

278525

# **Multispecies Trawl Survey of Hecate Strait, F/V *Viking Storm*, June 10 - 28, 2002**

E.M. Choromanski, J. Fargo, G.D. Workman, and K. Mathias

Fisheries and Oceans Canada  
Science Branch, Pacific Region  
Pacific Biological Station  
Nanaimo, British Columbia  
V9T 6N7

2004

## **Canadian Data Report of Fisheries and Aquatic Sciences 1124**



Fisheries  
and Oceans

Pêches  
et Océans

Canada

## Canadian Data Report of Fisheries and Aquatic Sciences

Data reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of data reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries and aquatic sciences.

Data reports are not intended for general distribution and the contents must not be referred to in other publications without prior written authorization from the issuing establishment. The correct citation appears above the abstract of each report. Data reports are abstracted in *Aquatic Sciences and Fisheries Abstracts* and indexed in the Department's annual index to scientific and technical publications.

Numbers 1 - 25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26 - 160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was introduced with the publication of report number 161.

Data reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page. Out-of-stock reports will be supplied for a fee by commercial agents.

## Rapport statistique canadien des sciences halieutiques et aquatiques

Les rapports statistiques servent à classer et à archiver les compilations de données pour lesquelles il y a peu ou point d'analyse. Ces compilations auront d'ordinaire été préparées à l'appui d'autres publications ou rapports. Les sujets des rapports statistiques reflètent la vaste gamme des intérêts et des politiques du ministère des Pêches et des Océans, c'est-à-dire les sciences halieutiques et aquatiques.

Les rapports statisques ne sont pas destinés à une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au-dessus du résumé de chaque rapport. Les rapports statisques sont résumés dans la revue *Résumés des sciences aquatiques et halieutiques*, et ils sont classés dans l'index annuel des publications scientifiques et techniques du Ministère.

Les numéros 1 à 25 de cette série ont été publiés à titre de relevés statistiques, Services des pêches et de la mer. Les numéros 26 à 160 ont été publiés à titre de rapports statistiques du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom actuel de la série a été établi lors de la parution du numéro 161.

Les rapports statistiques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Canadian Data Report of  
Fisheries and Aquatic Sciences 1124

2004

**MULTISPECIES TRAWL SURVEY OF HECATE STRAIT,  
*F/V VIKING STORM, JUNE 10 - 28, 2002***

by

E.M. Choromanski, J. Fargo, G.D. Workman, and K. Mathias

Fisheries and Oceans Canada  
Science Branch, Pacific Region  
Pacific Biological Station  
Nanaimo, British Columbia

V9T 6N7

© Her Majesty the Queen in Right of Canada, 2004,  
Cat. No. Fs 97-13/1124E ISSN0706-6456

Correct citation for this publication:

Choromanski, E.M., J. Fargo, G.D. Workman, and K. Mathias. 2004. Multispecies trawl survey  
of Hecate Strait, *F/V Viking Storm*, June 10 – 28, 2002. Can. Data Rep. Fish. Aquat. Sci.  
1124: 81 p.

**TABLE OF CONTENTS**

List of Tables .....	iv
List of Figures.....	v
List of Appendices.....	vii
Abstract.....	viii
Resume .....	ix
Introduction .....	1
Methods and Materials .....	1
Survey Design.....	1
Fishing Vessel and Gear .....	1
Catch and Sample Processing.....	2
Results.....	2
Fishing Operations .....	2
Catch Data.....	3
Biological Data .....	3
English Sole .....	3
Dover Sole.....	4
Rock Sole .....	4
Arrowtooth Flounder .....	4
Petrale Sole .....	4
Other Samples .....	5
Acknowledgements .....	6
References.....	6

**LIST OF TABLES**

Table 1. Summary of trawl stations during the 2002 Hecate Strait multispecies survey on the <i>F/V Viking Storm</i> .....	8
Table 2. Catch by species and frequency of occurrence of species captured during the Hecate Strait multispecies survey on the <i>F/V Viking Storm</i> , June 10 – 28 2002.....	11
Table 3. Summary of biological samples collected during the Hecate Strait multispecies survey on the <i>F/V Viking Storm</i> , June 10 – 28, 2002.....	15
Table 4. Summary of biological data collected by species for all samples taken during the demographic survey of Hecate Strait on the <i>F/V Viking Storm</i> , June 10 –28, 2002.....	26
Table 5. Summary of samples morphometrics attribute collected during the multispecies survey of Hecate Strait on the <i>F/V Viking Storm</i> , June 10 – 28, 2002. ....	28
Table 6. Summary statistics for length (mm) and weight (g) from samples collected during the Hecate Strait multispecies survey, June 10 – June 28, 2002 .....	30
Table 7. Regression parameters for log (weight) vs log (length) for selected species during the multispecies survey of Hecate Strait in 2002.....	31
Table 8. Maturity stage for species sampled during the Hecate Strait multispecies survey on the <i>F/V Viking Storm</i> , June 10 – 28, 2002. ....	32

## LIST OF FIGURES

Figure 1. Haul locations and survey grid for the Hecate Strait multispecies survey, on the <i>F/V Viking Storm</i> , June 10 – 28, 2002.....	33
Figure 2. Specifications for the Yankee 36 trawl net used during the 2002 multispecies survey of Hecate Strait.....	34
Figure 3. Length relative frequency distribution for male and female English sole collected during the Hecate Strait multispecies survey in 2002.....	35
Figure 4. Length – weight relationship by sex for English sole collected during the Hecate Strait multispecies survey in 2002.....	36
Figure 5. Stage of maturity for English sole collected during the Hecate Strait multispecies survey in 2002.....	37
Figure 6. Length relative frequency distribution for male and female Dover sole collected during the Hecate Strait multispecies survey in 2002.....	38
Figure 7. Length – weight relationship by sex for Dover sole collected during the Hecate Strait multispecies survey in 2002.....	39
Figure 8. Stage of maturity for Dover sole collected during the Hecate Strait multispecies survey in 2002 .....	40
Figure 9. Length relative frequency distribution for male and female rock sole collected during the Hecate Strait multispecies survey in 2002.....	41
Figure 10. Length – weight relationship by sex for rock sole collected during the Hecate Strait multispecies survey in 2002.....	42
Figure 11. Stage of maturity for rock sole collected during the Hecate Strait multispecies survey in 2002 .....	43
Figure 12. Length relative frequency distribution for male and female arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.....	44
Figure 13. Length – weight relationship by sex for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.....	45
Figure 14. Stage of maturity for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.....	46

**LIST OF FIGURES (cont'd)**

Figure 15. Length relative frequency distribution for male and female Petrale sole collected during the Hecate Strait multispecies survey in 2002.....	47
Figure 16. Length – weight relationship by sex for Petrale sole collected during the Hecate Strait multispecies survey in 2002.....	48
Figure 17. Stage of maturity for Petrale sole collected during the Hecate Strait multispecies survey in 2002.....	49
Figure 18. Length relative frequency distribution for male and female Pacific cod collected during the Hecate Strait multispecies survey in 2002.....	50
Figure 19. Length – weight relationship by sex for Pacific cod collected during the Hecate Strait multispecies survey in 2002.....	51
Figure 20. Stage of maturity for Pacific cod collected during the Hecate Strait multispecies survey in 2002.....	52
Figure 21. Length relative frequency distribution for male and female Pacific Halibut collected during the Hecate Strait multispecies survey in 2002.....	53
Figure 22. Length – weight relationship by sex for lingcod collected during the Hecate Strait multispecies survey in 2002.....	54
Figure 23. Stage of maturity for lingcod collected during the Hecate Strait multispecies survey in 2002.....	55

**LIST OF APPENDICES**

Appendix 1. Criteria used for determining sole maturity stage.....	56
Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on <i>F/V Viking Storm</i> , June 10 – 28, 2002. ....	57
Appendix 3. Detail description and specification of the <i>F/V Viking Storm</i> .....	81

## ABSTRACT

Choromanski, E.M., J. Fargo, G.D. Workman, and K. Mathias. 2004. Multispecies trawl survey of Hecate Strait, *F/V Viking Storm*, June 10 – 28, 2002. Can. Data Rep. Fish. Aquat. Sci. 1124: 81 p.

The *F/V Viking Storm* was chartered to conduct a multispecies survey of Hecate Strait between June 10 – 28, 2002. The primary objective of the survey was to assess the abundance of flatfish species on selected fishing grounds. Secondary objectives included collecting detailed biological data on multispecies community structure within the Hecate Strait ecosystem. Both objectives are supplementary to the development of an ecosystem approach to fisheries management in Hecate Strait. A total of 96 tows were performed during the cruise. Two sets were unusable due to gear fouling. A total of 63 species of groundfish, weighing 55,774 kg were caught during the survey of which 34,863 kg were flatfishes and 13,065 kg were selachii. In addition, 71 invertebrate species that comprising 1,222 kg were caught. The most abundant species were arrowtooth flounder (*Atheresthes stomias*) (12,042 kg) and spotted ratfish (*Hydrolagus colliei*) (9,547 kg).

Biological information was gathered from 47,956 fish over 35 species. Length frequency data sorted by sex were collected from 8,281 English sole (*Pleuronectes vetulus*), 6,105 rex sole (*Errex zachirus*), 4,966 arrowtooth flounder, 4,819 rock sole (*Pleuronectes bilineatus*), 4,092 Dover sole (*Microstomus pacificus*), among many other species. Length and weight data were collected from 1,580 Pacific Cod (*Gadus macrocephalus*) as well as 159 randomly selected stomach samples. Otoliths, maturity, sex, length and weight data were collected from 600 English sole, 200 rex sole, 932 rock sole, and 669 Dover sole. This report summarises the bridge log, catch and biological data obtained during the 2002 survey.

## RÉSUMÉ

Choromanski, E.M., J. Fargo, G.D. Workman, and K. Mathias. 2004. Multispecies trawl survey of Hecate Strait, *F/V Viking Storm*, June 10–28, 2002. Can. Data Rep. Fish. Aquat. Sci. 1124: 81 p.

Le *F/V Viking Storm* a été affrété pour effectuer un relevé plurispécifique dans le détroit d'Hecate du 10 au 28 juin 2002. Le relevé avait comme objectif principal d'évaluer l'abondance des espèces de poissons plats dans certains lieux de pêche. Un objectif secondaire a consisté à recueillir des données biologiques détaillées sur la structure des communautés de poissons dans l'écosystème du détroit d'Hecate. Ces deux objectifs s'inscrivent dans le cadre de l'élaboration d'une démarche de gestion écosystémique des pêches dans le détroit d'Hecate. Au total, 96 traits de chalut ont été réalisés durant la croisière de recherche, dont deux qui étaient inutilisables en raison du mauvais fonctionnement de l'engin. Soixante-trois espèces de poissons de fond ont été capturées durant le relevé, pour un poids total de 55 774 kg, dont 34 863 kg de poissons plats et 13 065 kg de sélaciens, en plus de 71 espèces d'invertébrés totalisant 1 222 kg. Les espèces les plus abondantes étaient la plie à grande bouche, *Atheresthes stomias* (12 042 kg), et la chimère d'Amérique, *Hydrolagus colliei* (9 547 kg).

Des données biologiques ont été recueillies sur 47 956 poissons de plus de 35 espèces. Des données de fréquence de taille par sexe ont été obtenues pour 8 281 carlottins anglais (*Pleuronectes vetulus*), 6 105 plies royales (*Errex zachirus*), 4 966 plies à grande bouche, 4 819 fausses limandes (*Pleuronectes bilineatus*) et 4 092 limandes-soles (*Microstomus pacificus*), entre autres espèces. En plus de 159 estomacs échantillonnes aléatoirement, des données de longueur et de poids ont été recueillies sur 1 580 morues du Pacifique (*Gadus macrocephalus*). Des otolithes ainsi que des données sur la maturité, le sexe, la longueur et le poids ont été recueillis pour 600 carlottins anglais, 200 plies royales, 932 fausses limandes et 669 limandes-soles. Le présent rapport résume le registre de bord, les captures et les données biologiques du relevé 2002.



## INTRODUCTION

The Hecate Strait multispecies groundfish bottom trawl survey initiated in April 1984 and conducted usually every 2 years, provides the longest running time series of fisheries independent groundfish surveys on the west coast. The 2002 survey is the tenth in a series conducted in 1984, 1986, 1987, 1989, 1991, 1993, 1995, 1996, 1998, and 2000 (Fargo *et al.* 1984, 1986, 1988; Westrheim *et al.* 1984; Antonsen *et al.* 1990; Wilson *et al.* 1991; Hand *et al.* 1994; Workman *et al.* 1997; Choromanski *et al.* 1998, 2000). Although secondary objectives varied with the survey years, the primary, long term objective of the Hecate Strait survey was to conduct ecosystem – based research for multispecies stock assessment and management of groundfish in the Hecate Strait region. While multispecies stock assessment strategies are being developed the systematic survey of Hecate Strait provides adequate spatial and temporal coverage to monitor changes in abundance of target species, and to provide comprehensive data for stock assessment purposes. Detailed species composition and biological data were collected for species encountered during the survey including length frequencies, weight, sex, maturity and otoliths for age determination. This information is essential for stock assessment to support management of the ground trawl fishery.

## METHODS AND MATERIALS

### SURVEY DESIGN

The trawl survey was stratified by area and depth but the allocation of stations within depth strata was non-random. Each stratum consisted of a sampling grid of 10 nm<sup>2</sup> blocks within each block, every 18.3 m (10 fathom) depth stratum was potentially sampled. The specific placement and direction of the tow within each depth stratum was left to the discretion of the skipper. The grid area encompassed Lat. 52°30' N and Lon. 130°5' W to Lat. 54°30' N and Lon. 131°45' W (Figure 1). The blocks were used for the placement of individual tows. Blocks were labelled A to L from north to south, and 1 to 6 west to east. The survey covered a depth range of 18.3 m to 146.3 m (10 to 80 fathoms). The specific placement and direction of the tow within each depth stratum was left to the discretion of the skipper.

### FISHING VESSEL AND GEAR

The Fishing Vessel *Viking Storm* was a 31.7 m steel hull West Coast trawler, chartered for the duration of the survey. Kelly Anderson skippered the vessel. The vessel was constructed in 1981 and equipped with a 980 hp. KTA Cummins engine achieving a cruising speed of 10 knots. Detailed vessel specifications can be found in Appendix 2. The vessel was equipped with several video depth sounders, (Furuno Model FCV 782 28/50 kHz dual and Furuno Model 261 50 kHz), Global Positioning System, computer navigation system Nobeltak and Seaplot, radar and communications equipment. The vessel was also equipped with net monitoring equipment (Scanmar Symmetry Sensors, Model Scanmar RX 400) measuring door spread, trawl speed and catch monitor. The vessel was equipped with two Yankee trawl nets one designed for

hard bottom use and the other for soft bottom (Figure 2.) and Thyborn Type 2 trawl doors. The Yankee 36 bottom trawl net had 8.75 cm mesh in the wing, 8.75 cm in the body, 8.75 cm in the intermediate, 8.75 cm in the codend with the 2.5 cm codend liner. The headline was 18.3 m long and hung with forty 20-cm diameter plastic floats. The net was connected to the trawl doors by 36.6 m bridle/sweelines. The Yankee 36 hard bottom footrope was modified by chain with toggle and half round bobbins. The decision to deploy the hard bottom net was based on sounding and bathymetry from the chart.

## CATCH AND SAMPLE PROCESSING

The total catch was emptied on deck into a fish holding bin in the stern of the vessel and moved by outside conveyor to the sampling area inside. Sorting by species into separate baskets was done as the catch made its way along the fish lab conveyor. The total weight for each species was recorded. Each specimen sampled was measured for length in millimetres and weighed using an electronic top - loading balance (Marel Model 2200 with 6 kg capacity). Random baskets were selected for biological sampling. Length frequency was recorded by sex for all species. Target species for biological sampling included arrowtooth flounder, Dover sole, flathead sole (*Hippoglossoides elassodon*), English sole, rock sole, rex sole, starry flounder (*Platichthys stellatus*), curlfin sole (*Pleuronichthys decurrens*), butter sole (*Pleuronectes isolepis*), Pacific sandab (*Citharichthys sordidus*), slender sole (*Eopsetta exilis*), Pacific cod, petrale sole (*Eopsetta jordani*), spiny dogfish (*Squalus acanthias*), spotted raffish (*Hydrolagus colliei*), big skate (*Raja binoculata*), longnose skate (*Raja rhina*), sandpaper skate (*Bathyraja interrupta*), walleye Pollock (*Theragra chalcogramma*), sablefish (*Anoplopoma fimbria*), bocaccio (*Sebastodes paucispinis*), Yellowtail rockfish (*Sebastodes ruberrimus*), copper rockfish (*Sebastodes caurinus*), quillback rockfish (*Sebastodes maliger*), and Pacific ocean perch (*Sebastodes alutus*).

The data were fitted to the power function model for weight as a function of length.

$$W_i = a L_i^b$$

where  $W_i$  is weight units of fish  $i$ ,  $L_i$  is length units of fish  $i$  and  $a$ ,  $b$  are estimated parameters.

The body cavity was exposed to determine the sex and the level of maturation (Appendix 1). In addition, otoliths extracted for age determination were cleaned and stored in a 50:50 solution of glycerine/water with 1 g thymol added per litre (MacLellan, 1999). Otolith samples were later processed in the Aging Laboratory at the Pacific Biological Station.

## RESULTS

### FISHING OPERATIONS

A total of 96 bottom trawls were completed during the cruise. Tows 60 and 68 were not usable. The summary of trawl stations occupied during the survey is presented in Table 1 and Figure 1. Fishing operations commenced at the North East

presented in Table 1 and Figure 1. Fishing operations commenced at the North East end of Laskeek Bank and proceeded northwest to Dixon Entrance. The most northerly tow (#82) was made off Dundas Island. Tows 12 and 55 were sub-sampled (Westrheim 1967) due to the large catch.

## CATCH DATA

The total catch was 55, 774 kg, which comprised 63 species of fish and 71 species of invertebrates. The total catch for each species and frequency of occurrence are presented in Table 2. During the survey, 47, 548 fish were sampled for length from 34 species.

## BIOLOGICAL DATA

An inventory of biological samples collected during the survey is presented in Table 3. Otoliths, maturity, sex, length and weight were collected from 600 English sole, 200 rex sole, 931 rock sole, and 669 Dover sole.

Length, sex, maturity and otoliths for age determination (LSMO) were collected for 4,631 specimens from 22 species. Table 3 summarizes the biological samples sorted by species and tow indicating numbers of males and females, plus collected and preserved structures. Table 4 contains a summary of specimen attributes recorded or collected by species. Table 5 summarize of number of samples collected by morphometrics attribute.

Summary statistics for length and weight composition data by species are presented in Table 6. The length statistics are based on the entire catch sampled but weight statistics were determined from length - weight samples only. The fitted length - weight relationships by sex are presented for English sole, Dover sole, Rock sole, Arrowtooth flounder, Petrale sole, Pacific cod and Lingcod in Figures 4, 7, 10, 13, 16, 19 and 22 respectively. Statistical parameters for length - weight relationship are presented in Table 7.

### English sole

Major assemblage of English sole were abundant at the Butterworth location. The total catch of English sole was 6,326 kg, comprising 11.4% of the total catch. The length statistics are based on the entire catch sampled but weight statistics were determined from length – weight samples only. Length frequency histograms (Fig.3) show that males ranged from 110 - 480 mm with a mode at 250 mm; females ranged from 110 mm - 490 mm with the modes at 200 and 350 mm. English sole occurred in 88 tows and a total of 600 otoliths were collected from a spectrum of the entire survey and variety of depth strata. The fitted length – weight relationships by sex are presented in Figure 4. Regression parameters for this species are presented in Table 5 indicating the 95% confidence intervals. Females dominated the samples and were in the higher range of weight and length. English sole had similar proportions of males (24.8%) and females (26%) in the resting stage (Figure 5). Also, 42 % of the males were spent

compared to 1.6 % of females. There was a high proportion of immature females 33.4% compared to males 24.2 %.

#### Dover sole

Dover sole occurred mostly in tows 22, 23 and 27 and it was a seasonal species (summer) in the Butterworth, Two Peaks and White Rocks locations. Males ranged from 150 - 520 mm in length with modes at 310 mm. Female Dover sole ranged from 150 - 660 mm in length with modes at 250 mm and 350 mm (Fig 6). Length and sex were recorded for 4080 specimens of Dover sole. A total of 669 otoliths were collected from Dover sole (Table 3.) The length – weight regression for Dover sole is presented in Figure 7. Females weighed significantly more than males of the same length after fish reached a size of about 450 mm. For Dover sole, 53% of males were spent compared to 1.5 % of the females (Figure 8). A similar proportion of males and females were resting, and 43.5 % of the females were immature compare to 8.5 % of males.

#### Rock sole

Length frequency histograms (Fig. 9) show that male rock sole ranged from 80 - 470 mm with a mode at 200 mm; females ranged from 90 - 550 mm with the mode at 210 mm. A total of 932 otoliths were collected. Length – weight relationships for rock sole are presented in Figure 10, and regression parameters are given in Table 7. Half of both males and females were in maturity stage 1 indicating a new recruitment (Fig. 11). Similar proportions of males (19 %) and females (17 %) were in the resting stage.

#### Arrowtooth flounder

The length frequency distribution for males and females are presented in Figure 12. A strong mode was present at 430 mm for males and for the females at 570 mm. A total of 4966 arrowtooth flounder were sampled. Length – weight relationship by sex is presented in Figure 13 and the summary regression parameters are presented in Table 7. Most arrowtooth flounder were in the resting stage (Figure 14) 68 % for males and 77 % for females.

#### Petrale sole

Petrale sole occurred in 47 tows. Otoliths were collected from 359 of 374 specimens caught. Females dominated the catch with the mode at 270 mm (Fig. 15). Lengths ranged from 170 - 590 mm and the mode for males was also at 270 mm. Length – weight regressions were completed (Fig.16, Table 7). Forty six percent of females and 35 % of males were in the resting stage of maturity. Also 42 % of males and 32 % of females were in the immature stage (Fig. 17).

### Other Samples

Juvenile Pacific halibut (*Hippoglossus stenolepis*) were collected in a joint study with the International Pacific Halibut Commission. The samples were frozen of further DNA analyses.

Biological sampling occurred on two main Elasmobranch species: Big skate (*Raja binoculata*) and Longnose skate (*Raja rhina*). Length, weight, wing span, sex, maturity, and stomach contents were recorded. Skate vertebrae were collected and frozen for future development of age determination methods.

Stomachs were collected from 159 Pacific cod, for analysis. Second dorsal fin was collected from lingcod for age determination. Figures 18 to 23 are representing the species but further analysis for those species will be presented elsewhere.

## ACKNOWLEDGEMENTS

We would like to acknowledge the assistance of the crew of the *F/V Viking Storm* skippered by Chris Roberts and Kelly Anderson. Our summer students, Alicia Cooper and Tom Bird participated in sampling and entered the data. We thank the Pacific Biological Station ageing laboratory for ageing the otolith samples. Brian Krishka reviewed the draft of the report and provided thoughtful comments.

## REFERENCES

- Antonsen, B.L., R.P. Foucher, J. Fargo, G.E. Gillespie, T. Johansson, A.V. Tyler, and H.L. Waye. 1990. F/V EASTWARD HO assemblage survey of Hecate Strait, May 23 – June 13, 1989. Can. Data Rep. Fish. Aquat. Sci. 783: 142p.
- Choromanski, E.M., J.Fargo, and A.R. Kronlund. 2002. Species assemblage trawl survey of Hecate Strait, CCGS W.E. RICKER, May 31-June 13, 2000. Can. Data Rep. Fish. Aquat. Sci. 1085: 89 p.
- Choromanski, E.M., J.Fargo, and A.R. Kronlund. 2002. CCGS W.E. RICKER, Assemblage trawl survey of Hecate Strait, June 5 – 17, 1998. Can. Data Rep. Fish. Aquat. Sci. 1093: 88p.
- Fargo, J., and D. Davenport. 1986. F/V DOUBLE DECKER species assemblage survey of Hecate Strait, Jan. 30 – Feb. 19, 1986. Can. Data Rep. Fish. Aquat. Sci. 603: 106 p.
- Fargo, J., R.P. Foucher, M.W. Sounders, A.V. Tyler, and P.L. Summers. 1988. F/V EASTWARD HO assemblage survey of Hecate Strait, May 27 – June 16, 1987. Can. Data Rep. Fish. Aquat. Sci. 699: 172 p.
- Fargo, J., A.V. Tyler, J. Cooper, S.C. Sheilds, and S. Stebbins. 1984. ARCTIC OCEAN assemblage survey of Hecate Strait, May 28- June 17, 1984. Can. Data Rep. Fish. Aquat. Sci. 491: 108 p.
- Hand, C.M., B.D. Robinson, J. Fargo, G.D. Workman, and M. Stocker. 1994. R/V W.E. RICKER assemblage survey of Hecate Strait, May 23 – June 9, 1993. Can. Data Rep. Fish. Aquat. Sci. 925: 97 p.
- MacLellan, S.E. 1999. Guide for sampling structures used in age determination of Pacific Salmon. Fisheries and Oceans Canada.
- Westrheim, S.J. 1967. Sampling research trawl catches at sea. J. Res. Board Can. 24: 1187-1202.

**REFERENCES (cont'd)**

- Westrheim, S.J., A.V. Tyler, R.P. Foucher, M.W. Saunders, and S.C. Shield. 1984. G.B.REED groundfish cruise No. 84-3, May 24-June 14, 1984. Can. Data Rep. Fish. Aquat. Sci. 488: 131 p.
- Wilson, S.J., J. Fargo, C.M. Hand, T. Johansson, and A.V. Tyler. 1991. R/V W.E. RICKER Assemblage survey of Hecate Strait, June 3-22, 1991. Can. Data Rep. Fish. Aquat. Sci. 866: 179 p.
- Workman, G.D., J. Fargo, B. Beall, and E. Hildebrandt. 1997. R/V W.E. RICKER and F/N STEADFAST trawl survey of Hecate Strait, May 30 – June 13, 1996. Can. Data Rep. Fish. Aquat. Sci. 1010: 155p.

Table 1. Summary of trawl stations during the 2002 Hecate Strait multispecies survey on the *F/V Viking Storm*.

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
1	11-Jun-02	B104	MCINTYRE BAY	549.3	0.500
2	11-Jun-02	B103	MCINTYRE BAY	810.2	0.500
3	11-Jun-02	B106	MCINTYRE BAY	815.5	0.500
4	11-Jun-02	B107	MCINTYRE BAY	730.5	0.500
5	11-Jun-02	B103	WEST TWO PEAKS	1363.5	0.550
6	11-Jun-02	B106	MCINTYRE BAY	1437.6	0.500
7	12-Jun-02	B201	TWO PEAKS	156.2	0.517
8	12-Jun-02	B202	TWO PEAKS	586.6	0.500
9	12-Jun-02	B204	TWO PEAKS	1136.9	0.333
10	12-Jun-02	B202	TWO PEAKS	450.9	0.333
11	12-Jun-02	B205	TWO PEAKS	1458.7	0.333
12	12-Jun-02	B204	TWO PEAKS	1230.0	0.333
13	12-Jun-02	B207	TWO PEAKS	971.6	0.500
14	16-Jun-02	A205	TWO PEAKS	1800.1	0.333
15	13-Jun-02	A206	S OF BARREN ISLAND	835.4	0.500
16	13-Jun-02	A307	DUNDAS	547.5	0.500
17	13-Jun-02	A307	DUNDAS	942.7	0.500
18	13-Jun-02	A306	TWO PEAKS	636.5	0.333
19	13-Jun-02	A305	TWO PEAKS	974.8	0.383
20	13-Jun-02	A303	TWO PEAKS	543.3	0.367
21	13-Jun-02	B302	BUTTERWORTH	277.8	0.500
22	14-Jun-02	B306	BUTTERWORTH	2495.1	0.383
23	14-Jun-02	B306	BUTTERWORTH	2495.2	0.333
24	14-Jun-02	B301	BUTTERWORTH	622.8	0.500
25	14-Jun-02	B301	BUTTERWORTH	467.5	0.500
26	14-Jun-02	B306	BUTTERWORTH	1020.7	0.333
27	14-Jun-02	B304	BUTTERWORTH	5000.1	0.367
28	14-Jun-02	B301	BUTTERWORTH	35.6	0.333
29	15-Jun-02	C305	BUTTERWORTH	1241.9	0.250
30	15-Jun-02	C201	BUTTERWORTH	735.1	0.500
31	15-Jun-02	C201	BUTTERWORTH	312.2	0.333
32	15-Jun-02	C301	BUTTERWORTH	220.4	0.500
33	15-Jun-02	C304	BUTTERWORTH	1814.9	0.333
34	15-Jun-02	D301	FINGERS	61.0	0.333
35	15-Jun-02	D201	UNKNOWN	283.4	0.417
36	15-Jun-02	D302	FINGERS	140.8	0.333
37	15-Jun-02	D304	OVAL HILLII	574.2	0.333
38	16-Jun-02	E202	SW SEAL ROCKS	731.1	0.500
39	16-Jun-02	E301	UNKNOWN	183.6	0.500
40	16-Jun-02	E302	VENUS	93.5	0.333
41	16-Jun-02	D404	OVAL HILLII	785.6	0.333
42	16-Jun-02	D404	OVAL HILLII	1137.9	0.333
43	16-Jun-02	D303	OVAL HILLII	709.0	0.333
44	16-Jun-02	A304	BUTTERWORTH	532.1	0.250
45	18-Jun-02	E405	WHITE ROCKS	478.3	0.333

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
46	18-Jun-02	E402	WHITE ROCKS	447.6	0.583
47	18-Jun-02	E406	WHITE ROCKS	640.1	0.333
48	18-Jun-02	E403	WHITE ROCKS	726.9	0.500
49	18-Jun-02	E404	WHITE ROCKS	300.7	0.250
50	18-Jun-02	E407	WHITE ROCKS	817.9	0.333
51	18-Jun-02	F403	WHITE ROCKS	360.2	0.333
52	18-Jun-02	F403	WHITE ROCKS	264.5	0.333
53	19-Jun-02	F404	WHITE ROCKS	634.8	0.333
54	19-Jun-02	F302	UNKNOWN	575.1	0.333
55	19-Jun-02	F302	SHELL GROUND	276.7	0.433
56	19-Jun-02	F301	UNKNOWN	718.2	0.500
57	19-Jun-02	G201	LAWN POINT	296.1	0.333
58	19-Jun-02	F302	UNKNOWN	322.4	0.500
59	19-Jun-02	G405	BONILLA	328.7	0.333
60	19-Jun-02	F404	WHITE ROCKS	0.483	
61	20-Jun-02	F404	WHITE ROCKS	559.1	0.333
62	20-Jun-02	G406	BONILLA	229.2	0.283
63	20-Jun-02	G301	UNKNOWN	138.0	0.517
64	20-Jun-02	G407	SOUTH BONILLA	446.0	0.467
65	20-Jun-02	G302	SOUTH BONILLA	531.8	0.500
66	20-Jun-02	G304	SOUTH BONILLA	818.4	0.283
67	20-Jun-02	H201	SOUTH BONILLA	365.8	0.400
68	20-Jun-02	H301	OLE SPOT	0.000	
69	21-Jun-02	H201	OLE SPOT	66.9	0.450
70	21-Jun-02	H302	OLE SPOT	205.5	0.500
71	21-Jun-02	H301	OLE SPOT	178.3	0.500
72	21-Jun-02	H302	OLE SPOT	117.9	0.500
73	21-Jun-02	H303	UNKNOWN	907.2	0.500
74	21-Jun-02	H405	SOUTH BONILLA	207.2	0.250
75	21-Jun-02	H405	SOUTH BONILLA	243.6	0.500
76	21-Jun-02	H406	UNKNOWN	217.9	0.383
77	22-Jun-02	J205	REEF ISLAND	285.9	0.400
78	22-Jun-02	J202	REEF ISLAND	437.4	0.533
79	22-Jun-02	I301	FLATS	274.7	0.500
80	22-Jun-02	I302	OLE SPOT	294.0	0.467
81	26-Jun-02	I404	UNKNOWN	365.5	0.250
82	26-Jun-02	I403	FLATS	332.1	0.283
83	26-Jun-02	I401	FLATS	128.9	0.250
84	26-Jun-02	J301	FLATS	22.2	0.267
85	26-Jun-02	J402	EAST HORSESHOE	56.2	0.333
86	26-Jun-02	J403	WEST HORSESHOE	28.2	0.250
87	26-Jun-02	J406	EAST HORSESHOE	90.8	0.250
88	26-Jun-02	I406	EAST HORSESHOE	161.0	0.250
89	26-Jun-02	J504	EAST HORSESHOE	138.0	0.367
90	26-Jun-02	J504	EAST HORSESHOE	130.8	0.250
91	26-Jun-02	J505	EAST HORSESHOE	110.0	0.250
92	26-Jun-02	K403	UNKNOWN	113.5	0.333

---

Haul Number	Date	Block Depth	Fishing Location	Total Catch (kg)	Effort (h)
93	26-Jun-02	K403	UNKNOWN	203.2	0.333
94	26-Jun-02	K403	UNKNOWN	92.0	0.333
95	26-Jun-02	K404	UNKNOWN	72.5	0.167
96	26-Jun-02	K405	UNKNOWN	67.1	0.333

---

Table 2. Catch by species and frequency of occurrence of species captured during the Hecate Strait multispecies survey on the *F/V Viking Storm*, June 10 - 28, 2002.

