2	-	-	-	-	-	2	-	-
29	-	1	3	-	-	-	1	-	-	-	-
30	1	3	2	1	-	-	-	1	-	-	-
31	-	-	4	1	-	-	-	1	2	-	-
32	-	2	11	1	-	-	-	1	2	-	-
33	-	1	6	1	-	-	-	-	3	1	-
34	-	-	4	-	-	2	-	-	8	-	-
35	-	-	4	2	-	-	-	1	2	-	-
36	-	1	10	2	-	-	-	-	8	1	1
37	-	1	6	1	-	2	-	2	5	1	-
38	-	-	6	-	-	1	-	-	-	-	-
39	-	-	1	-	1	1	-	-	4	1	-
40	-	-	-	-	1	3	-	-	2	-	-
41	-	1	2	-	1	-	-	-	-	-	-
42	-	-	2	-	-	1	-	-	2	-	1
43	-	-	1	-	-	1	-	-	-	-	1
44	-	-	-	-	-	-	-	-	-	1	-
45	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	2	-	-
48	-	-	2	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	1
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
Total	1	10	66	9	3	11	1	6	43	4	4

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 26									Haul 31								
	M						F			M					F			
	Maturity stage																	
Length (cm)	1	2	3	5	6	7	1	2	3	1	3	5	6	7	1	2	3	7
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
30	-	-	-	1	-	-	-	-	-	1	-	2	-	-	-	-	-	-
31	-	-	1	-	-	2	-	-	-	-	1	2	-	1	1	-	-	-
32	1	-	1	1	-	2	2	-	-	-	-	2	1	-	-	-	-	-
33	-	-	2	2	-	1	-	-	-	-	-	4	-	-	-	-	-	-
34	-	-	4	3	1	1	1	-	-	-	1	6	-	-	-	-	-	-
35	-	-	4	10	-	1	-	3	-	1	-	10	-	-	-	-	-	-
36	-	-	-	4	1	-	1	1	1	-	-	7	-	-	-	1	-	-
37	-	-	1	4	-	-	1	-	1	-	-	9	-	-	-	1	-	-
38	-	-	1	5	-	1	1	1	1	-	1	9	-	-	-	-	1	-
39	-	-	-	4	-	-	-	3	-	-	-	5	-	-	-	-	-	-
40	-	-	1	2	-	-	-	-	2	-	1	4	1	-	-	-	-	-
41	-	-	-	1	1	-	-	-	1	-	-	10	-	-	-	-	-	-
42	-	-	-	2	-	1	-	-	1	-	-	9	-	-	-	-	-	-
43	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-
44	-	-	-	1	-	-	-	-	-	-	-	1	1	-	-	-	-	-
45	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
48	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
53	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	1	17	42	3	9	6	8	13	2	5	83	3	1	1	2	2	1

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 48										Haul 49						
	M						F				M		F				
	Maturity stage																
Length (cm)	1	2	3	4	5	6	1	2	3	5	5	6	1	2	3	4	7
18	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
26	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
27	1	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-
28	1	-	-	-	4	1	1	-	-	-	2	-	-	-	-	-	-
29	-	-	1	-	2	-	1	-	-	-	1	1	-	-	-	-	-
30	-	-	-	-	2	4	4	-	-	-	1	-	2	-	-	-	-
31	-	-	-	-	6	4	4	-	-	-	6	-	-	-	-	-	-
32	-	-	-	-	3	2	7	2	4	-	4	-	-	1	-	-	-
33	-	-	-	-	3	1	5	2	-	-	1	-	-	-	2	-	-
34	-	-	-	-	4	-	4	1	-	-	4	-	-	1	2	-	-
35	-	-	-	-	2	-	1	1	-	1	5	-	-	-	2	-	1
36	-	-	-	-	-	-	1	1	-	-	4	1	-	1	5	-	-
37	-	-	-	-	-	-	-	1	-	-	3	-	-	-	2	1	-
38	-	-	-	1	-	-	-	1	-	-	2	-	-	1	4	-	-
39	-	1	-	-	1	1	-	-	-	-	1	-	-	-	1	-	-
40	-	-	-	-	-	-	-	-	-	-	4	-	-	-	3	1	-
41	-	-	-	-	-	-	-	1	-	-	-	-	-	-	3	-	1
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-
43	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	1
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-
46	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	1
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Total	3	1	1	1	29	14	34	12	4	1	40	2	2	4	41	7	4

