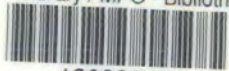


227

**G.B. Reed Shrimp Cruise 80-S-1,
May 7-21, 1980
West Coast of Vancouver Island and
Queen Charlotte Sound**

DFO - Library / MPO - Bibliothèque



12033613

J. A. Boutillier, K. Pasmans, and S. F. Head

Department of Fisheries and Oceans
Resource Services Branch
Pacific Biological Station
Nanaimo, British Columbia V9R 5K6

December 1980



**Canadian Data Report of Fisheries
and Aquatic Sciences No. 227**

QH
90.5
C33
#227
cp1



Government of Canada
Fisheries and Oceans

Gouvernement du Canada
Pêches et Océans

Canadian Data Report of Fisheries and Aquatic Sciences

These 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 management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

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 changed with report number 161.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 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 de la série a été modifié à partir du numéro 161.

Les Rapports statistiques ne sont pas préparés pour 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 haut du résumé de chaque rapport.

Canadian Data Report of Fisheries
and Aquatic Sciences No. 227

December 1980

G.B. REED SHRIMP CRUISE 80-S-1, MAY 7-21, 1980,
WEST COAST OF VANCOUVER ISLAND AND
QUEEN CHARLOTTE SOUND

by

J. A. Boutillier, K. Pasmans, and S. F. Head

Department of Fisheries and Oceans
Resource Services Branch
Pacific Biological Station
Nanaimo, British Columbia V9R 5K6

(c) Minister of Supply and Services Canada 1980

Gat. No. Fs 97-13/227

ISSN 0706-6465

ABSTRACT

Boutillier, J. A., K. Pasmans, and S. F. Head. 1980. G.B. REED shrimp cruise 80-S-1, May 7-21, 1980, west coast of Vancouver Island and Queen Charlotte Sound. Can. Data Rep. Fish. Aquat. Sci. 227: 60 p.

In May 1980, a shrimp survey of Tofino and Nootka grounds, off the west coast of Vancouver Island and Queen Charlotte Sound, was conducted aboard the research vessel G.B. REED. This survey was used to gather information on the biomass of pink shrimp, Pandalus jordani, in these regions. Larval samples, electrophoretic samples, and oceanographic temperature observations were also collected during the cruise. This report presents the detailed catch records and summarizes the resulting evaluations from this cruise, subsequently providing TACs (total allowable catches) for the 3 grounds.

Key words: Shrimp, Pandalus jordani, biomass, total allowable catches, west coast Vancouver Island.

RÉSUMÉ

Boutillier, J. A., K. Pasmans, and S. F. Head. 1980. G.B. REED shrimp cruise 80-S-1, May 7-21, 1980, west coast of Vancouver Island and Queen Charlotte Sound. Can. Data Rep. Fish. Aquat. Sci. 227: 60 p.

En mai 1980, un levé des pêcheries de crevettes de Tofino et de Nootka, au large de la côte ouest de l'île Vancouver, et du détroit Reine Charlotte, a été fait à partir du bateau de recherche G.B. REED. Le levé a permis de recueillir de l'information sur la biomasse de crevettes roses, Pandalus jordani dans ces régions. Les échantillons larvaires, les échantillons électrophorétiques et les observations sur la température océanographique ont également été recueillis au cours de l'excursion. Le présent rapport donne des données détaillées sur les prises et résume les évaluations qui résultent de cette excursion, à partir desquelles sont établis les TPA (total des prises admissibles) pour les trois pêcheries.

Mots clés: Crevette, Pandalus jordani, biomasse, total des prises admissibles, côte ouest de l'île Vancouver.

INTRODUCTION

A shrimp biomass survey of Tofino grounds, Nootka grounds, and Queen Charlotte Sound (refer to Figs. 1, 2, 3, respectively) was conducted in May of 1980. This was the seventh year in which a survey of this type has been carried out on Tofino and Nootka grounds during the month of May. Queen Charlotte Sound had previously been surveyed in April 1974, July 1977, and May 1979. From these surveys information is gathered on the total biomass, year-class abundances, and distribution, of the pink shrimp, Pandalus jordani. In addition to the standard biomass trawl survey, larval samples, electrophoretic samples, and oceanographic salinity and temperature observations were collected. The larval work was carried as a supplement to a larval monitoring program which had been conducted in the region prior to the shrimp survey. The electrophoretic samples will be analyzed in an attempt to establish a biochemical basis for separating shrimp stocks.

SURVEY METHODS AND FISHING GEAR

The biomass trawl survey was carried out in all three areas using a standard 61-ft, high-rising, N.M.F.S. shrimp sampling trawl. This trawling gear has been described in detail in a previous data report¹. The larval sampling was conducted using a single set of .2552 m² bongo nets. The bongo frame was fitted with 351 micron mesh nets. The effective filtering area to mouth area ratio was 22:1. Temperature and salinity observations were made using a STD probe and recorder while supplementary temperature observations were made using expendable bathythermographs (XBTs).

The trawl locations for the biomass of Tofino and Nootka grounds were established on a grid pattern based on Loran C blocks. Tows were made diagonally through adjacent 5990-X blocks along 5990-Y lines. Successive 5990-Y lines were 20 microseconds apart. The trawl locations for the Queen Charlotte Sound biomass survey were made on a Loran C grid in which tows were made diagonally through 5990-X blocks 30 microseconds apart along successive 5990-Y lines 10 microseconds apart. Variations in the grid patterns occurred when exploring new areas or avoiding bad bottom.

Tows lasted 30 min and covered a range of distances from 1.1-1.9 naut mi. Upon completion of each tow, the large fish were removed from the catch and weighed. The remaining mixed catch of shrimp, other invertebrates, and small fish was put into tubs and weighed. One tub was then sorted into shrimp and scrap, the percentage of shrimp by weight per

¹Fisheries and Marine Service Data Report No. 37.

tub was determined, and the total shrimp catch for the tow was then extrapolated. Random samples of shrimp were weighed and the number of shrimp per kilogram determined. The samples were then sexed and measured and the information obtained was used to determine the various year-class strengths.

Oblique plankton tows were made at selected locations in depths ranging from 25-105 fm. The samples were labelled and stored in 5% formalin for later sorting, identifying, and counting at the Pacific Biological Station.

RESULTS

A total of 103 tows was completed: 59 on the Tofino grounds, 26 on the Nootka grounds, and 18 in Queen Charlotte Sound.

Detailed records, by tow, for the 103 tows appear in Appendix Table 1.

TOFINO GROUNDS

The Tofino ground is a fishing area that lies within Statistical Area 24 and consists of approximately 280 square naut mi of potential towing bottom. For this survey, shrimp were found to be concentrated in two areas on the ground.

The larger southern concentration was found in a 25.5 sq naut mi area which ran from Loran C 5990-Y-29145 to 5990-Y-29205 between 50 and 90 fm (Fig. 4). The catch rates in this area ranged from 3.3-176.4 kg per naut mi towed.

The smaller northern concentration was found in a 4.6 sq naut mi area which ran from Loran C 5990-Y-29308 to 5990-Y-29327 between 68 and 76 fm (Fig. 5). The catch rate in this area was 6.6 kg per naut mi towed.

Upon completion of the initial Tofino and Nootka surveys, seven tows were repeated in and around the Tofino area where the larger southern concentration was located. This partial resurvey showed the shrimp to be concentrated in a smaller area, 10.8 sq naut mi, in denser schools. Catch rates in the area went as high as 499.3 kg per naut mi towed.

The total combined biomass calculated from the initial survey of the area was 212 t of shrimp. Because of the very high concentrations found in the resurvey, the biomass may be re-estimated to be as high as 479 t. The shrimp varied in size from 174-311 shrimp per kg and had a weighted mean count of 218 per kg. The variability in biomass calculations can to a

large degree be explained by the apparent contagious or clumped distribution of shrimp. In order to delimit the size and shape of the shrimp concentrations and improve the resulting biomass estimations, it will be necessary to modify the present grid system in future surveys and concentrate additional effort in areas in which shrimp are located.

NOOTKA GROUNDS

The Nootka ground is a fishing area that lies within Statistical Area 25. For this survey shrimp were found concentrated in 4 small areas. The most southerly concentration was located in a 2.8 sq naut mi area that ran from Loran C 5990-Y-29383 to 5990-Y-29400 between 95 and 105 fm (Fig. 6). North of this area the next concentration encountered was a 13.7 sq naut mi area which ran from Loran C 5990-Y-29425 to 5990-Y-29485 between 75 and 90 fm (Fig. 6, 7). The third shrimp concentration was located in a 14.5 sq naut mi area which ran from 5990-Y-29445 to 5990-Y-29490 between 64 and 81 fm (Fig. 7). The most northerly concentration located was in an 8.7 sq naut mi area which ran from 5990-Y-29500 to 5990-Y-29525 between 77 and 90 fm (Fig. 7).

The total combined shrimp biomass calculated for the Nootka grounds was 418 t. The shrimp had counts ranging from 256-610 shrimp per kg and a weighted mean count of 352 shrimp per kg.

WEST COAST OF VANCOUVER ISLAND

The total catch for the survey off the west coast of Vancouver Island is summarized by important species below:

Species	Kg	Percent
Pink (<u>jordani</u>)	2021	14.50
Prawn	3	.02
Jellyfish	2	.01
Anemone	6	.04
Starfish	6	.04
Sea urchins	91	.65
Heart urchin	1	.01
Sea cucumber	36	.26
Box crab	20	.14
Dab (Pacific)	29	.21
Dover sole	326	2.34
English sole	109	.78
Flathead sole	516	3.70
Halibut	96	.69
Petrable sole	55	.39
Rex sole	784	5.63
Slender sole	148	1.06
Turbot	321	2.30
<u>Sebastes brevispinis</u>	1	.01
<u>S. elongatus</u>	92	.66
<u>S. entomelas</u>	1	.01
<u>S. flavidus</u>	102	.73
<u>S. helvomaculatus</u>	13	.09
<u>S. paucispinis</u>	12	.09
<u>S. pinniger</u>	167	1.20
<u>S. proriger</u>	90	.65
<u>S. ruberrimus</u>	4	.03
<u>S. variegatus</u>	2	.01
<u>S. zacentrus</u>	209	1.50
Blackcod	127	.91
Chinook salmon	6	.04
Herring	318	2.28
Lingcod	1337	9.59
Pacific cod	159	1.14
Walleye pollock	174	1.25
Tomcod	160	1.15
Dogfish	4008	28.76
Ratfish	119	.85
Skates	87	.62

QUEEN CHARLOTTE SOUND

The survey of Queen Charlotte Sound was carried out off the N.E. and N.W. corners of Goose Island Gully. Shrimp were located in both these regions with the largest shrimp concentrations occurring in a 62.1 sq naut mi area in N.E. Goose Island Gully from Loran C 5990-Y-30150 to 5990-Y-30200 between 90 and 115 fm (Fig. 8). Shrimp in N.W. Goose Island Gully were found in a 38.3 sq naut mi area running from Loran C 5990-Y-30290 to 5990-Y-30320 between 80 and 95 fm (Fig. 9).

