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# *F. V. SHARLENE K* Shrimp Survey 89-S-1, West Coast of Vancouver Island, May 10-16, 1989

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# F. V. SHARLENE K SHRIMP SURVEY 89-S-1, WEST COAST OF VANCOUVER ISLAND, MAY 10-16, 1989

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## ABSTRACT

Boutillier, J. A., W. R. Harling and D. E. Young. 1990. F. V. SHARLENE K shrimp survey 89-S-1, west coast of Vancouver Island, May 10-16, 1989. Can. Data Rep. Fish. Aquat. Sci. 807: 38 p.

This report summarizes information obtained during a shrimp biomass survey of the Tofino grounds off the West Coast of Vancouver Island, conducted May 10-16, 1989. This is one of a continuing series of spring surveys done to determine biomass estimates, year-class abundance, and distribution of the pink shrimp, *Pandalus jordani*. This report provides detailed catch records and resulting biomass evaluations. The overall assessment shows about a 9% decline in shrimp biomass since the 1988 assessment. This reduction in biomass is mainly due to declines in abundance of the 3-year-old animals.

## RÉSUMÉ

Boutillier, J. A., W. R. Harling and D. E. Young. 1990. F. V. SHARLENE K shrimp survey 89-S-1, west coast of Vancouver Island, May 10-16, 1989. Can. Data Rep. Fish. Aquat. Sci. 807: 38 p.

Le présent rapport présente les données recueillies au cours d'une campagne d'échantillonnage effectuée du 10 au 16 mai 1989 visant à établir la biomasse de crevettes dans le secteur de Tofino au large de la côte ouest de l'île Vancouver. Cette campagne s'inscrit dans une série de campagnes printanières visant à déterminer la biomasse, l'abondance des classes d'âge et la distribution de la crevette *Pandalus jordani*. Les registres détaillés des prises et les évaluations de la biomasse obtenues à partir de ces registres sont présentés. Globalement, les résultats montrent une diminution de la biomasse de 9 % par rapport à l'évaluation de 1988. Cette réduction s'explique principalement par une diminution de l'abondance des crevettes de trois ans.

## INTRODUCTION

A shrimp biomass survey of the Tofino grounds, fisheries statistical area (FSA) 124 was conducted May 10-16, 1989 aboard the F.V. Sharlene K (Fig. 1). The fishery in this area targets exclusively on smooth pink shrimp and surveys of this stock have been conducted on these grounds 14 times in spring (April-May) and three times in the late summer (August-September). The purpose of these cruises is to provide relative estimates of total biomass, year-class abundance, and distribution of the smooth pink shrimp, Pandalus jordani.

## SURVEY DESIGN AND FISHING GEAR

This biomass trawl survey was carried out using a standard 18.6 m, National Marine Fisheries Service (NMFS), high-rising, shrimp-sampling trawl (Boutillier et al. 1977). Trawl locations for the biomass survey were established using a systematic grid pattern based on Loran C blocks. Tows were made diagonally through adjacent 5900-Z 10-microsecond blocks along successive 5900-Y lines, 20 microseconds apart. Tow duration, except when tows were fouled, was 30 minutes and the distance covered, depending on tide and wind, ranged from 1.1 to 1.7 nautical miles (M) with an average distance of 1.39 M. From each trawl catch dumped on deck, large species were sorted, weighed and discarded. A small, random, bucket sample of shrimp was collected and processed to determine the number of shrimp/kilogram (No./kg). The 1 kg sample was then sorted by sex, and the carapace length measured (orbit of the eye to mid-dorsal, posterior margin of the carapace). The balance of each catch, consisting of shrimp, small fish, and invertebrates, was shovelled into baskets and weighed. One or two tubs of this mixed catch were then sorted by species and each species was weighed individually to determine the proportional catch composition. The calculated percentage of species by weight was then used to extrapolate the total shrimp and other species weight in the catch.

The biomass and year-class abundance indices were calculated using a bicubic spline. For this analysis the Tofino ground is defined as the rectangular area that starts at $126^{0}05'$ longitude and $48^{0}35'$ N latitude and runs 50 M at $322^{0}$ True (T) and 15 M at $52^{0}$ T. This area is divided into 2 sq M cells which are 1 M wide and 2 M long. The towable area within this large area is identified by a set of untowable boundary points which were determined from all the surveys. The calculation of biomass assumes that all the towable area is potential shrimp grounds. This analysis sets the density [(kg or #)/0.2 sq M towed] obtained in the tow or in the case of repeated tows the mean of the two tows, equivalent to the density at the grid point which corresponds to the centre point of the tow. The area is divided into smaller 0.2 sq M cells and a bicubic spline is used to fill blank grid cells with interpolated values. The biomass and areas of concentration are then calculated by adding the values greater than some minimal density and counting the grid cells and multiplying by 0.2.

## RESULTS

The Tofino shrimp ground lies offshore from the west coast of Vancouver Island between 48°40′ and 49°15′ north latitude. A total of 67 trawl tows were completed on this ground. Tow locations are shown in Figure 2. Catch, by species, is summarized in descending order of abundance in Table 1. Detailed fishing logs and catch records are presented in Appendix Table 1.

This area-swept biomass survey found that shrimp were in concentrations >1 tonne/sq M in a 171 sq M area. Of the 67 usable tows, 46 contained shrimp varying in amounts from trace to 958 kg per nautical mile towed (kg/M), with a mean catch rate of 111 kg/M (Table 2). A weighted estimate of the age-class structure of the shrimp determined that the samples were composed of 5.5% 1-year-old, 59.2% 2-year-old, and 35.3% 3-year-old animals. Mean carapace size for these three age groups were 12.8, 17.4, and 21.1 mm, respectively. The number of shrimp per kilogram ranged from 168 to 326 (Appendix Table I) while the size and density of shrimp for each tow combined to give an overall weighted mean of 243.

The relative abundance of biomass and the three year classes of shrimp, for all spring surveys (plus the August 1987 survey) is shown in Figure 3.

## DISCUSSION

In comparison with the 1988 assessment, the 1989 overall assessment of shrimp shows about a 9% decline in shrimp on the grounds. The major difference between the two assessments was a shift in the proportions of 2+ and 3+ animals (Fig. 3). The combined totals of 2+ and 3+ animals (the major year classes targeted on in the fishery) for the 1988 and 1989 surveys was 9.5 x $10^8$ and 8.6 x $10^8$ animals respectively. Between 1988 and 1989, however, the 2+ index has shown almost a 47% increase with indices of 3.7 x $10^8$ to 5.4 x $10^8$ for 1988 and 1989 respectively. On the other hand the relatively weak 2+ year class in 1988 has resulted in a weak 3+ year class in 1989 which translated into a 45% decrease in indices from 5.8 x $10^8$ to 3.2 x $10^8$.

The prediction for 1990 suggests that the fishery on the 3+ animals will increase over the 1989 level but it will still be lower than the 1988 fishery. The index of 2+ animals in the 1987 survey was still 33.3% higher than the 1989 index. How strong the 2+ index of animals will be in 1990 depends on how strong the 1+ animals recruit. In the past the 1+ index obtained in a spring survey resulted in a 2+ index the following year which had increased by a factor varying from 2-20 times the 1+ index.