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Haul 50							
	M			F				
	Maturity stage							
Length (cm)	5	6	7	1	2	3	6	7
18	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-
28	1	1	-	-	1	-	-	-
29	6	1	1	-	-	-	-	-
30	10	2	-	-	-	-	-	-
31	9	-	-	1	-	1	-	-
32	9	1	-	-	1	1	-	-
33	10	1	-	2	1	1	-	-
34	4	-	-	-	1	-	-	-
35	4	-	-	-	1	4	1	-
36	1	-	-	-	1	2	-	-
37	-	-	-	-	-	1	-	1
38	3	-	-	-	-	3	-	-
39	-	-	-	-	-	2	-	-
40	-	-	-	-	-	3	-	-
41	-	-	-	-	-	1	-	-
42	-	-	-	-	-	-	-	-
43	1	-	-	-	-	2	-	-
44	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	1
47	-	-	-	-	-	1	-	-
48	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-
50	-	-	-	-	-	1	-	-
51	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-
Total	58	6	1	3	6	23	1	2

Appendix table 5. Dover sole length-sex-maturity (cont'd).

	Totals														Tot M	Tot F	Total
	M							F									
	Maturity Stage																
Length (cm)	1	2	3	4	5	6	7	1	2	3	4	5	6	7			
18	-	-	-	-	-	-	-	-	1	-	-	-	-	-	0	1	1
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
22	-	1	-	-	-	1	-	-	1	-	-	-	-	-	2	1	3
23	-	-	-	-	-	-	-	2	-	-	-	-	-	-	0	2	2
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
25	-	-	-	-	-	-	-	2	-	-	-	-	-	-	0	2	2
26	1	-	-	-	2	-	-	-	1	-	-	-	-	-	3	0	3
27	1	-	3	-	3	-	-	2	-	1	-	-	-	-	7	3	10
28	1	-	2	-	11	2	-	2	1	-	-	-	-	-	16	3	19
29	1	-	4	2	15	2	1	2	-	2	-	-	-	-	25	4	29
30	2	1	7	-	26	6	-	11	1	1	-	-	-	-	42	13	55
31	1	-	13	-	43	4	2	13	4	1	-	-	-	-	64	18	82
32	1	-	6	2	61	4	2	18	5	12	-	-	-	-	76	35	111
33	-	-	14	-	55	2	1	17	4	6	-	-	-	-	72	27	99
34	-	1	7	-	65	1	2	9	4	6	-	-	-	-	76	19	95
35	1	-	7	1	57	-	2	9	8	18	-	1	1	1	68	38	106
36	-	-	4	1	56	3	-	8	11	17	-	1	-	-	64	37	101
37	-	-	6	-	58	-	2	3	5	16	1	-	-	1	66	26	92
38	-	1	5	1	48	-	2	1	7	21	-	-	-	1	57	30	87
39	-	1	2	1	35	2	-	2	5	14	-	-	-	-	40	21	61
40	-	-	3	-	29	1	-	-	5	26	1	-	-	-	33	32	65
41	-	-	4	-	25	1	-	1	5	14	-	-	-	1	30	21	51
42	-	-	-	-	20	1	1	-	2	9	-	-	-	-	22	11	33
43	-	-	3	-	13	-	-	-	-	16	-	-	-	1	16	17	33
44	-	-	3	-	13	1	-	-	-	7	1	-	-	-	17	8	25
45	-	-	6	-	7	-	-	-	-	7	3	-	-	-	13	10	23
46	-	-	1	-	6	-	-	1	1	7	-	-	-	2	7	11	18
47	-	-	1	-	3	-	-	-	-	6	1	-	-	-	4	7	11
48	-	-	1	-	3	-	-	-	-	8	-	-	-	-	4	8	12
49	-	-	-	-	-	-	-	-	-	2	-	-	-	-	0	2	2
50	-	-	-	-	-	-	-	-	-	4	1	-	-	-	0	5	5
51	-	-	-	-	1	-	-	-	1	1	-	-	-	-	1	2	3
52	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0	2	2
53	-	-	-	-	-	-	-	-	-	3	-	-	-	-	0	3	3
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
60	-	-	-	-	-	-	-	-	1	-	-	-	-	-	0	1	1
	9	5	102	7	655	31	16	103	71	227	8	2	1	8	825	420	1245