The catch rates for the entire region ranged from 3.1-29.4 kg per naut mi towed. The total combined biomass calculated was 255 t. Shrimp counts varied from 210-325 shrimp per kg and the total region had a weighted mean count of 284 per kg.

The total catch for the survey of Queen Charlotte Sound is summarized by important species below:

Total catch by species for the Queen Charlotte Sound cruise

Species	Kg	Percent
Pink (<u>jordani</u>)	317	5.59
Sidestripe	7	0.12
Jellyfish	1	0.02
Starfish	4	0.07
Brittle stars	60	1.06
Sea urchins	4	0.07
Sea cucumber	10	0.18
Dover sole	170	3.00
Flathead sole	20	0.35
Halibut	10	0.18
Rex sole	14	0.25
Turbot	2325	40.98
<u>Sebastes alutus</u>	1254	22.10
<u>S. babcocki</u>	251	4.42
<u>S. brevispinis</u>	29	0.51
<u>S. flavidus</u>	343	6.05
<u>S. paucispinis</u>	2	0.04
<u>S. pinniger</u>	5	0.09
<u>S. reedi</u>	1	0.02
<u>S. zacentrus</u>	12	0.21
<u>Sebastolobus alascanus</u>	7	0.12
Blackcod	63	1.11
Eelpouts	4	0.07
Eulachon	42	0.74
Herring	1	0.02
Lingcod	16	0.28
Pacific cod	5	0.09
Walleye pollock	427	7.53
Dogfish	156	2.75
Ratfish	26	0.46
Skates	87	1.53

RESOURCE ALLOTMENTS

Using the best estimates of biomass for each area, precautionary total allowable catches were set on the Tofino grounds and Nootka grounds using a rate of utilization of .41. These recommended TACs were implemented as of May 1, 1980, and the areas will remain open until the quotas are taken.

The quotas for Tofino grounds and Nootka grounds were set at 87 t and 171 t, respectively. No quota was set for Queen Charlotte Sound, as there is no commercial fishery in this region at the present time.

ACKNOWLEDGMENTS

Thanks are extended to Captain J. Liston and the crew of the G.B. REED for their assistance and cooperation; and Mr. T. H. Butler for reviewing the manuscript.

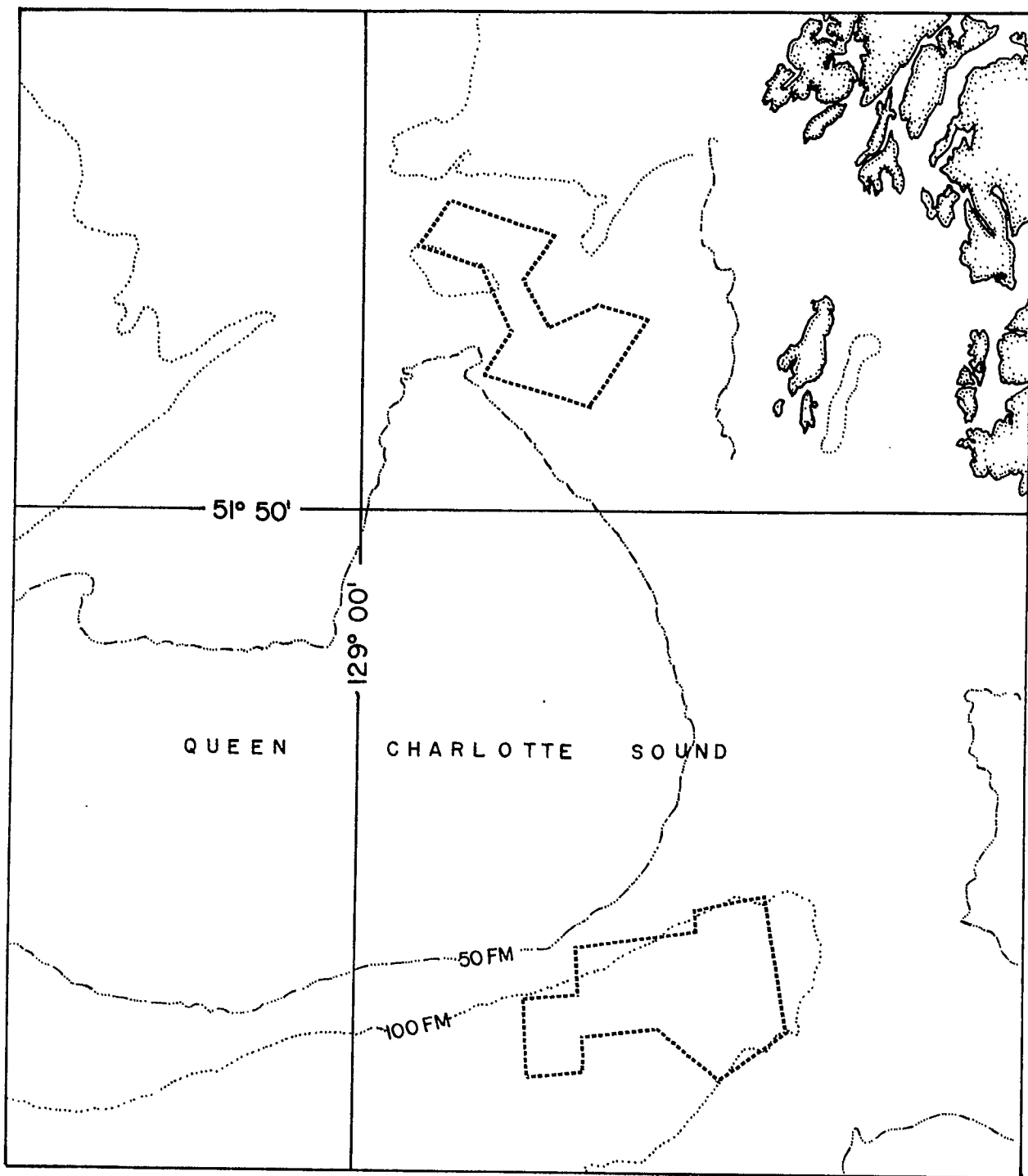


Fig. 1. Chart of fishing area off Queen Charlotte Sound.



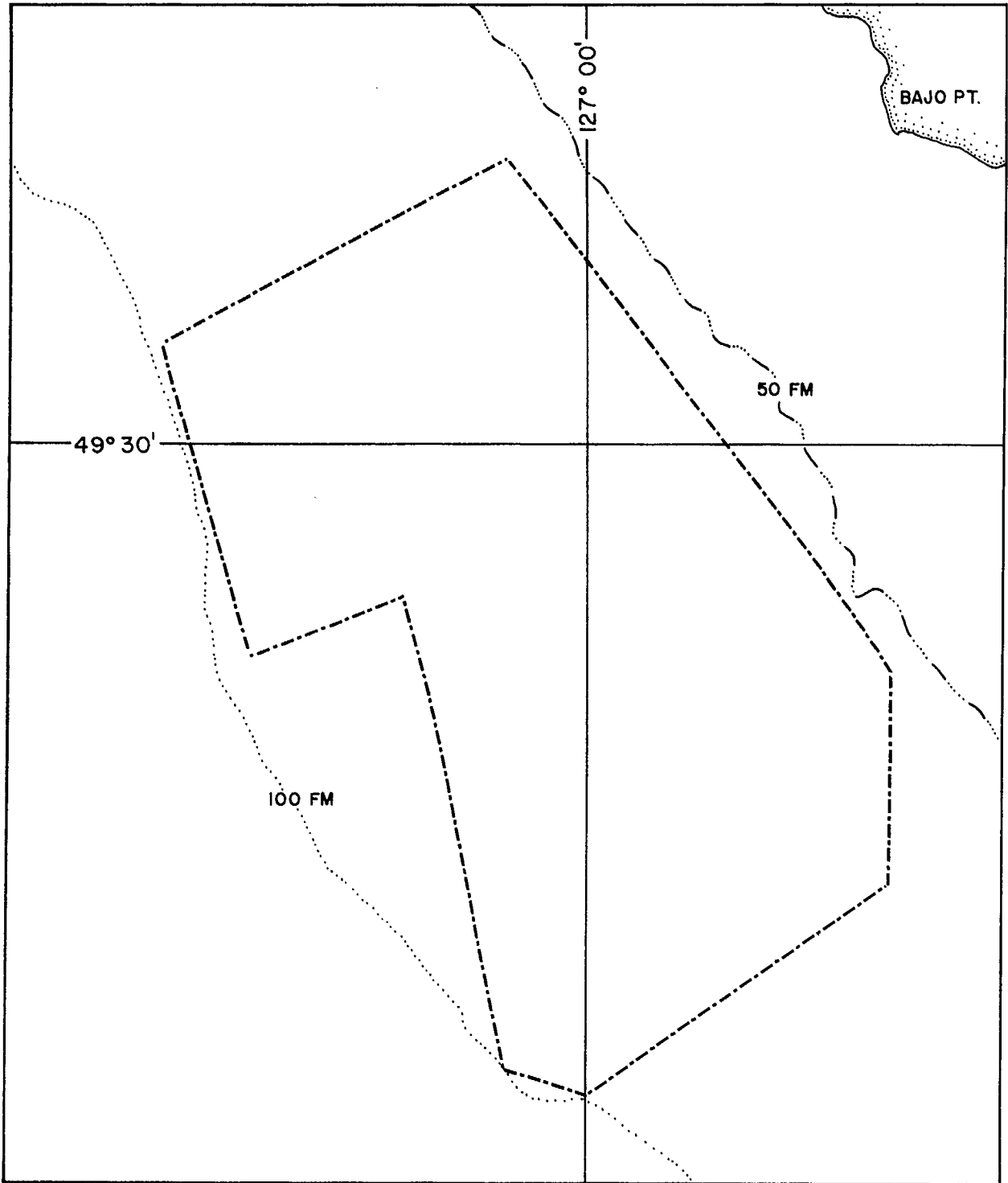


Fig. 2. Chart of fishing area off Nootka Sound.