No.	Species Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency of occurrence
<b>Flatfish</b>							
1	Arrowtooth flounder	602	<i>Atheresthes stomias</i>	12,041.94	21.61	73	76.04
2	English sole	628	<i>Pleuronectes vetulus</i>	6,326.62	11.36	88	91.67
3	Dover sole	626	<i>Microstomus pacificus</i>	5,468.78	9.82	61	63.54
4	Rex sole	610	<i>Errex zachirus</i>	5,340.02	9.59	67	69.79
5	Rock sole	621	<i>Pleuronectes bilineatus</i>	1,586.10	2.85	66	68.75
6	Pacific sanddab	596	<i>Citharichthys sordidus</i>	1,290.40	2.32	45	46.88
7	Pacific halibut	614	<i>Hippoglossus stenolepis</i>	1,001.30	1.80	69	71.88
8	Flathead sole	612	<i>Hippoglossoides elassodon</i>	849.40	1.52	47	48.96
9	Sand sole	636	<i>Psettichthys melanostictus</i>	424.75	0.76	56	58.33
10	Petrale sole	607	<i>Eopsetta jordani</i>	277.78	0.50	47	48.96
11	Butter sole	619	<i>Pleuronectes isolepis</i>	94.70	0.17	30	31.25
12	Starry flounder	631	<i>Platichthys stellatus</i>	68.80	0.12	9	9.38
13	Slender sole	625	<i>Eopsetta exilis</i>	59.10	0.11	24	25.00
14	Curlfin sole	635	<i>Pleuronichthys decurrens</i>	32.00	0.06	28	29.17
15	Speckled sanddab	598	<i>Citharichthys stigmaeus</i>	1.10	0.00	11	11.46
16	C-o sole	633	<i>Pleuronichthys coenosus</i>	0.10	0.00	1	1.04
<b>Total Flatfish</b>				34,862.89	62.58		
<b>Roundfish</b>							
1	Pacific cod	222	<i>Gadus macrocephalus</i>	2,310.64	4.15	78	81.25
2	Walleye pollock	228	<i>Theragra chalcogramma</i>	1,764.50	3.17	56	58.33
3	Sablefish	455	<i>Anoplopoma fimbria</i>	910.81	1.63	43	44.79
4	Pacific tomcod	226	<i>Microgadus proximus</i>	694.41	1.25	56	58.33
5	Lingcod	467	<i>Ophiodon elongatus</i>	379.20	0.68	31	32.30
6	Pacific herring	096	<i>Clupea pallasi</i>	139.62	0.25	46	47.92
7	Eulachon	148	<i>Thaleichthys pacificus</i>	61.80	0.11	19	19.79
8	Bigfin eelpout	233	<i>Lycodes cortezianus</i>	37.70	0.07	25	26.04
9	Pacific sand lance	361	<i>Ammodytes hexapterus</i>	37.10	0.07	34	35.42
10	Wolf eel	351	<i>Anarrhichthys ocellatus</i>	14.70	0.03	3	3.13
11	Sculpins	472	<i>Cottidae (family)</i>	14.50	0.03	14	14.58
12	Kelp greenling	461	<i>Hexagrammos decagrammus</i>	11.70	0.02	7	7.29
13	Sturgeon poacher	550	<i>Podothecus acipenserinus</i>	11.30	0.02	42	43.75
14	Picklebacks	324	<i>Stichaeidae (family)</i>	7.10	0.01	14	14.58
15	Buffalo sculpin	499	<i>Enophrys bison</i>	3.00	0.01	1	1.04
16	Chinook salmon	124	<i>Oncorhynchus tshawytscha</i>	3.00	0.01	2	2.08
17	Northern rockfish	319	<i>Ronquilus jordani</i>	1.10	0.00	2	2.08
18	Roughback sculpin	491	<i>Chitonotus pugetensis</i>	0.90	0.00	5	5.21
19	Eelpouts	231	<i>Zoarcidae (family)</i>	0.80	0.00	4	4.17
20	Brown Irish Lord	504	<i>Hemilepidotus spinosus</i>	0.50	0.00	1	1.04
21	Snake prickleback	337	<i>Lumpenus sagitta</i>	0.30	0.00	3	3.13
22	Poachers	546	<i>Agonidae (family)</i>	0.20	0.00	2	2.08
23	Wrymouths	354	<i>Cryptacanthodidae (family)</i>	0.10	0.00	1	1.04
24	Spotfin sculpin	513	<i>Icelinus tenuis</i>	0.10	0.00	1	1.04
25	Red irish lord	502	<i>Hemilepidotus hemilepidotus</i>	0.10	0.00	1	1.04

No.	Species Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency of occurrence
26	Northern spearnose poache	549	<i>Agonopsis vulsa</i>	0.10	0.00	1	1.04
27	Bluespotted poacher	567	<i>Xeneretmus triacanthus</i>	0.10	0.00	1	1.04
28	Shiner perch	304	<i>Cymatogaster aggregata</i>	0.10	0.00	1	1.04
<b>Total Roundfish</b>				6,405.38	11.50		
<b>Rockfish</b>							
1	Silvergray rockfish	405	<i>Sebastodes brevispinis</i>	47.60	0.09	6	6.25
2	Quillback rockfish	424	<i>Sebastodes maliger</i>	34.20	0.06	8	8.33
3	Bocaccio	435	<i>Sebastodes paucispinis</i>	31.10	0.06	6	6.25
4	Yellowtail rockfish	418	<i>Sebastodes flavidus</i>	27.60	0.05	7	7.29
5	Pacific ocean perch	396	<i>Sebastodes alutus</i>	5.60	0.01	8	8.33
6	Copper rockfish	407	<i>Sebastodes caurinus</i>	4.10	0.01	2	2.08
7	Shortspine thornyhead	451	<i>Sebastolobus alascanus</i>	2.80	0.01	2	2.08
8	Rougheye rockfish	394	<i>Sebastodes aleutianus</i>	1.80	0.00	1	1.04
9	Canary rockfish	437	<i>Sebastodes pinniger</i>	1.30	0.00	1	1.04
10	Yelloweye rockfish	442	<i>Sebastodes ruberrimus</i>	0.60	0.00	1	1.04
11	Pygmy rockfish	448	<i>Sebastodes wilsoni</i>	0.10	0.00	1	1.04
12	Black rockfish	426	<i>Sebastodes melanops</i>	0.10	0.00	1	1.04
13	Widow rockfish	417	<i>Sebastodes entomelas</i>	0.10	0.00	1	1.04
14	Greenstriped rockfish	414	<i>Sebastodes elongatus</i>	0.10	0.00	1	1.04
<b>Total Rockfish</b>				157.10	0.28		
<b>Selachii</b>							
1	Spotted ratfish	066	<i>Hydrolagus colliei</i>	9,547.54	17.14	86	89.58
2	Spiny dogfish	044	<i>Squalus acanthias</i>	2,704.01	4.85	75	78.13
3	Big skate	056	<i>Raja binoculata</i>	741.83	1.33	33	34.38
4	Longnose skate	059	<i>Raja rhina</i>	61.48	0.11	11	11.46
5	Sandpaper skate	058	<i>Bathyraja interrupta</i>	9.90	0.02	5	5.21
<b>Total Selachii</b>				13,064.76	23.45		
<b>TOTAL FISH</b>				54,489.73	97.81		
<b>Invertebrates</b>							
1	Pink short-spined star	4ZC	<i>Pisaster brevispinis</i>	319.08	0.57	52	54.17
2	Dungeness crab	XKG	<i>Cancer magister</i>	242.19	0.43	11	11.46
3	Sea cucumbers	6NA	<i>Holothuroidea (class)</i>	177.40	0.32	11	11.46
4	Sunflower starfish	4XE	<i>Pycnopodia helianthoides</i>	128.08	0.23	44	45.83
5	Anemone	3LO	<i>Actiniaria (order)</i>	68.98	0.12	26	27.08
6	Jellyfish	3GO	<i>Scyphozoa (class)</i>	65.50	0.12	43	44.79
7	Metridium spp	3M8	<i>Metridium spp</i>	37.20	0.07	4	4.17
8	Sea pens	3UO	<i>Pennatulacea (order)</i>	29.80	0.05	22	22.92
9	Sidestripe shrimp	SEE	<i>Pandalopsis dispar</i>	19.30	0.03	7	7.29
10	Barnacles	HCA	<i>Cirripedia (subclass)</i>	17.70	0.03	4	4.17
11	Sponges	2AO	<i>Phylum porifera</i>	16.12	0.03	9	9.38
12	Oregontriton	28I	<i>Fusitriton oregonensis</i>	11.52	0.02	17	17.71
13	Pagurus spp	VBB	<i>Pagurus spp</i>	10.22	0.02	28	29.17
14	Giant red sea cucumber	6OB	<i>Parastichopus californicus</i>	8.80	0.02	1	1.04
15	Echinoidea(class)	6AA	<i>Echinoidea (class)</i>	7.90	0.01	5	5.21
16	Purple starfish	4ZA	<i>Pisaster ochraceus</i>	6.60	0.01	3	3.13
17	Hermit crab	VBF	<i>Pagurus brandti</i>	6.40	0.01	12	12.50
18	Kelp crab	ZDE	<i>Pugettia gracilis</i>	5.72	0.01	2	2.08
19	Box crab	VMH	<i>Lopholithodes spp</i>	5.70	0.01	3	3.13
20	Giant Pacific Octopus	98E	<i>Octopus dofleini</i>	5.10	0.01	1	1.04

No.	Species Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency of occurrence
21	Pink shrimp	SDB	<i>Pandalus jordani</i>	3.50	0.01	5	5.21
22	Arminidae(family)	54B	<i>Arminidae (family)</i>	2.80	0.01	20	20.83
23	Red urchin	6BC	<i>Strongylocentrotus franciscanus</i>	2.70	0.00	1	1.04
24	Vermillion starfish	4JD	<i>Mediaster aequalis</i>	2.30	0.00	14	14.58
25	Purplehinged rockscallop	67J	<i>Crassadoma gigantea</i>	2.00	0.00	1	1.04
26	Spiny scallop	67C	<i>Chlamys hastata</i>	1.80	0.00	6	6.25
27	Cookie star	4JF	<i>Ceramaster patagonicus</i>	1.60	0.00	7	7.29
28	Decorator crab	ZCA	<i>Oregonia gracilis</i>	1.50	0.00	5	5.21
29	Opal squid	92D	<i>Loligo opalescens</i>	1.50	0.00	3	3.13
30	Starfish	4GA	<i>Asterioidea (subclass)</i>	1.30	0.00	4	4.17
31	Cancer gracilis	XKE	<i>Cancer gracilis</i>	1.00	0.00	6	6.25
32	Fish-eating star	4XF	<i>Stalasterias forneri</i>	1.00	0.00	1	1.04
33	Chlamys rubida	67E	<i>Chlamys rubida</i>	0.90	0.00	9	9.38
34	Cancer branneri	XKC	<i>Cancer branneri</i>	0.90	0.00	9	9.38
35	Lewis moon snail	27F	<i>Polinices lewisi</i>	0.70	0.00	7	7.29
36	Rock snails	31E	<i>Muricidae (family)</i>	0.70	0.00	3	3.13
37	Octopus	98D	<i>Octopus spp</i>	0.50	0.00	1	1.04
38	Sand star	4GD	<i>Luidia foliolata</i>	0.50	0.00	5	5.21
39	Leather star	4OC	<i>Dermasterias imbricata</i>	0.50	0.00	5	5.21
40	Cushion star	4UH	<i>Pteraster tesselatus</i>	0.40	0.00	4	4.17
41	Long-armed sea star	4YB	<i>Orthasterias koehleri</i>	0.40	0.00	4	4.17
42	Rose starfish	4TG	<i>Crossaster papposus</i>	0.40	0.00	4	4.17
43	Red rock crab	XLA	<i>Cancer productus</i>	0.40	0.00	4	4.17
44	Squid	92A	<i>Teuthoidea (order)</i>	0.30	0.00	3	3.13
45	Buccinidae(family)	33G	<i>Buccinidae (family)</i>	0.30	0.00	3	3.13
46	Ascidians and Tunicates	8AB	<i>Asciidiacea (class)</i>	0.30	0.00	3	3.13
47	Morning sun starfish	4TB	<i>Solaster dawsoni</i>	0.20	0.00	2	2.08
48	Humpback shrimp	SCJ	<i>Pandalus hypsinotus</i>	0.20	0.00	2	2.08
49	Boringnaticids	27C	<i>Naticidae (family)</i>	0.20	0.00	2	2.08
50	Myidae(family)	83E	<i>Myidae (family)</i>	0.20	0.00	2	2.08
51	Blood star	4RA	<i>Hericinia leviuscula annectens</i>	0.20	0.00	2	2.08
52	Basket stars	5QA	<i>Euryalae (order)</i>	0.20	0.00	2	2.08
53	Cardiidae(family)	75A	<i>Cardiidae (family)</i>	0.20	0.00	2	2.08
54	Sea mouse	OAE	<i>Aphroditidae spp</i>	0.20	0.00	2	2.08
55	Solasteridae(family)	4TA	<i>Solasteridae (family)</i>	0.10	0.00	1	1.04
56	Tube worms	OFA	<i>Sedentaria (subclass)</i>	0.10	0.00	1	1.04
57	Chitons	O2C	<i>Polyplacophora (subclass)</i>	0.10	0.00	1	1.04
58	Phyllolithodes papillosum	VPA	<i>Phyllolithodes papillosum</i>	0.10	0.00	1	1.04
59	Scallop	67B	<i>Pectinidae (family)</i>	0.10	0.00	1	1.04
60	Weathervane scallop	68A	<i>Pateinopecten caurinus</i>	0.10	0.00	1	1.04
61	Pasp	ESI	<i>Parastenopeltis spinosa</i>	0.10	0.00	1	1.04
62	Hermit crabs	VAC	<i>Paguridae (family)</i>	0.10	0.00	1	1.04
63	Sea whip	3U2	<i>Osteocella septentrionalis</i>	0.10	0.00	1	1.04
64	Ophiuroidea(class)	5AA	<i>Ophiuroidea (class)</i>	0.10	0.00	1	1.04
65	Seaslugs	51A	<i>Nudibranchiata (suborder)</i>	0.10	0.00	1	1.04
66	Molluscs	OOA	<i>Mollusca (phylum)</i>	0.10	0.00	1	1.04
67	Macoma spp	77C	<i>Macoma spp</i>	0.10	0.00	1	1.04
68	Green urchin	6BB	<i>Strongylocentrotus droebachiensis</i>	0.10	0.00	1	1.04
69	Flatworms	4AO	<i>Flatworms</i>	0.10	0.00	1	1.04

No.	Species	Common name	Code	Scientific name	Total catch (kg)	% Total catch by weight	Number of Tows	% Frequency of occurrence
70	Symmetrical sessil barnacles	HNA		<i>Balanomorpha (suborder)</i>	0.10	0.00	1	1.04
71	Anthozoa(class)	3JO		<i>Anthozoa (class)</i>	0.10	0.00	1	1.04
	<b>Total Invertebrates</b>				1,222.81	2.19		
	<b>TOTAL CATCH</b>				55,774.24	100.00		

**Table 3. Summary of biological samples collected during the Hecate Strait multispecies survey on the F/V Viking Storm, June 10 - 28, 2002.**

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Type	Preserved
										(a)	Sample Collected		
11-Jun-02	Arrowtooth Flounder	6020001-095	5	602-1	14	81	0	95	LWSM	otoliths	otoliths		
12-Jun-02	Arrowtooth Flounder	6020096-195	11	602-1	28	72	0	100	LWSM	otoliths	otoliths		
	<b>Arrowtooth Flounder</b>			<b>TOTAL</b>	<b>42</b>	<b>153</b>	<b>0</b>	<b>195</b>					
11-Jun-02	Dover Sole	6260001-046	2	626-1	13	32	0	45	LWSM	otoliths	otoliths		
11-Jun-02	Dover Sole	6260046-100	4	626-1	32	23	0	55	LWSM	otoliths	otoliths		
12-Jun-02	Dover Sole	6260101-200	13	626-2	65	35	0	100	LWSM	otoliths	otoliths		
14-Jun-02	Dover Sole	6260201-300	22	626-3	30	70	0	100	LWSM	otoliths	otoliths		
18-Jun-02	Dover Sole	6260301-373	47	626-4	30	43	0	73	LWSM	otoliths	otoliths		
18-Jun-02	Dover Sole	6260374-400	50	626-4	7	20	0	27	LWSM	otoliths	otoliths		
19-Jun-02	Dover Sole	6260401-500	53	626-5	72	28	0	100	LWSM	otoliths	otoliths		
13-Jun-02	Dover Sole	6260501-564	16	626-6	37	25	2	64	LWSM	otoliths	frozen		
13-Jun-02	Dover Sole	6260645-669	16	626-7	15	10	0	25	LWSM	otoliths	frozen		
16-Jun-02	Dover Sole	6260565-800	44	626-6	13	23	0	36	LWSM	otoliths	frozen		
16-Jun-02	Dover Sole	6260601-644	43	626-7	6	18	20	44	LWSM	otoliths	frozen		
	<b>Dover Sole</b>			<b>TOTAL</b>	<b>320</b>	<b>327</b>	<b>22</b>	<b>669</b>					
13-Jun-02	Flathead Sole	6120001-048	15	612-1	33	15	0	48	LWSM	otoliths	otoliths		
15-Jun-02	Flathead Sole	6120049-148	37	612-2	25	75	0	100	LWSM	otoliths	frozen		
12-Jun-02	Flathead Sole	6120149-156	37	612-3	2	6	0	8	LWSM	otoliths	frozen		
12-Jun-02	Flathead Sole	6120157-172	14	612-3	1	15	0	16	LWSM	otoliths	frozen		
	<b>Flathead Sole</b>			<b>TOTAL</b>	<b>61</b>	<b>111</b>	<b>0</b>	<b>172</b>					
11-Jun-02	English Sole	6280001-100	3	628-1	35	65	0	100	LWSM	otoliths	otoliths		
12-Jun-02	English Sole	6280101-200	12	628-2	8	92	0	100	LWSM	otoliths	otoliths		
13-Jun-02	English Sole	6280201-300	19	628-3	58	42	0	100	LWSM	otoliths	otoliths		
19-Jun-02	English Sole	6280301-400	55	628-4	36	64	0	100	LWSM	otoliths	otoliths		
20-Jun-02	English Sole	6280401-500	61	628-5	45	55	0	100	LWSM	otoliths	otoliths		
26-Jun-02	English Sole	6280501-600	81	628-6	38	62	0	100	LWSM	otoliths	otoliths		
	<b>English Sole</b>			<b>TOTAL</b>	<b>220</b>	<b>380</b>	<b>0</b>	<b>600</b>					

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Sample Collected		
										(a)	Type	Preserved
14-Jun-02	Rock Sole	Rock Sole	6210001-099	24	621-1	31	68	0	99	LWSM	otoliths	
15-Jun-02	Rock Sole	Rock Sole	6210100-199	30	621-2	41	59	0	100	LWSM	otoliths	
15-Jun-02	Rock Sole	Rock Sole	6210200-299	35	621-3	30	69	1	100	LWSM	otoliths	
19-Jun-02	Rock Sole	Rock Sole	6210301-332	54	621-4	14	18	0	32	LWSM	otoliths	
19-Jun-02	Rock Sole	Rock Sole	6210333-400	55	621-4	25	43	0	68	LWSM	otoliths	
20-Jun-02	Rock Sole	Rock Sole	6210401-500	63	621-5	82	18	0	100	LWSM	otoliths	
22-Jun-02	Rock Sole	Rock Sole	6210501-508	77	621-6	0	8	0	8	LWSM	otoliths	
22-Jun-02	Rock Sole	Rock Sole	6210509-559	78	621-6	21	30	0	51	LWSM	otoliths	
22-Jun-02	Rock Sole	Rock Sole	6210560-600	79	621-6	15	26	0	41	LWSM	otoliths	
26-Jun-02	Rock Sole	Rock Sole	6210601-657	83	621-7	11	46	0	57	LWSM	otoliths	
26-Jun-02	Rock Sole	Rock Sole	6210658-672	84	621-7	8	7	0	15	LWSM	otoliths	
26-Jun-02	Rock Sole	Rock Sole	6210683-700	85	621-7	10	18	0	28	LWSM	otoliths	
26-Jun-02	Rock Sole	Rock Sole	6210701-800	89	621-8	16	84	0	100	LWSM	otoliths	
16-Jun-02	Rock Sole	Rock Sole	6210801-902	31	621-9	11	27	61	99	LWSM	otoliths	
15-Jun-02	Rock Sole	Rock Sole	621903-932	31	621-10	3	3	26	32	LWSM	otoliths	
15-Jun-02	Rock Sole	Rock Sole	621933	30	621-11	1	0	0	1	LWSM	otoliths	
		<b>Rock Sole</b>				<b>TOTAL</b>	<b>319</b>	<b>524</b>	<b>88</b>	<b>931</b>		
11-Jun-02	Petrale Sole	Petrale Sole	6070001-014	1	607-1	6	8	0	14	LWSM	otoliths	
11-Jun-02	Petrale Sole	Petrale Sole	6070015-023	2	607-1	2	7	0	9	LWSM	otoliths	
11-Jun-02	Petrale Sole	Petrale Sole	6070024	3	607-1	1	0	0	1	LWSM	otoliths	
11-Jun-02	Petrale Sole	Petrale Sole	6070025-029	5	607-1	3	2	0	5	LWSM	otoliths	
11-Jun-02	Petrale Sole	Petrale Sole	6070030-041	6	607-1	6	6	0	12	LWSM	otoliths	
11-Jun-02	Petrale Sole	Petrale Sole	6070042	4	607-1	0	1	0	1	LWSM	otoliths	
13-Jun-02	Petrale Sole	Petrale Sole	6070044-045	15	607-1	0	2	0	2	LWSM	otoliths	
13-Jun-02	Petrale Sole	Petrale Sole	6070046-050	20	607-1	0	5	0	5	LWSM	otoliths	
14-Jun-02	Petrale Sole	Petrale Sole	6070051-055	26	607-1	1	4	0	5	LWSM	otoliths	
15-Jun-02	Petrale Sole	Petrale Sole	6070056-057	29	607-1	1	1	0	2	LWSM	otoliths	
16-Jun-02	Petrale Sole	Petrale Sole	6070058	42	607-1	1	0	0	1	LWSM	otoliths	
16-Jun-02	Petrale Sole	Petrale Sole	6070059	44	607-1	1	0	0	1	LWSM	otoliths	
18-Jun-02	Petrale Sole	Petrale Sole	6070060-068	45	607-2	7	2	0	9	LWSM	otoliths	
18-Jun-02	Petrale Sole	Petrale Sole	6070069-071	46	607-2	0	3	0	3	LWSM	otoliths	
18-Jun-02	Petrale Sole	Petrale Sole	6070072-074	47	607-2	3	0	0	3	LWSM	otoliths	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Sample Collected	
										(a)	Type
18-Jun-02	Petrale Sole	Petrale Sole	6070075-078	48	607-2	2	2	0	4	LWSM	otoliths
18-Jun-02	Petrale Sole	Petrale Sole	6070079-081	50	607-2	3	0	0	3	LWSM	otoliths
18-Jun-02	Petrale Sole	Petrale Sole	6070082-083	52	607-2	1	1	0	2	LWSM	otoliths
19-Jun-02	Petrale Sole	Petrale Sole	6070084-093	53	607-2	8	2	0	10	LWSM	otoliths
19-Jun-02	Petrale Sole	Petrale Sole	6070094-096	54	607-2	3	0	0	3	LWSM	otoliths
19-Jun-02	Petrale Sole	Petrale Sole	6070097-099	59	607-2	2	1	0	3	LWSM	otoliths
20-Jun-02	Petrale Sole	Petrale Sole	6070100-104	61	607-2	3	2	0	5	LWSM	otoliths
20-Jun-02	Petrale Sole	Petrale Sole	6070105	64	607-2	1	0	0	1	LWSM	otoliths
20-Jun-02	Petrale Sole	Petrale Sole	6070106-118	66	607-2	2	11	0	13	LWSM	otoliths
20-Jun-02	Petrale Sole	Petrale Sole	6070119-121	67	607-2	0	3	0	3	LWSM	otoliths
20-Jun-02	Petrale Sole	Petrale Sole	6070122-159	73	607-2	0	38	0	38	LWSM	otoliths
21-Jun-02	Petrale Sole	Petrale Sole	6070122-195	73	607-3	11	25	0	36	LWSM	otoliths
21-Jun-02	Petrale Sole	Petrale Sole	6070196-199	74	607-3	0	4	0	4	LWSM	otoliths
21-Jun-02	Petrale Sole	Petrale Sole	6070200	76	607-3	0	1	0	1	LWSM	otoliths
22-Jun-02	Petrale Sole	Petrale Sole	6070201-205	77	607-3	3	2	0	5	LWSM	otoliths
22-Jun-02	Petrale Sole	Petrale Sole	6070206	78	607-3	0	1	0	1	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070207-216	81	607-3	4	6	0	10	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070217-232	82	607-3	7	9	0	16	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070233	83	607-3	0	1	0	1	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070234-236	82	607-3	2	1	0	3	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070237-248	87	607-3	1	11	0	12	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070249-252	88	607-3	1	3	0	4	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070253	90	607-3	0	1	0	1	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070254	89	607-3	0	1	0	1	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070255-260	90	607-3	0	6	0	6	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070261-300	90	607-4	3	37	0	40	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070301-311	91	607-4	2	9	0	11	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070312-323	92	607-4	0	12	0	12	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070324	93	607-4	0	1	0	1	LWSM	otoliths
26-Jun-02	Petrale Sole	Petrale Sole	6070325-329	96	607-4	3	2	0	5	LWSM	otoliths
16-Jun-02	Petrale Sole	Petrale Sole	6070350-370	43	607-5	8	13	0	21	LWSM	otoliths
15-Jun-02	Petrale Sole	Petrale Sole	6070371	38	607-5	0	1	0	1	LWSM	frozen
12-Jun-02	Petrale Sole	Petrale Sole	6070372-380	14	607-5	7	2	0	9	LWSM	frozen
	<b>Petrale Sole</b>						<b>TOTAL</b>	<b>109</b>	<b>250</b>	<b>0</b>	<b>359</b>