Appendix table 6. Length frequencies by haul, sex and maturity stage for Petrale sole sampled during the F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See Appendix table 11 for a definition flatfish maturity stages.

	Haul 37							Haul 38				
	M				F			M		F		
	Maturity stage											
Length (cm)	3	5	6	7	3	4	6	5	6	3	4	6
25	-	-	1	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	1	-	-	-	-	1	-	-	-	-
32	-	2	1	-	-	-	-	-	1	-	-	-
33	1	2	2	-	-	-	-	-	1	-	-	-
34	-	4	5	-	-	-	1	1	1	-	-	-
35	1	1	5	-	-	-	-	-	3	-	-	-
36	-	14	2	-	-	-	-	-	-	-	-	-
37	-	4	5	-	-	2	-	-	-	-	-	-
38	-	4	2	1	1	1	-	-	-	1	-	-
39	-	2	2	-	-	1	-	-	1	1	1	-
40	-	-	-	-	1	1	-	-	2	-	1	-
41	-	-	-	-	-	9	-	-	-	2	3	-
42	-	-	1	-	-	4	-	-	-	4	4	1
43	-	-	-	-	1	2	-	-	-	3	9	-
44	-	-	-	-	1	3	-	-	-	3	1	-
45	-	-	-	-	3	1	-	-	-	2	3	-
46	-	-	-	-	-	2	-	-	-	4	3	1
47	-	-	-	-	-	-	-	-	-	-	1	-
48	-	-	-	-	-	-	-	-	-	1	2	-
49	-	-	-	-	1	-	-	-	-	-	-	-
50	-	1	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	1	-
54	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	1	-	-	-	-	-	-
Total	2	34	27	1	8	27	1	2	9	21	29	2

Appendix table 7. Length frequencies by haul, sex and maturity stage for rougheye rockfish sampled during the 1995 F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See Appendix table 12 for a definition maturity states for rockfish.

	Haul 20						Haul 32								
	M		F				M				F				
	Maturity stage														
Length (cm)	2	7	2	3	4	7	3	4	6	7	1	2	3	4	7
39	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
40	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-
43	1	-	1	-	-	-	-	-	-	1	-	2	-	-	-
44	1	1	2	-	-	-	-	1	-	3	-	3	1	-	-
45	-	3	1	-	-	-	-	-	1	3	-	1	1	-	-
46	-	5	2	-	-	-	1	-	-	2	-	2	-	-	-
47	-	1	1	-	1	-	1	-	2	1	1	1	-	-	-
48	1	1	-	-	1	-	-	-	-	3	-	1	2	-	-
49	-	2	1	1	1	1	-	-	-	2	-	-	-	-	-
50	-	1	-	1	-	1	-	-	-	2	-	-	-	2	-
51	-	-	-	-	-	-	-	-	-	2	-	-	-	-	1
52	-	1	-	-	1	-	-	1	-	-	-	-	-	-	-
53	-	-	-	-	1	-	-	-	-	1	-	-	-	-	1
54	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-
55	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3	16	11	3	5	2	2	2	3	22	2	11	4	2	2

Appendix table 7. Rougheye rockfish length-sex-maturity (cont'd).