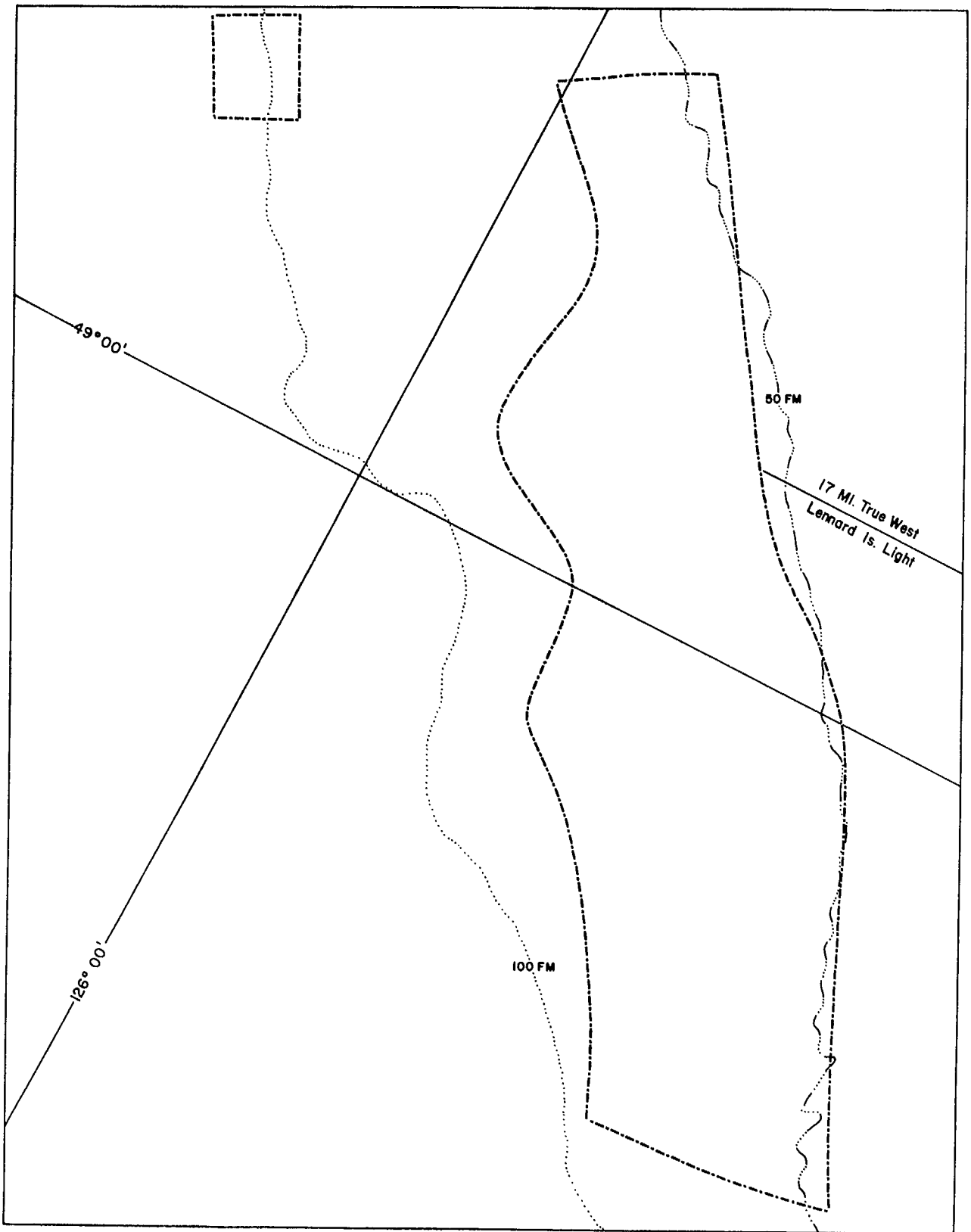


Fig. 3. Chart of fishing area off Tofino Sound.



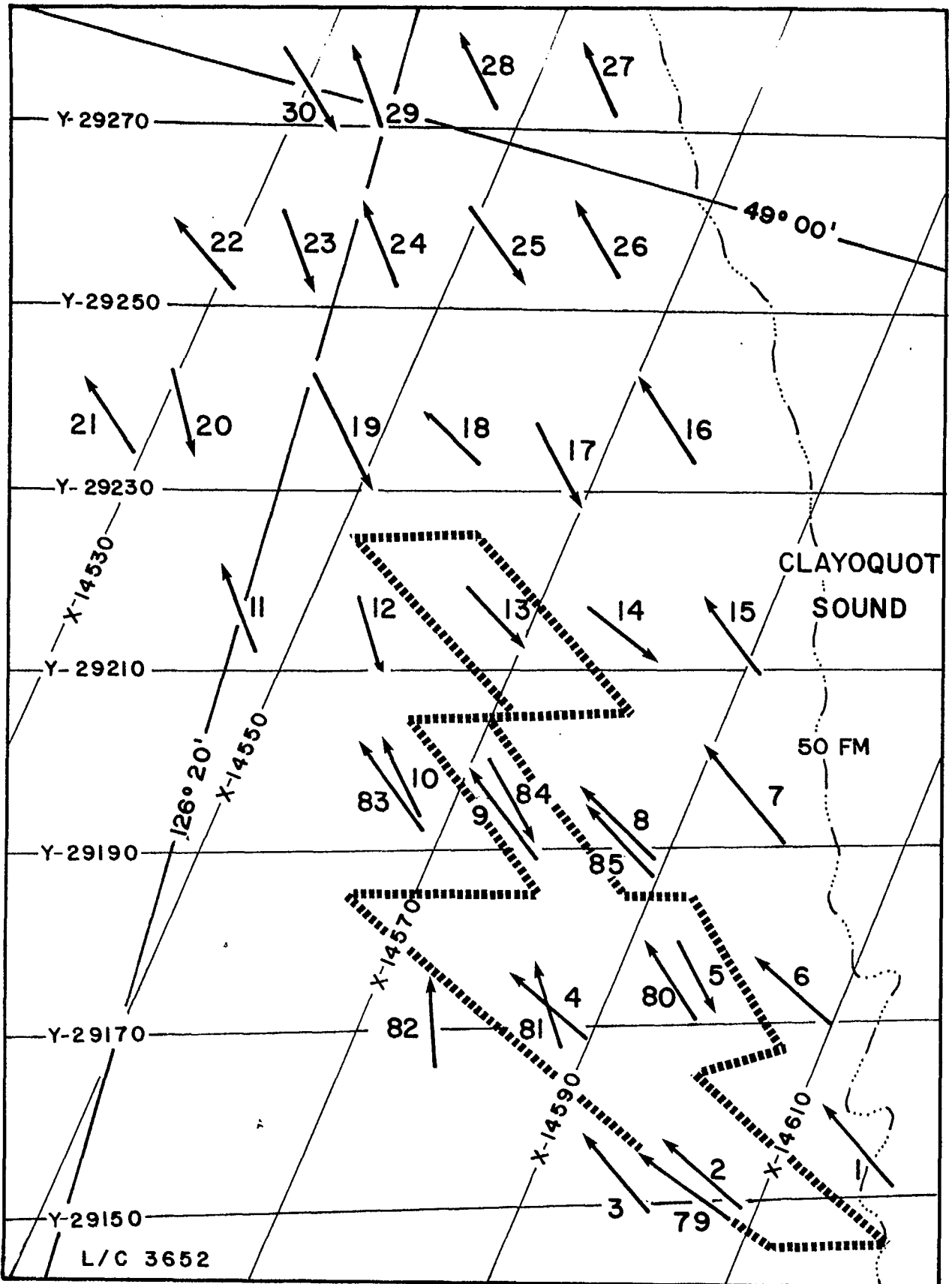
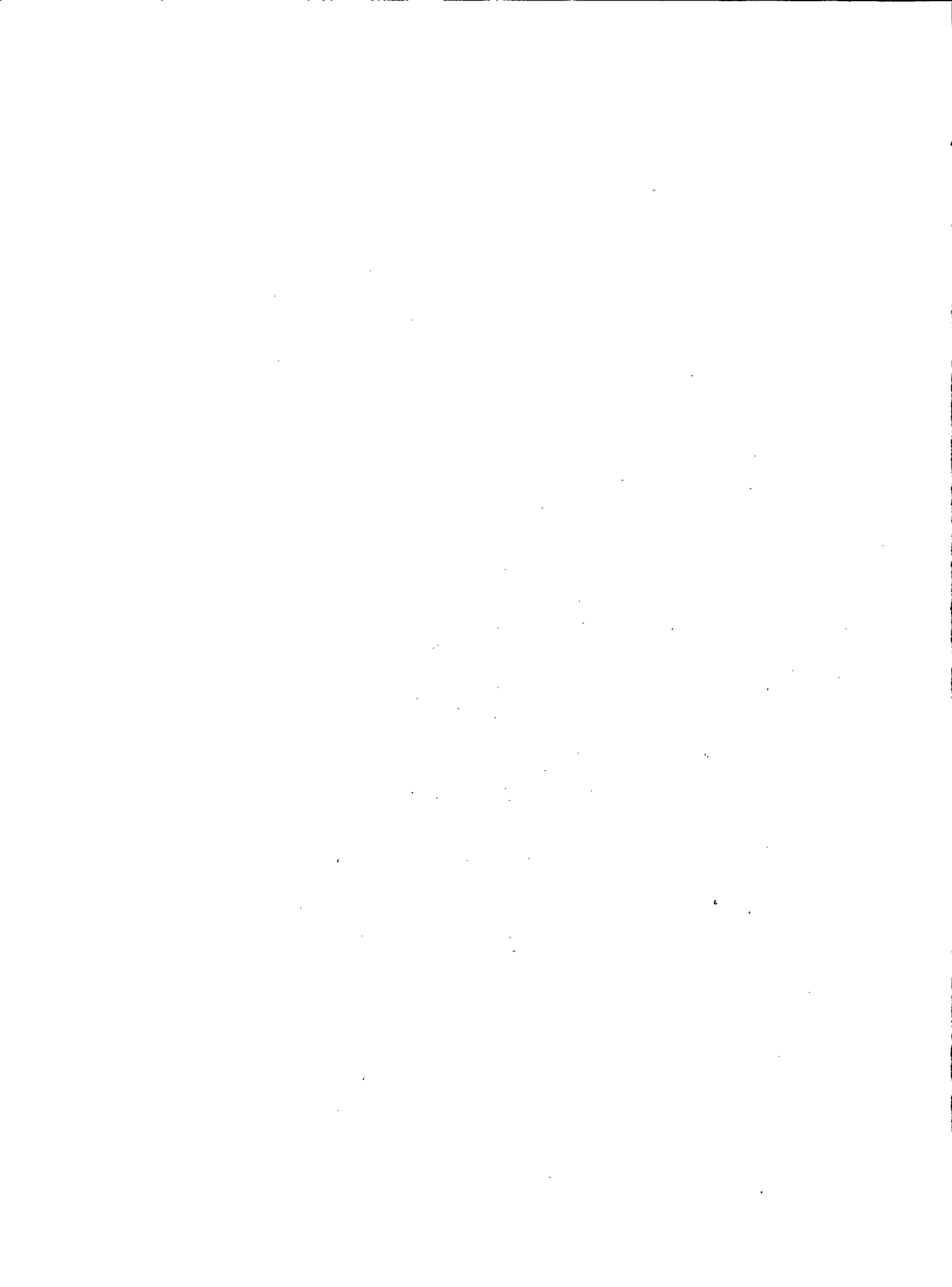


Fig. 4. Location of trawl tows and the boundary of the southern portion of the shrimp stock off Tofino.



