BENTHIC INVERTEBRATES, DEMERSAL FISHES, AND SEDIMENT CHARACTERISTICS AT AND ADJACENT TO OCEAN DREDGE MATERIAL DISPOSAL SITE F, OFFSHORE FROM THE COLUMBIA RIVER, JUNE 1989 AND 1990

by

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Final Report

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INTRODUCTION

In 1989, the U.S. Army Corps of Engineers (COE) agreed to assist in the deepening of both a navigational channel to the Tongue Point (Astoria, Oregon) finger piers and an accompanying turning basin for commercial vessels. The COE estimated that about 2.0-2.8 million yd^3 would be dredged from the Tongue Point area using a clamshell dredge. The bottom material was to be removed from July to October 1989 and dumped at Ocean Dredge Material Disposal Site (ODMDS) F, which is offshore from the mouth of the Columbia River (Fig. 1).

Because of concerns about the potential impacts of the dredged material on Dungeness crabs, *Cancer magister*, and demersal fishes, both of which support important local commercial fisheries, the COE agreed to fund environmental studies of the disposal site and adjacent areas. The National Marine Fisheries Service (NMFS), at the request of COE, did a pre-disposal survey (June 1989) and a post-disposal survey (June 1990) at and adjacent to ODMDS F. The primary goal of the study was to evaluate the effects of the dredged material on biological communities, specifically benthic and large epibenthic invertebrates and demersal fishes, at ODMDS F.

METHODS

Sampling

Benthic Invertebrates and Sediments

Benthic invertebrate and sediment samples were collected at five stations within and eight reference stations surrounding ODMDS F in June 1989 and 1990. Station depths ranged from 32.0 to 49.4 m (Fig. 1). Loran-C navigational readings for each station were recorded and are presented in