	Haul 34					Haul 39							Haul 41					
	M	F				M	F						M	F				
	Maturity stage																	
Length (cm)	7	2	3	4	7	1	2	7	2	3	4	7	5	7	2	3	4	7
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
41	-	1	-	-	-	-	2	-	-	-	-	-	-	1	1	-	-	-
42	1	-	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-
43	2	-	1	-	-	-	2	1	1	-	-	-	-	1	1	-	-	-
44	1	1	-	-	-	-	-	-	1	-	-	-	-	4	-	1	1	-
45	3	1	1	-	-	-	3	1	1	-	-	-	-	5	2	-	-	-
46	4	1	2	-	-	-	-	6	3	1	2	-	1	1	-	6	-	-
47	1	5	-	-	-	-	-	5	1	-	-	-	-	2	-	-	1	-
48	4	2	-	1	-	-	-	6	-	-	-	1	-	2	1	-	-	-
49	3	-	-	-	-	-	-	2	1	-	1	-	-	-	1	1	1	-
50	-	1	-	-	-	-	-	3	-	-	-	-	-	2	1	-	-	-
51	1	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-	2	1
52	2	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	2	-
53	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
54	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
55	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
57	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	29	15	4	1	1	1	7	25	11	1	3	2	1	23	9	8	8	1

Appendix table 8. Length frequencies by haul, sex and maturity stage for Pacific ocean perch sampled during the 1995 F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See Appendix table 12 for a definition maturity stages for rockfish.

Pacific Ocean Perch

	Haul 1						Haul 8						Haul 12				
	M			F			M			F			M		F		
	Maturity stage																
Length (cm)	1	2	7	1	4	5	1	2	7	2	4	5	1	2	1	2	3
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	5	-	1	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	1	-	5	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	4	1	4	1	-
28	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-
29	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-
31	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-
32	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	1	-
33	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
34	3	-	-	1	-	-	3	-	-	-	-	1	-	1	-	-	1
35	2	-	-	-	-	-	1	-	4	-	-	1	1	-	-	-	1
36	1	-	-	-	1	1	3	-	5	1	1	1	-	-	-	-	-
37	2	-	-	-	-	1	2	-	10	-	-	-	-	1	-	-	-
38	-	2	1	-	3	1	-	-	3	-	1	2	-	-	1	-	-
39	-	-	2	-	2	2	-	1	5	-	-	-	-	-	-	-	-
40	-	-	-	-	3	3	-	-	1	-	-	-	-	-	-	-	-
41	-	-	1	-	1	1	-	-	1	-	-	-	-	-	-	-	-
42	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	1	3	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-
Total	8	2	4	1	16	9	10	2	29	1	2	6	20	4	17	6	2

Appendix table 8. Pacific ocean perch length-sex-maturity (cont'd).

Length (cm)	Haul 29							Haul 33							
	M			F				M			F				
	Maturity stage														
	1	2	7	2	4	5	7	1	2	7	2	3	4	6	7
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	1	-	-	-	2	-	-	-	-	-	-	-
31	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
32	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-
33	-	1	1	-	-	-	-	1	1	1	2	-	-	-	-
34	-	3	-	-	-	-	-	2	-	-	-	-	-	-	-
35	-	-	-	-	-	1	1	-	-	5	2	-	1	-	-
36	-	-	4	-	-	1	-	-	-	9	2	1	-	1	1
37	-	-	9	-	-	1	-	-	-	8	-	-	-	-	-
38	-	-	7	-	-	-	-	-	-	5	-	-	-	-	-
39	-	-	9	-	-	-	-	-	-	1	-	-	-	-	-
40	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	1	-	1	-	1	-	-	-	-	-	-	-	-
42	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	5	37	1	1	3	2	7	2	29	6	1	3	1	1

Appendix table 8. Pacific ocean perch length-sex-maturity (cont'd).