## REFERENCES

Boutillier J.A., A.N. Yates and T.H.Butler. 1977. G.B.Reed shrimp Cruise 77-S-1 May 3-14, 1977. Fish and Marine Serv Data Report No. 37: 42 p.

Harling, W. R. and D. E. Young. 1990. W. E. RICKER shrimp survey 88-S-1, West Coast Vancouver Island, April 28-May 8, 1988. Can. Data Rep. Fish. Aquat. Sci.

Table 1. Total catch, by species, for the west coast Vancouver Island shrimp biomass survey 89-S-1, May 10-16, 1989.

| Species | | Weight (kg) | % of catch |
|---|---|---|---|
| Pink shrimp | *Pandalus jordani* | 7210 | 33.2 |
| Herring | *Clupea harengus pallasi* | 4218 | 19.4 |
| Dogfish | *Squalus acanthias* | 4150 | 19.1 |
| Eulachon | *Thaleichthys pacificus* | 1645 | 7.6 |
| Yellowtail rockfish | *Sebastes flavidus* | 1370 | 6.3 |
| Pacific cod | *Gadus macrocephalus* | 1015 | 4.7 |
| Pacific dab | *Citharichthys sordidus* | 457 | 2.1 |
| Canary rockfish | *Sebastes pinniger* | 446 | 2.1 |
| Lingcod | *Ophiodon elongatus* | 419 | 1.9 |
| Turbot | *Atheresthes stomias* | 237 | 1.1 |
| Other[a] | | 529 | 2.5 |
| Total weight | | 21696 | 100.0 |

[a]Those species, each of which contribute less than 1% to the total catch. Species comprising this group are listed in the footnotes to Appendix Table 1.

Table 2. *P. jordani* catch (kg) per nautical mile (M), 89-S-1, May 10-16, 1989.

| Tow No. | Depth (metres) | Duration (min.) | M | Weight (kg) | No./kg | Kg/M |
|---|---|---|---|---|---|---|
| 1 | 98-98 | 30 | 1.3 | 0 | - | - |
| 2 | 113-114 | 30 | 1.2 | 8 | 326 | 6.7 |
| 3 | 132-134 | 30 | 1.3 | 7 | 200 | 5.4 |
| 4 | 155-156 | 30 | 1.3 | 0 | - | - |
| 5 | 104-105 | 30 | 1.2 | 0 | - | - |
| 6 | 120-122 | 30 | 1.4 | 133 | 270 | 95.0 |
| 7 | 142-147 | 30 | 1.2 | Tr | - | - |
| 8 | 159-159 | 30 | 1.1 | 0 | - | - |
| 9 | 145-144 | 32 | 1.2 | 9 | 199 | 7.5 |
| 10 | 126-125 | 30 | 1.3 | 57 | 201 | 43.8 |
| 11 | 106-106 | 30 | 1.3 | 102 | 264 | 78.5 |
| 12 | 112-111 | 30 | 1.3 | 133 | 215 | 102.3 |
| 13 | 125-124 | 31 | 1.4 | 55 | 197 | 39.3 |
| 14 | 142-143 | 33 | 1.5 | 25 | 199 | 16.7 |
| 15 | 155-153 | 30 | 1.4 | 0 | - | - |
| 16 | 97-98 | 30 | 1.3 | 0 | - | - |
| 17 | 115-115 | 30 | 1.2 | 136 | 218 | 113.3 |
| 18 | 106-104 | 30 | 1.3 | Tr | - | - |
| 19 | 123-126 | 30 | 1.3 | 121 | 215 | 93.1 |
| 20 | 134-132 | 30 | 1.3 | 20 | 207 | 15.4 |
| 21 | 153-156 | 30 | 1.4 | 7 | 175 | 5.0 |
| 22 | 151-150 | 30 | 1.5 | 19 | 238 | 12.7 |
| 23 | 155-156 | 31 | 1.3 | 3 | 208 | 2.3 |
| 24 | 138-137 | 30 | 1.3 | 83 | 230 | 63.8 |
| 25 | 128-124 | 30 | 1.4 | 117 | 212 | 83.6 |
| 26 | 112-110 | 30 | 1.4 | 320 | 214 | 228.6 |
| 27 | 90-90 | 30 | 1.5 | 0 | - | - |
| 28 | 100-100 | 30 | 1.3 | 0 | - | - |
| 29 | 113-113 | 30 | 1.3 | 106 | 175 | 81.5 |
| 30 | 122-119 | 30 | 1.4 | 439 | 190 | 313.6 |
| 31 | 134-133 | 30 | 1.4 | 76 | 191 | 54.3 |
| 32 | 144-145 | 30 | 1.4 | 17 | 212 | 12.1 |
| 33 | 145-143 | 30 | 1.5 | 52 | 255 | 34.7 |
| 34 | 137-136 | 30 | 1.4 | 399 | 294 | 285.0 |
| 35 | 127-125 | 30 | 1.4 | 195 | 240 | 139.3 |
| 36 | 111-110 | 29 | 1.4 | 73 | 178 | 52.1 |
| 37 | 98-98 | 30 | 1.6 | 0 | - | - |
| 38 | 101-103 | 33 | 1.4 | 0 | - | - |
| 39 | 117-115 | 31 | 1.5 | 0 | - | - |
| 40 | 130-130 | 30 | 1.3 | 116 | 272 | 89.2 |
| 41 | 138-139 | 32 | 1.5 | 145 | 225 | 96.7 |
| 42 | 151-145 | 30 | 1.4 | 8 | 242 | 5.7 |
| 43 | 141-135 | 30 | 1.4 | 40 | 269 | 28.6 |
| 44 | 124-123 | 30 | 1.6 | 519 | 269 | 324.4 |

Table 2. (cont'd).

| Tow No. | Depth (metres) | Duration | M | Weight (kg) | No./kg | Kg/M |
|---|---|---|---|---|---|---|
| 45 | 116-119 | 32 | 1.7 | 3 | 240 | 1.8 |
| 46 | 108-106 | 30 | 1.5 | 0 | - | - |
| 47 | 106-106 | 30 | 1.6 | 0 | - | - |
| 48 | 115-116 | 30 | 1.5 | Tr | - | - |
| 49 | 122-122 | 30 | 1.4 | 166 | 234 | 118.6 |
| 50 | 129-126 | 32 | 1.6 | 621 | 237 | 388.1 |
| 51 | 137-136 | 31 | 1.7 | 0 | - | - |
| 52 | 132-133 | 30 | 1.4 | 109 | 243 | 77.9 |
| 53 | 138-141 | 30 | 1.5 | 139 | 236 | 92.7 |
| 54 | 128-126 | 30 | 1.4 | 451 | 299 | 322.1 |
| 55 | 131-129 | 30 | 1.4 | 32 | 168 | 22.9 |
| 56 | 125-125 | 29 | 1.3 | 5 | 212 | 3.8 |
| 57 | 119-116 | 35 | 1.6 | 41 | 225 | 25.6 |
| 58 | 107-104 | 30 | 1.4 | 260 | 263 | 185.7 |
| 59 | 95-90 | 30 | 1.5 | 0 | - | - |
| 60 | 92-92 | 30 | 1.5 | 0 | - | - |
| 61 | 108-112 | 31 | 1.3 | 1176 | 242 | 904.6 |
| 62 | 121-121 | 30 | 1.3 | 0 | - | - |
| 63 | 119-121 | 33 | 1.4 | 0 | - | - |
| 64 | 114-110 | 30 | 1.3 | 0 | - | - |
| 65 | 102-103 | 30 | 1.5 | 0 | - | - |
| 66 | 110-111 | 30 | 1.4 | 667 | 278 | 476.4 |
| 67 | 100-98 | 30 | 1.3 | 0 | - | - |