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Sample Collected	
									(a)	Type	Preserved	
11-Jun-02	Rex Sole	6100001-100	3	610-1	26	74	0	100	LWSM	otoliths		
18-Jun-02	Rex Sole	6100101-200	47	610-2	31	68	1	100	LWSM	otoliths		
	<b>Rex Sole</b>			<b>TOTAL</b>	<b>57</b>	<b>142</b>	<b>1</b>	<b>200</b>				
14-Jun-02	Starry Flounder	6310001-010	24	631-1	1	9	0	10	LWSM	otoliths		
14-Jun-02	Starry Flounder	63100011	26	631-1	0	1	0	1	LWSM	otoliths		
19-Jun-02	Starry Flounder	6310012-015	57	631-1	1	3	0	4	LWSM	otoliths		
20-Jun-02	Starry Flounder	6310016	63	631-1	0	1	0	1	LWSM	otoliths		
14-Jun-02	Starry Flounder	6310017	24	631-1	0	1	0	1	LWSM	otoliths		
	<b>Starry Flounder</b>			<b>TOTAL</b>	<b>2</b>	<b>15</b>	<b>0</b>	<b>17</b>				
26-Jun-02	Curfin Sole	6350001	96	635-1	0	1	0	1	LWSM	otoliths		
26-Jun-02	Curfin Sole	3530002	85	635-1	0	1	0	1	LWSM	otoliths		
19-Jun-02	Curfin Sole	6350003	55	635-1	0	1	0	1	LWSM	otoliths		
22-Jun-02	Curfin Sole	6350004	78	635-1	0	1	0	1	LWSM	otoliths		
26-Jun-02	Curfin Sole	6350005-007	82	635-1	3	0	0	3	LWSM	otoliths		
20-Jun-02	Curfin Sole	6350008-009	67	635-1	2	0	0	2	LWSM	otoliths		
20-Jun-02	Curfin Sole	6350010-011	65	635-1	2	0	0	2	LWSM	otoliths		
26-Jun-02	Curfin Sole	6350012-025	92	635-1	7	7	0	14	LWSM	otoliths		
26-Jun-02	Curfin Sole	6350026	83	635-1	1	0	0	1	LWSM	otoliths		
18-Jun-02	Curfin Sole	6350027-031	52	635-1	5	0	0	5	LWSM	otoliths		
26-Jun-02	Curfin Sole	6350032	94	635-1	0	1	0	1	LWSM	otoliths		
22-Jun-02	Curfin Sole	6350033-042	80	635-1	3	7	0	10	LWSM	otoliths		
21-Jun-02	Curfin Sole	6350043-054	70	635-1	5	7	0	12	LWSM	otoliths		
21-Jun-02	Curfin Sole	6350055-060	69	635-1	3	3	0	6	LWSM	otoliths		
18-Jun-02	Curfin Sole	6350061-065	46	635-2	3	2	0	5	LWSM	otoliths		
20-Jun-02	Curfin Sole	6350066-067	71	635-2	0	1	0	1	LWSM	otoliths		
19-Jun-02	Curfin Sole	6360068	54	635-2	1	1	0	1	LWSM	otoliths		
22-Jun-02	Curfin Sole	6360069-70	79	635-2	1	0	2	LWSM	otoliths	frozen		
22-Jun-02	Curfin Sole	6360071-75	77	635-2	1	4	0	5	LWSM	otoliths	frozen	
	<b>Curfin Sole</b>			<b>TOTAL</b>	<b>37</b>	<b>37</b>	<b>0</b>	<b>74</b>				
15-Jun-02	Butter Sole	6190001	30	619-1	36	64	0	100	LWSM	otoliths	frozen	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples			Sample Collected		
										Total	36	64	0	100	Type
14-Jun-02	Butter Sole														
	Sand Sole	Sand Sole	6360001-125	25	636-1/2	55	70	0	125	LWSM	otoliths	otoliths	frozen		
16-Jun-02	Sand Sole	Sand Sole	6360126-221	43	636-2/3	47	49	0	96	LWSM	otoliths	otoliths	frozen		
15-Jun-02	Sand Sole	Sand Sole	6360222-357	30	636-3/4	51	85	0	136	LWSM	otoliths	otoliths	frozen		
	Sand Sole	Sand Sole			TOTAL	153	204	0	357						
15-Jun-02	Pacific Sandab														
16-Jun-02	Pacific Sandab	Pacific Sandab	5960001-046	37	596-1	20	26	0	46	LWSM	otoliths	otoliths	frozen		
			5960047-073	41	596-1	16	10	1	27	LWSM	otoliths	otoliths	frozen		
					TOTAL	36	36	1	73						
18-Jun-02	Slender Sole	Slender Sole	6250001-093	47	625-1	57	36	0	93	LWSM	otoliths	otoliths	frozen		
16-Jun-02	Slender Sole	Slender Sole	6250094-117	41	625-2	0	24	0	24	LWSM	otoliths	otoliths	frozen		
					TOTAL	57	60	0	117						
11-Jun-02	Big Skate														
	Big Skate	Big Skate	0560001	2		1	0	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
	Big Skate	Big Skate	0560002	3		1	0	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
	Big Skate	Big Skate	0560003-004	6		1	1	0	2	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
12-Jun-02	Big Skate	Big Skate	0560005-006	7		1	1	0	2	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
12-Jun-02	Big Skate	Big Skate	0560008-009	8		3	0	0	3	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
12-Jun-02	Big Skate	Big Skate	0560010	9		0	1	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
12-Jun-02	Big Skate	Big Skate	0560011-012	11		0	2	0	2	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
13-Jun-02	Big Skate	Big Skate	0560013-14	16		1	1	0	2	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
13-Jun-02	Big Skate	Big Skate	0560015	17		0	1	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
13-Jun-02	Big Skate	Big Skate	0560016-018	21		2	1	0	3	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
14-Jun-02	Big Skate	Big Skate	0560019	23		0	1	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
14-Jun-02	Big Skate	Big Skate	0560020-028	24		4	5	0	9	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
14-Jun-02	Big Skate	Big Skate	0560028-031	25		2	1	0	3	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
14-Jun-02	Big Skate	Big Skate	0560032-034	26		3	0	0	3	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
14-Jun-02	Big Skate	Big Skate	0560035	27		0	1	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
15-Jun-02	Big Skate	Big Skate	0560036-039	30		2	2	0	4	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
15-Jun-02	Big Skate	Big Skate	0560040-041	31		2	0	0	2	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
15-Jun-02	Big Skate	Big Skate	0560045	35		1	0	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		
15-Jun-02	Big Skate	Big Skate	0560046	36		1	0	0	1	LWSM	backbones, stomachs	backbones, stomachs	wingspan		

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Sample Collected	
									(a)	Type	Preserved	
16-Jun-02	Big Skate	0560047-048	38		0	2	0	2	LWSM	backbones, stomachs	wingspan	
16-Jun-02	Big Skate	0560049-050	39		1	1	0	2	LWSM	backbones, stomachs	wingspan	
18-Jun-02	Big Skate	0560051	46		1	0	0	1	LWSM	backbones, stomachs	wingspan	
19-Jun-02	Big Skate	0560052-056	55		4	1	0	5	LWSM	backbones, stomachs	wingspan	
19-Jun-02	Big Skate	0560057-063	58		5	2	0	7	LWSM	backbones, stomachs	wingspan	
20-Jun-02	Big Skate	0560064	63		0	1	0	1	LWSM	backbones, stomachs	wingspan	
20-Jun-02	Big Skate	0560065	65		1	0	0	1	LWSM	backbones, stomachs	wingspan	
21-Jun-02	Big Skate	0560066-068	70		2	1	0	3	LWSM	backbones, stomachs	wingspan	
21-Jun-02	Big Skate	0560069-080	71		3	9	0	12	LWSM	backbones, stomachs	wingspan	
21-Jun-02	Big Skate	0560081-082	72		0	2	0	2	LWSM	backbones, stomachs	wingspan	
21-Jun-02	Big Skate	0590083	76		1	0	0	1	LWSM	backbones, stomachs	wingspan	
22-Jun-02	Big Skate	0560084-090	79		2	5	0	7	LWSM	backbones, stomachs	wingspan	
26-Jun-02	Big Skate	0560091	86		1	0	0	1	LWSM	backbones, stomachs	wingspan	
26-Jun-02	Big Skate	0560092	93		0	1	0	1	LWSM	backbones, stomachs	wingspan	
	<b>Big Skate</b>				<b>46</b>	<b>43</b>	<b>0</b>	<b>89</b>				
	<b>Total</b>											
11-Jun-02	Longnose Skate	0590001	5		1	0	0	1	LWSM	backbones, stomachs	wingspan	
11-Jun-02	Longnose Skate	0590002	6		0	1	0	1	LWSM	backbones, stomachs	wingspan	
13-Jun-02	Longnose Skate	0590003-004	15		1	1	0	2	LWSM	backbones, stomachs	wingspan	
13-Jun-02	Longnose Skate	0590005-006	17		1	1	0	2	LWSM	backbones, stomachs	wingspan	
14-Jun-02	Longnose Skate	0590007-008	26		2	0	0	2	LWSM	backbones, stomachs	wingspan	
15-Jun-02	Longnose Skate	0590009-010	38		0	2	0	2	LWSM	backbones, stomachs	wingspan	
18-Jun-02	Longnose Skate	0590011-013	45		2	1	0	3	LWSM	backbones, stomachs	wingspan	
18-Jun-02	Longnose Skate	0590014	46		1	0	0	1	LWSM	backbones, stomachs	wingspan	
18-Jun-02	Longnose Skate	0590015	50		1	0	0	1	LWSM	backbones, stomachs	wingspan	
21-Jun-02	Longnose Skate	0590016	75		0	1	0	1	LWSM	backbones, stomachs	wingspan	
22-Jun-02	Longnose Skate	0590017-018	78		1	1	0	2	LWSM	backbones, stomachs	wingspan	
	<b>Longnose Skate</b>				<b>10</b>	<b>8</b>	<b>0</b>	<b>18</b>				
	<b>Total</b>											
13-Jun-02	Sandpaper Skate	0580003	15		1	0	0	1	LWSM		wingspan	
13-Jun-02	Sandpaper Skate	0580004-005	16		2	0	0	2	LWSM		wingspan	
13-Jun-02	Sandpaper Skate	0580006	17		1	0	0	1	LWSM		wingspan	
13-Jun-02	Sandpaper Skate	0580007	19		0	0	1	1	LWSM		wingspan	
	<b>Sandpaper Skate</b>				<b>4</b>	<b>0</b>	<b>1</b>	<b>5</b>				
	<b>Total</b>											

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Sample Collected
									(a)	Type	
13-Jun-02	Walleye Pollock	2280001-100	15	228-1	33	67	0	100	LWSM	otoliths, lt, pectoral fin	frozen
14-Jun-02	Walleye Pollock	2280101-116	23	228-2	1	15	0	16	LWSM	otoliths, lt, pectoral fin	frozen
15-Jun-02	Walleye Pollock	2280117-163	29	228-2	13	34	0	47	LWSM	otoliths, lt, pectoral fin	frozen
12-Jun-02	Walleye Pollock	2280164-173	13	228-3	3	7	0	10	LWSM	otoliths, lt, pectoral fin	frozen
15-Jun-02	Walleye Pollock	2280174-207	33	228-3	11	23	0	34	LWSM	otoliths, lt, pectoral fin	frozen
	<b>Walleye Pollock</b>			<b>TOTAL</b>	<b>61</b>	<b>146</b>	<b>0</b>	<b>207</b>			
13-Jun-02	Sablefish	455001-18	16	455-1	11	7	0	18	LWSM	otoliths, lt, pectoral fin	frozen
16-Jun-02	Sablefish	455019-34	42	455-1	7	9	0	16	LWSM	otoliths, lt, pectoral fin	frozen
16-Jun-02	Sablefish	455035-59	41	455-1	15	10	0	25	LWSM	otoliths, lt, pectoral fin	frozen
16-Jun-02	Sablefish	455060-77	42	455-1	6	11	1	18	LWSM	otoliths, lt, pectoral fin	frozen
12-Jun-02	Sablefish	455078-100	13	455-1	13	10	0	23	LWSM	otoliths, lt, pectoral fin	frozen
16-Jun-02	Sablefish	455101-125	41	455-2	13	12	0	25	LWSM	otoliths, lt, pectoral fin	frozen
13-Jun-02	Sablefish	455126-140	16	455-2	3	12	0	15	LWSM	otoliths, lt, pectoral fin	frozen
12-Jun-02	Sablefish	455141-155	13	455-2	8	7	0	15	LWSM	otoliths, lt, pectoral fin	frozen
15-Jun-02	Sablefish	455156-167	16	455-2	1	11	0	12	LWSM	otoliths, lt, pectoral fin	frozen
13-Jun-02	Sablefish	453168-181	13	455-2	5	9	0	14	LWSM	otoliths, lt, pectoral fin	frozen
13-Jun-02	Sablefish	455182-199	15	455-2	11	7	0	18	LWSM	otoliths, lt, pectoral fin	frozen
	<b>Sablefish</b>			<b>TOTAL</b>	<b>93</b>	<b>105</b>	<b>1</b>	<b>199</b>			
11-Jun-02	Pacific Cod	2220001-3	2		1	2	0	3	LWSM		
11-Jun-02	Pacific Cod	2220004-12	3		4	5	0	9	LWSM		
11-Jun-02	Pacific Cod	2220013-18	4		2	4	0	6	LWSM		
11-Jun-02	Pacific Cod	2220019-22	5		2	2	0	4	LWSM		
11-Jun-02	Pacific Cod	2220023-31	1		5	4	0	9	LWSM		
12-Jun-02	Pacific Cod	2220032-47	6		7	9	0	16	LWSM		
12-Jun-02	Pacific Cod	2220048	7		1	0	0	1	LWSM		
12-Jun-02	Pacific Cod	2220049-169	9		67	53	1	121	LWSM		
12-Jun-02	Pacific Cod	2220170-171	10		0	2	0	2	LWSM		
12-Jun-02	Pacific Cod	2220172-191	11		10	10	0	20	LWSM		
12-Jun-02	Pacific Cod	2220192-203	12		8	4	0	12	LWSM		
12-Jun-02	Pacific Cod	2220204-224	13		7	14	0	21	LWSM		
12-Jun-02	Pacific Cod	2220225-237	14		7	5	0	12	LWSM		

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Sample Collected	
										(a)	Type
13-Jun-02	Pacific Cod	Pacific Cod	2220238-261	15		11	13	0	24	LWSM	
13-Jun-02	Pacific Cod	Pacific Cod	2220262-268	16		5	2	0	7	LWSM	
13-Jun-02	Pacific Cod	Pacific Cod	2220269-316	17		23	24	1	48	LWSM	
13-Jun-02	Pacific Cod	Pacific Cod	2220317-339	18		11	12	0	23	LWSM	
13-Jun-02	Pacific Cod	Pacific Cod	2220340-375	19		17	19	0	36	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220376-388	22		5	8	0	13	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220389-411	23		11	12	0	23	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220412-425	25		4	10	0	14	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220426-430	24		2	3	0	5	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220431-458	26		21	7	0	28	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220459-485	27		17	9	0	26	LWSM	
14-Jun-02	Pacific Cod	Pacific Cod	2220486-487	28		1	1	0	2	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220488-502	29		3	12	0	15	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220503-517	30		8	7	0	15	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220518-530	31		6	7	0	13	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220531-648	32		59	59	0	118	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220649-819	33		41	40	0	81	LWSM	19 stomachs examined
15-Jun-02	Pacific Cod	Pacific Cod	2220820-825	34		4	2	0	6	LWSM	5 stomachs
15-Jun-02	Pacific Cod	Pacific Cod	2220826-843	35		9	8	0	17	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220843-845	36		1	2	0	3	LWSM	
15-Jun-02	Pacific Cod	Pacific Cod	2220846-853	37		2	6	0	8	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220854-870	38		6	11	0	17	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220871-875	39		2	3	0	5	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220876-884	40		5	4	0	9	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220885-890	41		2	4	0	6	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220891-906	42		7	9	0	16	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220907-918	43		6	6	0	12	LWSM	
16-Jun-02	Pacific Cod	Pacific Cod	2220919-922	44		2	2	0	4	LWSM	
18-Jun-02	Pacific Cod	Pacific Cod	2220923-928	45		3	3	0	6	LWSM	
18-Jun-02	Pacific Cod	Pacific Cod	2220929-1075	46		82	65	0	147	LWSM	9 stomachs examined
18-Jun-02	Pacific Cod	Pacific Cod	2221076-1082	47		1	6	0	7	LWSM	
18-Jun-02	Pacific Cod	Pacific Cod	2221083-1095	48		6	7	0	13	LWSM	
18-Jun-02	Pacific Cod	Pacific Cod	2221096-1097	50		0	2	0	2	LWSM	
18-Jun-02	Pacific Cod	Pacific Cod	2221098-1103	51		2	4	0	6	LWSM	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Type	Preserved
										(a)	LWSM		
18-Jun-02	Pacific Cod	Pacific Cod	2221004-1107	52		0	4	0	4		4	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221108-1109	53		1	2	0	3		3	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221110-1115	54		2	4	0	6		6	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221116-1143	55		15	13	0	28		28	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221144	56		1	0	0	1		1	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221145-1149	57		3	2	0	5		5	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221150-1239	58		55	35	0	90		90	LWSM	
19-Jun-02	Pacific Cod	Pacific Cod	2221240-1241	59		1	1	0	2		2	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221242	61		0	1	0	1		1	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221243-1247	63		1	4	0	5		5	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221248-1256	64		5	4	0	9		9	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221257-1451	65		93	107	0	200		200	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221452-1458	66		4	3	0	7		7	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221459	67		0	2	0	2		2	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221460	69		0	1	0	1		1	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221460	70		1	0	0	1		1	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221461	71		1	0	0	1		1	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221462-1466	72		1	4	0	5		5	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221467-1512	73		28	18	0	46		46	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221513	74		1	0	0	1		1	LWSM	
21-Jun-02	Pacific Cod	Pacific Cod	2221514-1515	75		2	0	0	2		2	LWSM	
22-Jun-02	Pacific Cod	Pacific Cod	2221516-1521	78		3	3	0	6		6	LWSM	
22-Jun-02	Pacific Cod	Pacific Cod	2221522-1523	79		1	1	0	2		2	LWSM	
22-Jun-02	Pacific Cod	Pacific Cod	2221524-1546	80		9	14	0	23		23	LWSM	
22-Jun-02	Pacific Cod	Pacific Cod	2221547	82		0	1	0	1		1	LWSM	
26-Jun-02	Pacific Cod	Pacific Cod	2221548	84		0	1	0	1		1	LWSM	
26-Jun-02	Pacific Cod	Pacific Cod	2221549	85		1	0	0	1		1	LWSM	
26-Jun-02	Pacific Cod	Pacific Cod	2221550-1551	86		1	1	0	2		2	LWSM	
26-Jun-02	Pacific Cod	Pacific Cod	2221552-1553	88		1	1	0	2		2	LWSM	
26-Jun-02	Pacific Cod	Pacific Cod	2221554	96		0	1	0	1		1	LWSM	
20-Jun-02	Pacific Cod	Pacific Cod	2221555-1665	65		59	52	0	111		111	LWSM	111 stomachs taken frozen
						TOTAL	796	783	2	1581	2		
11-Jun-02	Lingcod	Lingcod	4670001-7	2		5	2	0	7	LWSM	second dorsal fin	frozen	

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Preserved
									(a)	LWSM	
11-Jun-02	Lingcod	4670008-10	4	0	0	3	0	3	23	LWSM	second dorsal fin
11-Jun-02	Lingcod	4670011-33	5	9	14	0	0	0	1	LWSM	frozen
11-Jun-02	Lingcod	4670034	6	0	1	0	0	1	5	LWSM	second dorsal fin
12-Jun-02	Lingcod	4670035-39	8	0	5	0	0	0	4	LWSM	frozen
12-Jun-02	Lingcod	4670040-43	9	0	4	0	0	0	3	LWSM	second dorsal fin
12-Jun-02	Lingcod	4670044-46	10	1	2	0	0	0	1	LWSM	second dorsal fin
13-Jun-02	Lingcod	4670047	17	1	0	0	0	0	1	LWSM	frozen
13-Jun-02	Lingcod	4670048	19	0	1	0	0	0	1	LWSM	frozen
13-Jun-02	Lingcod	4670049-50	20	0	2	0	0	0	2	LWSM	frozen
14-Jun-02	Lingcod	4670051-55	22	2	3	0	0	0	5	LWSM	second dorsal fin
14-Jun-02	Lingcod	4670056-61	27	2	4	0	0	0	6	LWSM	second dorsal fin
16-Jun-02	Lingcod	4670062	41	1	0	0	0	0	1	LWSM	second dorsal fin
18-Jun-02	Lingcod	4670063	51	1	0	0	0	0	1	LWSM	frozen
19-Jun-02	Lingcod	4670064-68	54	3	2	0	0	0	5	LWSM	second dorsal fin
19-Jun-02	Lingcod	4670069	55	0	1	0	0	0	1	LWSM	frozen
19-Jun-02	Lingcod	4670070	58	0	1	0	0	0	1	LWSM	frozen
20-Jun-02	Lingcod	4670071	61	0	1	0	0	0	1	LWSM	second dorsal fin
20-Jun-02	Lingcod	4670072	65	0	1	0	0	0	1	LWSM	second dorsal fin
20-Jun-02	Lingcod	4670073	67	0	1	0	0	0	1	LWSM	frozen
21-Jun-02	Lingcod	4670074	72	0	1	0	0	0	1	LWSM	second dorsal fin
21-Jun-02	Lingcod	4670075-77	73	1	2	0	0	0	3	LWSM	second dorsal fin
22-Jun-02	Lingcod	4670078	78	0	1	0	0	0	1	LWSM	second dorsal fin
22-Jun-02	Lingcod	4670079	80	0	1	0	0	0	1	LWSM	frozen
26-Jun-02	Lingcod	4670080-83	81	0	4	0	0	0	4	LWSM	second dorsal fin
26-Jun-02	Lingcod	4670084	82	0	1	0	0	0	1	LWSM	frozen
26-Jun-02	Lingcod	4670085-87	87	0	3	0	0	0	3	LWSM	second dorsal fin
26-Jun-02	Lingcod	4670088-89	88	0	2	0	0	0	2	LWSM	second dorsal fin
26-Jun-02	Lingcod	4670090-93	89	0	4	0	0	0	4	LWSM	frozen
26-Jun-02	Lingcod	4670094-99	91	2	4	0	0	0	6	LWSM	frozen
26-Jun-02	Lingcod	4670100-101	93	0	2	0	0	0	2	LWSM	second dorsal fin
26-Jun-02	Lingcod	4670102-104	94	1	2	0	0	0	3	LWSM	frozen
26-Jun-02	Lingcod	4670105	96	0	1	0	0	0	1	LWSM	second dorsal fin
	Lingcod							TOTAL	29		105
	Lingcod								76		

(a) L-length, W-weight, S-sex, M-maturity

Catch Date	Species	Common Name	Fish No.	Tow No.	Tray No.	Male	Female	Unknown	Total	Number of Samples		Sample Collected
										(a)	Type	
11-Jun-02	Bocaccio	Bocaccio	4350001	2	435-1	1	0	0	1	LWSM	otoliths	
11-Jun-02	Bocaccio	Bocaccio	4350002-004	1	435-1	3	0	0	3	LWSM	otoliths	
12-Jun-02	Bocaccio	Bocaccio	4350005	4	435-1	1	0	0	1	LWSM	otoliths	
12-Jun-02	Bocaccio	Bocaccio	4350006	13	435-1	1	0	0	1	LWSM	otoliths	
19-Jun-02	Bocaccio	Bocaccio	4350007	53	435-1	0	1	0	1	LWSM	otoliths	
20-Jun-02	Bocaccio	Bocaccio	4350008	67	435-1	0	1	0	1	LWSM	otoliths	
	<b>Bocaccio</b>				<b>TOTAL</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>8</b>			
22-Jun-02	Yellowtail Rockfish	Yellowtail Rockfish	4180001-2	79	418-1	2	0	0	2	LWSM	otoliths	
	<b>Yellowtail Rockfish</b>				<b>TOTAL</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>			
19-Jun-02	Copper Rockfish	Copper Rockfish	4070001-005	54	407-1	4	1	0	5	LWSM	otoliths	
	<b>Copper Rockfish</b>				<b>TOTAL</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>			
19-Jun-02	Quillback Rockfish	Quillback Rockfish	4240001-015	54	424-1	8	7	0	15	LWSM	otoliths	
20-Jun-02	Quillback Rockfish	Quillback Rockfish	42420016	62	424-1	1	0	0	1	LWSM	otoliths	
20-Jun-02	Quillback Rockfish	Quillback Rockfish	42420017-020	69	424-1	4	0	0	4	LWSM	otoliths	
22-Jun-02	Quillback Rockfish	Quillback Rockfish	42420021-029	78	424-1	5	4	0	9	LWSM	otoliths	
	<b>Quillback</b>				<b>TOTAL</b>	<b>18</b>	<b>11</b>	<b>0</b>	<b>29</b>			
21-Jun-02	Pacific Ocean Perch	Pacific Ocean Perch	3960001-017	75	396-1	9	8	0	17	LWSM	otoliths	
	<b>Pacific Ocean Perch</b>				<b>TOTAL</b>	<b>9</b>	<b>8</b>	<b>0</b>	<b>17</b>			

(a) L-length, W-weight, S-sex, M-maturity

Table 4. Summary of biological data collected by species for all samples taken during the multispecies survey of Hecate Strait on the F/V Viking Storm, June 10 - 28, 2002.

No. Code	Species Common Name	Species Scientific Name	Length Recorded	Weight Recorded	Sex Recorded	Maturity Recorded	Otoliths Collected	Stomach Collected	Pectoral Fins Collected	Flatfish
1	628	English Sole	8281	600	7900	600	600	0	0	<i>Pleuronectes vetulus</i>
2	610	Rex Sole	6105	200	5767	200	200	0	0	<i>Errex zachirus</i>
3	602	Arrowtooth Flounder	4966	195	4394	195	195	0	0	<i>Atheresthes stomias</i>
4	621	Rock Sole	4819	932	4819	917	931	0	0	<i>Pleuronectes bilineatus</i>
5	626	Dover Sole	4093	669	4093	646	669	0	0	<i>Microstomus pacificus</i>
6	596	Pacific Sanddab	3139	73	2890	72	73	0	0	<i>Citharichthys sordidus</i>
7	612	Flathead Sole	1503	172	1503	172	172	0	0	<i>Hippoglossoides elassodon</i>
8	636	Sand Sole	1197	357	1190	356	357	0	0	<i>Psettichthys melanostictus</i>
9	619	Butter Sole	438	100	384	100	100	0	0	<i>Pleuronectes isolepis</i>
10	607	Petrale Sole	374	359	374	359	359	0	0	<i>Eopsetta jordani</i>
11	625	Slender Sole	309	117	310	117	117	0	0	<i>Eopsetta exilis</i>
12	614	Pacific Halibut	277	0	244	0	0	0	0	<i>Hippoglossus stenolepis</i>
13	635	Curfin Sole	74	74	74	74	74	0	0	<i>Pleuronichthys decurrens</i>
14	631	Starry Flounder	23	17	23	17	17	0	0	<i>Platichthys stellatus</i>
		Roundfish								
15	226	Pacific Tomcod	2015	50	1894	50	50	0	0	<i>Microgadus proximus</i>
16	228	Walleye Pollock	1720	207	1031	207	207	0	10	<i>Theragra chalcogramma</i>
17	222	Pacific Cod	1580	1581	1579	1576	0	0	159	<i>Gadus macrocephalus</i>
18	361	Pacific Sand Lance	698	0	0	0	0	0	0	<i>Ammodytes hexapterus</i>
19	455	Sablefish	328	199	328	199	199	0	0	<i>Anoplopoma fimbria</i>
20	148	Eulachon	187	0	0	0	0	0	0	<i>Thaleichthys pacificus</i>
21	233	Bigfin Eelpout	173	0	0	0	0	0	0	<i>Lycodes cortezianus</i>
22	96	Pacific Herring	166	0	58	0	0	0	0	<i>Clupea pallasi</i>
23	467	Lingcod	105	105	105	82	82	0	0	<i>Ophiodon elongatus</i>
24	461	Kelp Greenling	27	0	27	0	0	0	0	<i>Hexagrammos decagrammus</i>
		Selachii								
25	66	Spotted Ratfish	3446	0	3349	0	0	0	0	<i>Hydrolagus colliei</i>
26	44	Spiny Dogfish	1609	0	1588	0	0	0	0	<i>Squalus acanthias</i>
27	56	Big Skate	178	89	89	87	87	0	0	<i>Raja binoculata</i>
28	59	Longnose Skate	36	17	17	18	18	0	0	<i>Raja rhina</i>

No.	Species Code	Species Common Name	Species Scientific Name	Length Recorded	Weight Recorded	Sex Recorded	Maturity Recorded	Otoliths Collected	Stomach Collected	Pectoral Fins Collected
29	58	Sandpaper Skate	<i>Bathyraja interrupta</i>	10	5	4	0	0	0	0
		<b>Rockfish</b>								
30	424	Quillback Rockfish	<i>Sebastes maliger</i>	29	29	29	29	29	0	0
31	396	Pacific Ocean Perch	<i>Sebastes alutus</i>	29	29	28	28	29	0	0
32	435	Bocaccio	<i>Sebastes paucispinis</i>	8	8	8	8	8	0	0
33	405	Silvergray Rockfish	<i>Sebastes brevispinis</i>	7	0	7	0	0	0	0
34	407	Copper Rockfish	<i>Sebastes carinius</i>	5	5	5	5	5	0	0
35	418	Yellowtail Rockfish	<i>Sebastes flavidus</i>	2	2	2	2	2	0	0
		<b>Total</b>		47956	6191	44114	6116	4393	159	10

Table 5. Summary of samples morphometrics attribute collected during the multispecies survey of Hecate Strait on the F/V *Viking Storm*, June 10 - 28, 2002.