	Haul 39								Haul 42							
	M			F					M				F			
	Maturity stage															
Length (cm)	2	4	7	2	3	4	5	7	1	2	3	7	1	3	4	7
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
29	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
33	-	-	-	1	-	-	-	-	-	1	-	2	-	-	-	-
34	2	1	3	1	-	1	-	-	1	1	-	4	-	1	-	-
35	3	-	3	-	-	1	2	-	-	2	-	4	-	-	2	-
36	-	-	8	1	1	1	1	1	-	1	1	6	-	-	1	-
37	-	-	4	1	-	1	-	1	-	1	-	3	-	-	1	1
38	-	-	2	-	-	-	1	-	-	1	-	4	-	-	-	-
39	-	-	6	-	-	-	-	-	-	-	-	3	1	-	-	-
40	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	-
41	-	-	1	-	-	-	1	-	-	-	-	1	-	-	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5	1	28	4	1	4	5	2	3	8	1	31	1	1	4	1

Appendix table 9. Length frequencies by haul, sex and maturity stage for Shortspine thornyhead sampled during the 1995 F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See Appendix table 12 for a definition maturity stages for rockfish.

	Haul 40										
	M					F					
	Maturity stage										
Length (cm)	1	2	5	6	7	1	2	3	4	6	7
19	1	-	-	-	-	-	-	-	-	-	-
20	-	2	-	-	-	-	-	-	-	-	-
22	-	-	-	1	-	1	-	-	-	-	-
23	-	-	1	-	-	-	-	-	-	-	-
24	-	-	-	1	-	-	1	-	-	-	-
25	-	-	-	-	-	-	2	1	-	-	-
26	-	1	1	1	-	-	2	-	-	-	-
27	-	-	1	2	-	-	-	-	-	-	-
28	-	-	-	1	-	-	1	-	-	-	-
29	-	-	2	1	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	1	-	-	-
31	-	1	1	1	1	-	2	-	-	-	1
32	-	-	-	-	-	-	-	-	1	-	-
33	-	-	-	-	-	-	1	-	-	-	2
35	-	-	1	-	-	-	-	-	-	-	1
36	-	-	-	1	1	-	1	-	-	-	-
37	-	-	-	-	-	-	-	-	-	-	1
38	-	-	-	-	-	-	-	-	-	-	2
39	-	-	-	-	-	-	-	-	-	1	2
40	-	-	-	-	-	-	-	-	-	1	-
41	-	-	-	-	-	-	-	-	-	1	-
42	-	-	-	-	-	-	-	-	-	1	-
Total	1	4	7	9	2	1	10	2	1	4	9

Appendix table 10. Length frequencies by haul, sex and maturity stage for Longspine thornyhead and splitlip rockfish sampled during the 1995 F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See Appendix table 12 for a definition maturity stages for rockfish.

	Longspine thornyhead						Splitlip rockfish				
	Haul 26						Haul 29				
	M		F				M		F		
	Maturity stage										
Length (cm)	1	7	1	2	3	Length (cm)	3	7	3	7
18	-	-	-	1	-	22	1	2	1	1
20	1	-	2	-	-	23	1	5	3	-
21	3	-	3	-	-	24	4	7	3	1
22	1	-	3	-	-	25	1	1	4	1
23	5	-	1	2	-	26	2	3	2	-
24	7	-	7	6	-	27	-	-	1	-
25	1	-	-	1	-	28	-	-	3	-
26	1	-	-	1	-	29	-	-	3	-
27	-	1	-	-	1	30	-	-	-	-
28	-	-	-	1	-	31	-	-	-	-
29	-	1	-	-	-	32	-	-	1	-
Total	19	2	16	12	1	Total	9	18	20	3

Appendix table 11. Length frequencies by haul, sex and maturity stage for Sablefish sampled during the F/V Ocean Selector Dover sole biomass survey, west coast Vancouver Island, Feb. 13-27, 1995. See appendix table 13 for a definition maturity states for Sablefish.