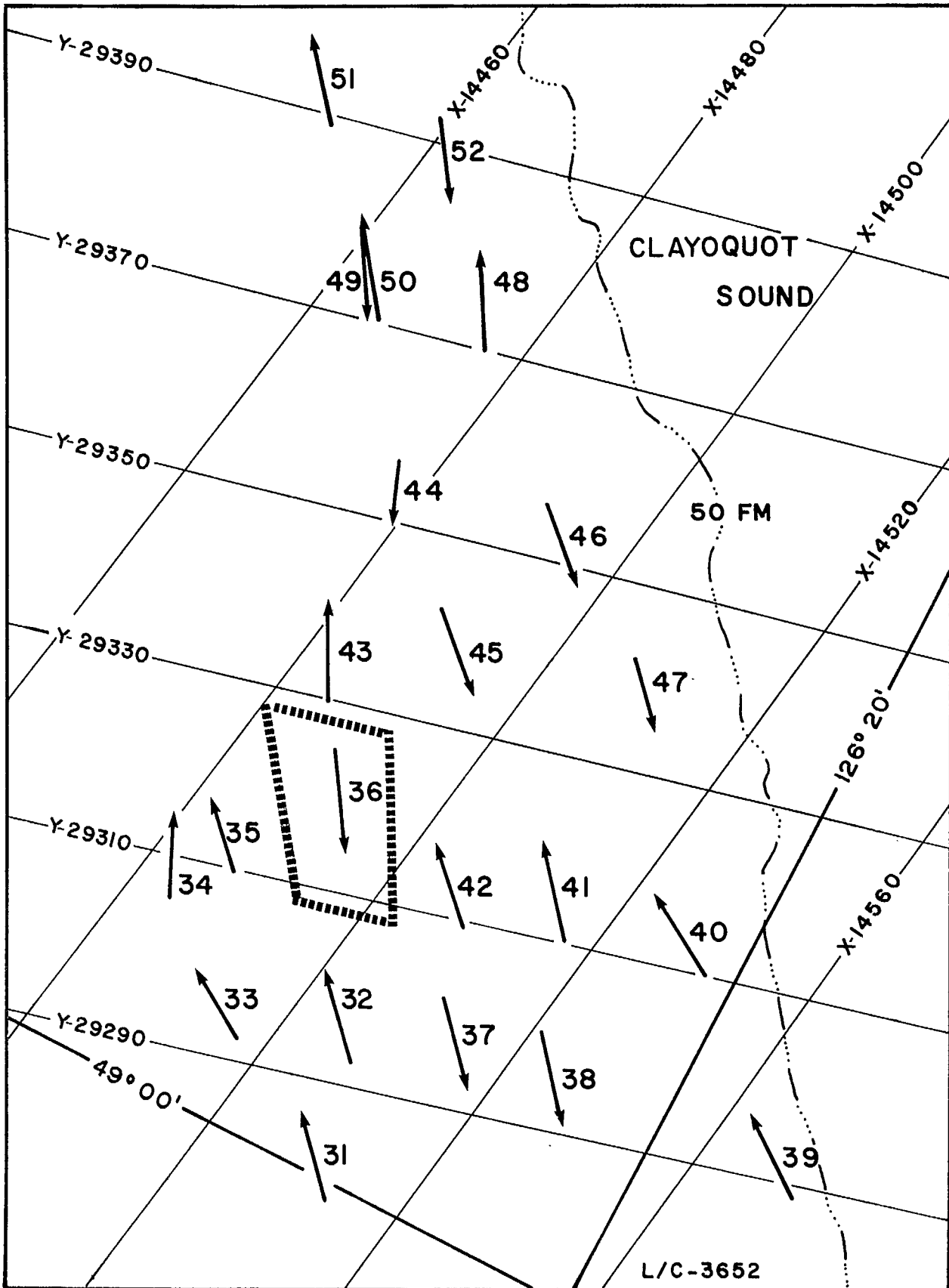


Fig. 5. Location of trawl tows and the boundary of the northern portion of the shrimp stock off Tofino.



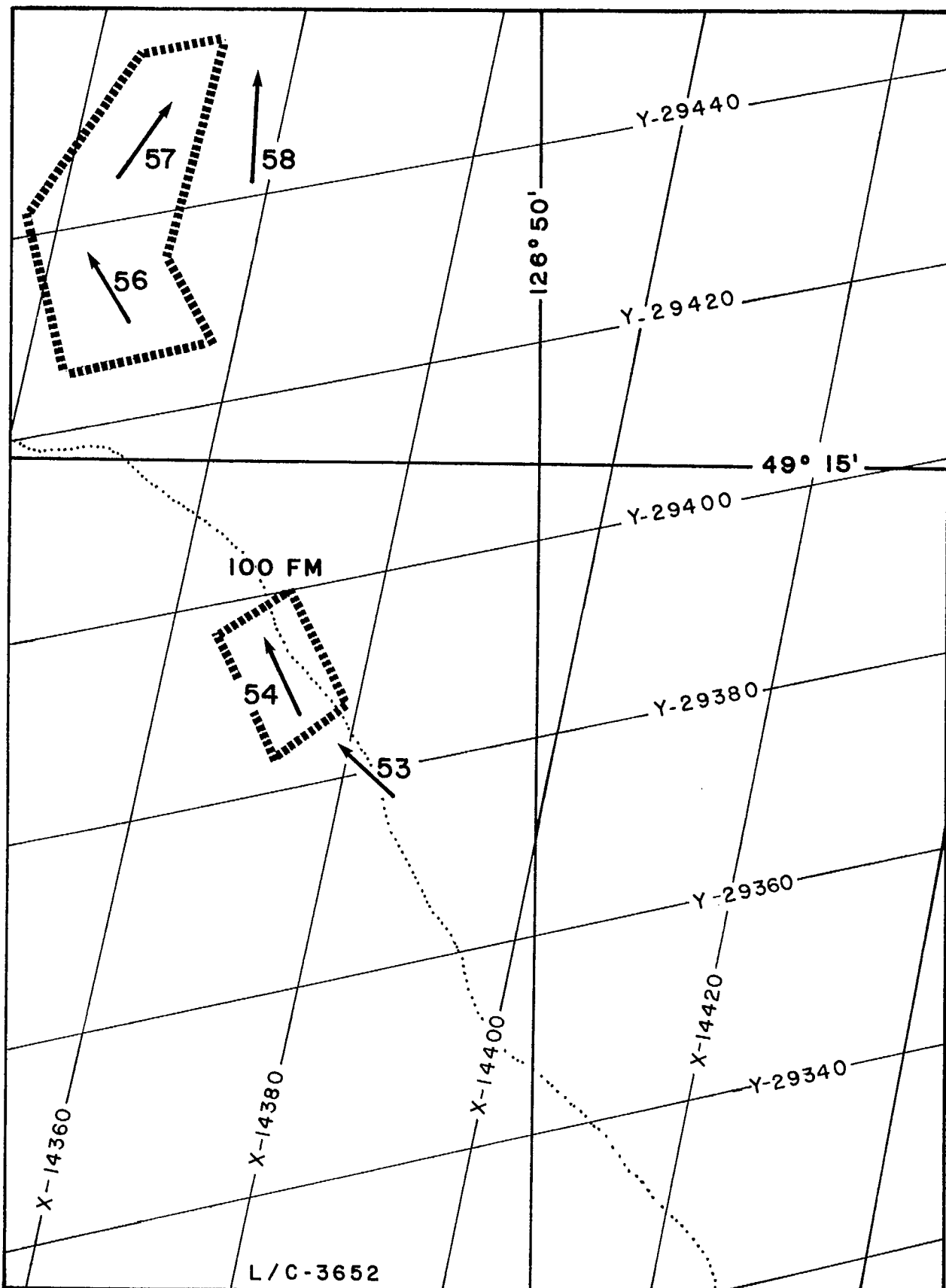


Fig. 6. Location of trawl tows and the boundaries of the southern portions for the shrimp stock on the Nootka grounds.