No. Code	Species Code	Species	Scientific Name	Number Specimens	(a) LWSMO	LWSM	LSM	LWS	LS	LW	L
<b>Flatfish</b>											
1	628	English Sole	<i>Pleuronectes vetulus</i>	8281	600	0	0	0	7300	0	381
2	610	Rex Sole	<i>Errex zachirus</i>	6105	200	0	0	0	5567	0	338
3	602	Arrowtooth Flounder	<i>Atheresthes stomias</i>	4968	195	0	0	0	4201	0	572
4	621	Rock Sole	<i>Pleuronectes bilineatus</i>	4819	931	1	0	0	3887	0	0
5	626	Dover Sole	<i>Microstomus pacificus</i>	4093	669	0	0	0	3424	0	0
6	596	Pacific Sanddab	<i>Citharichthys sordidus</i>	3139	72	0	0	0	2817	0	249
7	612	Flathead Sole	<i>Hippoglossoides elassodon</i>	1503	172	0	0	0	1331	0	0
8	636	Sand Sole	<i>Psettichthys melanostictus</i>	1197	357	0	0	0	833	0	7
9	619	Butter Sole	<i>Pleuronectes isolepis</i>	438	100	0	0	0	284	0	54
10	607	Petrale Sole	<i>Eopsetta jordani</i>	374	359	0	0	0	15	0	0
11	625	Slender Sole	<i>Eopsetta exilis</i>	310	116	0	0	0	193	0	0
12	614	Pacific Halibut	<i>Hippoglossus stenolepis</i>	277	0	0	0	0	244	0	33
13	635	Curfin Sole	<i>Pleuronichthys decurrens</i>	74	74	0	0	0	0	0	0
14	631	Starry Flounder	<i>Platichthys stellatus</i>	23	17	0	0	0	6	0	0
<b>Roundfish</b>											
1	226	Pacific Tomcod	<i>Microgadus proximus</i>	2015	50	0	0	0	1844	0	121
2	228	Walleye Pollock	<i>Theragra chalcogramma</i>	1720	207	0	0	0	824	0	689
3	222	Pacific Cod	<i>Gadus macrocephalus</i>	1581	0	1580	0	1	0	0	0
4	361	Pacific Sand Lance	<i>Ammodytes hexapterus</i>	698	0	0	0	0	0	0	698
5	455	Sablefish	<i>Anoplopoma fimbria</i>	328	199	0	0	0	129	0	0
6	148	Eulachon	<i>Thaleichthys pacificus</i>	187	0	0	0	0	0	0	187
7	233	Bigfin Eelpout	<i>Lycodes corteziensis</i>	173	0	0	0	0	0	0	173
8	96	Pacific Herring	<i>Clupea pallasi</i>	166	0	0	0	0	58	0	108
9	467	Lingcod	<i>Ophiodon elongatus</i>	105	0	82	0	23	0	0	0
10	461	Kelp Greenling	<i>Hexagrammos decagrammus</i>	27	0	0	0	0	27	0	0
		<i>Selachii</i>									
1	66	Spotted Ratfish	<i>Hydrologus collei</i>	3446	0	0	0	0	3349	0	97
2	44	Spiny Dogfish	<i>Squalus acanthias</i>	1609	0	0	0	0	1588	0	21
3	56	Big Skate	<i>Raja binoculata</i>	178	0	1	88	0	89	0	0
4	59	Longnose Skate	<i>Raja rhina</i>	36	0	17	18	1	0	0	0

(a) L-length, W-weight, S-sex, M-maturity, O-otolith

No.	Species Code	Species	Scientific Name	Number Specimens	(a) LW	WSMO	LWSM	LWS	LS	LW	L
5	58	Sandpaper Skate	<i>Bathyraja interrupta</i>	10	0	5	4	1	0	0	0
		<b>Rockfish</b>									
1	396	Pacific Ocean Perch	<i>Sebastes alutus</i>	29	28	1	0	0	0	0	0
2	424	Quillback Rockfish	<i>Sebastes maliger</i>	29	29	0	0	0	0	0	0
3	435	Bocaccio	<i>Sebastes paucispinis</i>	8	8	0	0	0	0	0	0
4	405	Silvergray Rockfish	<i>Sebastes brevispinis</i>	7	0	0	0	0	7	0	0
5	407	Copper Rockfish	<i>Sebastes caurinus</i>	5	5	0	0	0	0	0	0
6	418	Yellowtail Rockfish	<i>Sebastes flavidus</i>	2	2	0	0	0	0	0	0
		<b>Total</b>		47960	4390	1687	110	26	38017	0	3728

(a) L-length, W-weight, S-sex, M-maturity, O-otolith

Table 6. Summary statistics for length (mm) and weight (g) from samples collected during the 2002 Hecate Strait multispecies survey, June 10 - June 28, 2002.

Species	Sex	Weight (g)						Length (mm)					
		N	Min	Max	Mean	Standard Deviation	Median	N	Min	Max	Mean	Standard Deviation	Median
English sole	Male	218	54	573	254.1	117.866	237	208	3277	110	480	251.3	63.797
	Female	376	40	1162	366.7	208.757	365	486	4522	110	490	289.8	81.487
Dover sole	Male	317	45	1381	377.1	190.678	323	194	1838	150	520	295.7	52.751
	Female	324	31	2177	582.8	387.679	476	265	2231	150	660	336.8	84.289
Rock sole	Male	318	21	1006	234.0	142.779	202	84	1883	80	470	214.7	64.4659
	Female	521	8	2355	435.0	444.091	249	92	2742	90	546	262.9	98.9693
Arrowtooth Flounder	Male	41	83	2212	694.3	402.367	735	788	1436	110	632	357.4	118.664
	Female	151	88	4132	1421.5	613.966	1492	1035	2767	100	760	451.2	146.717
Petrale sole	Male	108	77	1234	428.0	273.371	346	177	108	205	481	328.0	66.661
	Female	248	70	2787	790.5	622.377	623	182	248	190	590	382.5	98.897
Pacific Cod	Male	748	62	6570	1092.3	1080.55	688	278	788	192	842	421.2	133.321
	Female	785	31	10000	1253.6	1413.1	603	269	785	143	931	435.6	150.334
Lingcod	Male	29	688	5400	2568.7	1493.27	2303	29	430	795	616.1	112.345	609
	Female	74	545	17000	4732.4	4002.02	3196	7000	74	415	1170	734.6	190.299

Table 7. Regression parameters for log(weight) vs log(length) for selected species during the multispecies survey of Hecate Strait in 2002.

Species	Sex	N	r	a	95% Confidence interval		b	95% Confidence interval	
					Estimate	Lower		Estimate	Lower
English sole	Males	218	0.97138	-408.94301	-431.0077	-386.8782	2.27117	2.19669	2.3456
	Females	376	0.95303	-561.544	-592.217	-530.871	2.877527	2.784549	2.970504
Dover sole	Males	318	0.95559	-792.748	-1266.915	-1120.4512	3.5007	3.3812	3.6202
	Females	324	0.93836	-1193.68	-1266.91	-1120.45	4.71334	4.522979	4.903701
Rock sole	Males	318	0.92035	-373.54627	-402.7785	-344.3139	2.37355	2.26192	2.485185
	Females	521	0.92491	-788.807	-834.56	-743.054	4.191903	4.043312	4.340494
Arrowtooth flounder	Males	41	0.92619	-1019.6	-1250.74	-788.459	4.107655	3.566032	4.649279
	Females	151	0.92787	-1685.74	-1891.24	-1480.25	50.86802	5.486431	6.249972
Petrale sole	Males	108	0.97788	-887.4248	-942.785	-832.065	4.0099602	3.844553	4.175367
	Females	248	0.96176	-1524.6801	-1610.19	-1439.17	6.052482	5.836015	6.26895
Pacific Cod	Males	788	0.94617	-2125.9812	-2205.99	-2045.98	7.5606331	7.379547	7.741719
	Females	785	0.93418	-2571.3741	-2679.79	-2462.96	8.7810375	8.545755	9.01632

Table 8. Maturity stage for species sampled during the Hecate Strait multispecies survey on the F/V *Viking Storm*, June 10 - 28, 2002.

	Males	Females	Maturity stage						Total								
			Mature	Developing Reproductive	Developing Ripe	Spawning Ripe	Spawning	Spawning Post-									
English sole	n 40	40	5	1	0	28	90	54	218	127	92	51	0	4	6	100	380
	% 18.35	2.29	0.46	0.00	12.84	41.28	24.77	100.00		33.42	24.21	13.42	0.00	1.05	1.58	26.32	100.00
Dover sole	n 26	26	27	7	1	14	168	74	317	72	141	3	0	1	5	102	324
	% 8.20	8.52	2.21	0.32	4.42	53.00	23.34	100.00		22.22	43.52	0.93	0	0.31	1.54	31.48	100.00
Rock sole	n 155	155	26	0	4	49	23	61	318	259	79	94	0	2	0	88	522
	% 48.74	8.18	0.00	1.26	15.41	7.23	19.18	100.00		49.62	15.13	18.01	0.00	0.38	0.00	16.86	100.00
Arrowtooth Flounder	n 7	7	3	0	0	0	3	28	41	17	9	2	1	1	5	116	151
	% 17.07	7.32	0.00	0.00	0.00	7.32	68.29	100.00		11.26	5.96	1.32	0.66	0.66	3.31	76.82	100.00
Petrale sole	n 45	45	20	0	0	1	4	38	108	79	48	4	0	0	1	115	247
	% 41.67	18.52	0.00	0.00	0.93	3.70	35.19	100.00		31.98	19.43	1.62	0.00	0.00	0.40	46.56	100.00
Pacific Cod	n 630	630	12	3	0	0	1	141	787	592	32	2	0	0	0	157	783
	% 80.051	1.525	0.38	0	0	0.127	17.916	100.00		75.61	4.09	0.26	0.00	0.00	0.00	20.05	100.00
Lingcod	n 10	10	2	0	0	0	0	8	20	23	14	4	0	0	0	21	62
	% 50.00	10.00	0.00	0.00	0.00	40.00	100.00			50.00	10.00	6.00	0.00	0.00	0.00	34.00	100.00

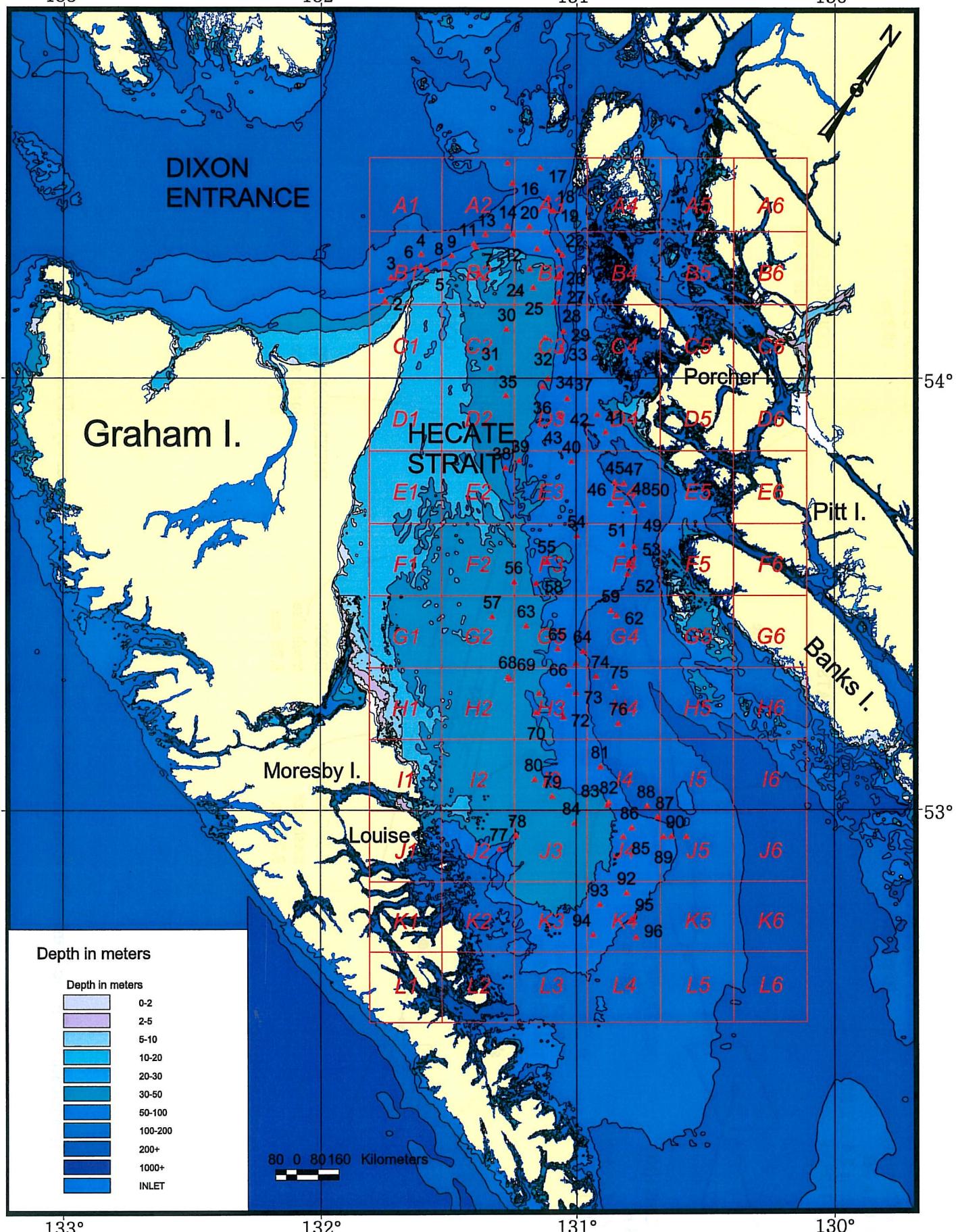


Figure 1. Haul locations and survey grid for the 2002 Hecate Strait multispecies survey on the F/V Viking Storm , June 10 - 28, 2002.

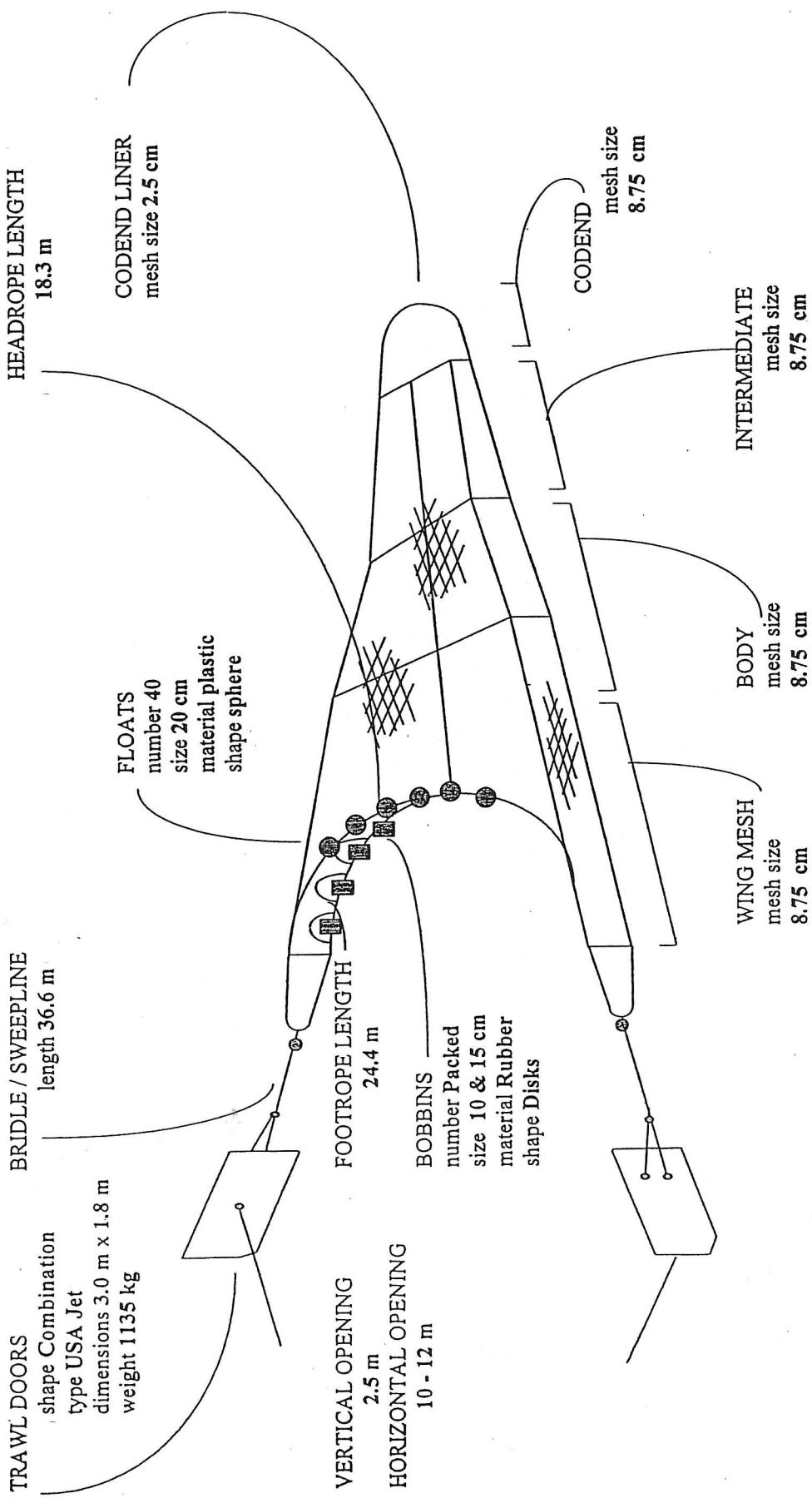


Figure 2. Specifications for the Yankee 36 trawl net used during the 2002 multispecies survey of Hecate Strait.

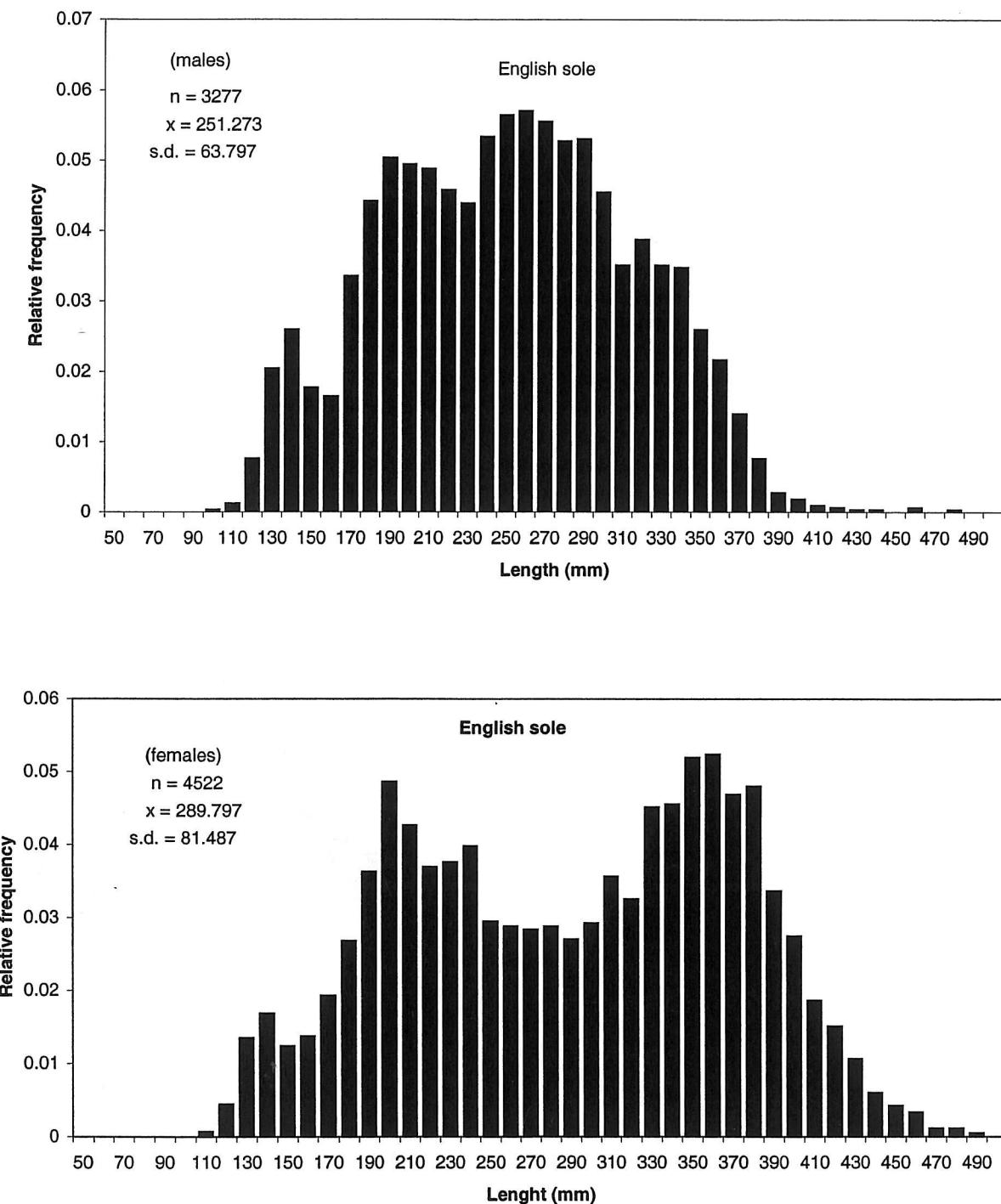


Figure 3. Length relative frequency distribution for males and females of English sole collected during the Hecate Strait multispecies survey in 2002.

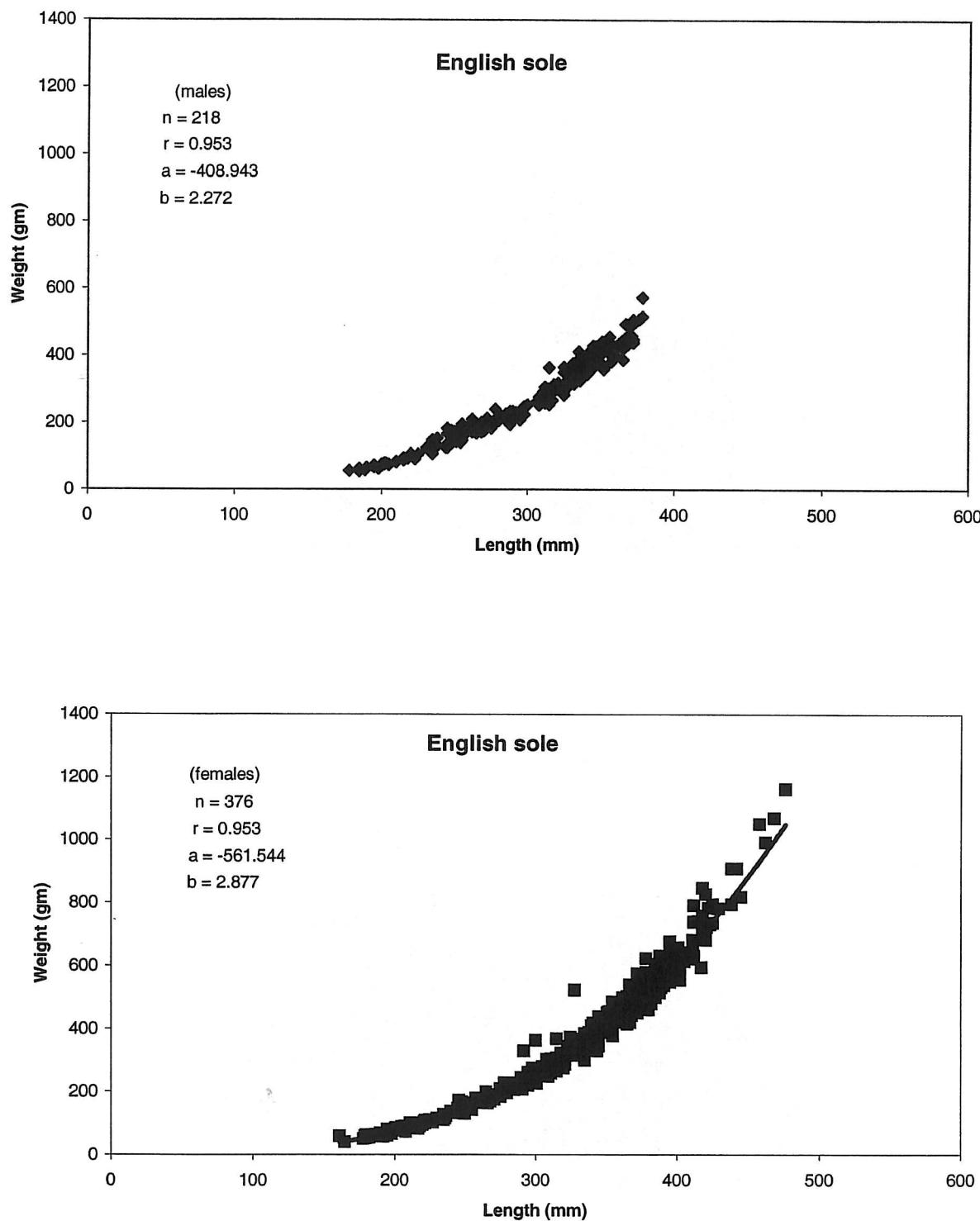


Figure 4. Length - weight relationship by sex for English sole collected during the Hecate Strait multispecies survey in 2002.

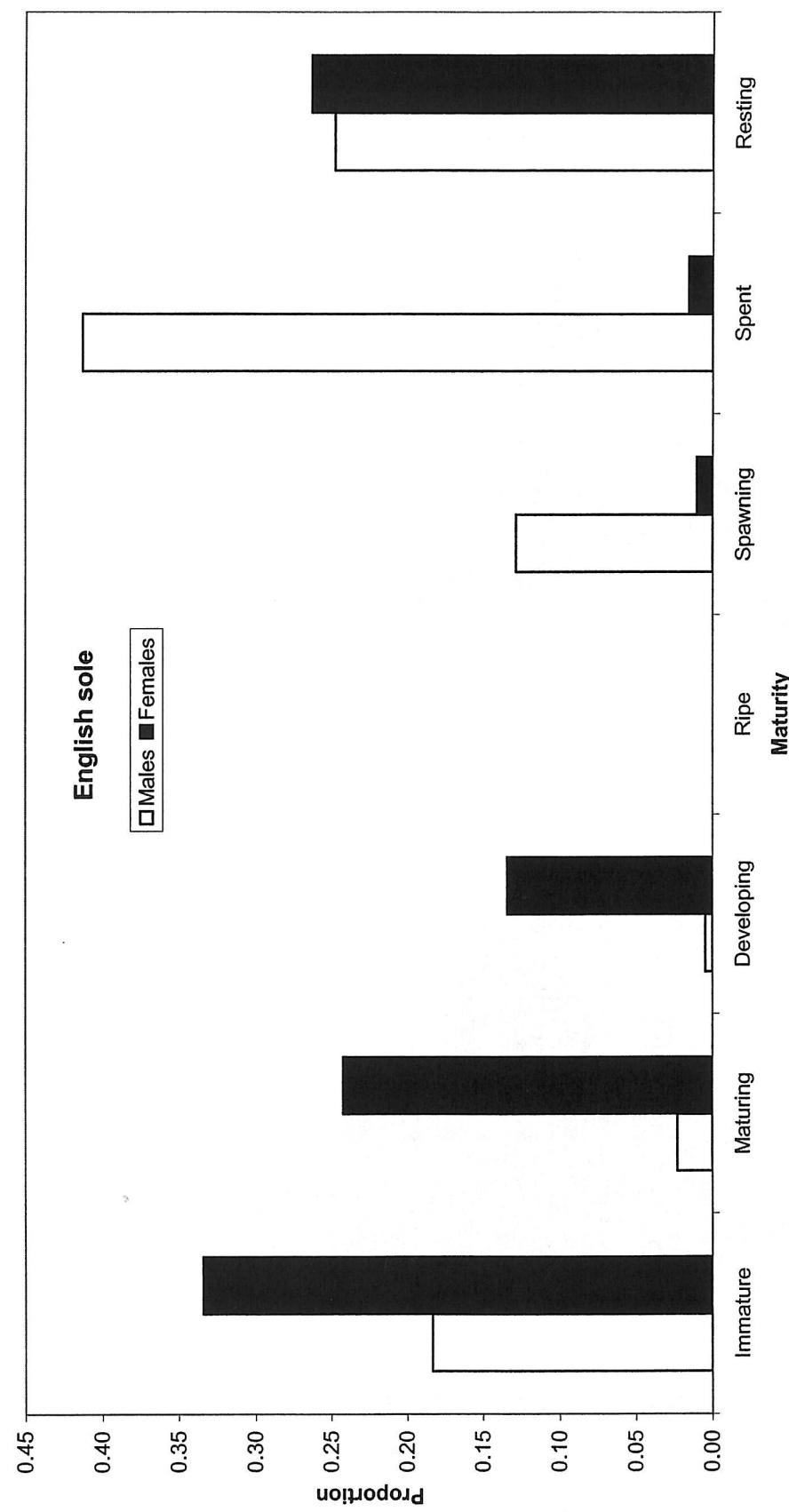


Figure 5. Stage of maturity for English sole collected during the Hecate Strait multispecies survey in 2002.

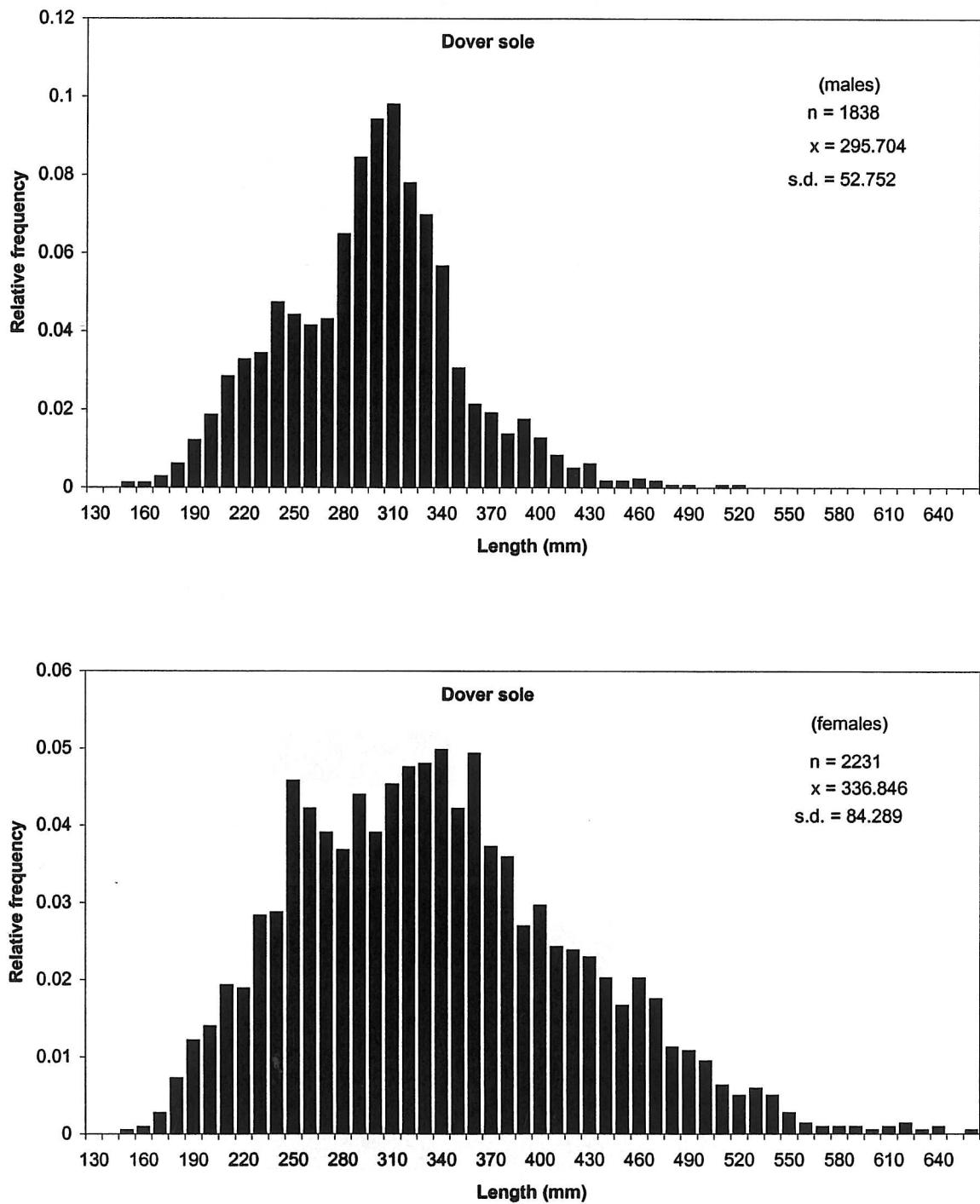


Figure 6. Length relative frequency distribution for males and females of Dover sole collected during the Hecate Strait multispecies survey in 2002.