	Haul 1					Haul 6								
	M		F			M			F					
	Maturity stage													
Length (cm)	2	12	1	2	9	5	11	12	5	6	8	9	11	12
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	1	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	1	-	-	-	-	-	-
48	-	-	-	-	-	-	-	1	-	-	-	-	-	-
49	-	-	-	-	-	2	-	-	-	-	-	-	-	-
50	-	-	-	-	-	2	-	-	-	-	-	-	-	-
51	-	-	-	-	-	2	-	-	-	1	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	2	-	-	-	-	1	-	-	-	-	-	-	-	-
54	-	1	-	-	-	2	-	1	-	-	-	-	-	-
55	1	-	-	3	-	2	-	1	-	-	-	-	-	-
56	-	-	-	1	-	2	-	-	-	-	-	-	1	-
57	2	-	-	1	-	3	-	-	-	-	-	1	-	1
58	-	-	-	1	-	1	-	-	-	-	-	-	-	-
59	-	-	-	3	-	1	1	-	-	-	-	-	-	-
60	-	-	-	4	-	1	-	-	-	-	-	-	-	-
61	1	-	-	2	-	2	-	-	1	-	-	-	-	1
62	-	-	-	3	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	1	-	-
64	-	-	-	2	-	1	-	-	1	1	-	-	-	-
65	-	-	-	1	-	-	-	-	-	-	1	1	-	-
66	-	-	-	-	1	2	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	1	-	-	-	-	1	-	-
69	-	-	-	-	-	-	-	-	-	-	1	1	-	-
71	-	-	-	-	-	3	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	1	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	1	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	6	1	1	21	1	27	2	4	2	2	2	6	2	2

Appendix table 11. Sablefish length-sex-maturity (cont'd).

Length (cm)	Haul 14												Haul 15			
	M					F							M		F	
	Maturity stage															
	2	5	9	11	12	2	5	6	7	8	9	11	5	12	5	8
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
46	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
47	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
50	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
51	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
52	1	3	-	-	-	-	1	-	-	-	-	-	4	-	-	-
53	-	7	-	-	-	-	-	-	-	-	-	-	2	-	-	-
54	-	7	-	2	-	-	-	-	-	-	-	-	7	-	1	-
55	-	4	-	-	-	-	-	-	-	-	-	-	5	-	-	-
56	-	5	-	-	-	3	1	-	-	-	1	-	9	-	-	-
57	-	3	1	-	-	2	-	-	-	-	-	-	6	1	-	-
58	-	4	-	-	-	-	-	1	-	-	1	-	4	-	-	-
59	-	1	-	-	1	-	1	-	-	-	-	-	5	-	-	-
60	-	1	-	-	-	-	1	-	-	-	1	-	4	-	-	-
61	-	4	-	-	-	-	1	-	-	-	-	-	2	-	-	-
62	-	1	-	-	-	-	2	-	-	-	1	-	1	-	-	-
63	-	-	-	-	-	-	2	-	1	-	-	-	4	1	-	1
64	-	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-
65	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-
66	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-
67	-	-	-	-	1	-	-	-	-	1	1	-	1	-	-	-
68	-	1	-	-	-	-	-	-	-	-	1	-	2	1	-	-
69	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
70	-	1	-	-	-	-	-	1	-	-	1	1	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
75	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	8	45	1	2	2	7	9	2	2	4	12	1	64	5	1	1

Appendix table 11. Sablefish length-sex-maturity (cont'd).