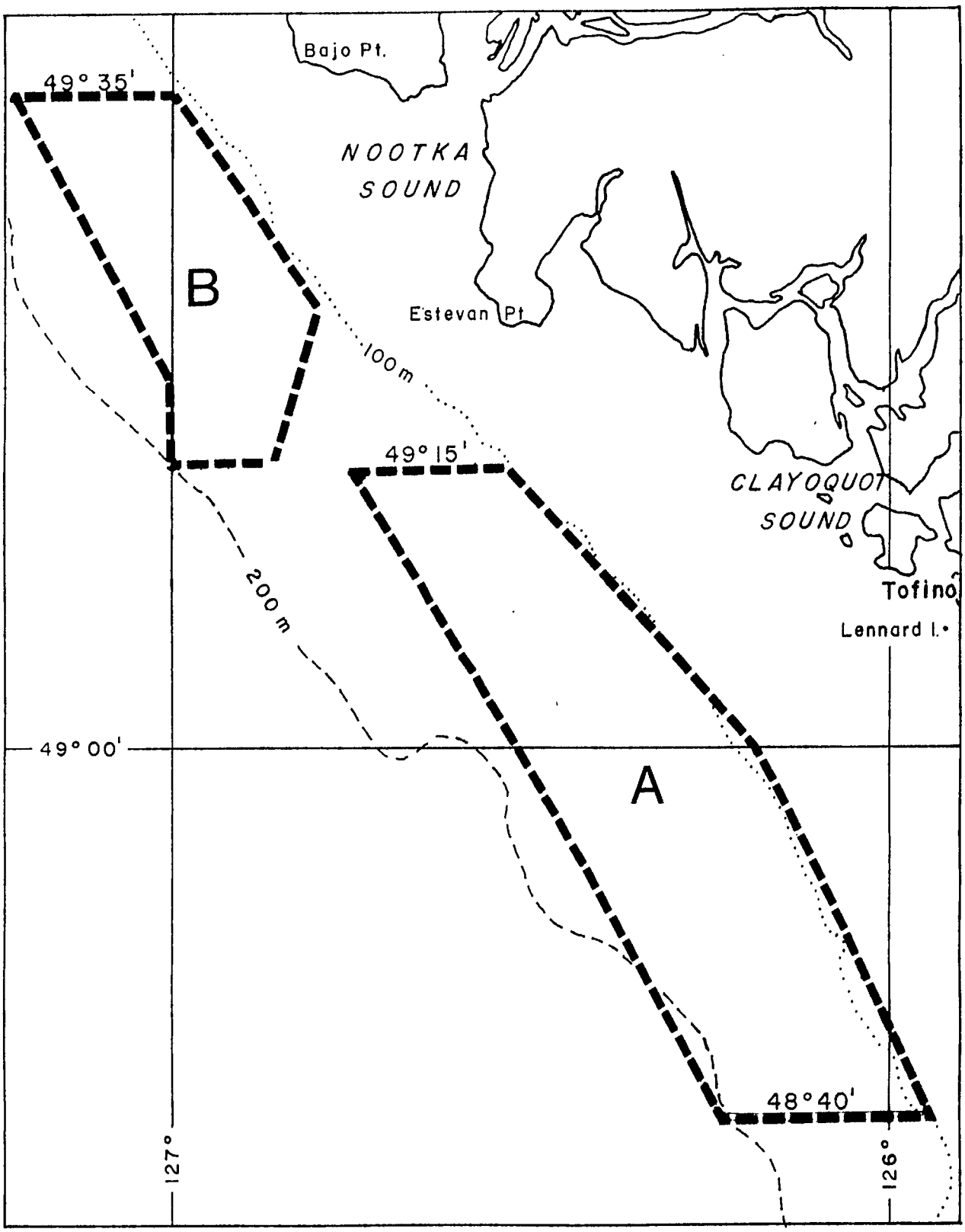


Fig. 1. General location of the Tofino (A) and Nootka (B) shrimp (*P. jordani*) fishing grounds off west coast Vancouver Island.