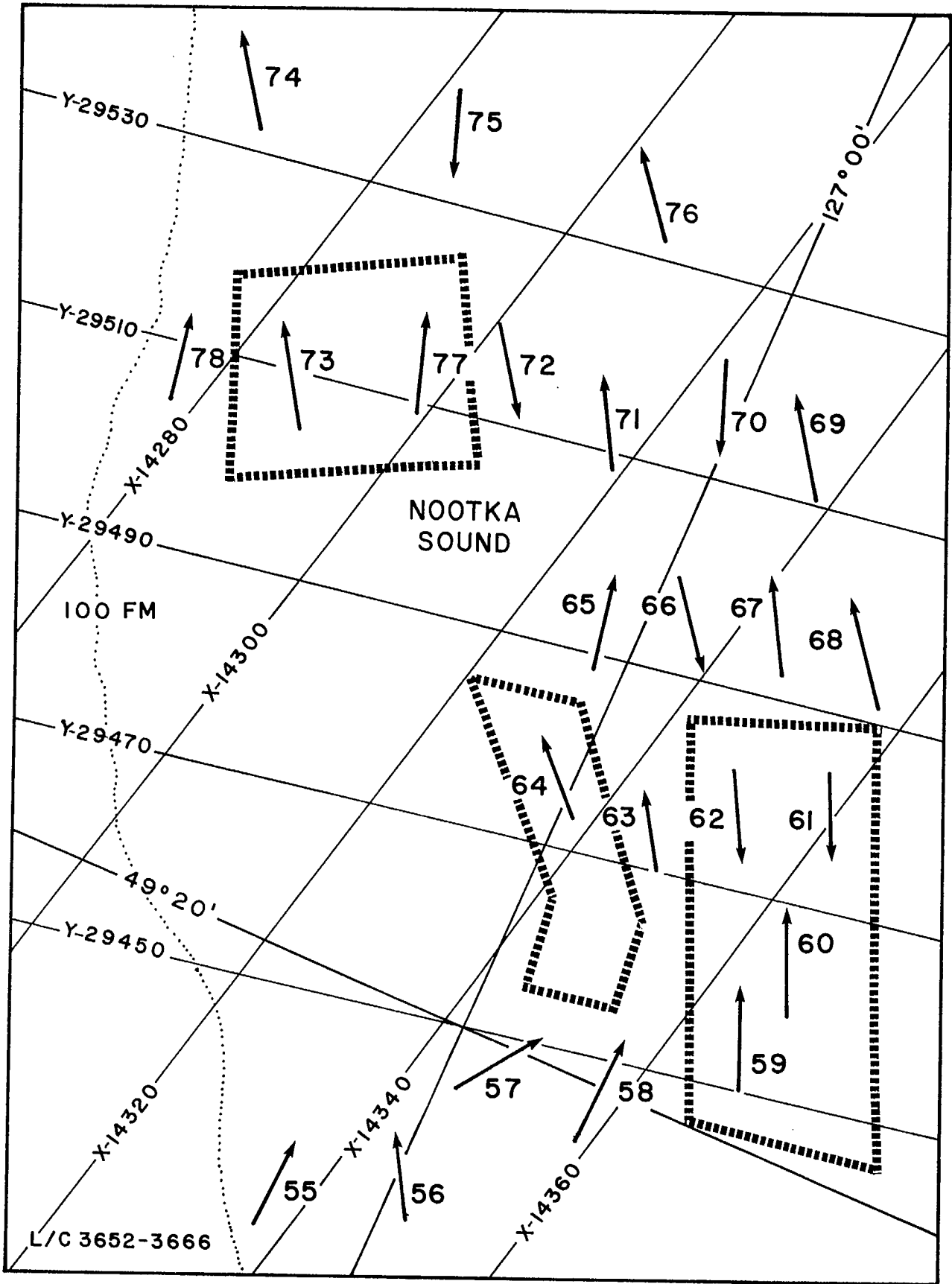
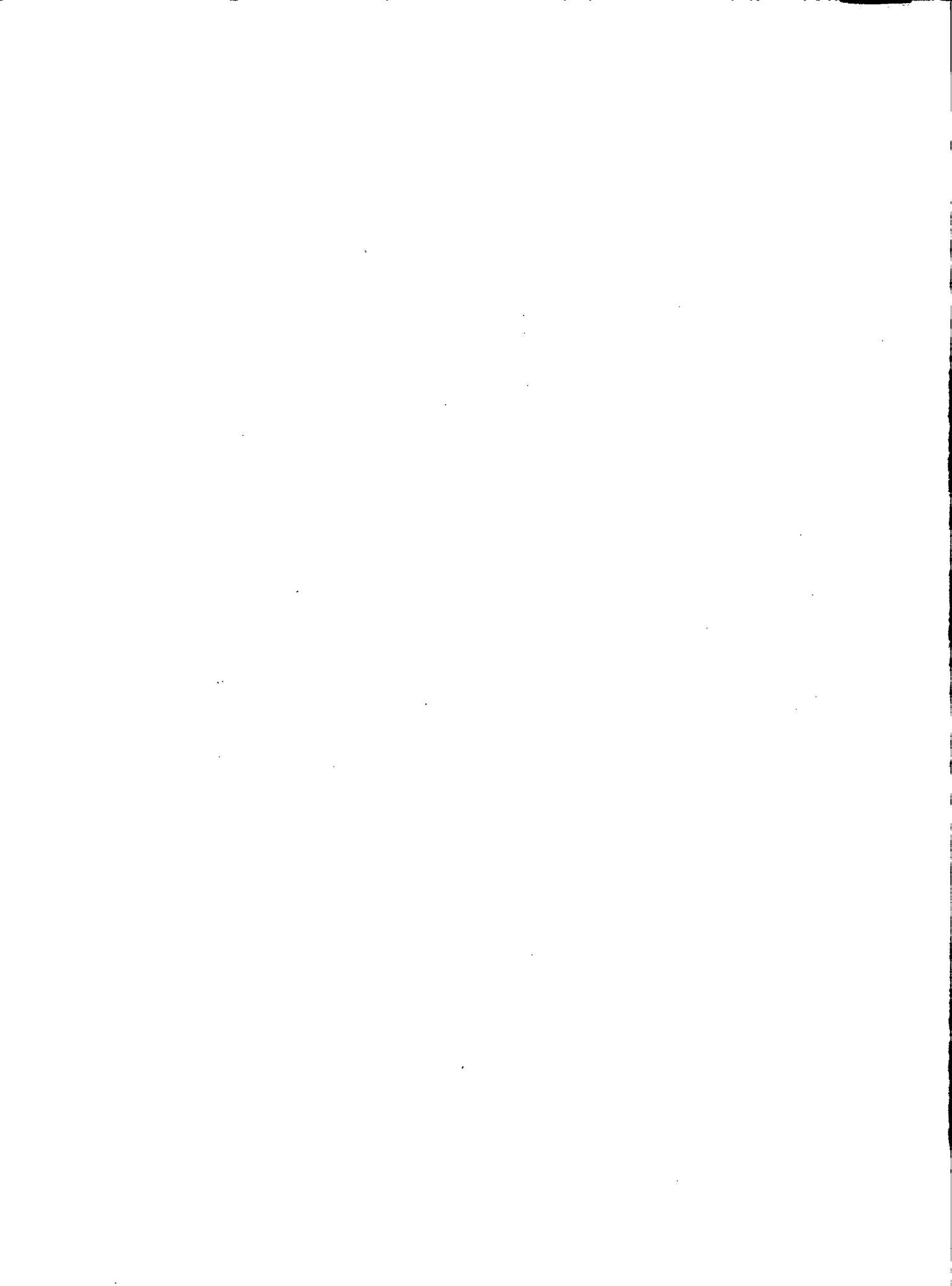


Fig. 7. Location of trawl tows and the boundaries of the northern portions of the shrimp stock on the Nootka grounds.



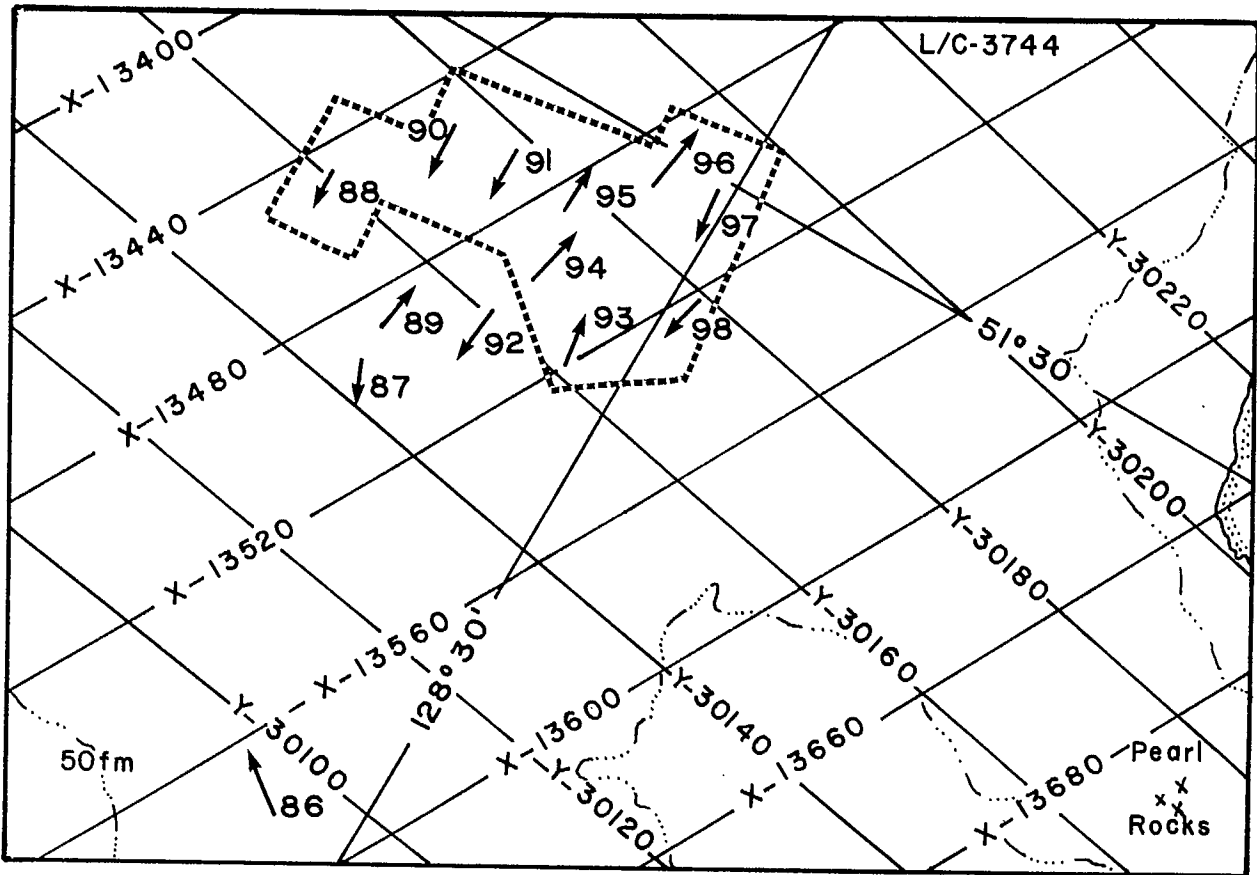


Fig. 8. Location of trawl tows off the N.E. corner of Goose Island Gully.