	Haul 17											Haul 27										
	M			F								M					F					
	Maturity stage																					
Length (cm)	2	5	12	2	5	6	8	9	10	11		2	5	8	9	12	1	2	3	5	7	9	11
42	-	-	-	-	-	-	-	-	-	-		1	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
48	1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
49	1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
50	-	1	-	-	-	-	-	-	-	-		1	-	-	-	-	-	-	-	-	-	-	-
51	1	1	-	-	-	-	-	-	-	-		2	1	-	-	-	-	1	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-		2	-	-	-	-	1	2	-	-	-	-	-
53	1	-	-	1	-	-	-	-	-	-		1	-	-	-	-	-	-	-	-	-	-	-
54	-	1	-	-	-	-	-	-	-	-		1	2	-	-	2	-	-	-	-	-	-	-
55	-	2	-	-	-	-	-	-	-	-		-	1	-	-	-	-	-	-	-	-	-	-
56	-	1	-	-	-	-	-	-	-	-		-	1	-	-	-	-	1	-	-	-	-	-
57	-	4	-	-	-	-	-	-	-	-		-	1	-	-	1	-	-	-	-	-	-	1
58	-	1	1	3	1	-	-	1	-	-		-	1	1	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	1	-		1	1	-	-	-	-	-	-	1	-	-	1
60	-	1	-	-	3	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	2	1	-	-	-	-	-		-	1	-	-	-	-	1	-	-	-	-	-
62	-	-	-	-	1	-	1	-	-	-		-	2	-	1	-	-	-	-	-	-	-	-
63	-	-	-	1	-	-	-	-	-	-		-	-	-	-	-	-	-	-	1	-	-	-
64	-	1	-	-	-	-	-	-	-	1		-	1	-	-	1	-	-	-	-	-	-	-
65	-	1	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	1	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1	-
67	-	1	-	-	-	1	-	-	-	1		-	-	-	-	1	-	-	-	-	-	-	-
68	-	-	-	-	1	-	-	-	-	1		-	-	-	-	-	-	-	1	-	1	1	-
69	-	-	-	-	1	-	-	-	-	1		-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	2	-
71	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	2		-	-	-	-	-	-	-	-	-	-	2	-
73	-	-	-	-	-	-	-	1	-	2		-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-		-	1	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	1	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	1
79	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1	-
80	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	1	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Total	4	15	1	8	9	2	2	2	1	8		9	13	1	1	5	1	5	1	2	1	7	3

Appendix table 11. Sablefish length-sex-maturity (cont'd).

Length (cm)	Haul 31						Haul 35									
	M			F			M					F				
	Maturity stage															
	5	9	12	5	9	11	5	6	9	11	12	2	5	6	9	11
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
52	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
53	3	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
54	-	-	1	-	-	-	3	-	-	-	-	-	-	-	-	-
55	10	-	-	-	-	-	2	-	1	-	1	-	-	-	-	-
56	9	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
57	8	-	1	-	-	-	3	-	-	1	1	-	-	-	-	-
58	2	-	-	-	-	-	5	1	-	-	-	-	-	-	-	-
59	5	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
60	2	-	1	-	-	1	2	-	-	-	1	-	-	-	-	-
61	4	-	2	-	-	-	4	-	-	-	-	-	-	1	-	-
62	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
63	1	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
64	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	2	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-
67	2	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
68	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
69	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-
70	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	60	2	7	1	1	1	34	1	1	1	4	1	3	1	3	1

Appendix table 11. Sablefish length-sex-maturity (cont'd).

	Haul 43											Haul 46										
	M						F					M					F					
	Maturity stage																					
Length (cm)	2	3	5	9	11	12	5	7	9	11	12	3	5	9	11	12	2	5	9	10	11	12
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
49	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
53	-	-	1	-	-	-	-	-	-	-	-	1	3	-	-	1	-	-	-	-	-	-
54	-	-	4	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
55	-	-	4	1	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
56	-	1	4	-	-	-	-	-	-	-	-	-	2	-	1	1	-	-	1	-	-	-
57	-	-	3	-	-	-	-	-	-	-	-	-	4	1	1	-	1	-	-	-	1	-
58	-	1	1	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
59	-	1	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-
60	-	-	1	-	-	-	-	-	-	-	1	-	2	1	-	-	-	-	-	-	-	1
61	-	-	1	1	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-
62	-	-	1	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	2	-
63	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-
64	-	-	1	-	-	-	-	-	-	-	-	-	2	1	1	1	-	-	-	-	2	-
65	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
66	-	-	-	2	-	-	-	1	-	-	-	-	2	1	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
69	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
70	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
72	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-
75	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	-	-	1	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Total	1	3	31	4	2	1	1	1	2	3	1	1	41	5	3	5	1	2	2	1	10	2

Appendix table 12. Criteria used for determining stage of maturity of Dover and Petrale sole sampled during the F/V OCEAN SELECTOR biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