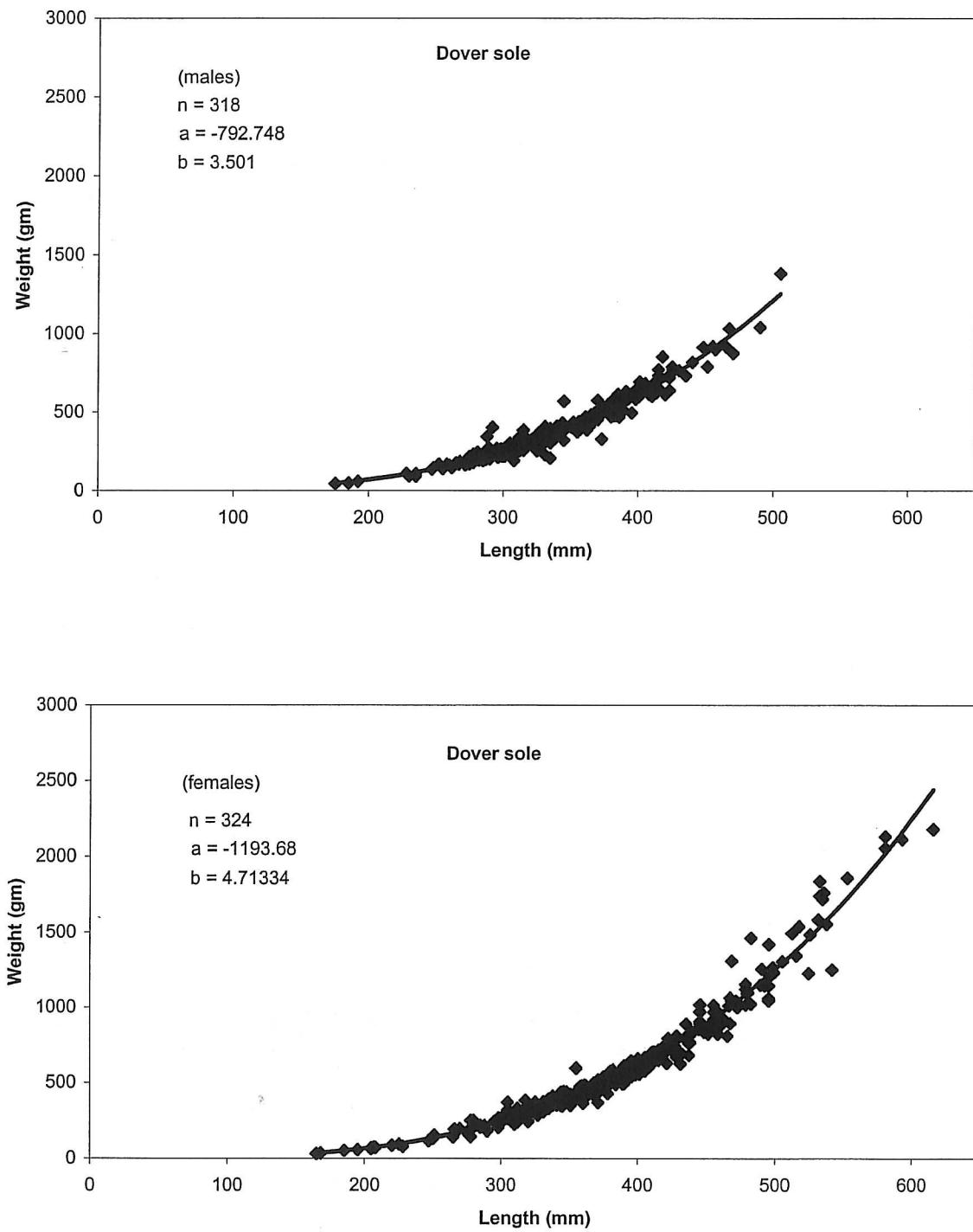


Figure 7. Length- weight relationship by sex for Dover sole collected during the Hecate Strait multispecies survey in 2002.

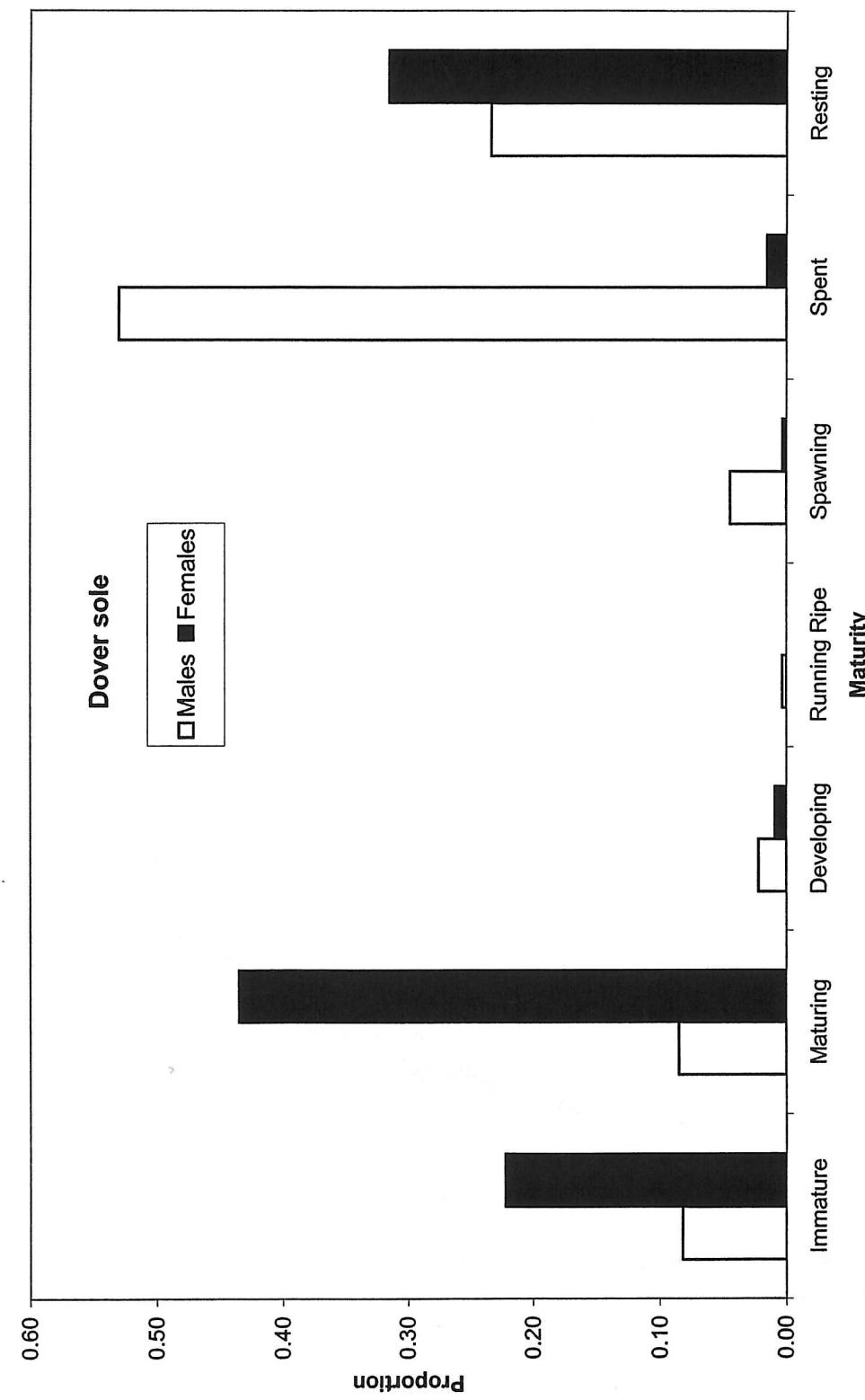


Figure 8. Stage of maturity for Dover sole collected during the Hecate Strait multispecies survey in 2002.

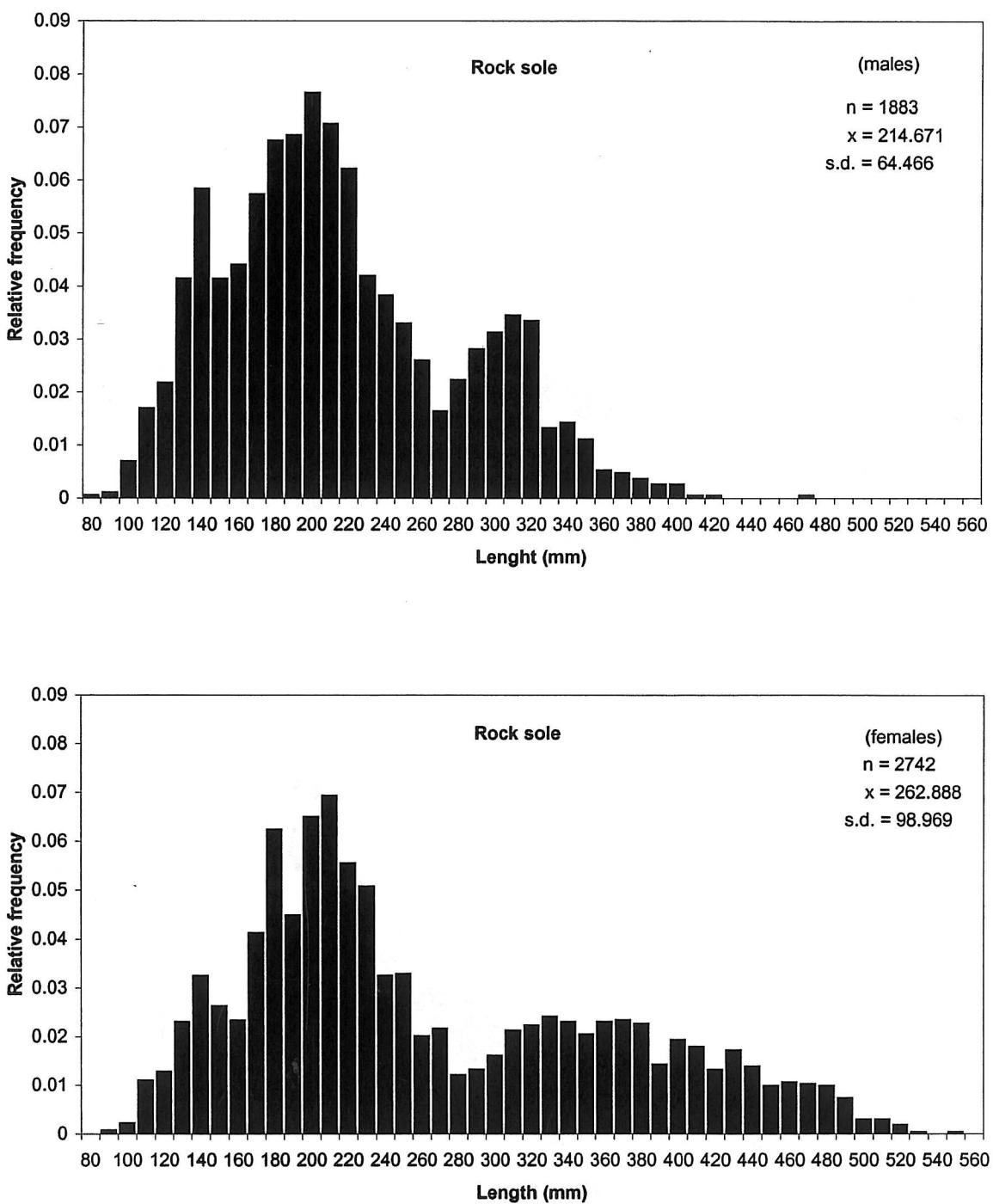


Figure 9. Length relative frequency distribution for males and females of rock sole collected during the Hecate Strait multispecies survey in 2002.

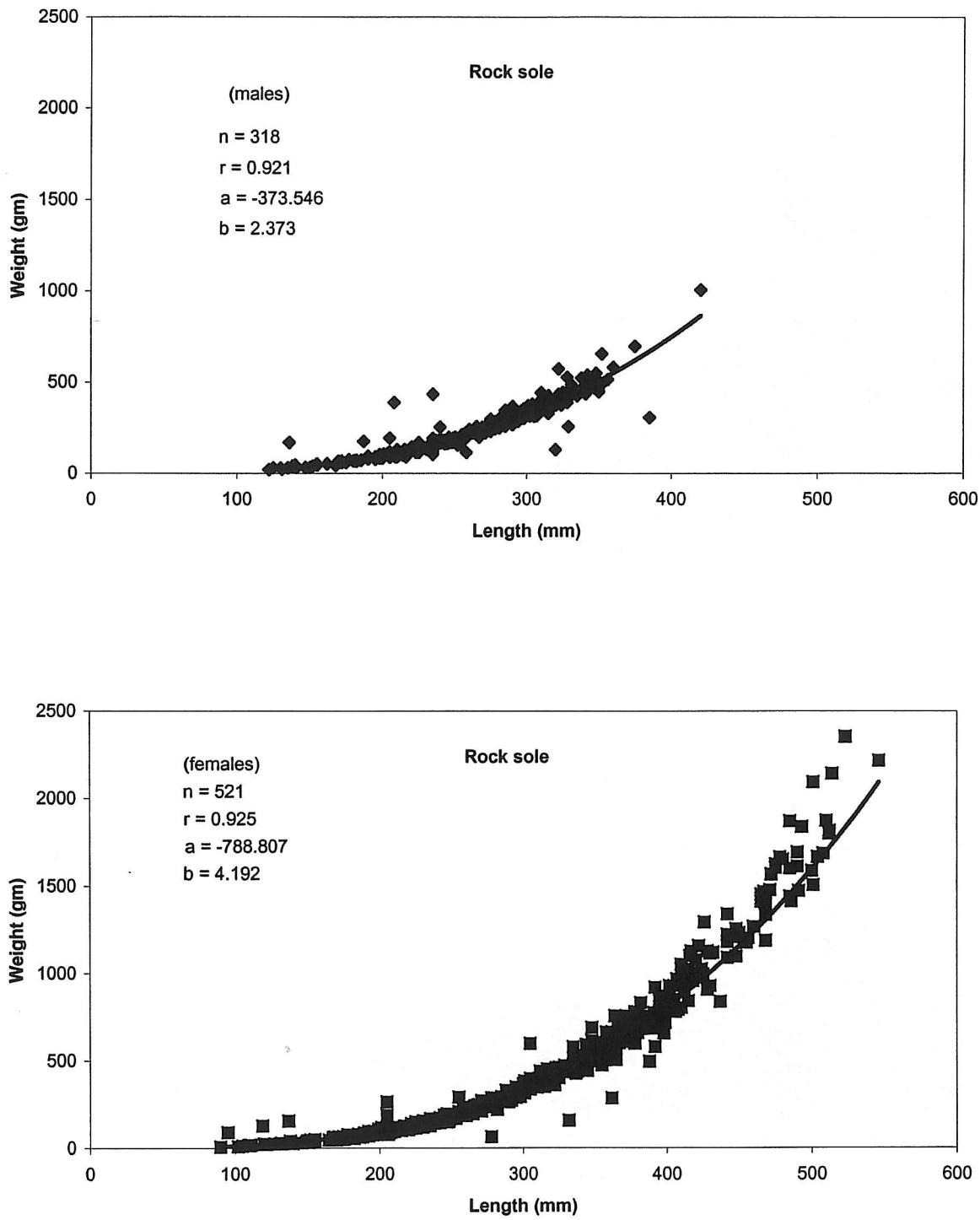


Figure 10. Length - weight relationship by sex for rock sole collected during the Hecate Strait multispecies survey in 2002.

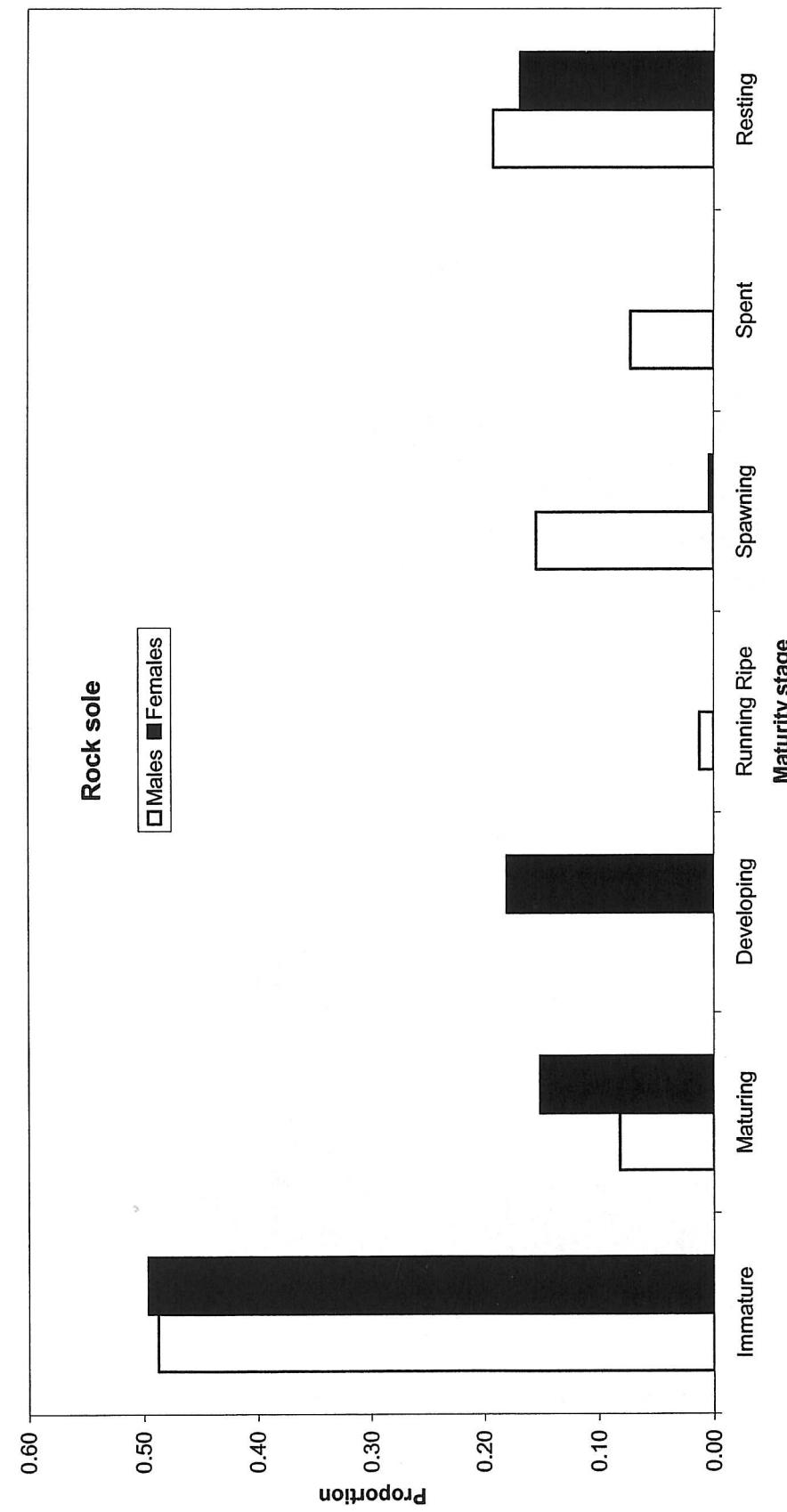


Figure 11. Stage of maturity for rock sole collected during the Hecate Strait multispecies survey in 2002.

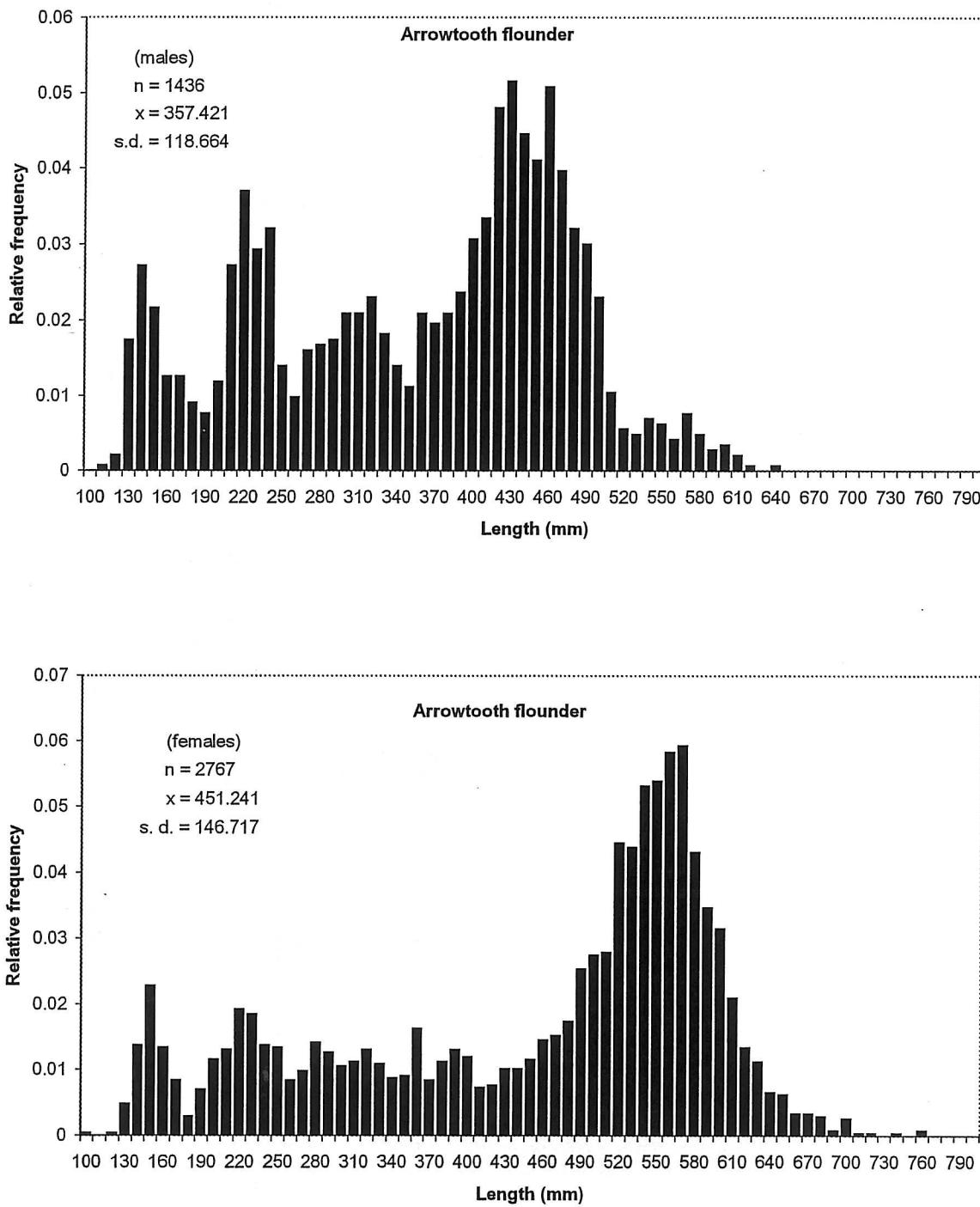


Figure 12. Length relative frequency distribution for males and females of arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

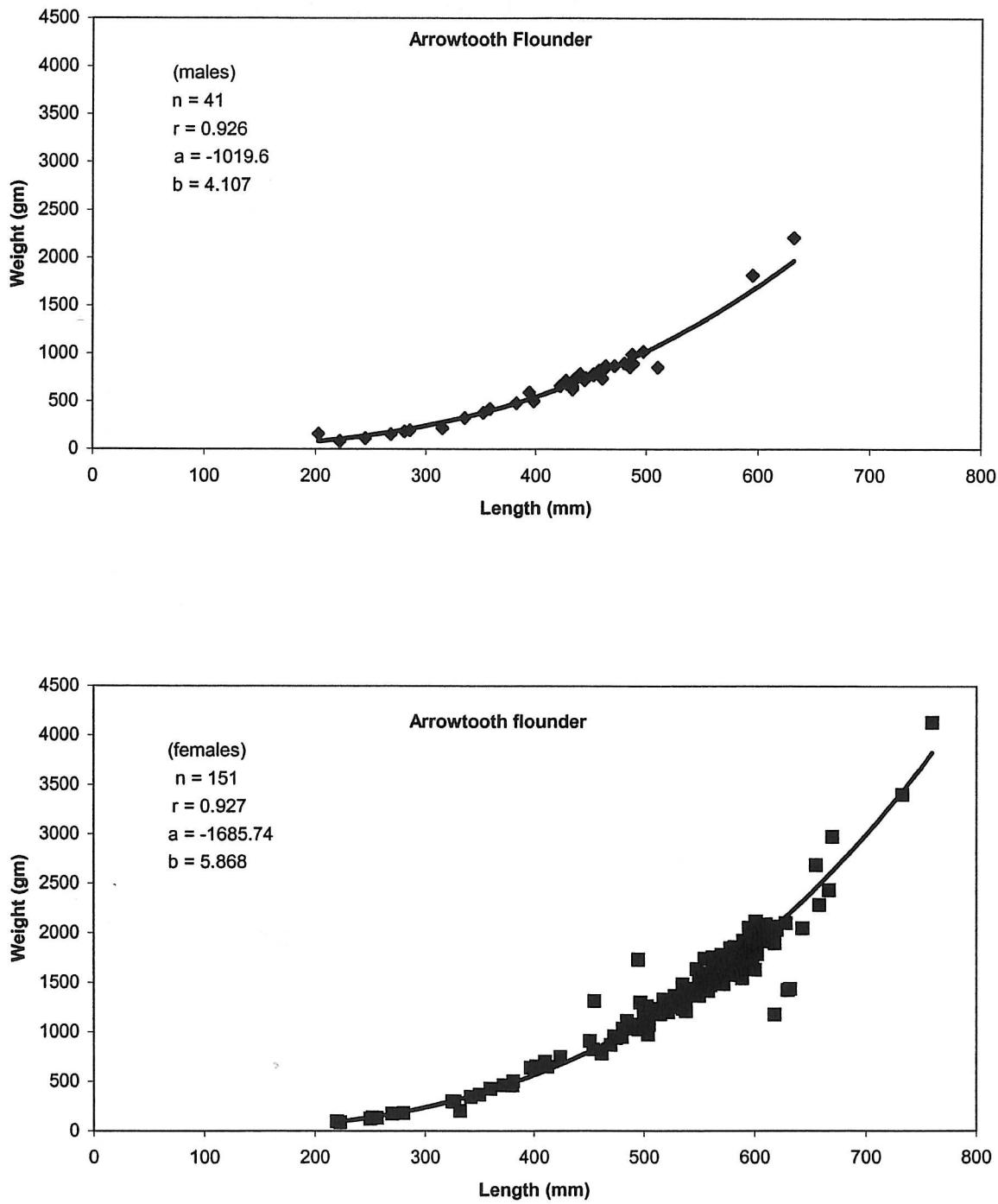


Figure 13. Length - weight relationship by sex for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

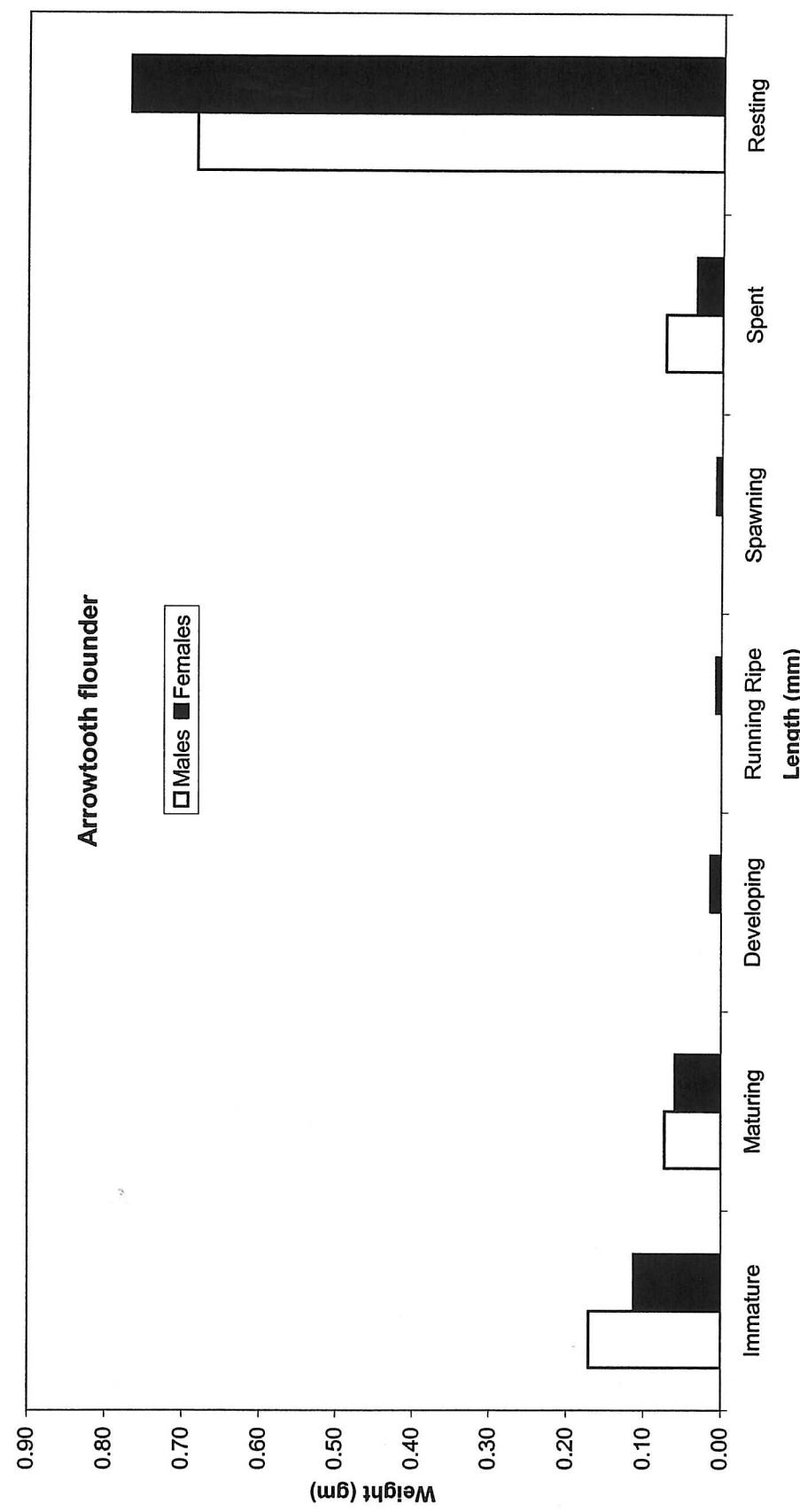


Figure 14. Stage of maturity for arrowtooth flounder collected during the Hecate Strait multispecies survey in 2002.