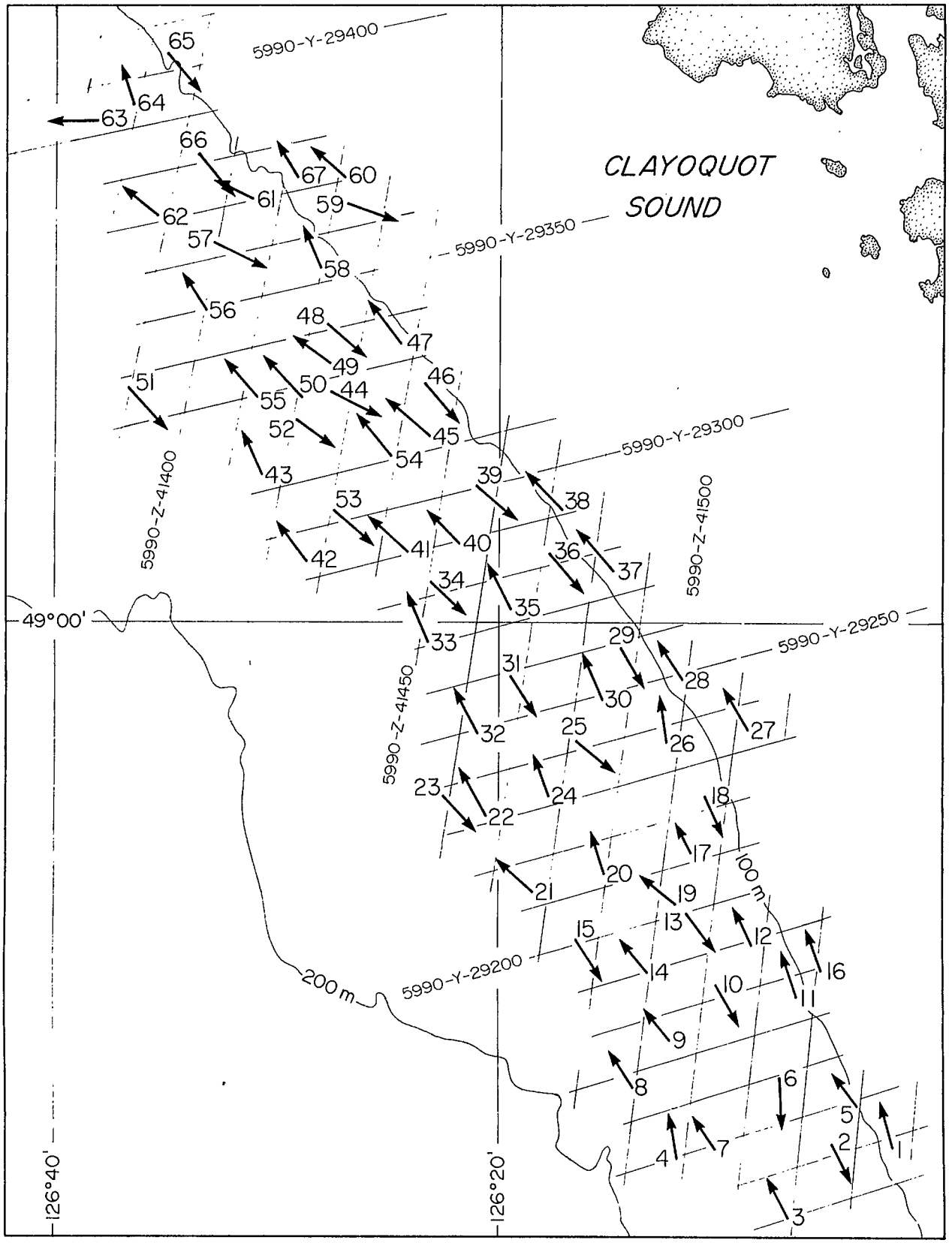


Fig. 2. Location of tows completed by M.V. SHARLENE K during shrimp cruise 89-S-1 off west coast Vancouver Island, May 10-16, 1989.

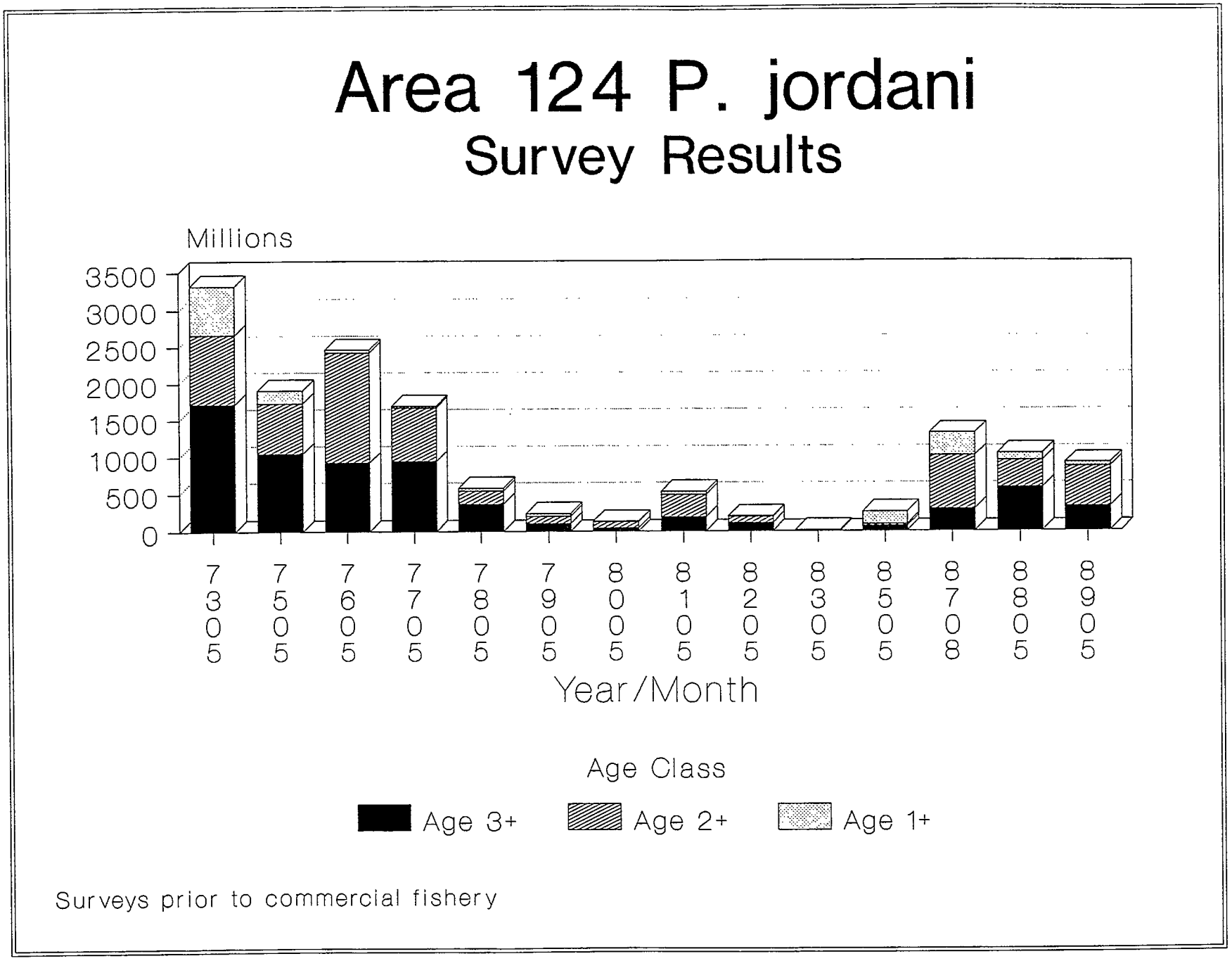


Fig. 3. Relative abundance of shrimp (*P. jordani*) year classes on Tofino Ground.

APPENDIX TABLE 1

APPENDIX TABLE 1. FISHING LOG AND CATCH TOTALS OF F.V SHARLENE K SHRIMP SURVEY 89-S-1, (MAY 10-16, 1989) OFF THE WEST COAST OF VANCOUVER ISLAND (SEE FOOTNOTE AT END OF TABLE FOR EXPLANATION OF TERMS).

| HAUL NO. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| DATE | MAY 10 | MAY 10 | MAY 10 | MAY 10 | MAY 11 | MAY 11 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1438 | 1548 | 1655 | 1805 | 0717 | 0822 |
| DURATION(HR.MIN) | .30 | .30 | .30 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 44.6 | 44.7 | 42.5 | 44.2 | 45.8 | 46.7 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 02.2 | 05.1 | 07.1 | 12.0 | 03.7 | 07.4 |
| DIRECTION (DEG.TRUE) | 332 | 172 | 322 | 322 | 332 | 152 |
| FINISH N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 45.9 | 43.6 | 43.6 | 45.4 | 46.7 | 45.3 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 02.8 | 04.2 | 07.9 | 12.3 | 04.9 | 07.3 |
| DISTANCE NAUT. MI. | 1.3 | 1.2 | 1.3 | 1.3 | 1.2 | 1.4 |
| DEPTH (METERS) | 98- 98 | 113-114 | 132-134 | 155-156 | 104-105 | 120-122 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 348 | 1107 | 111 | 39 | 370 | 227 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. (CONTINUED