Maturity stage		Testes	Ovaries
Immature	(1)	Testes very small, string-like and somewhat translucent or pinkish in colour	Ovaries very small, translucent or pinkish and somewhat gelatinous in texture.
Immature	(2)	Testes enlarging, a distinct bulge evident but still translucent or pinkish in colour.	Ovaries relatively small, pinkish-yellow or cream in colour, granular in texture. No distinct eggs visible.
Developing	(3)	Testes enlarging, brown-white or white in colour, firm in texture.	Ovaries large, cream or yellow in colour, containing opaque eggs that be distinguished by direct observation. Sex may be determined externally.
Ripe	(4)	Testes large, white and easily broken. No sperm evident.	Ovaries containing partly or wholly translucent eggs. Sex easily determined externally.
Spawning	(5)	Testes large, white and sperm evident.	Ovaries containing entirely translucent, mature ova. Eggs loose and will run from oviducts under slight pressure.
Spent	(6)	Testes flaccid, shrunken and yellow-brown in colour. Sperm ducts enlarged and a small amount of sperm may be present.	Ovaries large, flaccid and purple in colour; a few translucent eggs may be left. Ovarian membrane very vascular (bloodshot) and sac-like.
Resting	(7)	Testes firm, small and yellow-brown in colour. Sperm ducts small.	Ovaries contracted and firm, pinkish-grey to cream-yellow in colour and may appear granular in texture but no distinct eggs are visible.

Appendix table 13. Criteria used for determining stage of maturity of rockfish sampled during the F/V OCEAN SELECTOR biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

Maturity stage		Testes	Ovaries
Immature	(1)	Very small, translucent	Very small, translucent
Maturing	(2)	(stringlike, slight swelling, translucent)	(small, yellow eggs; translucent or opaque)
Developing	(3)	(swelling, brown-white)	(large, yellow or orange eggs; opaque)
Developed	(4)	(large, white; easily broken)	(large, orange-yellow eggs; translucent)
Running	(5)	(running sperm)	embryos or larvae (include eyed eggs; translucent)
Spent	(6)	(white-brown; sperm still in duct)	(large, flaccid, red ovaries. A few larvae may
Resting	(7)	(triangular in cross-section; small, brown)	(moderate size, firm, orange-grey ovaries

Appendix Table 14. Criteria used for determining stage of maturity of sablefish sampled during the F/V OCEAN SELECTOR biomass survey off the west coast of Vancouver Island, February 13-27, 1995.

Maturity stage		Males	Females
Immature	(1)	very thin string-like >1mm thick, translucent-white colour	thin string-like =1.5mm thick, mid-section translucent-white colour
Immature	(2)	thin string-like 3mm thick extends length of cavity white-translucent colour	thickened >5mm, does not extend length of cavity, some folds sausage-like, translucent-white colour
Developing	(3)	thick >10mm visible folds,white, smooth texture =20% body cavity	eggs present, white opaque colour, encased in translucent sock, <25% of body cavity
Developing	(4)	as above but with blood vessels present on surface, >30% body cavity	eggs larger =1mm diameter, white in colour, blood vessels present on surface, >25% of body cavity
Ripe	(5)	as above; blood vessels present, folds delicate, some sperm may flow, >40% of body cavity.	eggs at least 1mm diameter, white in colour, gonad full size, >50% of body cavity
Ripe	(6)	no stage in males	gonad same size as above but at least 25% of eggs have become translucent
Ripe	(7)	no stage in males	gonad same size as above but at least 50% of eggs have become tranlucent
Running ripe	(8)	lobes fully developed, sperm is released when slight pressure is applied to external posterior region of body cavity	stream of translucent eggs released when slight-moderate pressure is applied to external posterior region of body cavity
Spent	(9)	lobes or folds are bloodshot, some sperm may be present when moderate pressure is applied to external posterior region of body cavity	gonad is red-purple in colour residual eggs may be present, outer wall of gonad flacid
Resorbing	(10)	no stage in males	resorbing eggs present
Recovering	(11)	lobes flat, brown colour, bloodshot appearance on edges and ends of lobes	still some red-purple colour, not flaccid, whitish sheen to exterior surface
Resting	(12)	firm, light brown some wrinkles on surface	smooth, elongated and round in shape, brown-purple pulp interior, exterior surface has whitish sheen.