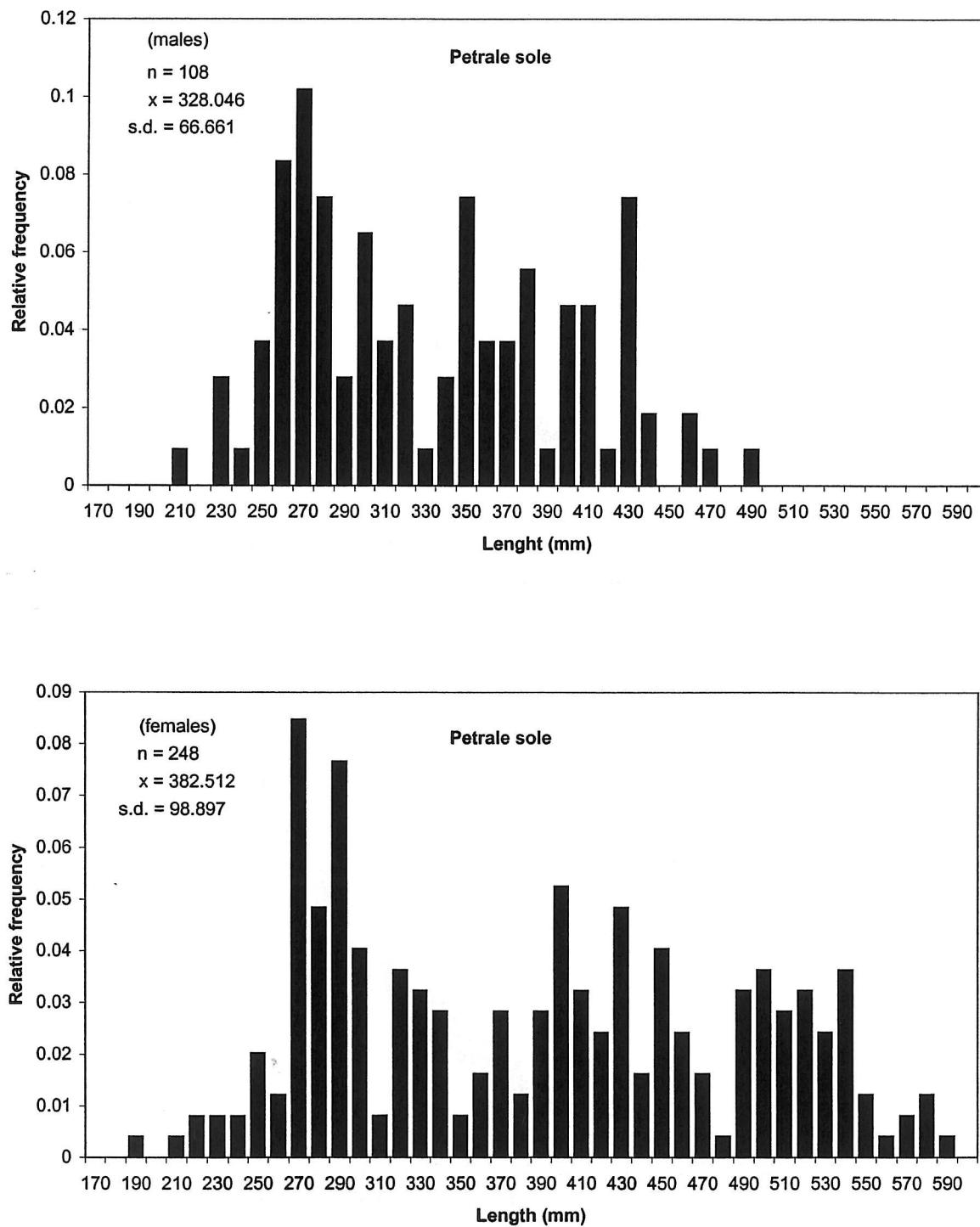


Figure 15. Length relative frequency distribution for males and females of Petrale sole collected during the Hecate Strait multispecies survey in 2002.

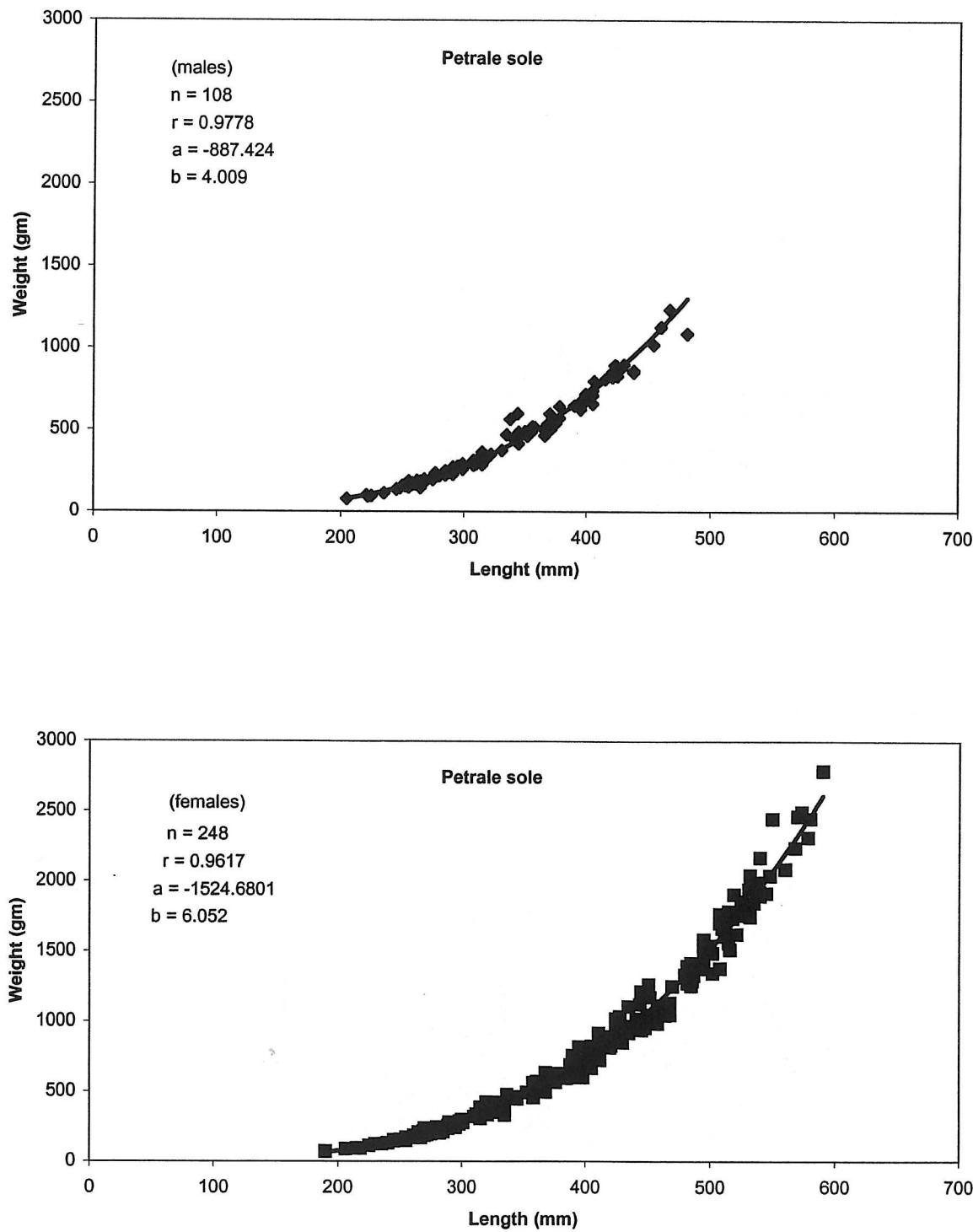


Figure 16. Length - weight relationship by sex for Petrale sole collected during the Hecate Strait multispecies survey in 2002.

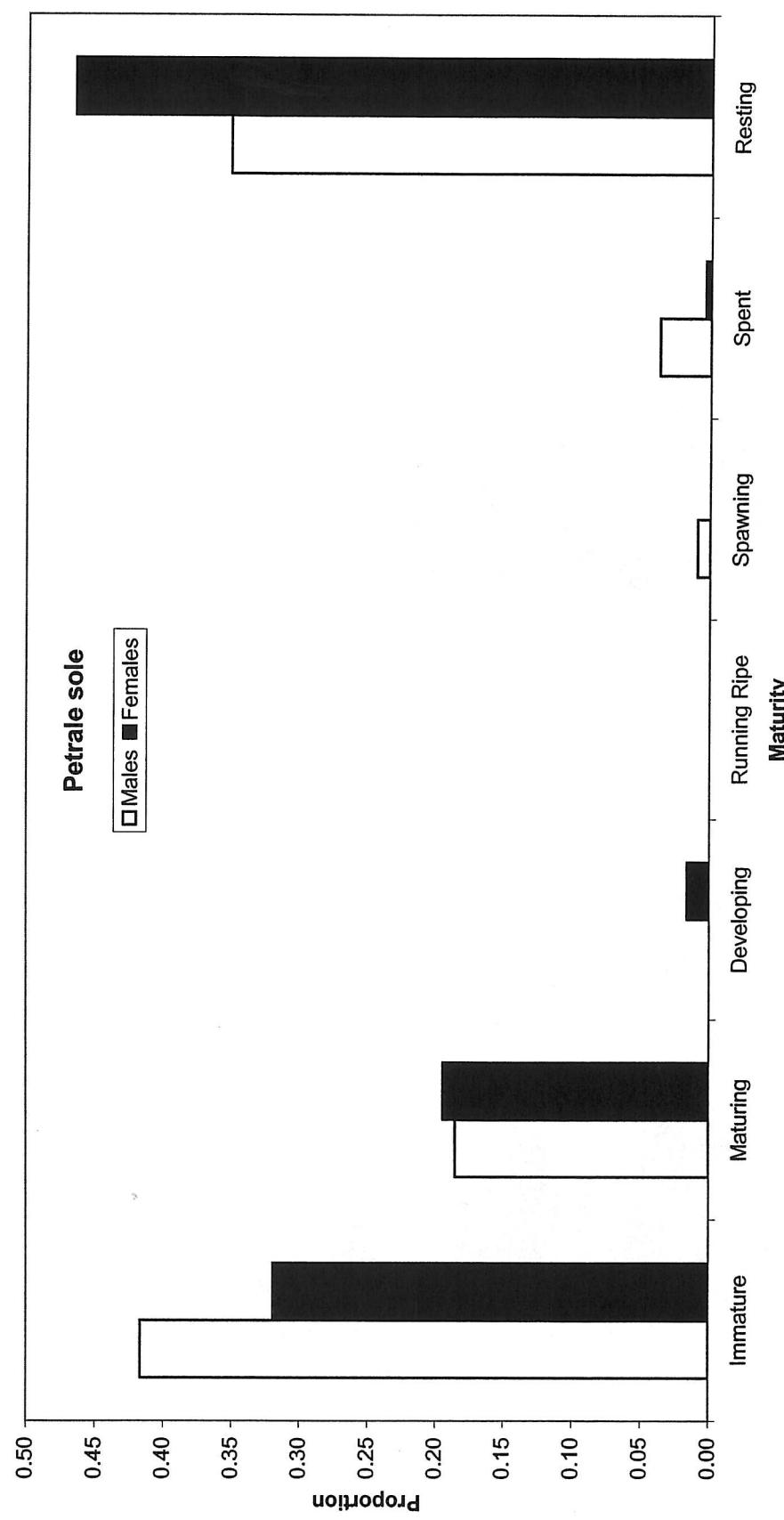


Figure 17. Stage of maturity for Petrale sole collected during the Hecate Strait multispecies survey in 2002.

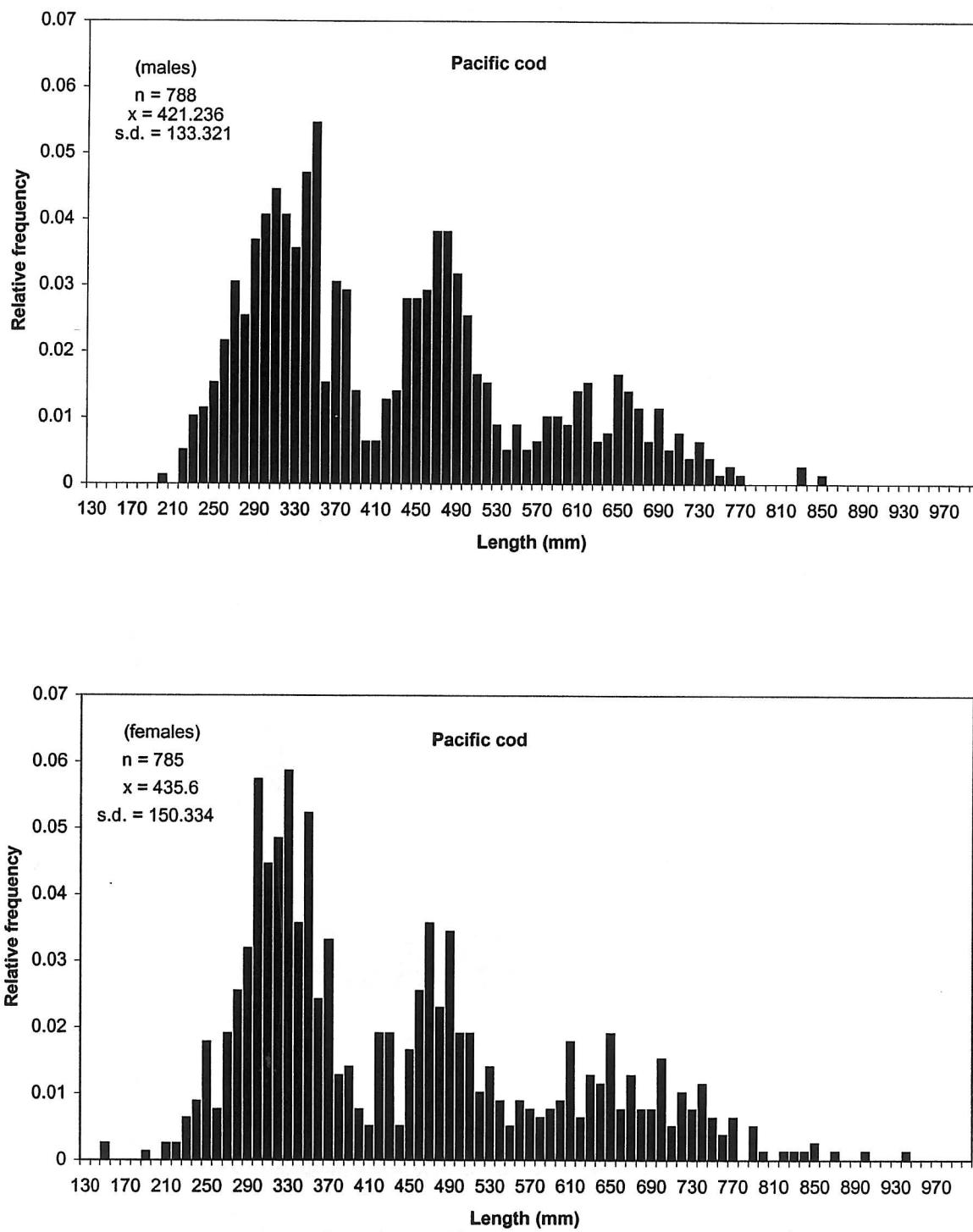


Figure 18. Length relative frequency distribution for males and females of Pacific cod collected during the Hecate Strait multispecies survey in 2002.

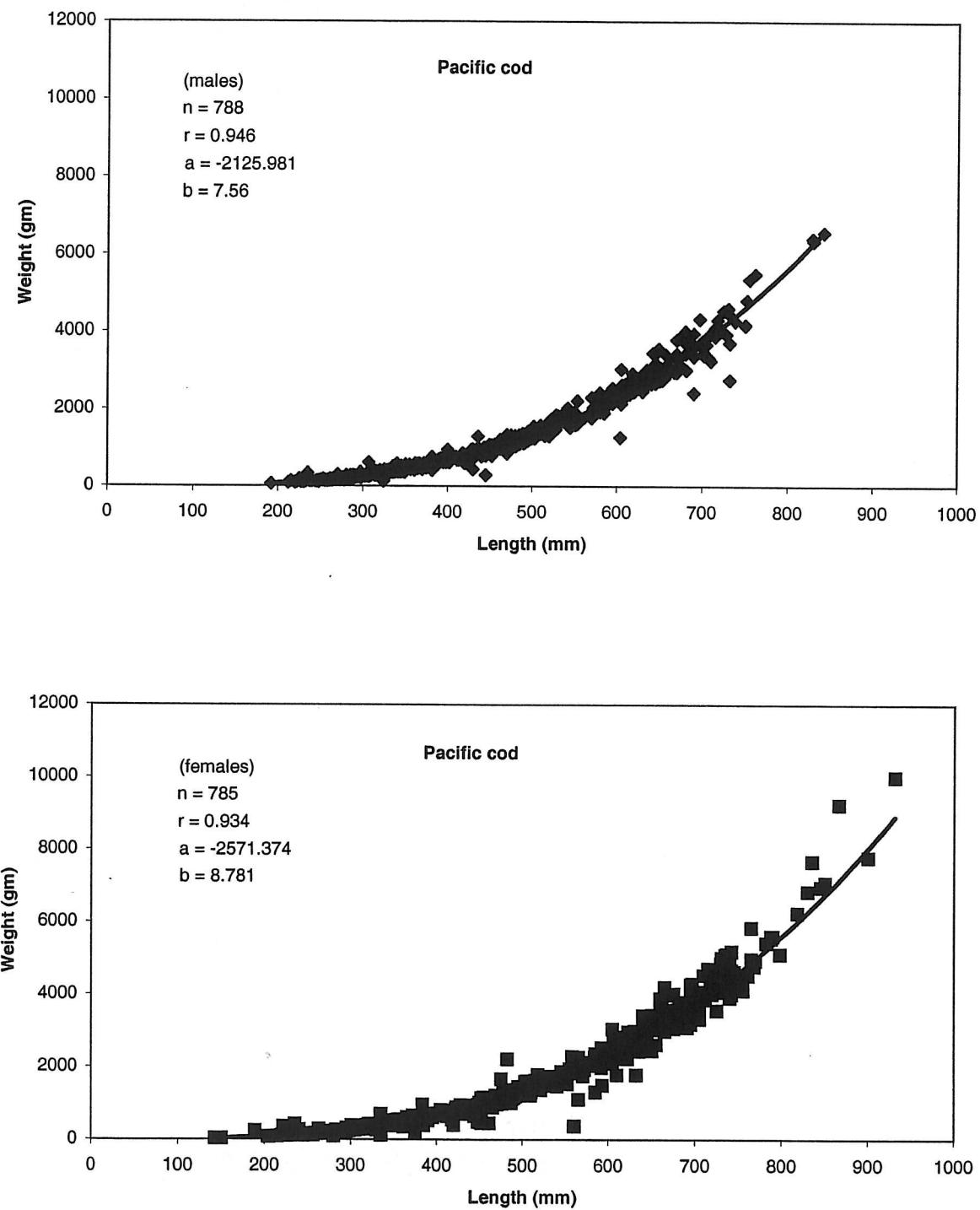


Figure 19. Length - weight relationship by sex for Pacific cod collected during the Hecate Strait multispecies survey in 2002.

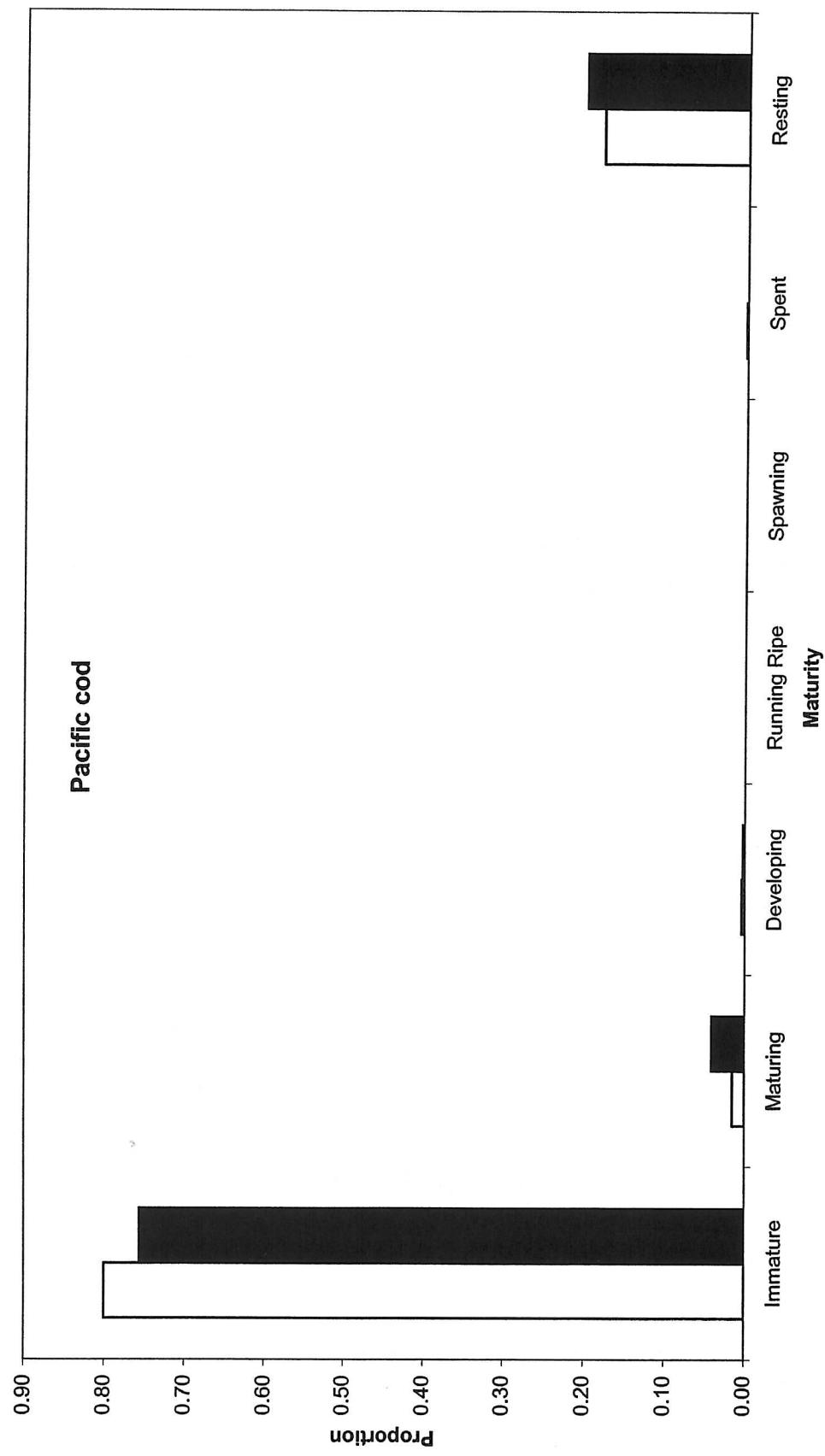


Figure 20. Stage of maturity for Pacific cod collected during the Hecate Strait multispecies survey in 2002.

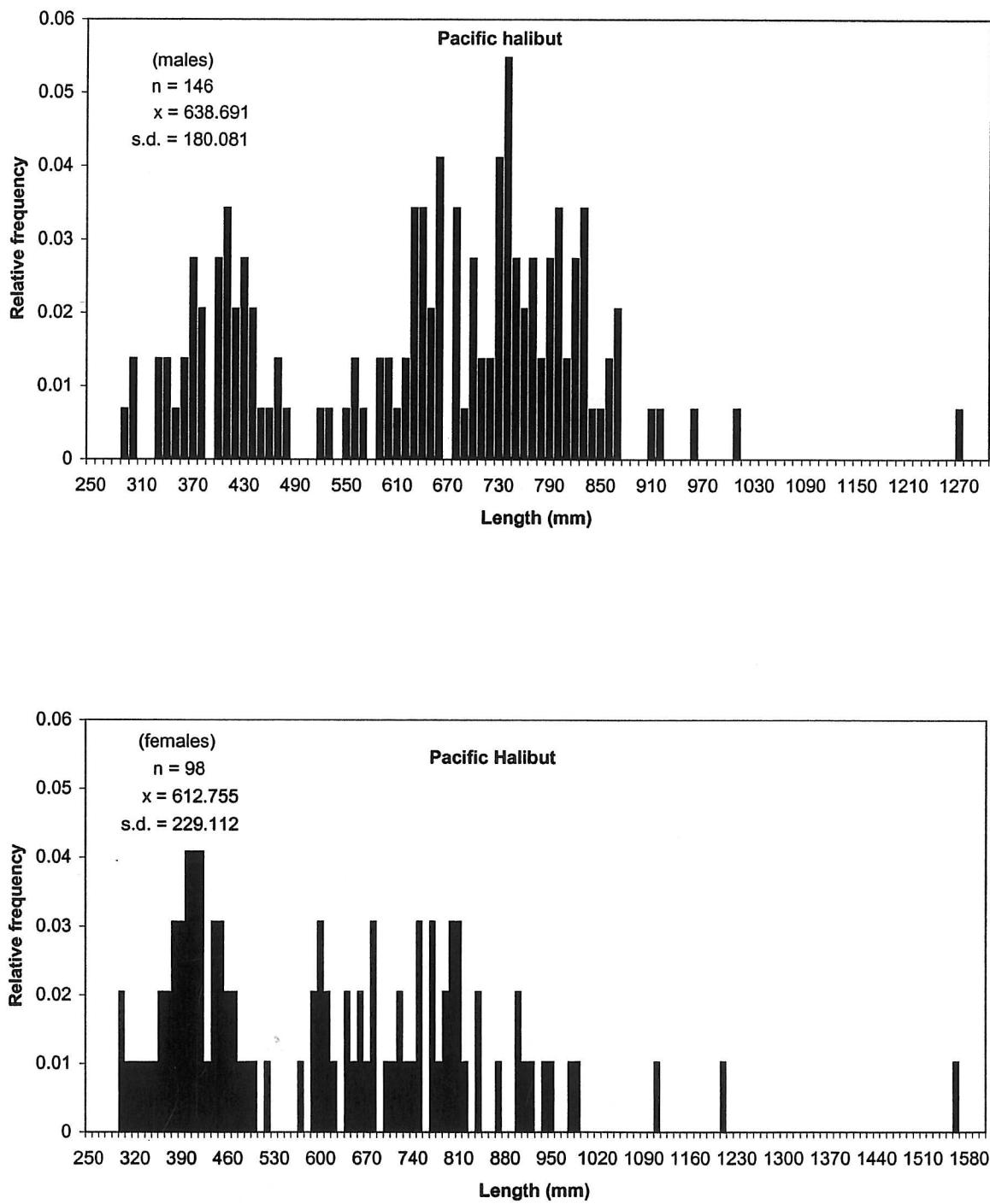


Figure 21. Length relative frequency distribution for males and females of Pacific Halibut collected during the Hecate Strait multispecies survey in 2002.

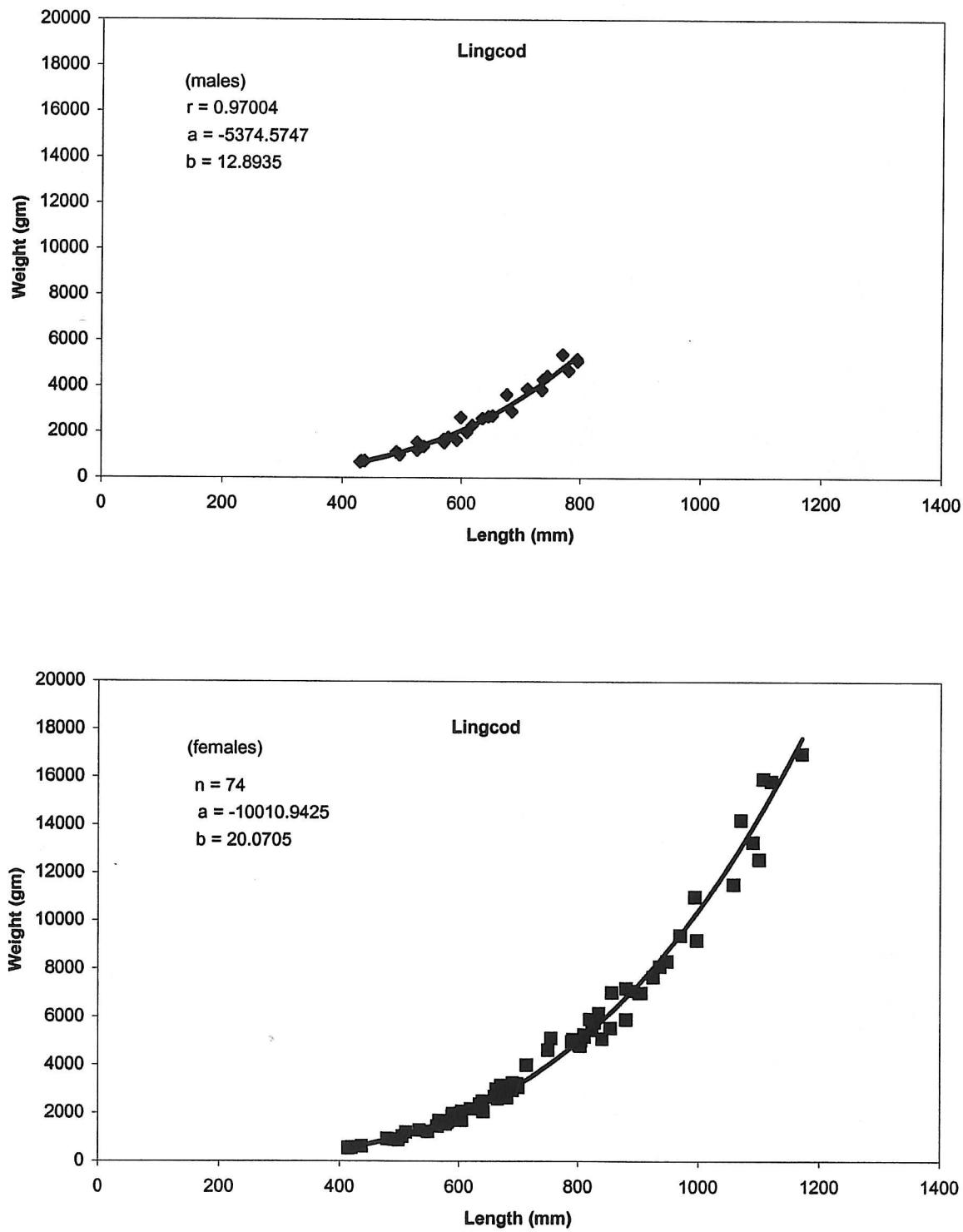


Figure 22. Length - weight relationship by sex for lingcod collected during the Hecate Strait multispecies survey in 2002.