| HAUL NO. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| DATE | MAY 10 | MAY 10 | MAY 10 | MAY 10 | MAY 11 | MAY 11 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 348 | 1107 | 111 | 39 | 370 | 227 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | .. | 8 | 7 | .. | .. | 133 |
| NUM/KG | .. | 326 | 200 | .. | .. | 270 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | T | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | 54 | .. | .. | .. | 44 | .. |
| TURBOT | .. | .. | 2 | 23 | .. | .. |
| OTHERS | 7 | 4 | 6 | 4 | 1 | .. |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | 23 | 27 | 1 | .. | .. |
| S. PINNIGER | .. | .. | 3 | .. | .. | 3 |
| OTHERS | .. | .. | .. | 4 | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | .. | 10 | 15 | 4 | 10 | 52 |
| HERRING | T | 7 | 2 | .. | T | 6 |
| LINGCOD | .. | .. | .. | .. | .. | 5 |
| PACIFIC COD | .. | 4 | 20 | .. | .. | 6 |
| OTHERS | T | .. | .. | .. | .. | 1 |
| SELACHI | | | | | | |
| DOGFISH | 287 | 1051 | 28 | 1 | 315 | 19 |
| SKATES | .. | .. | 1 | 2 | T | .. |
| OTHERS | .. | .. | T | .. | .. | 2 |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|
| DATE | MAY 11 | MAY 11 | MAY 11 | MAY 11 | MAY 11 | MAY 11 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 0925 | 1026 | 1129 | 1232 | 1331 | 1425 |
| DURATION(HR.MIN) | .30 | .30 | .32 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 44.6 | 46.3 | 47.7 | 49.4 | 49.0 | 50.5 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 10.3 | 13.9 | 12.3 | 10.1 | 06.6 | 08.6 |
| DIRECTION (DEG.TRUE) | 322 | 332 | 342 | 142 | 332 | 332 |
| FINISH N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 45.5 | 47.4 | 48.8 | 48.4 | 50.1 | 51.7 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 11.2 | 14.8 | 13.3 | 09.3 | 07.4 | 09.5 |
| DISTANCE NAUT. MI. | 1.2 | 1.1 | 1.2 | 1.3 | 1.3 | 1.3 |
| DEPTH (METERS) | 142-147 | 159-159 | 145-144 | 126-125 | 106-106 | 112-111 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 68 | 4 | 427 | 477 | 344 | 446 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1 CONTINUED

| HAUL NO. | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|
| DATE | MAY 11 | MAY 11 | MAY 11 | MAY 11 | MAY 11 | MAY 11 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 68 | 4 | 427 | 477 | 344 | 446 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | T | .. | 9 | 57 | 102 | 133 |
| NUM/KG | .. | .. | 199 | 201 | 264 | 215 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | .. | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | .. | .. | .. | 33 | 26 |
| TURBOT | 27 | .. | 2 | .. | .. | .. |
| OTHERS | 4 | .. | 4 | 3 | 12 | .. |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | .. | 9 | .. | .. | 3 |
| S. PINNIGER | .. | .. | .. | .. | .. | .. |
| OTHERS | 2 | .. | .. | 1 | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 8 | 2 | 56 | 44 | 18 | 31 |
| HERRING | T | 2 | 121 | 47 | 13 | 22 |
| LINGCOD | .. | .. | .. | 2 | .. | .. |
| PACIFIC COD | 8 | .. | 12 | 9 | .. | 1 |
| OTHERS | 3 | .. | .. | .. | 1 | 7 |
| SELACHI | | | | | | |
| DOGFISH | 7 | .. | 214 | 309 | 164 | 222 |
| SKATES | 9 | .. | .. | 4 | 1 | 1 |
| OTHERS | .. | .. | T | 1 | .. | .. |