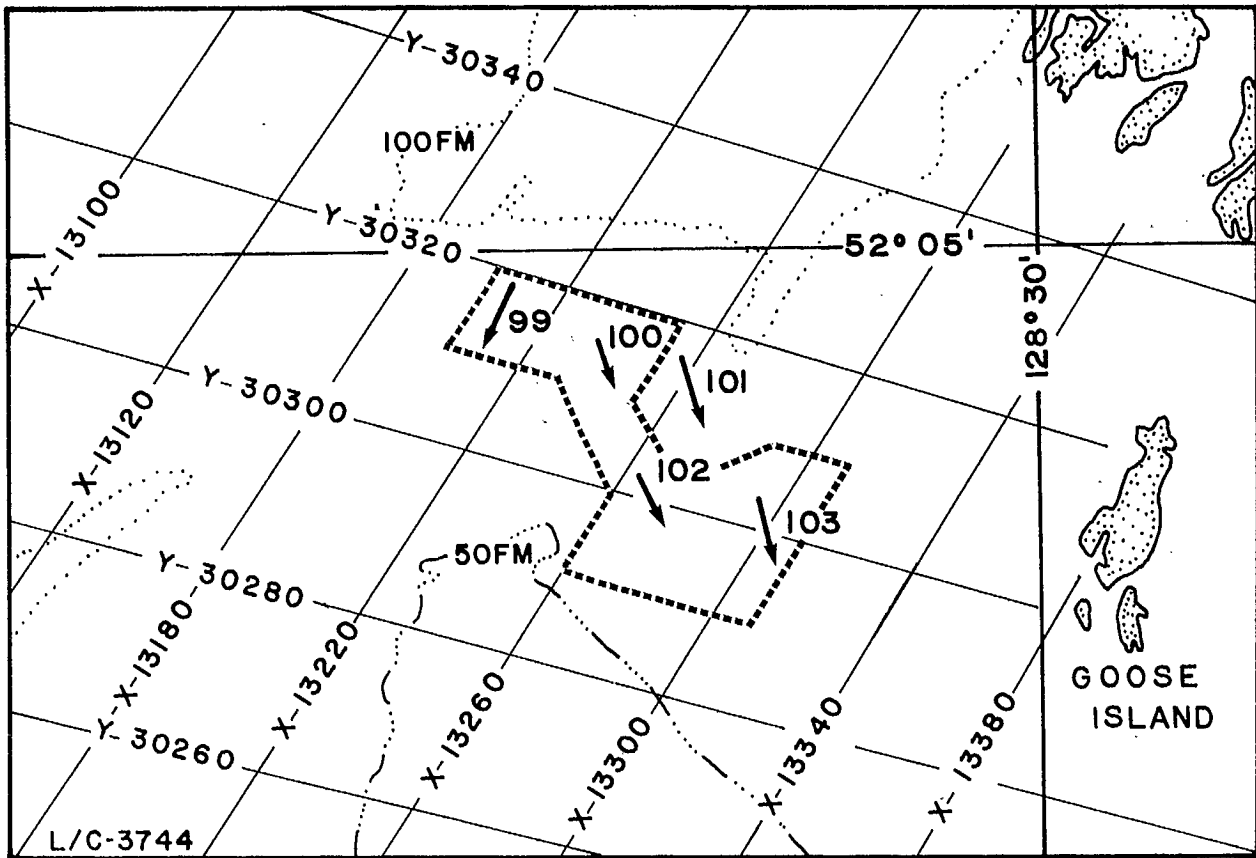


Fig. 9. Location of trawl tows off the N.W. corner of Goose Island Gully.