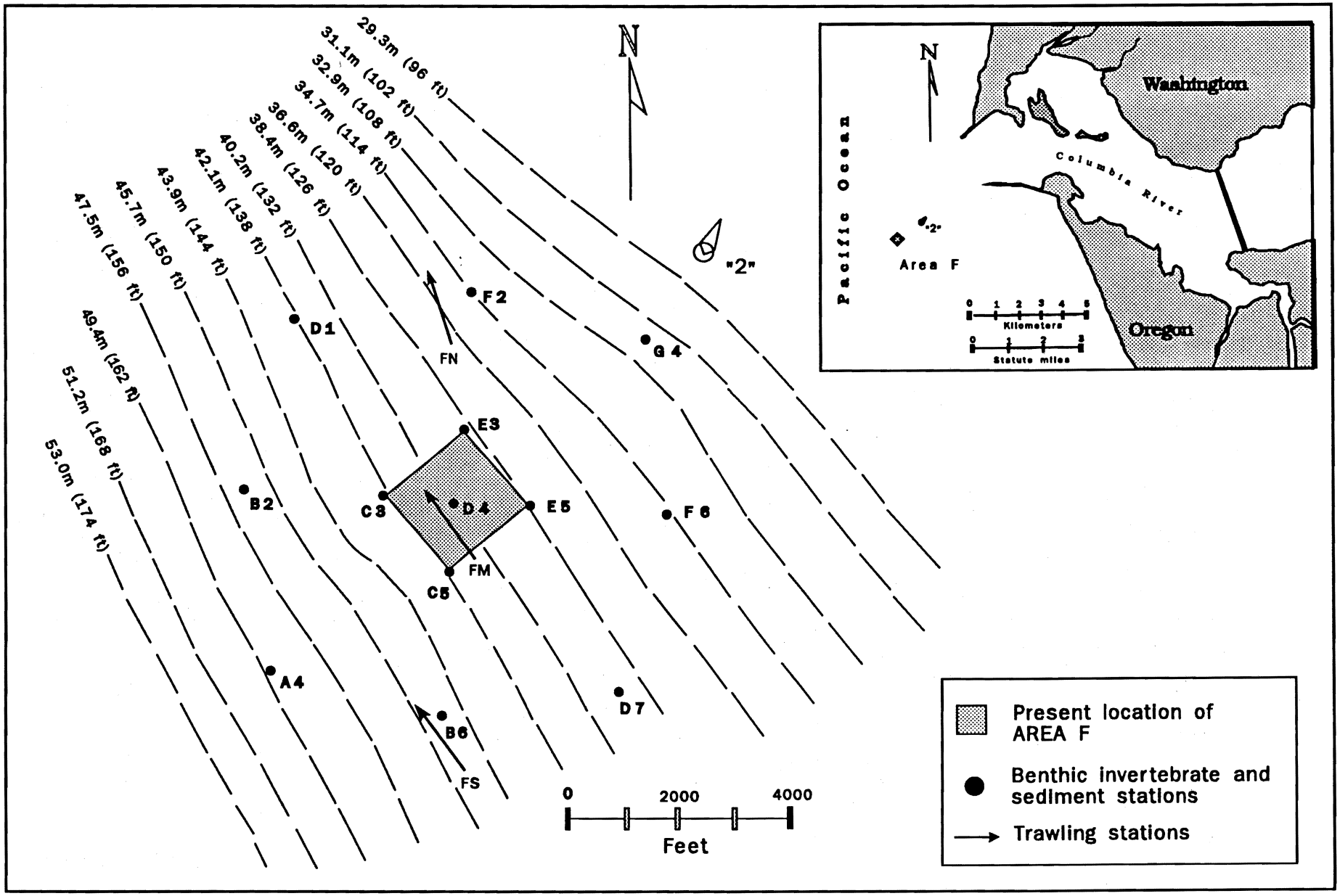

Figure 1.--Locations of benthic invertebrate, sediment, and trawling stations at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Appendix Table 1. A 0.1-m^2 Gray-O'Hara box corer (Pequegnat et al. 1981) was used to collect six bottom samples at each station. Five of the samples were individually sieved through a 0.5-mm mesh screen, and the residues containing the macroinvertebrates were preserved in jars with a buffered 5% formaldehyde solution containing rose bengal (a protein stain). Benthic organisms were sorted from the preserved samples, identified to the lowest practical taxonomic level (usually species), and counted. All specimens were placed in vials containing 70% ethanol and stored at the NMFS Point Adams Biological Field Station, Hammond, Oregon. The sixth sample was used for sediment analysis. Sediment grain size was determined by sieving, and organic content [total organic carbon (TOC)] by burning for 1 hour at 600°C. Sediment analysis was done by the COE laboratory at Troutdale, Oregon.

Fishes and Large Epibenthic Invertebrates

Three trawling efforts were conducted during each survey, one in the disposal area and one each north and south of the disposal area (Fig. 1). Depths along the trawling transects ranged from 36.3 to 45.1 meters. All trawling efforts were 10 minutes long and were made in a northwesterly direction as currents allowed. Bottom trawling was done with an 8-m semiballoon shrimp trawl that had an overall mesh size of 38.1 mm (stretched); a 12.7-mm mesh liner was inserted in the cod end to ensure retention of small fishes and epibenthic invertebrates. Fishing width of the trawl was estimated to be 5 m. Location and distance traveled during each trawling effort were determined using Loran-C navigational equipment (Appendix Table 1).

All organisms captured by trawling were weighed (g) and measured (mm)--total lengths for fishes, and carapace widths for Dungeness crabs. Shrimp were measured from the rostrum to the distal end of the telson.

Data Analyses

Benthic Invertebrates

The five benthic invertebrate samples from each station were treated as replicates, allowing calculation of a mean number/m^2 and standard deviation for each species, and total mean number/m^2 and standard deviation for each station. Two community structure indices, diversity and species evenness, were also calculated for each station. The first community structure index was the Shannon-Weiner function (H′), which contains two components of diversity--number of species and evenness of individuals among species (Krebs 1978).

$$H' = -\sum_{i=1}^{s} Pi \log_2 Pi$$

where Pi = Xa/n (Xa is the number of individuals of a particular species in the sample, and n is the total number of all individuals in the sample) and s = number of species. The second community structure index was Species Evenness (J′), which measures the proportional abundances among the various species in a sample (Pielou 1966). Evenness (J′) has a possible range of 0.00 to 1.00, with 1.00 indicating all species in the sample are numerically equal.

$$J' = H'/\log_2 s$$

where H′ = Shannon-Weiner function and s = number of species.

A two-sample t-test (unpaired data, assuming unequal variance) (Ryan et al. 1985) was used to compare benthic invertebrate densities between reference

and disposal site stations within surveys. A comparison of benthic invertebrate densities was also made between the two surveys by combining the data for the reference and disposal site stations for each survey. Benthic invertebrate densities were $\log_{10}$ transformed prior to doing the tests.

Fishes and Large Epibenthic Invertebrates

By using distance fished, fishing width of the trawl, and catch data, we estimated densities of fishes and large epibenthic invertebrates [number/hectare(ha)]. With the use of various computer programs, a descriptive summary of each trawling effort was produced, which included a species list, numbers and weights of fishes and large epibenthic invertebrates captured (total and by species), number/ha (total and by species), weight/ha (total and by species), and the previously described community structure indices. Length-frequency distributions of six dominant species were used to define the size-class structures of the major species in the study area. Histograms were made by grouping individual total lengths for each species into 5-mm increments; fish >300 mm were included in the 300-mm interval.

A two-sample t-test (Ryan et al. 1985) was used to compare number/ha and weight/ha between surveys. The data were $\log_{10}$ transformed prior to making the comparisons.

Sediments

Median grain size (phi), percent silt/clay, and percent TOC content were calculated for each station. Reference stations and disposal site stations were compared between surveys using a two-sample t-test. The data for percent silt/clay were $\log_{10}$ transformed prior to doing the test because they were not normally distributed.