APPENDIX TABLE 1 CONTINUED

| HAUL NO. | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|
| DATE | MAY 11 | MAY 11 | MAY 11 | MAY 12 | MAY 12 | MAY 12 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1528 | 1635 | 1740 | 0715 | 0830 | 0932 |
| DURATION(HR.MIN) | .31 | .33 | .30 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 51.4 | 49.8 | 50.7 | 49.8 | 53.2 | 54.9 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 11.7 | 13.3 | 16.6 | 05.5 | 11.4 | 10.8 |
| DIRECTION (DEG.TRUE) | 162 | 312 | 152 | 337 | 322 | 162 |
| FINISH N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 50.4 | 50.9 | 49.6 | 51.0 | 54.3 | 53.8 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 10.3 | 14.7 | 15.5 | 06.4 | 12.2 | 09.9 |
| DISTANCE NAUT. MI. | 1.4 | 1.5 | 1.4 | 1.3 | 1.2 | 1.3 |
| DEPTH (METERS) | 125-124 | 142-143 | 155-153 | 97- 98 | 115-115 | 106-104 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 262 | 279 | 97 | 150 | 301 | 114 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|
| DATE | MAY 11 | MAY 11 | MAY 11 | MAY 12 | MAY 12 | MAY 12 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 262 | 279 | 97 | 150 | 301 | 114 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 55 | 25 | .. | .. | 136 | T |
| NUM/KG | 197 | 199 | .. | .. | 218 | .. |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | T | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | 1 | .. | 63 | 11 | 7 |
| TURBOT | .. | 49 | 34 | .. | .. | .. |
| OTHERS | .. | 2 | 5 | 2 | .. | 1 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | 4 | 7 | 4 | .. | 17 | 7 |
| S. PINNIGER | 6 | 3 | .. | .. | 5 | .. |
| OTHERS | .. | T | 4 | .. | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 102 | 31 | 17 | 11 | 36 | 4 |
| HERRING | 75 | 3 | T | 8 | 84 | 88 |
| LINGCOD | .. | 9 | .. | 6 | .. | .. |
| PACIFIC COD | .. | 28 | 18 | .. | .. | .. |
| OTHERS | 4 | 1 | 5 | T | 2 | T |
| SELACHI | | | | | | |
| DOGFISH | 16 | 111 | 1 | 24 | 10 | .. |
| SKATES | .. | 2 | 3 | 36 | .. | 7 |
| OTHERS | .. | 7 | 6 | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|
| DATE | MAY 12 | MAY 12 | MAY 12 | MAY 12 | MAY 12 | MAY 12 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1041 | 1132 | 1243 | 1345 | 1447 | 1553 |
| DURATION(HR.MIN) | .30 | .30 | .30 | .30 | .31 | .30 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 51.8 | 52.7 | 52.1 | 54.4 | 54.9 | 54.9 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 12.0 | 15.1 | 18.5 | 20.6 | 22.5 | 17.8 |
| DIRECTION (DEG.TRUE) | 322 | 337 | 327 | 322 | 157 | 352 |
| FINISH N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 52.6 | 53.9 | 53.0 | 55.6 | 53.9 | 56.2 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 13.5 | 15.9 | 20.0 | 21.7 | 21.2 | 18.5 |
| DISTANCE NAUT. MI. | 1.3 | 1.3 | 1.4 | 1.5 | 1.3 | 1.3 |
| DEPTH (METERS) | 123-126 | 134-132 | 153-156 | 151-150 | 155-156 | 138-137 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 266 | 244 | 138 | 121 | 55 | 125 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|
| DATE | MAY 12 | MAY 12 | MAY 12 | MAY 12 | MAY 12 | MAY 12 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 266 | 244 | 138 | 121 | 55 | 125 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 121 | 20 | 7 | 19 | 3 | 83 |
| NUM/KG | 215 | 207 | 175 | 238 | 208 | 230 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | .. | T |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | .. | .. | .. | .. | .. |
| TURBOT | .. | T | 32 | 2 | 5 | .. |
| OTHERS | 1 | .. | 6 | 1 | T | 2 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | 15 | .. | 4 | 1 | .. | 1 |
| S. PINNIGER | 1 | .. | 2 | .. | .. | .. |
| OTHERS | .. | 1 | 3 | T | 5 | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 67 | 27 | 9 | 16 | 21 | 18 |
| HERRING | 46 | 47 | 2 | 2 | 1 | 4 |
| LINGCOD | .. | 6 | 2 | .. | 4 | 6 |
| PACIFIC COD | .. | .. | 7 | .. | 1 | .. |
| OTHERS | 1 | .. | 10 | 1 | 2 | T |
| SELACHI | | | | | | |
| DOGFISH | 12 | 143 | 49 | 79 | 13 | 11 |
| SKATES | 2 | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | 5 | T | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|
| DATE | MAY 12 | MAY 12 | MAY 13 | MAY 13 | MAY 13 | MAY 13 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1648 | 1749 | 0635 | 0734 | 0831 | 0929 |
| DURATION(HR.MIN) | .30 | .30 | .30 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 56.6 | 56.5 | 56.9 | 58.4 | 59.3 | 57.8 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 16.5 | 12.4 | 08.8 | 11.7 | 14.6 | 15.4 |
| DIRECTION (DEG.TRUE) | 147 | 327 | 332 | 322 | 157 | 327 |
| FINISH N. LAT. (DEG) | 048 | 048 | 048 | 048 | 048 | 048 |
| (MIN) | 55.7 | 57.9 | 58.2 | 59.5 | 58.2 | 59.1 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 14.9 | 12.8 | 09.8 | 12.9 | 13.5 | 16.2 |
| DISTANCE NAUT. MI. | 1.4 | 1.4 | 1.5 | 1.3 | 1.3 | 1.4 |
| DEPTH (METERS) | 128-124 | 112-110 | 90- 90 | 100-100 | 113-113 | 122-119 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 164 | 382 | 27 | 196 | 229 | 548 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|
| DATE | MAY 12 | MAY 12 | MAY 13 | MAY 13 | MAY 13 | MAY 13 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 164 | 382 | 27 | 196 | 229 | 548 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 117 | 320 | .. | .. | 106 | 439 |
| NUM/KG | 212 | 214 | .. | .. | 175 | 190 |
| OTHER SHRIMP | T | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | T | .. | .. | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | 22 | 7 | 5 | 14 | .. |
| TURBOT | 1 | 1 | 2 | 4 | .. | .. |
| OTHERS | 1 | 6 | T | 1 | 4 | T |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | 1 | .. | 74 | 3 | 1 |
| S. PINNIGER | .. | .. | .. | 7 | .. | .. |
| OTHERS | 1 | 4 | .. | .. | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 35 | 13 | 5 | 3 | 53 | 86 |
| HERRING | 1 | 11 | 10 | 50 | 35 | 21 |
| LINGCOD | .. | .. | .. | .. | .. | .. |
| PACIFIC COD | .. | 3 | .. | 49 | .. | .. |
| OTHERS | T | 1 | 3 | 3 | 2 | .. |
| SELACHI | | | | | | |
| DOGFISH | 5 | .. | .. | .. | 12 | 1 |
| SKATES | 3 | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 31 | 32 | 33 | 34 | 35 | 36 |
|---|---|---|---|---|---|---|
| DATE | MAY 13 | MAY 13 | MAY 13 | MAY 13 | MAY 13 | MAY 13 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1035 | 1136 | 1230 | 1333 | 1428 | 1527 |
| DURATION(HR.MIN) | .30 | .30 | .30 | .30 | .30 | .29 |
| START N. LAT. (DEG) | 048 | 048 | 048 | 049 | 049 | 049 |
| (MIN) | 58.5 | 56.8 | 59.5 | 01.2 | 00.4 | 02.0 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 19.6 | 21.0 | 23.2 | 23.1 | 19.5 | 17.8 |
| DIRECTION (DEG.TRUE) | 152 | 327 | 332 | 147 | 342 | 157 |
| FINISH N. LAT. (DEG) | 048 | 048 | 049 | 049 | 049 | 049 |
| (MIN) | 57.4 | 58.0 | 00.8 | 00.3 | 01.7 | 01.0 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 18.4 | 22.0 | 24.1 | 21.6 | 20.4 | 16.5 |
| DISTANCE NAUT. MI. | 1.4 | 1.4 | 1.5 | 1.4 | 1.4 | 1.4 |
| DEPTH (METERS) | 134-133 | 144-145 | 145-143 | 137-136 | 127-125 | 111-110 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 158 | 181 | 252 | 777 | 341 | 354 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 31 | 32 | 33 | 34 | 35 | 36 |
|---|---|---|---|---|---|---|
| DATE | MAY 13 | MAY 13 | MAY 13 | MAY 13 | MAY 13 | MAY 13 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 158 | 181 | 252 | 777 | 341 | 354 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 76 | 17 | 52 | 399 | 195 | 73 |
| NUM/KG | 191 | 212 | 255 | 294 | 240 | 178 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | 1 | .. | .. | T | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | .. | .. | .. | .. | 1 |
| TURBOT | .. | 1 | 7 | T | 3 | .. |
| OTHERS | 2 | T | 5 | .. | 2 | 4 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | 1 | .. | 1 | 33 | 13 |
| S. PINNIGER | .. | .. | .. | .. | .. | .. |
| OTHERS | T | 1 | .. | .. | T | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 51 | 63 | 30 | 22 | 21 | 8 |
| HERRING | 29 | 79 | 100 | 264 | 70 | 195 |
| LINGCOD | .. | 6 | 18 | 5 | 3 | 3 |
| PACIFIC COD | .. | 3 | .. | .. | .. | 3 |
| OTHERS | .. | .. | .. | T | .. | 5 |
| SELACHI | | | | | | |
| DOGFISH | .. | 9 | 32 | 84 | 14 | 49 |
| SKATES | .. | .. | 8 | 2 | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|
| DATE | MAY 13 | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1620 | 0650 | 0752 | 0852 | 0950 | 1105 |
| DURATION(HR.MIN) | .30 | .33 | .31 | .30 | .32 | .30 |
| START N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 01.5 | 03.3 | 04.1 | 02.3 | 02.0 | 01.7 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 14.9 | 17.2 | 21.0 | 21.7 | 24.1 | 28.5 |
| DIRECTION (DEG.TRUE) | 312 | 317 | 142 | 322 | 302 | 312 |