APPENDIX TABLE 1 CONTINUED

HAUL NO.	1	2	3	4	5	6
DATE	MAY 7	MAY 7	MAY 7	MAY 7	MAY 7	MAY 7
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	155	199	128	106	91	61
SHRIMP						
PINK (JORDANI)	..	23	T	5	30	..
NUM/KG	..	245	..	182	311	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	T	T	..	..	..
OTHERS	T	T	T	T	T	T
FLATFISH						
DOVER SOLE	..	..	T	..	..	..
ENGLISH SOLE	5	T	T	..	..	3
FLATHEAD SOLE	..	3	T	10	T	..
HALIBUT	10	..	..	..	..	..
REX SOLE	T	4	2	..	T	T
SLENDER SOLE	T	T	3	..	T	..
TURBOT	..	T	1	10	..	..
OTHERS	9	..	..	..	..	4
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	..	..	..	3	..	..
OTHERS	..	..	..	..	T	..
OTHER ROUND FISH						
BLACKCOD	..	T	..	1	1	..
EULACHON	..	T	24	24	1	..
HERRING	..	..	T	3	6	..
LINGCOD	71	90	72	3	4	35
PACIFIC COD	..	..	..	1	..	..
WALLEYE PULLOCK	..	T	1	2	..	..
TOMCOD	..	1	..	T	T	..
OTHERS	T	..	..	..	..	..
SELACHII						
DOGFISH	60	78	25	12	49	19
RATFISH	..	..	..	32	..	T
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	7	8	9	10	11	12
DATE	MAY 7	MAY 7	MAY 7	MAY 8	MAY 8	MAY 8
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	180	92	423	92	63	80
SHRIMP						
PINK (JORDANI)	T	T	300	..	T	T
NUM/KG	..	..	187	..	..	..
OTHER SHRIMP	..	T	..	..	..	T
INVERTEBRATES						
BRITTLE STARS	..	..	..	..	..	..
OTHERS	T	..	1	3	3	T
FLATFISH						
DOVER SOLE	..	1	1	T	T	..
ENGLISH SOLE	..	1	..	..	..	..
FLATHEAD SOLE	..	3	9	7	3	3
HALIBUT	..	..	..	..	..	..
REX SOLE	..	1	2	..	3	T
SLENDER SOLE	T	2	2	3	5	T
TURBOT	..	T	4	7	3	3
OTHERS	3	..	..	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	3	..	..	2	3
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	..	2	10	5	13	2
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	1	T	1	1	..	T
EULACHON	..	40	77	55	25	38
HERRING	2	8	T	5	..	1
LINGCOD	..	..	..	..	..	1
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	..	10	3	..	..	..
TOMCOD	..	T	..	..	..	..
OTHERS	T	..	..	..	..	..
SELACHII						
DOGFISH	174	21	8	..	5	11
RATFISH	T	..	4	6	1	16
SKATES	..	..	1	..	..	2
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	13	14	15	16	17	18
DATE	MAY 8	MAY 8	MAY 8	MAY 8	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	421	108	95	331	127	158
SHRIMP						
PINK (JORDANI)	21	..	..	..	..	..
NUM/KG	174	..	..	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	..	..	..	..
OTHERS	..	..	T	..	T	..
FLATFISH						
DOVER SOLE	T	..	1	..	..	..
ENGLISH SOLE	..	..	4	..	..	..
FLATHEAD SOLE	10	3	..	5	1	2
HALIBUT	..	..	..	..	..	..
REX SOLE	2	..	4	1	..	T
SLENDER SOLE	2	T	T	2	1	T
TURBUT	3	1	..	..	1	1
OTHERS	..	..	9	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	5	1	..	..	2	..
S. PINNIGER	3	..	2	..	..	..
S. ZACENTRUS	4	..	..	..	..	T
OTHERS	..	..	..	..	..	1
OTHER ROUND FISH						
BLACKCOD	1	2	..	..	1	..
EULACHON	314	27	..	1	30	28
HERRING	..	..	..	26	2	1
LINGCOD	..	6	27	86	..	2
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	4	2	..	..	3	..
TOMCOD	..	..	4	18	..	..
OTHERS	..	..	T	T	..	..
SELACHII						
DOG FISH	51	66	44	191	86	123
RAT FISH	1	..	..	1	..	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	19	20	21	22	23	24
DATE	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	159	68	85	150	159	70
SHRIMP						
PINK (JORDANI)	T	T	..	..	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	T	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	..	..	..	..
OTHERS	T	T	..	T	..	..
FLATFISH						
DOVER SOLE	..	..	..	..	..	..
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	3	2	1	4	17	5
HALIBUT	..	..	..	..	..	..
REX SOLE	T	2	..	..	1	1
SLENDER SOLE	2	..	3	1	T	T
TURBOT	1	..	8	4	..	2
OTHERS	..	..	..	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	2	2	..	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	2	2	2	2	10	6
OTHERS	..	..	..	..	1	..
OTHER ROUND FISH						
BLACKCOD	..	..	1	..	..	1
EULACHON	53	20	30	60	20	14
HERRING	2	11	2	11	7	4
LINGCOD	14	..	1	..	6	2
PACIFIC COD	..	1	..	..	..	..
WALLEYE POLLOCK	..	T	..	T	..	T
TOMCOD	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..
SELACHII						
DOG FISH	82	30	33	66	97	30
RAT FISH	T	..	2	..	T	..
SKATES	..	..	..	..	..	5
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	25	26	27	28	29	30
DATE	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	135	49	47	62	270	115
SHRIMP						
PINK (JORDANI)	..	..	..	..	T	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	T	..	T	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	..	..	..	..
OTHERS	T	T	..	T	T	T
FLATFISH						
DOVER SOLE	T	2	T	1	1	..
ENGLISH SOLE	..	..	2	..	1	..
FLATHEAD SOLE	9	6	..	2	21	6
HALIBUT	..	..	..	..	..	..
REX SOLE	3	..	2	1	18	2
SLENDER SOLE	3	2	T	T	6	T
TURBUT	..	..	..	T	18	1
OTHERS	..	..	3	1	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	8	..	3	..	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	4	..	..	1	4	5
OTHERS	..	..	..	..	..	T
OTHER ROUND FISH						
BLACKCOD	2	2	..	..	T	1
EULACHON	10	8	..	4	8	30
HERRING	1	..	..	11	..	1
LINGCOD	1	4	8	5	8	..
PACIFIC COD	..	4	..	1	..	..
WALLEYE POLLOCK	1	5	..	6	..	..
TOMCOD	..	1	6	T	..	..
OTHERS	..	T	T	..	..	T
SELACHII						
DOGFISH	101	7	26	26	185	69
RATFISH	..	..	..	..	T	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	31	32	33	34	35	36
DATE	MAY 10	MAY 10	MAY 10	MAY 11	MAY 11	MAY 11
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	142	101	47	90	77	45
SHRIMP						
PINK (JORDANI)	..	T	..	..	T	10
NUM/KG	..	..	..	..	..	222
OTHER SHRIMP	..	..	..	..	..	T
INVERTEBRATES						
BRITTLE STARS	..	..	T	T	1	..
OTHERS	T	1	4	1	2	1
FLATFISH						
DOVER SOLE	1	1	1	..	..	..
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	5	4	3	T	2	1
HALIBUT	..	..	..	..	..	..
REX SOLE	T	T	T	..	..	..
SLENDER SOLE	T	T	T	1	T	..
TURBOT	2	T	2	..	..	..
OTHERS	..	..	..	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	1	3	..	..	..
S. PINNIGER	1	..	..	..	..	3
S. ZACENTRUS	3	1	..	T	..	2
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	1	2	..	..	..	..
EULACHON	52	33	28	43	13	14
HERRING	..	2	..	1	1	..
LINGCOD	..	7	..	14	7	..
PACIFIC COD	2	2	..	..	..	..
WALLEYE POLLOCK	T	T	T	5	1	..
TOMCOD	..	..	..	..	..	..
OTHERS	..	T	..	..	..	..
SELACHII						
DOG FISH	75	47	6	25	50	14
RAT FISH	..	..	T	..	..	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	37	38	39	40	41	42
DATE	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	247	85	16	141	61	92
SHRIMP						
PINK (JORDANI)	T	T	..	T	T	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	T	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	T	T	..	..
OTHERS	T	T	1	2	T	2
FLATFISH						
DOVER SOLE	..	..	1	1	3	..
ENGLISH SOLE	..	..	1	..	..	..
FLATHEAD SOLE	12	..	..	..	7	14
HALIBUT	..	..	..	..	..	..
REX SOLE	T	1	T	1	..	1
SLENDER SOLE	T	3	..	..	1	T
TURBOT	..	..	..	..	..	1
OTHERS	..	..	3	T	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	7	3	..	..	T	..
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	1	..	..	..	1	..
EULACHON	40	26	2	T	33	64
HERRING	T	T	..	..	..	..
LINGCOD	3	..	4	71	11	1
PACIFIC COD	..	..	..	..	..	..
WALLEYE PULLOCK	T	T	..	..	T	..
TOMCOD	..	..	4	48	..	..
OTHERS	..	..	T	..	..	..
SELACHII						
DOGFISH	184	52	..	18	5	9
RATFISH	T	..	..	..	..	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	43	44	45	46	47	48
DATE	MAY 11	MAY 12	MAY 12	MAY 12	MAY 12	MAY 13
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	26	41	80	51	224	158
SHRIMP						
PINK (JORDANI)	T	..	T	..	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	1	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	1	T	..	..	..	..
OTHERS	1	T	T	T	T	T
FLATFISH						
DOVER SOLE	T	T	T	..	4	1
ENGLISH SOLE	T	..	..	T	5	1
FLATHEAD SOLE	T	T	3	..	T	..
HALIBUT	..	..	3	..	..	..
REX SOLE	T	2	..	1	15	3
SLENDER SOLE	T	1	T	T	..	..
TURBOT	..	..	..	..	..	..
OTHERS	..	T	..	3	5	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	4
S. PINNIGER	..	..	..	3	126	..
S. ZACENTRUS	T	..	T	..	..	..
OTHERS	..	..	..	..	5	..
OTHER ROUND FISH						
BLACKCOD	..	..	..	..	..	..
EULACHON	4	1	3	1	..	..
HERRING	..	T	4	1	6	130
LINGCOD	4	..	1	6	9	..
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	..	T	2	..	..	..
TOMCOD	..	..	..	4	3	6
OTHERS	..	..	T	T	..	T
SELACHII						
DOGFISH	18	36	64	32	46	13
RATFISH	..	..	..	..	..	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	49	50	51	52	53	54
DATE	MAY 13	MAY 13	MAY 13	MAY 13	MAY 14	MAY 14
AREA	CLSD	CLSD	CLSD	CLSD	NOSD	NOSD
CATCH TOTAL (KG)	126	167	99	85	203	263
SHRIMP						
PINK (JORDANI)	T	..	..	..	T	14
NUM/KG	..	..	..	..	..	286
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	T	..	..	..
OTHERS	T	T	T	T	6	38
FLATFISH						
DOVER SOLE	2	12	4	..	..	7
ENGLISH SOLE	..	7	3	15	1	1
FLATHEAD SOLE	3	2	3	..	..	1
HALIBUT	..	..	..	..	3	..
REX SOLE	7	18	30	25	24	53
SLENDER SOLE	1	1	T	1	6	6
TURBOT	..	T	..	..	20	23
OTHERS	1	T	T	1	3	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	2	..	..	..	..
S. PINNIGER	4	13	3	..	..	..
S. ZACENTRUS	..	..	T	..	11	28
OTHERS	..	..	..	..	..	1
OTHER ROUND FISH						
BLACKCOD	..	..	..	..	..	..
EULACHON	2	3	5	..	11	..
HERRING	9	1	3	T	T	..
LINGCOD	15	21	19	7	2	4
PACIFIC COD	..	..	..	..	46	40
WALLEYE POLLOCK	..	1	..	..	64	12
TOMCOD	1	1	8	10	..	..
OTHERS	T	T	T	..	..	T
SELACHII						
DOGFISH	81	85	21	26	6	23
RATFISH	..	..	..	..	..	..
SKATES	T	..	..	..	..	12
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	55	56	57	58	59	60
DATE	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	447	267	67	219	293	564
SHRIMP						
PINK (JORDANI)	..	44	11	..	114	452
NUM/KG	..	316	610	..	282	308
OTHER SHRIMP	2	..	..	T	..	..
INVERTEBRATES						
BRITTLE STARS	..	1	3	..	..	..
OTHERS	6	2	16	22	2	T
FLATFISH						
DOVER SOLE	46	1	..	16	9	8
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	8	..	..	96	55	58
HALIBUT	..	..	..	..	..	..
REX SOLE	77	6	7	22	..	..
SLENDER SOLE	8	6	3	4	3	6
TURBOT	15	2	..	22	..	5
OTHERS	..	..	T	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	1
S. PINNIGER	..	..	..	..	..	..
S. ZACANTIRUS	10	..	..	10	7	T
OTHERS	199	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	5	8	..	..	6	..
EULACHON	..	11	..	4	38	T
HERRING	..	3	1	4	2	1
LINGCOD	16	8	2	..	6	7
PACIFIC COD	24	..	1	..	2	..
WALLEYE POLLOCK	..	..	T	T	5	1
TOMCOD	..	..	..	..	..	..
OTHERS	T	T	T	..	..	T