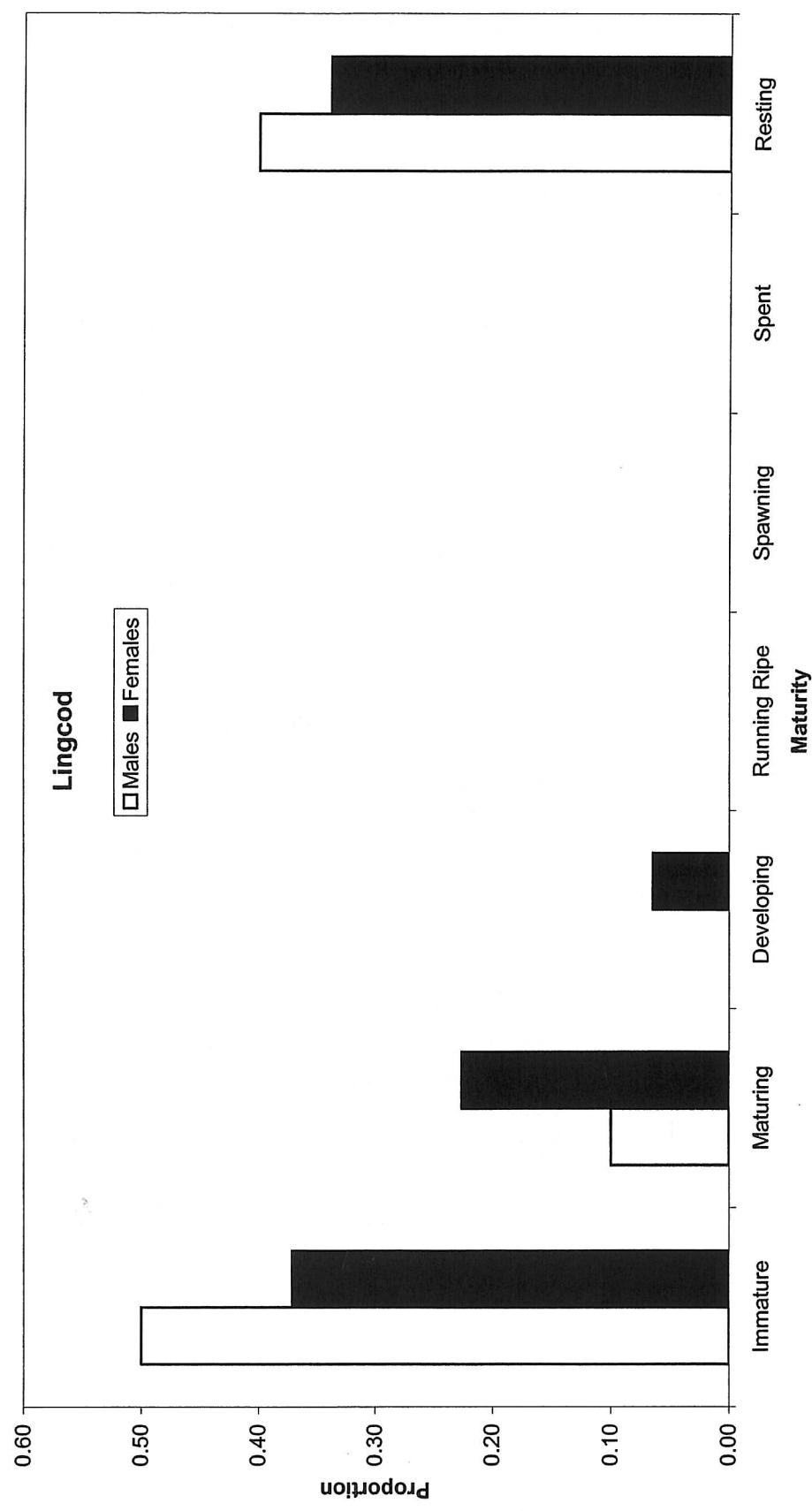


Figure 23. Stage of maturity for lingcod collected during the Hecate Strait multispecies survey in 2002.

**Appendix 1. Criteria used for determining sole maturity stage.**

Maturity stage	Code	Testes	Ovaries
Immature	1	Testes very small string-like and somewhat translucent or pinkish in colour.	Ovaries very small, translucent or pinkish in colour and somewhat gelatinous in texture.
Maturing	2	Testes enlarged, 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 enlarged, brown-white or white in colour, firm in texture.	Ovaries large, cream or yellow in colour, containing opaque eggs that can be distinguished by direct observation. Sex may be determined externally.
Running 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 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 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	1	2	3	4
Block:	B104	B103	B106	B107
Date:	11-Jun-02	11-Jun-02	11-Jun-02	11-Jun-02
Start	Finish	Start	Finish	Start
Time:	7:11	7:41	8:17	8:47
Depth (Meters):	77	68	38	48
Latitude (Deg, Min):	54°11.89'	54°10.91'	54°10.57'	54°11.55'
Longitude (Deg, Min):	131°45.81'	131°47.82'	131°44.83'	131°42.88'
Duration (Minute):	30	30	30	30
Direction (Deg, True):	225	065	065	245
Distance (km):	5.0	5.4	6.1	5.2
Boat Speed (km/h):	5.4	5.7	6.1	5.7
Locality:Major/Minor	08 / 03	08 / 03	08 / 03	08 / 03
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	206.9	103.7	390.9	481.4
Butter sole		7.9		
C-o sole				
Curlfin sole				
Dover sole	17.1	36.5	50	38
English sole	51.7	162.2	51	
Flathead sole	0.1		0.5	1
Pacific halibut	4.4	42.9		
Pacific sanddab	3.1	192.5	3	2
Petrale sole	11.3	4.5	1	1
Rex sole	29.2	30.8	47	27
Rock sole		1.5		
Sand sole		2.9		
Slender sole				
Speckled sandab				
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio	11.9	4		2
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				0.1
Pygmy rockfish				0.1
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish			2	6.4
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish			1	
<b>Selachii</b>				
Big skate		3.5	12	
Longnose skate				
Sandpaper skate				2.9
Spiny dogfish	4.4	0.9	64	89
Spotted ratfish	85.6	53.8	158	49
<b>Roundfish</b>				
Bigfin eelpouts	0.1			
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts			0.5	
Eulachon				
Kelp greenling				
Lingcod		17.9		12.4
Northern ronquil				
Northern spearnose poacher				
Pacific cod	19.1	7.9	15	7
Pacific herring		2.9		
Pacific sand lance				
Pacific tomcod	7.1	8.9		0.1
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish	0.1		0.5	0.1
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock	91.8	107.7	18	11
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	5.4	17.3	1.1	0
Total catch (kg)	549.3	810.2	815.5	730.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	5	6	7	8
Block:	B103	B106	B201	B202
Date:	11-Jun-02	11-Jun-02	12-Jun-02	12-Jun-02
Time:	Start 15:41	Finish 16:14	Start 18:22	Finish 18:52
Depth (Meters):	57	73	110	99
Latitude (Deg, Min):	54°14.81'	54°15.67'	54°15.28'	54°15.78'
Longitude (Deg, Min):	131°35.08'	131°33.04'	131°36.47'	131°33.87'
Duration (Minute):	33	30	31	30
Direction (Deg, True):	054	080	310	083
Distance (km):	4.8	5.4	5.2	6.1
Boat Speed (km/h):	5.2	6.3	5.6	6.3
Locality:Major/Minor	08 / 01	08 / 03	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flattish</b>				
Arrowtooth flounder	268	229		
Butter sole			7	3.8
C-o sole				
Curfin sole				
Dover sole	37	147		
English sole	107	276	4	12
Flathead sole		0.1		
Pacific halibut	63	9	38	7
Pacific sanddab		0.1		
Petrale sole	2	9		
Rex sole	23	130	1	
Rock sole	0.1		8	
Sand sole		0.1	3	0.1
Slender sole				
Speckled sanddab				
Starry flounder	3		15	5
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate		29	8	42
Longnose skate	4.3	1.8		
Sandpaper skate				
Spiny dogfish	5	61	37	413.9
Spotted ratfish	743	512	16	55.7
<b>Roundfish</b>				
Bigfin eelpouts		0.1		
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod	88	13		39
Northern ronquil				
Northern spearnose poacher				
Pacific cod	10	13	3	
Pacific herring			8	4.5
Pacific sand lance			0.1	0.1
Pacific tomcod	5	0.1		0.1
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1			0.1
Walleye pollock	5	3		
Wolf eel				3.3
Wrymouths				
<b>Invertebrate</b>	0	4.3	8.1	0
<b>Total catch (kg)</b>	1363.5	1437.6	156.2	586.6

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	9	10	11	12
Block:	B204	B202	B205	B204
Date:	12-Jun-02	12-Jun-02	12-Jun-02	12-Jun-02
Time:	Start 10:10	Finish 10:30	Start 12:42	Finish 13:55
Depth (Meters):	49	42	68	55
Latitude (Deg, Min):	54°16.7'	54°17.3'	54°17.89'	54°17.95'
Longitude (Deg, Min):	131°29.24'	131°27.25'	131°23.57'	131°21.08'
Duration (Minute):	20	20	20	20
Direction (Deg, True):	065	084	080	080
Distance (km):	4.6	4.6	4.3	3.3
Boat Speed (km/h):	7	7	6.7	5.7
Locality:Major/Minor	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	159	409	1059.5	1055.5
Butter sole	2	20		
C-o sole				
Curlfin sole				
Dover sole	4	0.1	10	
English sole	57	8	36	125.5
Flathead sole				1.74
Pacific halibut			4	
Pacific sanddab		0.1		
Petrale sole				6
Rex sole			21	13.5
Rock sole				
Sand sole				
Slender sole				
Speckled sanddab				
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate	9.6		39	
Longnose skate				
Sandpaper skate				
Spiny dogfish	434.1		100	7.7
Spotted ratfish	106		149	
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod	12	6.5		
Northern ronquil				
Northern spearnose poacher				
Pacific cod	351	7	30	12.6
Pacific herring	0.1		0.1	
Pacific sand lance		0.1	0.1	
Pacific tomcod				
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish			4	2.5
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock	0.1		4	4
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	2	0.1	2	1
Total catch (kg)	1136.9	450.9	1458.7	1230.04

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	13 B207	14 A205	15 A206	16 A307
Date:	12-Jun-02	16-Jun-02	13-Jun-02	13-Jun-02
Start	Finish	Start	Finish	Start
Time:	17:32	18:02 19:05	19:25 7:10	7:40 8:53
Depth (Meters):	148	135 110	99 130	124 141
Latitude (Deg, Min):	54°19.59'	54°19.48'	54°20.7'	54°21.87'
Longitude (Deg, Min):	131°21.35'	131°19.41'	131°16.14'	131°15.5'
Duration (Minute):	30	20	30	30
Direction (Deg, True):	100	018	133	090
Distance (km):	4.1	3.9	5.2	5.2
Boat Speed (km/h):	4.3	5.7	5.7	5.7
Locality:Major/Minor	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	419.8	1374.2	214.1	238.9
Butter sole				
C-o sole				
Curlfin sole				
Dover sole	241.6	131.83	404	152.4
English sole		12.59	1.7	0.6
Flathead sole	2.7	35.42	19	2.4
Pacific halibut		39.35	17.4	16.5
Pacific sanddab				
Petrale sole		31.48	2.3	
Rex sole	32.8	64.93	57.8	33
Rock sole				
Sand sole				
Slender sole				
Speckled sanddab				
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio	4			
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				2.5
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead	1.4			
Silvergray rockfish				
Widow rockfish	0.1			
Yelloweye rockfish				
Yellowtail rockfish		5.9		
<b>Selachii</b>				
Big skate				21
Longnose skate			2.2	
Sandpaper skate			1.4	2.6
Spiny dogfish	13.1		13.8	1
Spotted ratfish	178.7	17.71	9.5	4
<b>Roundfish</b>				
Bigfin eelpouts			13	7.8
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts			0.1	0.1
Eulachon			3.6	1.5
Kelp greenling				
Lingcod				
Northern ronquil				
Northern spearnose poacher				
Pacific cod	32	70.84	26.7	6.3
Pacific herring				
Pacific sand lance				
Pacific tomcod				
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish	41	15.74	13	43
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock	3.3	0.1	35.2	8.8
Wolf eel				
Wrymouths	0.1	0	0.6	1.9
<b>Invertebrate</b>	1			
Total catch (kg)	971.6	1800.09	835.4	547.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	17		18		19		20	
Block:	A307		A306		A305		A303	
Date:	13-Jun-02		13-Jun-02		13-Jun-02		13-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	10:30	11:00	13:04	13:24	14:43	15:06	16:34	16:56
Latitude (Deg, Min):	54°28.66'	54°27.14'	54°24.54'	54°23.65'	54°22.83'	54°21.8'	54°20.67'	54°21.35'
Longitude (Deg, Min):	131°8.53'	131°7.1'	131°6.7'	131°5.48'	131°5.75'	131°6.14'	131°11'	131°9.53'
Duration (Minute):	30		20		23		22	
Direction (Deg, True):	150		127		190		055	
Distance (km):	5.7		3.9		3.3		3.9	
Boat Speed (km/h):	5.7		5.7				5.6	
Locality:Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
<b>Flatfish</b>								
Arrowtooth flounder		164.3		105.5		259.4		126.7
Butter sole								0.1
C-o sole								
Curlfin sole								
Dover sole		226.5		207.9		136		10
English sole		1		88.9		68		180.1
Flathead sole		18.5		2		13.5		1
Pacific halibut		38				3.2		9.9
Pacific sanddab								0.1
Petrale sole								4
Rex sole		88.8		39.8		26.2		26
Rock sole				0.1				
Sand sole						0.1		0.1
Slender sole								
Speckled sanddab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch		0.9						
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
<b>Selachii</b>								
Big skate		7						
Longnose skate		13.6						
Sandpaper skate		1.2					1.8	
Spiny dogfish				2.3			1.6	
Spotted ratfish		8.2		60.4		243		181.4
<b>Roundfish</b>								
Bigfin eelpouts		3.3		0.6				
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon		1		2.9		37.3		
Kelp greenling								
Lingcod		1.7				5.2		3
Northern ronquil								
Northern spearnose poacher								
Pacific cod		69.4		33.4		53		0.3
Pacific herring								0.6
Pacific sand lance								
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish		233.2		68.7		21		
Sculpins								
Shiner perch								
Snake prickleback								
Spoifin sculpin								
Sturgeon poacher								
Walleye pollock		49		23		105.2		
Wolf eel								
Wrymouths								
<b>Invertebrate</b>		17.1		1		0.3		0
Total catch (kg)		942.7		636.5		974.8		543.3

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	21	22	23	24
Block:	B302	B306	B306	B301
Date:	13-Jun-02	14-Jun-02	14-Jun-02	14-Jun-02
Time:	Start 18:10	Finish 18:40	Start 7:08	Finish 7:31
Depth (Meters):	51	51	119	101
Latitude (Deg, Min):	54°17.63'	54°17.52'	54°16.81'	54°17.88'
Longitude (Deg, Min):	131°9.2'	131°7.12'	131°3.38'	131°4.46'
Duration (Minute):	30		23	20
Direction (Deg, True):	097		340	330
Distance (km):	4.3		4.1	3.3
Boat Speed (km/h):	4.6		5.9	5.2
Locality:Major/Minor	08 / 04		08 / 04	08 / 04
Remarks:	USABLE		USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	41.6		539.61	240.28
Butter sole	10			0.1
C-o sole				
Curlfin sole				
Dover sole			471.17	489.46
English sole	14.5		17.37	66.74
Flathead sole			3.69	0.1
Pacific halibut	4		104	12
Pacific sanddab				29.5
Petrale sole				
Rex sole	1.3		47.38	163.15
Rock sole	0.2			2
Sand sole	0.1			37
Slender sole				39.1
Speckled sanddab				0.1
Starry flounder				20
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate	77.6			39.2
Longnose skate				22.5
Sandpaper skate				
Spiny dogfish			5.26	
Spotted ratfish	107.5		1213.46	1429.81
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod		19		
Northern ronquil				
Northern spearnose poacher				
Pacific cod			34.9	37.3
Pacific herring				10.7
Pacific sand lance				
Pacific tomcod				0.1
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock			28.43	17.06
Wolf eel				6.1
Wrymouths				
<b>Invertebrate</b>	21		10.82	0
Total catch (kg)	277.8		2495.09	2495.2
				13.2
				622.8

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on  
F/V *Viking Storm*, June 10 - 28, 2002.

Set:	25	26	27	28
Block:	B301	B306	B304	B301
Date:	14-Jun-02	14-Jun-02	14-Jun-02	14-Jun-02
Time:	13:04	13:34	14:29	14:49
Depth (Meters):	26	29	57	62
Latitude (Deg, Min):	54°12.4'	54°10.9'	54°14'	54°13.08'
Longitude (Deg, Min):	131°10.15'	131°8.8'	131°4.3'	131°2.47'
Duration (Minute):	30		20	22
Direction (Deg, True):	150		185	185
Distance (km):	5.9		3.1	3.5
Boat Speed (km/h):	6.5		5.2	5
Locality:Major/Minor	08 / 04		08 / 04	08 / 04
Remarks:	USABLE		USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder		92.5	425.84	
Butter sole	0.1	3		
C-o sole				
Curlfin sole				
Dover sole		35.5		
English sole	27	139.2	1124.23	1.3
Flathead sole		1.1	1098.68	
Pacific halibut	17	4.3	68.14	
Pacific sanddab		0.1		4.5
Petrale sole		2		
Rex sole		571.3	1483.64	
Rock sole	17	4.7		
Sand sole	37.5	13		1.5
Slender sole				
Speckled sanddab				
Starry flounder	0.1	3.6		
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate	8	30.3	2	
Longnose skate		4.8		
Sandpaper skate				
Spiny dogfish		1.5		
Spotted ratfish	296.5	21.9	442.88	0.1
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon	2	1		
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod			14	
Northern rockfish				
Northern rock sole				
Pacific cod	10.7	37.3	51.7	0.6
Pacific herring	4	0.1	5.62	0.1
Pacific sand lance		0.1		
Pacific tomcod	0.1	8.9	17.03	
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish		5.4	25.55	
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1			
Walleye pollock	0.1	11.8	136.27	
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	47.3	27.28	104.52	27.5
Total catch (kg)	467.5	1020.68	5000.1	35.6

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	29 C305	30 C201	31 C201	32 C301
Block:	15-Jun-02	15-Jun-02	15-Jun-02	15-Jun-02
Date:	Start	Finish	Start	Finish
Time:	7:11	7:26 8:47	9:17	10:55
Depth (Meters):	101	101 29	29	26
Latitude (Deg, Min):	54°6.4'	54°6.78'	54°6.73'	54°7.43'
Longitude (Deg, Min):	131°3.07'	131°3.55'	131°16.37'	131°14.28'
Duration (Minute):	15	30	20	30
Direction (Deg, True):	334	060	035	180
Distance (km):	2.4		3.3	5.2
Boat Speed (km/h):	5.2	5.2	5.2	5.4
Locality:Major/Minor	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	403			
Butter sole		33.5	3	1
C-o sole				
Curfin sole		0.1		
Dover sole	301.5		0.1	
English sole	91.5	411.3	9.7	23
Flathead sole	6			
Pacific halibut	7	8.1	18.1	4
Pacific sanddab				
Petrale sole	2			
Rex sole	144.3	10		
Rock sole	1	42.7	8	32
Sand sole		38.6	6	30
Slender sole				
Speckled sanddab				
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch		0.1		
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate			42.6	5
Longnose skate				
Sandpaper skate				
Spiny dogfish	17			
Spotted ratfish	145.9	30.5	4.7	8.3
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts	0.1			
Eulachon	1	0.1	0.1	
Kelp greenling				
Lingcod				
Northern ronquil				
Northern spearnose poacher				
Pacific cod	25.4	3.3	3.2	30.5
Pacific herring		3.3	8	0.1
Pacific sand lance				0.1
Pacific tomcod	9	13.5	229.1	3
Poachers				
Pricklebacks		0.1	1	2
Red irish lord				
Roughback sculpin				
Sablefish	4	1.2	1	
Sculpins		0.1		
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock		0.1	1	
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	4.8	95.9	6	89.7
Total catch (kg)	1241.9	735.1	312.2	220.4

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	33	34	35	36
Block:	C304	D301	D201	D302
Date:	15-Jun-02	15-Jun-02	15-Jun-02	15-Jun-02
Time:	Start 14:17	Finish 14:37	Start 15:39	Start 17:14
Depth (Meters):	86	82	29	46
Latitude (Deg, Min):	54°3'75"	54°2'75"	53°59'93"	53°58'87"
Longitude (Deg, Min):	131°3'7"	131°4'	131°6.73'	131°7.9'
Duration (Minute):	20	20	25	20
Direction (Deg, True):	190	264	207	135
Distance (km):	3.5	3.3	3.7	3.7
Boat Speed (km/h):	5.6	5	5	5.6
Locality:Major/Minor	08 / 04	08 / 04	08 / 04	08 / 04
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	102.35	2		1.6
Butter sole	0.1		0.1	0.1
C-o sole				
Curlfin sole				
Dover sole	23.39			
English sole	669.64	7	2.4	2
Flathead sole	18.71	0.1	1	
Pacific halibut	1	1.4	1.25	9
Pacific sanddab		0.5		
Petrale sole		0.1		
Rex sole	207.62			
Rock sole		11	51	6
Sand sole	5.85	12	15	17
Slender sole				
Speckled sandab			0.1	0.1
Starry flounder				
<b>Rockfish</b>				
Black rockfish			0.1	
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate			1.3	38
Longnose skate				
Sandpaper skate				
Spiny dogfish	5.85		1	1
Spotted ratfish	96.5	6	168	54
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin			3	
Chinook salmon				
Eelpouts				
Eulachon	0.1			
Kelp greenling		0.1	1	
Lingcod				
Northern ronquil				
Northern spearnose poacher				
Pacific cod	587.76	1	4	1
Pacific herring	0.1	1	0.5	2
Pacific sand lance			0.1	0.1
Pacific tomcod	4.68	0.1	11	0.1
Poachers				
Pricklebacks	0.1	0.1	0.1	0.1
Red irish lord				
Roughback sculpin				
Sablefish	2.92		1	
Sculpins			3.5	0.1
Shiner perch			0.1	
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1		0.1	0.1
Walleye pollock	40.94	1		0.1
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	47.19	17.6	17.7	8.4
<b>Total catch (kg)</b>	<b>1814.9</b>	<b>61</b>	<b>283.35</b>	<b>140.8</b>

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	37	38	39	40
Block:	D304	E202	E301	E302
Date:	15-Jun-02	16-Jun-02	16-Jun-02	16-Jun-02
Time:	Start 19:07	Finish 19:27	Start 7:08	Finish 7:38
Depth (Meters):	82	80	44	44
Latitude (Deg, Min):	53°57.2'	53°56.34'	53°47.7'	53°46.28'
Longitude (Deg, Min):	131°2.17'	131°1.47'	131°16.55'	131°15.6'
Duration (Minute):	20		30	30
Direction (Deg, True):	155		156	180
Distance (km):	3.3		5.4	5.4
Boat Speed (km/h):	5.2		5.6	5.7
Locality:Major/Minor	08 / 04		08 / 01	08 / 05
Remarks:	USABLE		USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	183.9		14	1
Butter sole			0.1	0.1
C-o sole				
Curlfin sole			0.1	0.1
Dover sole	8		4	
English sole	31		22.8	
Flathead sole	158.7		0.1	
Pacific halibut	14		10.6	
Pacific sanddab	15.5		3	
Petrale sole			1	
Rex sole	28.7		1	
Rock sole	27.5		183.7	
Sand sole	4.5		26	
Slender sole				
Speckled sanddab				
Starry flounder				0.1
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish	2			
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate			78.7	3
Longnose skate			10	
Sandpaper skate				
Spiny dogfish			13.7	2.4
Spotted ratfish	8.6		271.1	48.5
<b>Roundfish</b>				49.7
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord			0.1	
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod				
Northern ronquil			1	
Northern spearnose poacher				
Pacific cod	14.6		5	
Pacific herring	0.1		16	
Pacific sand lance	0.1			
Pacific tomcod	3		32	
Poachers			0.1	
Pricklebacks	0.1		1	
Red irish lord				
Roughback sculpin				
Sablefish	1			
Sculpins			7	
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				
Walleye pollock	71.9		1	
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	1	28	9.5	6.5
Total catch (kg)	574.2	731.1	183.64	93.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	41		42		43		44	
Block:	D404		D404		D303		A304	
Date:	16-Jun-02		16-Jun-02		16-Jun-02		16-Jun-02	
Time:	Start 12:31	Finish 12:51	Start 13:58	Finish 68	Start 14:18	Finish 59	Start 15:45	Finish 18:48
Depth (Meters):	86	82	68	68	59	71	82	86
Latitude (Deg, Min):	53°52.65'	53°52.04'	53°55'	53°54.43'	53°54.75'	53°54.13'	54°19.94'	54°20.68'
Longitude (Deg, Min):	130°53.2'	130°51.57'	130°55.17'	130°53.54'	131°3.83'	131°3.39'	131°7.1'	131°7.18'
Duration (Minute):	20		20		20		15	
Direction (Deg, True):	124		123		127		356	
Distance (km):	3.7		3.7		3.5		2.6	
Boat Speed (km/h):	5.7		5.7		5.7		5.2	
Locality:Major/Minor	08 / 04		08 / 04		08 / 04		08 / 04	
Remarks:	USABLE		USABLE		USABLE		USABLE	
<b>Flatfish</b>								
Arrowtooth flounder	159.2		566.8		69.7		70.7	
Butter sole					0.1			
C-o sole								
Curlfin sole			0.1					
Dover sole	6		13		4.4		41.6	
English sole	20.6		64.1		184.6		105	
Flathead sole	203.2		7.9		0.5		5	
Pacific halibut			4.9		13.8		2.3	
Pacific sanddab	7.8		96.8		140.5		1.5	
Petrale sole			0.6		9.9		0.5	
Rex sole	29		21.5		17		75.3	
Rock sole	4.5		10.7		11.4			
Sand sole	1		1.4		20			
Slender sole	3.6				0.5		0.1	
Speckled sandab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish					4.1			
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
<b>Selachii</b>								
Big skate								
Longnose skate								
Sandpaper skate								
Spiny dogfish						3		3.8
Spotted ratfish					12.8		18.8	202.48
<b>Roundfish</b>								
Bigfin eelpouts							0.1	
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling			2.6					
Lingcod	1.3							
Northern ronquil								
Northern spearnose poacher								
Pacific cod	10.5		23.5		14		7.1	
Pacific herring	0.1		0.1		1		0.1	
Pacific sand lance								
Pacific tomcod	0.1				51.3		0.1	
Poachers								
Pricklebacks	0.1				0.1			
Red irish lord								
Roughback sculpin								
Sablefish	282		52		4		0.5	
Sculpins	0.1				0.1		0.1	
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1		1					
Walleye pollock	55.1		242.1		143.7		0.1	
Wolf eel							9	
Wrymouths								
<b>Invertebrate</b>	1.3		11.9		0.6		6.7	
Total catch (kg)	785.6		1137.9		709		532.08	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	45 E405		46 E402		47 E406		48 E403	
Block:	18-Jun-02		18-Jun-02		18-Jun-02		18-Jun-02	
Date:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time:	7:09	7:29	8:45	9:29	10:31	10:51	12:33	13:03
Depth (Meters):	102	104	51	51	113	113	68	68
Latitude (Deg, Min):	53°45.7'	53°45.05'	53°42.75'	53°42'	53°45.54'	53°44.58'	53°42.87'	53°41.35'
Longitude (Deg, Min):	130°51.1'	130°50.03'	130°52.16'	130°50.06'	130°49'	130°48.13'	130°48.26'	130°46.83'
Duration (Minute):	20		35		20		30	
Direction (Deg, True):	140		122		150		152	
Distance (km):	3.3		5.2		3.7		5.7	
Boat Speed (km/h):	5.2		5.6		5.9		6.3	
Locality:Major/Minor	08 / 05		08 / 05		08 / 05		08 / 05	
Remarks:	USABLE		USABLE		USABLE		USABLE	
<b>Flatfish</b>								
Arrowtooth flounder	66.8		38.8		76.5		93.4	
Butter sole							0.1	
C-o sole								
Curlfin sole			2.8				0.1	
Dover sole	83.5		2		250.1		16.1	
English sole	41.3		13.2		4.2		104.7	
Flathead sole	46.8		2.4		8.9		0.1	
Pacific halibut			35.5		0.5		3.4	
Pacific sanddab					0.1		60.3	
Petrale sole	6.1		7.7		1.3		2	
Rex sole	171.3		17		194.9		25.3	
Rock sole			29		2		2.4	
Sand sole			5.8				1	
Slender sole	5.1		2		10.4		1.2	
Speckled sanddab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch		0.1						
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
<b>Selachii</b>								
Big skate								
Longnose skate	12.3		3.3					
Sandpaper skate								
Spiny dogfish								
Spotted ratfish	5.4		94.7		23		3.8	
<b>Roundfish</b>							10.3	
Bigfin eelpouts	4.7		1		2			
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon	4.8		0.1		8.2			
Kelp greenling								
Lingcod								
Northern rockfish								
Northern spearnose poacher								
Pacific cod	14.3		178.8		22		31.5	
Pacific herring			0.1		0.1		2.3	
Pacific sand lance			0.1		0.1			
Pacific tomcod	1		2.5		0.1		61.5	
Poachers								
Pricklebacks			0.5					
Red irish lord								
Roughback sculpin								
Sablefish	4.6				19.8		1	
Sculpins			0.1					
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.5				0.1			
Walleye pollock	6.8				7.2		300.5	
Wolf eel								
Wrymouths								
<b>Invertebrate</b>	2.9		5.5		8.6		5.9	
<b>Total catch (kg)</b>	478.3		447.6		640.1		726.9	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	49		50		51		52	
Block:	E404		E407		F403		F403	
Date:	18-Jun-02		18-Jun-02		18-Jun-02		18-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	14:39	14:54	16:19	16:39	17:50	18:10	18:56	19:16
Latitude (Deg, Min):	82	82	128	134	64	64	53	53
Longitude (Deg, Min):	53°41.72'	53°40.87'	53°42.65'	53°43.84'	53°37.1'	53°36.37'	53°33.04'	53°39.94'
Duration (Minute):	130°46.43'	130°46.22'	130°44.65'	130°44.93'	130°49.35'	130°50.35'	130°48.17'	130°48.05'
Direction (Deg, True):	15	20	20	20	20	20	20	20
Distance (km):	172	351	218	218	037	037	037	037
Boat Speed (km/h):	3.0	3.7	3.1	3.1	3.7	3.7	3.7	3.7
Locality:Major/Minor	08 / 05	08 / 05	08 / 05	08 / 05	08 / 05	08 / 05	08 / 05	08 / 05
Remarks:	USABLE							
<b>Flatfish</b>								
Arrowtooth flounder	54.9	221.1		37			3	
Butter sole				0.1				
C-o sole								
Curlfin sole							1.4	
Dover sole	31.2	305.8		6				
English sole	23	4.6		95.3			43.6	
Flathead sole	38.4	10.8		1.1				
Pacific halibut							11	
Pacific sanddab	1	0.1		61.4			1	
Petrale sole		0.5					1	
Rex sole	70.6	218.9		14.4			0.1	
Rock sole	1			20.6			18.5	
Sand sole		0.5				1		2.8
Slender sole				6.8				
Speckled sandab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch		0.1						
Pygmy rockfish								
Quillback rockfish						4.1		
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
<b>Selachii</b>								
Big skate								
Longnose skate		2.15						
Sandpaper skate								
Spiny dogfish	3.2	2		7			2.2	
Spotted ratfish	1.5	10.3		0.1			133.9	
<b>Roundfish</b>								
Bigfin eelpouts		0.1		0.1			0.1	
Bluespotted poacher								
Brown irish lord					0.1			
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon		0.5						
Kelp greenling					4.2			
Lingcod					1.8			
Northern ronquil								
Northern spearnose poacher								
Pacific cod		8.9		5			12.9	
Pacific herring	0.1	0.1					0.1	
Pacific sand lance	0.1							
Pacific tomcod	38.4	0.1		54.6			18.9	
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish	1.4	21					1	
Sculpins		0.1						
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher								
Walleye pollock	35.7	2.6		7.2			0.1	
Wolf eel								
Wrymouths								
<b>Invertebrate</b>	0.2	0.7		39.1			12.9	
Total catch (kg)	300.7	817.85		360.2			264.5	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	53 F404	54 F302	55 F302	56 F301
Block:	19-Jun-02	19-Jun-02	19-Jun-02	19-Jun-02
Date:	Start	Finish	Start	Finish
Time:	7:09	7:29	8:49	9:09
Depth (Meters):	91	102	60	51
Latitude (Deg, Min):	53°36.87'	53°37.4'	53°38.28'	53°38.77'
Longitude (Deg, Min):	130°46.64'	130°46.44'	130°59.91'	130°58.55'
Duration (Minute):	20	20	26	30
Direction (Deg, True):	007	055	180	140
Distance (km):	3.7	3.3	6.3	6.3
Boat Speed (km/h):	5.9	5.4	5.4	6.7
Locality:Major/Minor	08 / 05	08 / 05	08 / 05	08 / 01
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	102	9.8	2	0.1
Butter sole			0.5	
C-o sole				
Curlfin sole		1	1	0.1
Dover sole	122.6	3.4	2	
English sole	33	0.1	37.2	1.2
Flathead sole	31	1.8		
Pacific halibut	0.1	5	8.2	3.6
Pacific sanddab			76.6	
Petrale sole	6	1.5		
Rex sole	242.8	7.5		
Rock sole	0.1	10	49.7	42.8
Sand sole	0.1		14.6	1.3
Slender sole	4	1		
Speckled sanddab				0.1
Starry flounder				2.3
<b>Rockfish</b>				
Black rockfish				
Bocaccio	5.2			
Canary rockfish				
Copper rockfish		4		
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish			17	
Rougheye rockfish				
Shortspine thornthead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate			8	
Longnose skate				
Sandpaper skate				
Spiny dogfish	25.4	2	2	
Spotted ratfish	12.7	328.8	10	653.1
<b>Roundfish</b>				
Bigfin eelpouts	1.8	0.1	0.1	
Bluespotted poacher				
Brown irish lord		0.1		
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon	0.1	0.1	0.1	
Kelp greenling		3.6		
Lingcod		8	9.4	
Northern ronquil			0.1	
Northern spearnose poacher				
Pacific cod	4.3	1.4	7.5	0.5
Pacific herring			1.2	
Pacific sand lance		0.1		0.1
Pacific tomcod	1.7	0.1	40.7	
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish	23.1	1	0.1	
Sculpins		0.1	2	0.1
Shiner perch				
Snake prickleback			0.1	
Spotfin sculpin				
Sturgeon poacher	0.1	0.1		0.1
Walleye pollock	16.7			0.1
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	2	167.5	3.6	6.7
Total catch (kg)	634.8	575.1	276.7	718.2