| FINISH N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 02.7 | 04.3 | 03.1 | 03.2 | 03.0 | 02.9 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 16.5 | 18.8 | 19.4 | 23.1 | 25.8 | 29.9 |
| DISTANCE NAUT. MI. | 1.6 | 1.4 | 1.5 | 1.3 | 1.5 | 1.4 |
| DEPTH (METERS) | 98- 98 | 101-103 | 117-115 | 130-130 | 138-139 | 151-145 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 86 | 83 | 1180 | 267 | 1517 | 82 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|
| DATE | MAY 13 | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 86 | 83 | 1180 | 267 | 1517 | 82 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | .. | .. | .. | 116 | 145 | 8 |
| NUM/KG | .. | .. | .. | 272 | 225 | 242 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | T | T | .. | .. | .. | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | 12 | 4 | .. | .. | .. | .. |
| TURBOT | .. | T | .. | 3 | 2 | T |
| OTHERS | 1 | 1 | .. | T | .. | 1 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | 4 | .. | 1100* | 14 | .. | .. |
| S. PINNIGER | .. | .. | .. | .. | 4 | .. |
| OTHERS | .. | .. | .. | 1 | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 23 | 6 | 40* | 40 | 34 | 35 |
| HERRING | 10 | 31 | 30* | 61 | 1200 | 14 |
| LINGCOD | 4 | 7 | 10* | 14 | 33 | 20 |
| PACIFIC COD | 19 | .. | .. | .. | .. | .. |
| OTHERS | 8 | 11 | .. | .. | .. | .. |
| SELACHI | | | | | | |
| DOGFISH | 5 | 23 | .. | 18 | 99 | 4 |
| SKATES | .. | T | .. | .. | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 43 | 44 | 45 | 46 | 47 | 48 |
|---|---|---|---|---|---|---|
| DATE | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1203 | 1315 | 1417 | 1515 | 1625 | 1720 |
| DURATION(HR.MIN) | .30 | .30 | .32 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 04.3 | 06.8 | 05.5 | 07.0 | 08.2 | 08.8 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 30.6 | 27.6 | 23.2 | 23.4 | 24.4 | 27.7 |
| DIRECTION (DEG.TRUE) | 312 | 132 | 317 | 132 | 317 | 147 |
| FINISH N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 05.6 | 06.0 | 06.5 | 05.9 | 09.4 | 07.8 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 31.5 | 25.3 | 25.1 | 21.9 | 25.9 | 26.1 |
| DISTANCE NAUT. MI. | 1.4 | 1.6 | 1.7 | 1.5 | 1.6 | 1.5 |
| DEPTH (METERS) | 141-135 | 124-123 | 116-119 | 108-106 | 106-106 | 115-116 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 100 | 1280 | 537 | 38 | 39 | 68 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 43 | 44 | 45 | 46 | 47 | 48 |
|---|---|---|---|---|---|---|
| DATE | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 | MAY 14 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 100 | 1280 | 537 | 38 | 39 | 68 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 40 | 519 | 3 | .. | .. | T |
| NUM/KG | 269 | 269 | 240 | .. | .. | .. |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | 1 | .. | .. | T | T | T |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | .. | 1 | 4 | 11 | 6 | 4 |
| TURBOT | 1 | .. | 1 | T | 1 | T |
| OTHERS | T | 1 | 2 | 3 | .. | T |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | .. | .. | .. | .. | .. |
| S. PINNIGER | .. | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | 3 | .. | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 27 | 74 | 57 | 1 | 11 | 9 |
| HERRING | 14 | 550 | 59 | 14 | .. | 42 |
| LINGCOD | 9 | 7 | 21 | 5 | 6 | 10 |
| PACIFIC COD | .. | .. | 120 | .. | .. | .. |
| OTHERS | .. | .. | 6 | 2 | 10 | .. |
| SELACHI | | | | | | |
| DOGFISH | 8 | 128 | 261 | 2 | 5 | 3 |
| SKATES | .. | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|
| DATE | MAY 14 | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1815 | 0715 | 0844 | 0955 | 1055 | 1200 |
| DURATION(HR.MIN) | .30 | .32 | .31 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 07.6 | 06.6 | 06.9 | 05.9 | 03.3 | 04.9 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 27.5 | 28.9 | 36.8 | 29.1 | 27.4 | 24.9 |
| DIRECTION (DEG.TRUE) | 312 | 322 | 132 | 132 | 132 | 312 |
| FINISH N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 08.4 | 07.7 | 05.7 | 05.1 | 02.3 | 06.1 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 29.2 | 30.5 | 35.0 | 27.3 | 25.7 | 26.3 |
| DISTANCE NAUT. MI. | 1.4 | 1.6 | 1.7 | 1.4 | 1.5 | 1.4 |
| DEPTH (METERS) | 122-122 | 129-126 | 137-136 | 132-133 | 138-141 | 128-126 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 199 | 701 | 52 | 236 | 363 | 703 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|
| DATE | MAY 14 | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 199 | 701 | 52 | 236 | 363 | 703 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 166 | 621 | .. | 109 | 139 | 451 |
| NUM/KG | 234 | 237 | .. | 243 | 236 | 299 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | .. | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | 4 | .. | .. | .. | .. | .. |
| TURBOT | 1 | .. | .. | 1 | 7 | 9 |
| OTHERS | T | 1 | 4 | T | 1 | 1 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | .. | .. | .. | .. | .. |
| S. PINNIGER | .. | .. | 2 | .. | .. | .. |
| OTHERS | .. | .. | 4 | .. | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 19 | 68 | .. | 19 | 42 | 66 |
| HERRING | 8 | 1 | .. | 77 | 144 | 147 |
| LINGCOD | 1 | 5 | 39 | 13 | 14 | 9 |
| PACIFIC COD | .. | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | 1 |
| SELACHI | | | | | | |
| DOGFISH | .. | 5 | 3 | 9 | 16 | 16 |
| SKATES | .. | .. | .. | 8 | .. | 3 |
| OTHERS | .. | .. | T | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 55 | 56 | 57 | 58 | 59 | 60 |
|---|---|---|---|---|---|---|
| DATE | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 1310 | 1403 | 1455 | 1600 | 1655 | 1753 |
| DURATION(HR.MIN) | .30 | .29 | .35 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 06.6 | 09.1 | 11.1 | 10.4 | 12.4 | 13.0 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 30.9 | 33.2 | 32.9 | 28.0 | 26.9 | 27.0 |
| DIRECTION (DEG.TRUE) | 312 | 312 | 132 | 312 | 132 | 302 |
| FINISH N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 07.6 | 10.2 | 10.4 | 11.6 | 11.7 | 13.9 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 32.3 | 34.2 | 30.6 | 28.8 | 24.7 | 28.5 |
| DISTANCE NAUT. MI. | 1.4 | 1.3 | 1.6 | 1.4 | 1.5 | 1.5 |
| DEPTH (METERS) | 131-129 | 125-125 | 119-116 | 107-104 | 95- 90 | 92- 92 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 358 | 36 | 140 | 927 | 60 | 27 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 55 | 56 | 57 | 58 | 59 | 60 |
|---|---|---|---|---|---|---|
| DATE | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 | MAY 15 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 358 | 36 | 140 | 927 | 60 | 27 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 32 | 5 | 41 | 260 | .. | .. |
| NUM/KG | 168 | 212 | 225 | 263 | .. | .. |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | T | T | .. | .. | .. | T |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | T | T | 5 | 10 | 10 | 16 |
| TURBOT | 1 | T | .. | 1 | 2 | .. |
| OTHERS | T | 16 | 6 | 4 | 3 | 4 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | .. | .. | .. | .. | .. | .. |
| S. PINNIGER | 314 | .. | .. | .. | .. | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 5 | 7 | 2 | 28 | .. | T |
| HERRING | 3 | 1 | 10 | 6 | .. | T |
| LINGCOD | 1 | .. | 5 | 9 | 25 | 4 |
| PACIFIC COD | .. | .. | .. | 573 | .. | .. |
| OTHERS | .. | .. | T | 4 | 14 | 3 |
| SELACHI | | | | | | |
| DOGFISH | 2 | 7 | 71 | 32 | 4 | .. |
| SKATES | .. | .. | .. | .. | 2 | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 61 | 62 | 63 | 64 | 65 | 66 |
|---|---|---|---|---|---|---|
| DATE | MAY 16 | MAY 16 | MAY 16 | MAY 16 | MAY 16 | MAY 16 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| TIME START (PST) | 0722 | 0835 | 0955 | 1110 | 1209 | 1310 |
| DURATION(HR.MIN) | .31 | .30 | .33 | .30 | .30 | .30 |
| START N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 12.3 | 11.9 | 14.6 | 15.0 | 16.7 | 13.7 |
| W. LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 31.2 | 35.4 | 38.2 | 36.5 | 35.0 | 33.6 |
| DIRECTION (DEG.TRUE) | 312 | 312 | 312 | 342 | 132 | 132 |
| FINISH N. LAT. (DEG) | 049 | 049 | 049 | 049 | 049 | 049 |
| (MIN) | 12.9 | 12.6 | 14.6 | 16.2 | 15.4 | 12.6 |
| W.LONG. (DEG) | 126 | 126 | 126 | 126 | 126 | 126 |
| (MIN) | 33.0 | 36.9 | 40.3 | 37.0 | 33.5 | 32.2 |
| DISTANCE NAUT. MI. | 1.3 | 1.3 | 1.4 | 1.3 | 1.5 | 1.4 |
| DEPTH (METERS) | 108-112 | 121-121 | 119-121 | 114-110 | 102-103 | 110-111 |
| SEE FIGURE NO. | | | | | | |
| SURFACE TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| BOTTOM TEMP (DEG.C) | .. | .. | .. | .. | .. | .. |
| TYPE OF GEAR | 8 | 8 | 8 | 8 | 8 | 8 |
| TOTAL CATCH (KG) | 1292 | 133 | 280 | 177 | 181 | 782 |
| REMARKS | USABLE | USABLE | USABLE | USABLE | USABLE | USABLE |