SELACHII						
DOG FISH	21	175	23	19	42	25
RAT FISH	1	..	..	..	..	..
SKATES	9	T	..	T	2	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	61	62	63	64	65	66
DATE	MAY 14	MAY 15	MAY 15	MAY 15	MAY 15	MAY 15
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	178	195	187	201	79	151
SHRIMP						
PINK (JORDANI)	19	26	T	91	..	..
NUM/KG	256	256	..	450	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	..	T	17	..	..
OTHERS	..	T	1	4	T	1
FLATFISH						
DOVER SOLE	25	20	20	..	20	10
ENGLISH SOLE	2	..	..	..	T	..
FLATHEAD SOLE	2	20	10	3	..	..
HALIBUT	..	..	5	..	..	..
REX SOLE	18	20	30	26	30	35
SLENDER SOLE	2	1	2	2	..	..
TURBOT	..	..	1	1	3	..
OTHERS	4	..	..	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	56	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	..	..	3	..	T	..
OTHERS	T	7	..	1	..	..
OTHER ROUND FISH						
BLACKCOD	1	3	..	2	1	..
EULACHON	..	15	35	8	2	2
HERRING	1	..	..	1	..	1
LINGCOD	..	37	..	14	..	3
PACIFIC COD	1	..	3	1	1	1
WALLEYE PULLOCK	13	12	8	1	1	T
TOMCOD	8	..	..	..	..	T
OTHERS	..	..	..	..	..	..
SELACHII						
DOGFISH	18	34	69	29	11	88
RATFISH	..	..	..	..	..	..
SKATES	8	..	..	T	10	10
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	67	68	69	70	71	72
DATE	MAY 15	MAY 15	MAY 15	MAY 16	MAY 16	MAY 16
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	117	122	163	169	104	121
SHRIMP						
PINK (JORDANI)	T	T	..	T	T	T
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	..	T	..	T	7	45
OTHERS	T	..	T	T	T	3
FLATFISH						
DOVER SOLE	10	8	8	6	..	..
ENGLISH SOLE	1	8	15	T	2	..
FLATHEAD SOLE	..	1	..	..	T	..
HALIBUT	..	..	..	..	3	3
REX SOLE	30	8	20	50	6	3
SLENDER SOLE	..	..	T	T	..	T
TURBOT	T	..	..	..	T	1
OTHERS	3	..	..	1	T	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	..
S. PINNIGER	..	..	..	4	..	..
S. ZACENTRUS	..	..	T	..	..	..
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	..	..	9	16	3	..
EULACHON	15	..	..	..	..	2
HERRING	3	7	22	T	..	2
LINGCOD	30	63	12	..	9	3
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	1	..	3	T	1	T
TUMCOD	6	13	15	..	..	..
OTHERS	T	6	..	T	T	..
SELACHII						
DOGFISH	18	8	52	92	73	57
RATFISH	..	..	..	..	..	..
SKATES	..	..	7	..	..	2
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	73	74	75	76	77	78
DATE	MAY 16	MAY 16	MAY 16	MAY 16	MAY 16	MAY 16
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	270	265	120	99	95	323
SHRIMP						
PINK (JORDANI)	133	..	T	T	22	..
NUM/KG	500	..	..	..	300	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	30	..	10	T	20	T
OTHERS	6	5	3	T	2	T
FLATFISH						
DOVER SOLE	4	2	T	8	..	T
ENGLISH SOLE	..	14	..	6	..	11
FLATHEAD SOLE	..	..	1	..	..	..
HALIBUT	5	3	7	7	8	33
REX SOLE	17	..	T	..	6	12
SLENDER SOLE	..	..	T	..	..	8
TURBOT	11	4	T	..	3	2
OTHERS	2	3	2	..	..	7
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	..
S. PINNIGER	..	5	..	..	..	..
S. ZACENTRUS	..	..	..	..	..	..
OTHERS	T	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	6	8	7	11	5	..
EULACHON	18	60	3	2	12	T
HERRING	1	2	..	T	..	4
LINGCOD	17	11	9	3	..	165
PACIFIC COD	7	13	2	..	..	..
WALLEYE POLLOCK	T	2	T	T	T	..
TOMCOD	..	..	..	..	..	..
OTHERS	..	T	..	T	..	..
SELACHII						
DOGFISH	5	133	76	62	17	77
RATFISH	..	..	..	..	..	1
SKATES	8	..	..	..	..	3
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	79	80	81	82	83	84
DATE	MAY 17	MAY 17	MAY 17	MAY 17	MAY 17	MAY 17
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	166	119	914	172	479	255
SHRIMP						
PINK (JORDANI)	7	..	699	..	T	T
NUM/KG	342	..	225	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTEBRATES						
BRITTLE STARS	T	T	..	..	..	..
OTHERS	1	T	7	10	2	1
FLATFISH						
DOVER SOLE	9	4	..	14	20	11
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	..	T	32	3	9	21
HALIBUT	..	6	..	..	..	..
REX SOLE	12	15	T	48	12	14
SLENDER SOLE	12	5	5	..	7	6
TURBOT	..	T	6	70	47	11
OTHERS	8	4	..	..	..	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BABCOCKI	..	..	..	..	..	..
S. FLAVIDUS	..	..	..	..	4	..
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	..	..	9	T	38	..
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	..	..	9	..	..	6
EULACHON	2	..	43	15	303	130
HERRING	1	..	T	..	..	..
LINGCOD	104	73	67	5	8	13
PACIFIC COD	..	..	..	1	4	..
WALLEYE POLLOCK	..	..	4	..	..	T
TOMCOD	1	2	..	..	..	..
OTHERS	..	..	T	T	..	..
SELACHII						
DOGFISH	9	10	14	6	16	9
RATFISH	..	..	19	..	2	33
SKATES	..	..	..	..	7	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	85	86	87	88	89	90
DATE	MAY 17	MAY 16	MAY 18	MAY 18	MAY 18	MAY 18
AREA	CLSD	STRA	STRA	NEGI	NEGI	NEGI
CATCH TOTAL (KG)	67	449	670	193	795	401
SHRIMP						
PINK (JORDANI)	..	..	T	32	T	15
NUM/KG	..	..	..	250	..	313
OTHER SHRIMP	..	..	..	1	..	T
INVERTEBRATES						
BRITTLE STARS	..	..	..	2	6	T
OTHERS	2	..	..	T	..	T
FLATFISH						
DOVER SOLE	2	T	5	9	10	24
ENGLISH SOLE	..	T	T	..	..	..
FLATHEAD SOLE	2	T	3	T	T	T
HALIBUT	..	4	..	..	..	..
REX SOLE	30	12	2	..	..	T
SLENDER SOLE	10	..	..	..	..	..
TURBOT	1	8	484	112	284	125
OTHERS	5	..	..	..	..	..
ROCKFISH						
S. ALUTUS	..	26	142	23	469	101
S. BABCOCKI	..	..	..	3	7	2
S. FLAVIDUS	..	6	11	3	3	110
S. PINNIGER	..	1	..	..	..	..
S. ZACENTRUS	T	..	..	..	..	..
OTHERS	..	12	6	3	..	4
OTHER ROUND FISH						
BLACKCOD	..	20	2	T	5	3
EULACHON	4	..	..	..	..	..
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	..	..
PACIFIC COD	1	..	2	..	3	..
WALLEYE POLLOCK	T	348	6	..	..	11
TOMCOD	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..
SELACHII						
DOGFISH	9	..	7	5	7	..
RATFISH	T	..	..	T	..	..
SKATES	1	12	..	..	1	6
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	91	92	93	94	95	96
DATE	MAY 18	MAY 20	MAY 20	MAY 20	MAY 20	MAY 20
AREA	NEGI	NEGI	NEGI	NEGI	NEGI	NEGI
CATCH TOTAL (KG)	240	584	103	89	486	394
SHRIMP						
PINK (JORDANI)	6	T	4	17	34	46
NUM/KG	276	..	304	324	287	310
OTHER SHRIMP	T	..	..	1	3	2
INVERTEBRATES						
BRITTLE STARS	..	40	2	10	..	..
OTHERS	..	2	1	1	2	1
FLATFISH						
DOVER SOLE	22	20	3	6	23	35
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	T	..	..	T	..	8
HALIBUT	..	..	..	..	..	..
REX SOLE	..	..	T	..	..	T
SLENDER SOLE	..	..	..	..	..	..
TURBOT	49	284	61	23	325	204
OTHERS	..	..	..	..	..	..
ROCKFISH						
S. ALUTUS	38	206	6	17	9	5
S. BABCOCKI	3	6	13	..	49	33
S. FLAVIDUS	114	8	..	..	1	18
S. PINNIGER	..	4	..	..	..	..
S. ZACENTRUS	..	..	..	..	..	..
OTHERS	T	3	..	1	1	..
OTHER ROUND FISH						
BLACKCOD	..	..	..	..	..	..
EULACHON	..	..	..	T	12	10
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	..	..
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	3	9	2	..	..	14
TOMCOD	..	..	..	..	..	..
OTHERS	..	..	T	T	..	..
SELACHII						
DOGFISH	2	..	10	5	..	9
RATFISH	3	1	1	2	4	2
SKATES	..	1	..	6	23	7
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	97	98	99	100	101	102
DATE	MAY 20	MAY 20	MAY 21	MAY 21	MAY 21	MAY 21
AREA	NEGI	NEGI	NWGI	NWGI	NWGI	NWGI
TIME START (PST)	1324	1434	0720	0830	0930	1116
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	051	051	052	052	052	051
(MIN)	30.0	27.0	04.1	02.7	02.0	59.0
W. LONG. (DEG)	128	128	128	128	128	128
(MIN)	30.8	29.0	53.0	49.4	45.6	47.5
DIRECTION (DEG.TRUE)	185	190	204	160	160	155
FINISH N. LAT. (DEG)	051	051	052	052	052	051
(MIN)	28.2	25.6	02.4	01.4	00.4	57.6
W.LONG. (DEG)	128	128	128	128	128	128
(MIN)	30.5	29.2	54.3	48.7	44.8	46.5
DISTANCE NAUT. MI.	1.8	1.5	1.9	1.5	1.7	1.5
DEPTH (FATHOMS)	103-107	108-108	95- 93	94- 95	96- 93	94- 91
SEE FIGURE NO.	8	8	9	9	9	9
SURFACE TEMP(DEG.C)	..	9.4	..	9.7	..	9.7
BOTTOM TEMP.(DEG.C)	..	6.1	..	6.5	..	8.2
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	302	400	110	68	..	202
REMARKS	USABLE	USABLE	USABLE	USABLE	UNUSABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	97	98	99	100	101	102
DATE	MAY 20	MAY 20	MAY 21	MAY 21	MAY 21	MAY 21
AREA	NEGI	NEGI	NWGI	NWGI	NWGI	NWGI
CATCH TOTAL (KG)	302	400	110	68	0	202
SHRIMP						
PINK (JORDANI)	53	36	20	8	..	8
NUM/KG	320	325	228	218	..	210
OTHER SHRIMP	T	T	..	..	..	T
INVERTEBRATES						
BRITTLE STARS	..	T	..	..	..	..
OTHERS	2	..	T	1	..	8
FLATFISH						
DOVER SOLE	13	..	..	..	..	..
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	3	T	4	T	..	T
HALIBUT	..	..	..	..	..	..
REX SOLE	..	..	T	..	..	T
SLENDER SOLE	..	..	..	..	..	..
TURBOT	95	30	55	42	..	66
OTHERS	..	..	..	..	..	..
ROCKFISH						
S. ALUTUS	20	192	..	..	..	T
S. BABCOCKI	58	71	..	6	..	..
S. FLAVIDUS	24	22	6	9	..	8
S. PINNIGER	..	..	..	..	..	..
S. ZACENTRUS	..	..	..	..	..	..
OTHERS	5	..	4	..	..	..
OTHER ROUND FISH						
BLACKCOD	1	..	..	..	..	32
EULACHON	12	8	..	..	..	..
HERRING	..	..	..	..	..	T
LINGCOD	..	..	..	..	..	..
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	5	7	..	T	..	..
TOMCOD	..	..	..	..	..	..
OTHERS	..	..	1	2	..	1
SELACHII						
DOGFISH	7	10	5	..	..	79
RATFISH	4	5	3	..	..	T
SKATES	..	19	12	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	103
DATE	MAY 21
AREA	NWGI
TIME START (PST)	1225
DURATION(HR.,MIN)	.30
START N. LAT. (DEG)	051
(MIN)	58.2
W. LONG. (DEG)	128
(MIN)	42.5
DIRECTION (DEG.TRUE)	167
FINISH N. LAT. (DEG)	051
(MIN)	56.6
W.LONG. (DEG)	128
(MIN)	41.8
DISTANCE NAUT. MI.	1.6
DEPTH (FATHOMS)	86- 83
SEE FIGURE NO.	9
SURFACE TEMP(DEG.C)	..
BOTTOM TEMP.(DEG.C)	..
TYPE OF GEAR	8
TOTAL CATCH (KG)	187
REMARKS	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	103
DATE	MAY 21
AREA	NWGI
CATCH TOTAL (KG)	187
SHRIMP	
PINK (JORDANI)	38
NUM/KG	226
OTHER SHRIMP	..
INVERTEBRATES	
BRITTLE STARS	..
OTHERS	1
FLATFISH	
DOVER SOLE	..
ENGLISH SOLE	..
FLATHEAD SOLE	2
HALIBUT	6
REX SOLE	..
SLENDER SOLE	..
TURBOT	78
OTHERS	..
ROCKFISH	
S. ALUTUS	..
S. BABCOCKI	..
S. FLAVIDUS	..
S. PINNIGER	..
S. ZACENTRUS	12
OTHERS	..
OTHER ROUND FISH	
BLACKCOD	..
EULACHON	T
HERRING	1
LINGCOD	16
PACIFIC COD	..
WALLEYE POLLOCK	22
TUMCOD	..
OTHERS	T
SELACHII	
DOGFISH	10
RATFISH	1
SKATES	..
OTHERS	..

FOOTNOTES

AREA: CLSD = Tofino Ground
NOSD = Nootka Ground
STRA = Stump Ranch, Queen Charlotte Sound
NEGI = N.E. Goose Island Gully, Queen Charlotte Sound
NWGI = N.W. Goose Island Gully, Queen Charlotte Sound

TIME START: Pacific Standard Time

TYPE OF GEAR: 8 = National Marine Fisheries
61-ft shrimp sampling trawl

T: Trace

t: Metric tonne = 2204 pounds