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	57		58		59		60	
Block:	G201		F302		G405		F404	
Date:	19-Jun-02		19-Jun-02		19-Jun-02		19-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	14:15		14:31:54		16:24	17:43	18:03	18:51
Latitude (Deg, Min):	29	22	48	42	106			19:20
Longitude (Deg, Min):	53°27.13'	53°28.52'	53°31.74'	53°30.35'	53°27.95'	53°28.78'	53°34.23'	"
Duration (Minute):	131°19.7'	131°18.1'	131°9.4'	131°9.24'	130°52.08'	130°50.87'	130°48'	"
Direction (Deg, True):		20		30		20		29
Distance (km):		121		173		040		010
Boat Speed (km/h):		3.9				3.7		
Locality:Major/Minor	08 / 01		08 / 01		08 / 05		08 / 05	
Remarks:	USABLE		USABLE		USABLE		UNUSABLE	
<b>Flatfish</b>								
Arrowtooth flounder		0.1		0.1		122.6		
Butter sole								
C-o sole								
Curilfin sole		0.1		0.1				
Dover sole		0.1				51.2		
English sole		1		0.1		22.5		
Flathead sole						1		
Pacific halibut		10.4		4.9				
Pacific sanddab		0.1		16.5		0.5		
Petrale sole						1.7		
Rex sole				0.1		80.4		
Rock sole		67		69.9		3.8		
Sand sole		4		4.3		-0.1		
Slender sole						5.1		
Speckled sandab								
Starry flounder		13.6						
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish								
<b>Selachii</b>								
Big skate				69				
Longnose skate								
Sandpaper skate								
Spiny dogfish		3		0.1		6.3		
Spotted ratfish		180.6		21.1		11.6		
<b>Roundfish</b>							1	
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon				0.1				
Kelp greenling								
Lingcod				15.9				
Northern ronquil								
Northern spearnose poacher			0.1					
Pacific cod		3		31		10.7		
Pacific herring				69.5		1		
Pacific sand lance		0.1		0.1				
Pacific tomcod				0.1				
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin		0.1		0.1				
Sablefish						1		
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher		0.1		0.1		0.5		
Walleye pollock		0.1		0.1		0.1		
Wolf eel								
Wrymouths								
<b>Invertebrate</b>		12.6		19.2		7.6		0
Total catch (kg)		296.1		322.4		328.7		

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	61	62	63	64
Block:	F404	G406	G301	G407
Date:	20-Jun-02	20-Jun-02	20-Jun-02	20-Jun-02
Time:	Start	Finish	Start	Finish
Depth (Meters):	7:11	7:31	9:16	9:33
Latitude (Deg, Min):	88	90	126	119
Longitude (Deg, Min):	53°34.7'	53°35.85'	53°27.34'	53°26.68'
Duration (Minute):	20		17	31
Direction (Deg, True):	015		220	100
Distance (km):	3.9		3.0	4.8
Boat Speed (km/h):	6.3		5.6	5
Locality:Major/Minor	08 / 05		08 / 05	08 / 01
Remarks:	USABLE		USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	125.2		68.4	4.4
Butter sole				178.4
C-o sole				
Curlfin sole				
Dover sole	12.7		26.7	29.9
English sole	225.1		5.3	1.2
Flathead sole	32.5		4	26.1
Pacific halibut	3.8			27.6
Pacific sanddab				
Petrale sole	3.7			0.5
Rex sole	41.2		88.8	110.8
Rock sole	1.9			1.1
Sand sole	0.1			0.1
Slender sole	1.2		2	1.9
Speckled sanddab				
Starry flounder				6.2
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish			1	
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish			8.1	
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate			3.3	
Longnose skate				
Sandpaper skate				
Spiny dogfish	11.1		5.5	7.9
Spotted ratfish	5.8		15.5	25.8
<b>Roundfish</b>				
Bigfin eelpouts	0.1		1	0.1
Bluespotted poacher				
Brown irish lord				0.1
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon			0.1	0.1
Kelp greenling				
Lingcod	1.2			
Northern ronquil				
Northern spearnose poacher				
Pacific cod	1.1			1.7
Pacific herring	1.8			0.5
Pacific sand lance				0.1
Pacific tomcod	16.5		0.1	0.1
Poachers				0.1
Pricklebacks				
Red irish lord				
Roughback sculpin			0.5	
Sablefish	3		1	0.1
Sculpins				2.1
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.5		0.1	0.1
Walleye pollock	66.7		0.1	0.1
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	3.9	1.5	11.9	0.5
Total catch (kg)	559.1	229.2	138.0	446.0

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	65	66	67	68
Block:	G302	G304	H201	H301
Date:	20-Jun-02	20-Jun-02	20-Jun-02	20-Jun-02
Time:	Start 14:15	Finish 14:45	Start 16:10	Start 16:27
Depth (Meters):	53	53	80	71
Latitude (Deg, Min):	53°22.65'	53°23.47'	53°20.6'	53°21.4'
Longitude (Deg, Min):	131°4.38'	131°2.6'	131°0.1'	131°0.31'
Duration (Minute):	30		17	24
Direction (Deg, True):	050		352	017
Distance (km):	4.6		2.8	3.9
Boat Speed (km/h):	5		5	5.4
Locality:Major/Minor	07 / 06	07 / 06	07 / 06	07 / 02
Remarks:	USABLE	USABLE	USABLE	UNUSABLE
<b>Flatfish</b>				
Arrowtooth flounder	6	481.66	18	
Butter sole				
C-o sole				
Curlfin sole	0.1		0.6	
Dover sole		11		
English sole	29.4	99.7	206.4	
Flathead sole	1.2			
Pacific halibut	0.4		1.8	
Pacific sanddab		22.8	37.8	
Petrale sole		9	0.7	
Rex sole	1.9	147.6	6.4	
Rock sole	60.2	2.2	4.7	
Sand sole	8	0.1	0.1	
Slender sole	0.1	0.1		
Speckled sanddab				
Starry flounder				
<b>Rockfish</b>			4	
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate	16			
Longnose skate				
Sandpaper skate				
Spiny dogfish	182	8	32	
Spotted ratfish	48.8	14.6	25.3	
<b>Roundfish</b>				
Bigfin eelpouts	0.1			
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling	0.1			
Lingcod	7.8		17	
Northern ronquil				
Northern spearnose poacher				
Pacific cod	165	9.4	0.1	
Pacific herring	0.1	0.1		
Pacific sand lance	0.1			
Pacific tomcod	0.1	0.8	2	
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish		0.5	1	
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher		0.1		
Walleye pollock		0.6	0.1	
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	4.4	10.1	7.8	0
Total catch (kg)	531.8	818.36	365.8	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	69	70	71	72
Block:	H201	H302	H301	H302
Date:	21-Jun-02	21-Jun-02	21-Jun-02	21-Jun-02
Time:	Start 7:10	Finish 7:37	Start 8:36	Finish 9:40
Depth (Meters):	27	27	40	35
Latitude (Deg, Min):	53°18.45'	53°17.66'	53°13.79'	53°15.3'
Longitude (Deg, Min):	131°15.56'	131°14.29'	131°9.4'	131°10.2'
Duration (Minute):	27	30	30	30
Direction (Deg, True):	135	343	150	327
Distance (km):	3.9	5.4	4.4	5.4
Boat Speed (km/h):		5.9	4.6	5.7
Locality:Major/Minor	07 / 02	07 / 02	07 / 02	07 / 02
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder				
Butter sole			0.1	
C-o sole	0.1			
Curlfin sole	5	7.4		
Dover sole			0.1	
English sole		1	0.1	0.1
Flathead sole				
Pacific halibut	2	6.7	2.2	12.6
Pacific sanddab				
Petrale sole				
Rex sole				
Rock sole	14	39.3	62	38.9
Sand sole	1	2.8	31	4
Slender sole				
Speckled sanddab	0.1		0.1	
Starry flounder				0.1
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish	2			
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate		15.8	42.4	
Longnose skate				22
Sandpaper skate				
Spiny dogfish	24	61.6	9.4	
Spotted ratfish	13	35.7	2.8	2.4
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling	0.1			
Lingcod				7.2
Northern ronquil				
Northern spearnose poacher				
Pacific cod	0.1	0.1	0.1	1.5
Pacific herring				
Pacific sand lance		0.1		6.1
Pacific tomcod			0.1	
Poachers				
Pricklebacks				
Red irish lord	0.1			
Roughback sculpin				
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback		0.1		
Spotfin sculpin				
Sturgeon poacher		0.5		0.1
Walleye pollock				
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	5.4	34.4	27.9	22.9
Total catch (kg)	66.9	205.5	178.3	117.9

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	73		74		75		76	
Block:	H303		H405		H405		H406	
Date:	21-Jun-02		21-Jun-02		21-Jun-02		21-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	12:17	12:47	16:03	16:18	17:31	18:01	19:00	19:23
Latitude (Deg, Min):	80	79	93	99	139	141	119	123
Longitude (Deg, Min):	53°16.5'	53°15.18'	53°18.8'	53°18.05'	53°17.35'	53°16.22'	53°12.2'	53°13.3'
Duration (Minute):	131°0.14'	131°59.47'	130°55.45'	130°54.87'	130°51.13'	130°50.5'	130°50.28'	130°50.85'
Direction (Deg, True):	30	15	30	23				
Distance (km):	167	154	164	343				
Boat Speed (km/h):	4.6	2.6	4.4	4.1				
Locality:Major/Minor	5.2	5.7		5.9				
Remarks:	07 / 02 USABLE	07 / 06 USABLE	07 / 06 USABLE	07 / 06 USABLE				
<b>Flatfish</b>								
Arrowtooth flounder	15.1	50.3	12.9	43.9				
Butter sole								
C-o sole								
Culfin sole								
Dover sole	39.8	36.3	33.1	5.3				
English sole	145	12.3		1				
Flathead sole		6.6	48.6	11.4				
Pacific halibut	36							
Pacific sanddab	25.4							
Petrale sole	57.9	2.2		0.1				
Rex sole	20.3	81	114.7	93.3				
Rock sole	9	0.1	0.1					
Sand sole	0.1		0.1	2.9				6.3
Slender sole								
Speckled sandab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio								
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch			1.7					
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish			2					
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish			8.3					
<b>Selachii</b>								
Big skate						0.03		
Longnose skate					1.23			
Sandpaper skate								
Spiny dogfish	432.9	7.8	8.6	41.8				
Spotted ratfish	30.6	9.7	0.1	8.6				
<b>Roundfish</b>								
Bigfin eelpouts	0.1		0.1					
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod	4.4							
Northern rockfish								
Northern spearnose poacher								
Pacific cod	53.2	0.1	1.6					
Pacific herring			0.1					
Pacific sand lance	0.5	0.1	0.1					
Pacific tomcod	2.3	0.1						
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish	0.1		2.6	3				
Sculpins								
Shiner perch								
Snake prickleback	0.1							
Spotfin sculpin								
Sturgeon poacher	2	0.1						
Walleye pollock	8.3	0.1	2.8	1				
Wolf eel								
Wrymouths								
<b>Invertebrate</b>	24.1	0.3	2.1	2.2				
Total catch (kg)	907.2	207.2	243.63	217.93				

**Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.**

Set:	77 J205 22-Jun-02		78 J202 22-Jun-02		79 I301 22-Jun-02		80 I302 22-Jun-02	
Block:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Date:	8:02	8:26	9:35	10:07	11:28	11:51	13:02	13:30
Time:	86	90	75	33	35	40		
Depth (Meters):	52°54.61' "	52°56.52'	52°55.36'	53°2.02'	53°2.7'	53°4.43'	53°3.13'	
Latitude (Deg, Min):	131°17.92' "	131°14.1'	131°15.07'	131°5.65'	131°3.4'	131°9.73'	131°9.08'	
Longitude (Deg, Min):								
Duration (Minute):	24		32		30		28	
Direction (Deg, True):	057		207		065		160	
Distance (km):	3.7		4.4		5.2			
Boat Speed (km/h):			4.6		5.6			
Locality:Major/Minor	07 / 02		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
<b>Flatfish</b>								
Arrowtooth flounder	0.5							
Butter sole		0.1						
C-o sole								
Curlfin sole	2.2		0.4		0.1		2	
Dover sole	5.6		14		0.1			
English sole	117.6		97.3		2.8		0.1	
Flathead sole	1.5		0.9					
Pacific halibut		24.3		44.6		66.2		
Pacific sanddab	92.2		155.9		2.8			
Petrale sole	1		0.1					
Rex sole	6.3		10.6		1			
Rock sole	6.5		29		66.8		45.3	
Sand sole		0.9		15.6		20		
Slender sole								
Speckled sandab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish								
Bocaccio							0.1	
Canary rockfish		1.3						
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch		0.1						
Pygmy rockfish								
Quillback rockfish		1						
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish								
Widow rockfish								
Yelloweye rockfish								
Yellowtail rockfish	3.1		9.1		0.1		0.1	
<b>Selachii</b>								
Big skate						17		
Longnose skate		5.8						
Sandpaper skate								
Spiny dogfish	6.1		6.4		109.8		127.4	
Spotted ratfish	36.8		57.6		1.1			
<b>Roundfish</b>								
Bigfin eelpouts	0.1							
Bluespotted poacher								
Brown irish lord							0.1	
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod		0.5					0.6	
Northern ronquil								
Northern spearnose poacher								
Pacific cod			4.1		0.1		6.2	
Pacific herring	0.5						0.1	
Pacific sand lance	0.1				7.4		0.1	
Pacific tomcod	3.7		1.8		0.6		16.7	
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin								
Sturgeon poacher	0.1		1		0.1		0.1	
Walleye pollock			1.2		0.1			
Wolf eel								
Wrymouths								
<b>Invertebrate</b>	2		14		4.6		8.9	
<b>Total catch (kg)</b>	285.9		437.4		274.7		294	

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	81	82	83	84
Block:	1404	1403	1401	J301
Date:	26-Jun-02	26-Jun-02	26-Jun-02	26-Jun-02
Time:	Start	Finish	Start	Finish
Depth (Meters):	5:32	5:47	6:51	7:08
Latitude (Deg, Min):	82° 53' 6.16"	82° 53' 5.7"	82° 53' 1.22"	82° 53' 0.35"
Longitude (Deg, Min):	130° 54' 48"	130° 53' 48"	130° 52' 51"	130° 51' 75"
Duration (Minute):	15	17	15	16
Direction (Deg, True):	124	148	137	020
Distance (km):	2.8	3.5	2.2	2.4
Boat Speed (km/h):	5.9	6.5	4.8	4.8
Locality:Major/Minor	07 / 06	07 / 02	07 / 02	07 / 02
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder	2.3	1.1		
Butter sole	0.1	0.1		0.1
C-o sole				
Curlfin sole		0.8	0.1	
Dover sole	0.1	0.7	0.1	
English sole	107.3	158.4	70.9	0.1
Flathead sole				
Pacific halibut	4.7	14.6		0.8
Pacific sanddab	188	35.1	2.8	0.1
Petrale sole	3	2.5	0.1	
Rex sole	3.3	1	0.1	
Rock sole		0.1	12.2	5.6
Sand sole			0.1	
Slender sole			0.1	
Speckled sandab			0.1	
Starry flounder				0.1
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate				
Longnose skate				
Sandpaper skate				
Spiny dogfish	8.5	20.7	0.1	
Spotted ratfish	7.4	79.3	30.3	12.3
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod	19.4	14.4		
Northern ronquil				
Northern spearnose poacher				
Pacific cod		0.1		0.1
Pacific herring				1.5
Pacific sand lance			6.2	
Pacific tomcod	21.2	1.2		
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				0.1
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1			
Walleye pollock				
Wolf eel			5.3	0.1
Wrymouths				
<b>Invertebrate</b>				
Total catch (kg)	365.5	332.1	128.9	22.2

**Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on F/V *Viking Storm*, June 10 - 28, 2002.**

Set:	85	86	87	88
Block:	J402	J403	J406	I406
Date:	26-Jun-02	26-Jun-02	26-Jun-02	26-Jun-02
Time:	Start	Finish	Start	Finish
Depth (Meters):	48	38	60	60
Latitude (Deg, Min):	52°56.35'	52°57.44'	52°57.6'	52°57.64'
Longitude (Deg, Min):	130°49.21'	130°49.99'	130°47.14'	130°45.97'
Duration (Minute):	20		15	15
Direction (Deg, True):	337		090	315
Distance (km):	3.9		2.4	2.6
Boat Speed (km/h):	6.1		5.4	5.4
Locality:Major/Minor	07 / 06		07 / 02	07 / 06
Remarks:	USABLE		USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder		0.1	0.8	11
Butter sole	0.1	0.4		
C-o sole				
Curlfin sole	0.9			
Dover sole			0.1	0.9
English sole	10.3	0.8	33.4	5.2
Flathead sole				0.6
Pacific halibut	1.5	7	10.8	
Pacific sanddab			5.3	0.1
Petrale sole			6.3	2.3
Rex sole			2.6	56
Rock sole	28.8	8.1	2.2	
Sand sole	3.2	2.9	1.3	0.1
Slender sole	1.6			2.3
Speckled sandab		0.1		
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish				
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate		3.4		
Longnose skate				
Sandpaper skate				
Spiny dogfish	5.2	4.2	7.9	55.6
Spotted ratfish	0.7		0.1	8.5
<b>Roundfish</b>				
Bigfin eelpouts				0.1
Bluespotted poacher				
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod			16.4	3.4
Northern ronquil				
Northern spearnose poacher				
Pacific cod	0.1	0.4		14.5
Pacific herring	0.1			
Pacific sand lance	0.1	0.1		0.1
Pacific tomcod			0.1	0.1
Poachers				
Picklebacks				
Red irish lord				
Roughback sculpin	0.1			
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher	0.1	0.1	0.1	
Walleye pollock				
Wolf eel				
Wrymouths				
<b>Invertebrate</b>	3.4	0.6	3.4	0.2
<b>Total catch (kg)</b>	56.2	28.2	90.8	161

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Heceta Strait on F/V *Viking Storm*, June 10 - 28, 2002.

Set:	89	90	91	92
Block:	J504	J504	J505	K403
Date:	26-Jun-02	26-Jun-02	26-Jun-02	26-Jun-02
Time:	Start 13:47	Finish 14:09	Start 14:54	Finish 15:42
Depth (Meters):	64	84	86	68
Latitude (Deg, Min):	52°56.35'	52°57.29'	52°56.4'	52°55.45'
Longitude (Deg, Min):	130°39.81'	130°39.85'	130°37.95'	130°37.59'
Duration (Minute):	22	15	15	20
Direction (Deg, True):	360	165	185	216
Distance (km):	3.1	2.6	1.5	3.5
Boat Speed (km/h):	4.8	5.4	6.1	5.6
Locality:Major/Minor	07 / 06	07 / 06	07 / 06	07 / 02
Remarks:	USABLE	USABLE	USABLE	USABLE
<b>Flatfish</b>				
Arrowtooth flounder		1.4	6.7	1.3
Butter sole		0.9		
C-o sole				
Curfin sole				
Dover sole			0.1	
English sole	1.6	2.9	3.5	4.8
Flathead sole				
Pacific halibut	1.6	2.8		15.3
Pacific sanddab		1.2	5.2	0.6
Petrale sole	0.6	50	5.8	11.5
Rex sole	2.9		5.2	1
Rock sole	82.2	62.1	3.4	15.5
Sand sole				
Slender sole	0.6			
Speckled sandab				
Starry flounder				
<b>Rockfish</b>				
Black rockfish				
Bocaccio				
Canary rockfish				
Copper rockfish				
Greenstriped rockfish				
Pacific ocean perch				
Pygmy rockfish				
Quillback rockfish				
Rougheye rockfish				
Shortspine thornyhead				
Silvergray rockfish				
Widow rockfish			22.5	
Yelloweye rockfish				
Yellowtail rockfish				
<b>Selachii</b>				
Big skate				
Longnose skate				
Sandpaper skate				
Spiny dogfish	4.3	1.3	29.3	43.3
Spotted ratfish	1.5		14.6	12.7
<b>Roundfish</b>				
Bigfin eelpouts				
Bluespotted poacher			0.1	
Brown irish lord				
Buffalo sculpin				
Chinook salmon				
Eelpouts				
Eulachon				
Kelp greenling				
Lingcod	31.8		7	
Northern ronquil				
Northern spearnose poacher				
Pacific cod				
Pacific herring	0.1	0.1	0.1	
Pacific sand lance	7.9	6.2	0.1	
Pacific tomcod				
Poachers				
Pricklebacks				
Red irish lord				
Roughback sculpin				
Sablefish				
Sculpins				
Shiner perch				
Snake prickleback				
Spotfin sculpin				
Sturgeon poacher				0.1
Walleye pollock				
Wolf eel				
Wrymouths				
<b>Invertebrate</b>				
Total catch (kg)	2.9	1.9	6.4	3.3
	138	130.8	110	113.5

Appendix 2. Bridge log and species catch composition during the multispecies trawl survey of Hecate Strait on *F/V Viking Storm*, June 10 - 28, 2002.

Set:	93 K403		94 K403		95 K404		96 K405	
Date:	26-Jun-02		26-Jun-02		26-Jun-02		26-Jun-02	
Time:	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Depth (Meters):	18:13	18:33	19:13	19:33	20:18	20:28	21:15	21:35
Latitude (Deg, Min):	53	53	68	68	91	88	102	
Longitude (Deg, Min):	52°46.72'	52°45.96'	52°42.45'	52°43.34'	52°44.67'	52°45.26'	52°42.09'	52°42.59'
Duration (Minute):	20		20		10		20	
Direction (Deg, True):	220		037		360		060	
Distance (km):	3.3		3.5		1.9		3.1	
Boat Speed (km/h):	5.4		5.7		5.6		5	
Locality: Major/Minor	07 / 02		07 / 02		07 / 02		07 / 02	
Remarks:	USABLE		USABLE		USABLE		USABLE	
<b>Flatfish</b>								
Arrowtooth flounder				0.1		0.8		3.4
Butter sole								
C-o sole				0.1				0.1
Curlfin sole								
Dover sole								
English sole	0.1					3.5		2.7
Flathead sole								
Pacific halibut	6		16				6.8	
Pacific sanddab	0.1		0.1		11.4		19.2	
Petrale sole	1.2				0.7		2.1	
Rex sole					0.6		5.1	
Rock sole	121.8		4		5		6.6	
Sand sole	1.8					0.1		
Slender sole								
Speckled sandab								
Starry flounder								
<b>Rockfish</b>								
Black rockfish					0.1			
Bocaccio					3			
Canary rockfish								
Copper rockfish								
Greenstriped rockfish								
Pacific ocean perch								
Pygmy rockfish								
Quillback rockfish								
Rougheye rockfish								
Shortspine thornyhead								
Silvergray rockfish							6.6	
Widow rockfish								
Yelloweye rockfish					0.6			
Yellowtail rockfish								
<b>Selachii</b>								
Big skate	20.9							
Longnose skate								
Sandpaper skate								
Spiny dogfish	5.3		5.2		17.2		11	
Spotted ratfish	28		16.7		11.4		2	
<b>Roundfish</b>								
Bigfin eelpouts								
Bluespotted poacher								
Brown irish lord								
Buffalo sculpin								
Chinook salmon								
Eelpouts								
Eulachon								
Kelp greenling								
Lingcod	17.7		19.1		3.7		0.9	
Northern ronquil								
Northern spearnose poacher								
Pacific cod					0.1		0.1	
Pacific herring							0.1	
Pacific sand lance							0.1	
Pacific tomcod								
Poachers								
Pricklebacks								
Red irish lord								
Roughback sculpin								
Sablefish								
Sculpins								
Shiner perch								
Snake prickleback								
Spotfin sculpin							0.1	
Sturgeon poacher	0.1				0.1		0.1	
Walleye pollock							0.1	
Wolf eel								
Wrymouths								
<b>Invertebrate</b>	0.2		30.7		14.2		0.1	
Total catch (kg)	203.2		92		72.5		67.1	

Appendix 3. Detailed description and specification of the *F/V Viking Storm*.

Vessel Registration Number	20093
Year constructed	1981
Construction material	Steel
Length	104 Feet
Beam	27 Feet
Draft	12-15 Feet
Gross Tonnage	246
Registered tonnage	115.12
Name and engine type	KTA 37 Cummins
Engine horsepower	980
Fuel consumption	65 liters per hour
Fuel capacity	88,000 liters
Cruising speed	10 Knots
Number of crew (include skipper)	5
Berths / Cabins	14 / 5
Freezing capacity	1,680 cubic feet
Electrical power	110, 240 AC
Echo sounders: Furuno Furuno	Model FCV 782 28/50 kHz dual frequency Model FCV 261 50 kHz
Radars: Furuno Furuno	FR- 1425 48 mile range FR – 8050 48 mile range
Radios: VHF , ICOM SSB	Sailor – 8220Y8 IC- M700
GPS/Plotters : Furuno	GPS-30, GPS-50
Charting software: Nobletec Seaplot	Ver. 4.1
Net sensors: Scanmar Furuno Elac	Model RX 400 Model 10A
PC Computers with Flat Screen Monitor	IBM
Surface Temperature Sensor	Model T-2000