APPENDIX TABLE 1. CONTINUED

| HAUL NO. | 61 | 62 | 63 | 64 | 65 | 66 |
|---|---|---|---|---|---|---|
| DATE | MAY 16 | MAY 16 | MAY 16 | MAY 16 | MAY 16 | MAY 16 |
| AREA | CLSD | CLSD | CLSD | CLSD | CLSD | CLSD |
| CATCH TOTAL (KG) | 1292 | 133 | 280 | 177 | 181 | 783 |
| SHRIMP | | | | | | |
| PINK (JORDANI) | 1176 | .. | .. | .. | .. | 667 |
| NUM/KG | 242 | .. | .. | .. | .. | 278 |
| OTHER SHRIMP | .. | .. | .. | .. | .. | .. |
| INVERTEBRATES | | | | | | |
| OTHERS | .. | .. | .. | .. | .. | .. |
| FLATFISH | | | | | | |
| DAB (PACIFIC) | 21 | 1 | 3 | 15 | 14 | 16 |
| TURBOT | 1 | .. | 1 | .. | 1 | 7 |
| OTHERS | 18 | 1 | 1 | 5 | 2 | 9 |
| ROCKFISH | | | | | | |
| S. FLAVIDUS | 2 | .. | .. | .. | .. | .. |
| S. PINNIGER | .. | 96 | .. | .. | .. | .. |
| OTHERS | .. | .. | 4 | 8 | .. | .. |
| OTHER ROUNDFISH | | | | | | |
| EULACHON | 10 | .. | 1 | .. | T | 21 |
| HERRING | 17 | 6 | 176 | 38 | 105 | 9 |
| LINGCOD | 8 | 19 | 16 | 2 | 3 | 10 |
| PACIFIC COD | 24 | .. | .. | 94 | 2 | 10 |
| OTHERS | 14 | .. | 11 | 3 | 3 | 27 |
| SELACHI | | | | | | |
| DOGFISH | 1 | 10 | 67 | 12 | 39 | 6 |
| SKATES | .. | .. | .. | .. | 12 | .. |
| OTHERS | .. | .. | .. | .. | .. | .. |

APPENDIX TABLE 1. CONTINUED

| | |
|---|---|
| HAUL NO. | 67 |
| DATE | MAY 16 |
| AREA | CLSD |
| TIME START (PST) | 1413 |
| DURATION(HR.MIN) | .30 |
| START N. LAT. (DEG) | 049 |
| (MIN) | 13.0 |
| W. LONG. (DEG) | 126 |
| (MIN) | 29.1 |
| DIRECTION (DEG.TRUE) | 342 |
| FINISH N. LAT. (DEG) | 049 |
| (MIN) | 14.1 |
| W.LONG. (DEG) | 126 |
| (MIN) | 30.0 |
| DISTANCE NAUT. MI. | 1.3 |
| DEPTH (METERS) | 100- 98 |
| SEE FIGURE NO. | |
| SURFACE TEMP (DEG.C) | .. |
| BOTTOM TEMP (DEG.C) | .. |
| TYPE OF GEAR | 8 |
| TOTAL CATCH (KG) | 42 |
| REMARKS | USABLE |

APPENDIX TABLE 1. CONTINUED

| | |
|---|---|
| HAUL NO. | 67 |
| DATE | MAY 16 |
| AREA | CLSD |
| CATCH TOTAL (KG) | 42 |
| SHRIMP | |
| PINK (JORDANI) | .. |
| NUM/KG | .. |
| OTHER SHRIMP | .. |
| INVERTEBRATES | |
| OTHERS | 1 |
| FLATFISH | |
| DAB (PACIFIC) | 12 |
| TURBOT | 2 |
| OTHERS | 6 |
| ROCKFISH | |
| S. FLAVIDUS | .. |
| S. PINNIGER | .. |
| OTHERS | .. |
| OTHER ROUNDFISH | |
| EULACHON | 1 |
| HERRING | .. |
| LINGCOD | 15 |
| PACIFIC COD | 1 |
| OTHERS | 2 |
| SELACHI | |
| DOGFISH | 2 |
| SKATES | .. |
| OTHERS | .. |

Footnotes to Appendix Table I

Area: CLSD = Clayoquot Sound (= Tofino Ground)
Time Start: PST = Pacific Standard Time
Type of Gear: 8 = Nat. Mar. Fish. Serv. 61-ft shrimp sampling trawl
Catch: T = Trace (<1 kilogram)
Others:

| | |
|---|---|
| Invertebrates: | anemone; basket stars; brittle stars; cucumbers; prawn, squid (rossia and loligo); urchins. |
| Flatfish: | Butter sole; Dover sole; English sole; Flathead sole; Halibut; Petrale sole; Rex sole; Slender sole. |
| Rockfish: | *Sebastes alutus; S. crameri; S. elongatus; S. entomelas; S. paucispinis; S. proriger* |
| Roundfish: | Blackcod; Shiner perch; Pacific hake; Pacific tomcod; Walleye pollock; shad; wolf-eef. |
| Selachii: | Ratfish; skate |