RESULTS

Benthic Invertebrates

A total of 194 benthic invertebrate taxa were identified from the June 1989 survey; the mean invertebrate density was 1,074/m^2 (Table 1 and Appendix Table 2). The highest benthic invertebrate density was found at Station D-1 (1,517/m^2), which is northwest of ODMDS F at a depth of 42.1 m (Appendix Table 3). The lowest density was found at Station D-7 (792/m^2), located southeast of ODMDS F at a depth of 39.2 m. The number of benthic invertebrate taxa/station ranged from 59 (Station E-3) to 80 (Station D-1).

A total of 213 benthic invertebrate taxa were indentified from the June 1990 survey; the mean invertebrate density was 2,565/m^2 (Table 1 and Appendix Table 2). The highest benthic invertebrate density was found at Station C-3 (3,824/m^2), located on the west corner of ODMDS F at a depth of 42.1 m (Appendix Table 3). The lowest density was found at Station D-4 (735/m^2), located in the center of ODMDS F at a depth of 40.2 m. The number of benthic invertebrate taxa/station ranged from 61 (Station D-4) to 110 (Stations C-3 and C-5).

For each survey, there was no significant difference (t-test, $P > 0.05$) between invertebrate densities at the disposal site stations and the reference stations. However, the mean benthic invertebrate density (all stations combined) in 1990 was significantly higher than in 1989 ($P < 0.05$).

The community structure indices H′ and J′ were high at all stations for the June 1989 and 1990 surveys, reflecting the high number of taxa and their proportional abundances (Table 1).

Polychaetes and amphipods were the most abundant taxa captured during

Table 1.--Description of the benthic invertebrate community at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990. Station values were calculated by combining replicates from each station. Totals were calculated by combining all replicates for each survey.

June 1989						
Station	Depth (m)	Number of taxa	Mean number per m^2	Standard deviation	H′	J′
A-4	49.4	72	1,232	408	4.91	0.80
B-2	46.6	68	1,294	536	4.97	0.82
B-6	44.8	69	873	277	5.09	0.83
C-3	42.1	64	969	130	4.55	0.76
C-5	42.1	68	1,146	533	4.94	0.81
D-1	42.1	80	1,517	581	4.89	0.77
D-4	40.2	64	882	385	4.82	0.80
D-7	39.2	60	792	334	5.04	0.85
E-3	38.4	59	994	259	4.72	0.80
E-5	38.4	61	798	218	4.85	0.82
F-2	34.7	72	1,050	406	4.95	0.80
F-6	34.7	74	1,138	466	4.96	0.80
G-4	32.0	65	1,278	450	4.96	0.82
	TOTAL	194	1,074	421	5.38	0.71

Table 1.--Continued.

Station	Depth (m)	Number of taxa	Mean number per m^2	Standard deviation	H′	J′
			June 1990			
A-4	49.4	76	2,257	665	4.78	0.77
B-2	46.6	93	3,312	799	4.94	0.75
B-6	44.8	73	2,586	414	4.30	0.69
C-3	42.1	110	3,824	2,013	4.85	0.71
C-5	42.1	110	3,024	1,723	5.22	0.77
D-1	42.1	87	3,674	1,047	4.89	0.76
D-4	40.2	61	735	336	4.99	0.84
D-7	39.2	72	2,618	539	4.24	0.69
E-3	38.4	91	2,832	629	4.39	0.67
E-5	38.4	75	2,311	716	4.45	0.71
F-2	34.7	74	1,615	596	4.75	0.77
F-6	34.7	72	2,584	1,104	4.15	0.67
G-4	32.1	69	1,632	751	4.53	0.74
	TOTAL	213	2,565	1,210	5.12	0.66

each survey, with molluscs also being important (Table 2). Dominant species in June 1989 included the polychaetes Nephtys sp., Leitoscoloplos elongatus, and Chaetozone spinosa; and the amphipods Eohaustorius sencillus and Rhepoxynius sp.. Dominant species in June 1990 included the polychaetes Spiophanes bombyx, Spiophanes berkeleyorum, and Magelona sacculata; and the amphipods Orchomene cf. pinguis and Rhepoxynius daboius (Table 2). Overall, there was an increase in densities for most species from the June 1989 to the June 1990 survey.

Fishes and Large Epibenthic Invertebrates

During the June 1989 survey, a total of 2,469 fishes and epibenthic invertebrates were captured, representing 25 different taxa (Table 3 and Appendix Table 4). Numerically dominant species were whitebait smelt, Allosmerus elongatus; northern crangon, Crangon alaskensis; and Pacific sanddab, Citharichthys sordidus. Species with the highest mean weight/ha were Pacific sanddab; butter sole, Isopsetta isolepis; and English sole, Parophrys vetulus, respectively (Table 4). The South trawling station had the highest catch of the three stations (Table 3). Community structure indices H′ and J′ were highest at the ODMDS F and the North trawling stations in 1989, indicating relatively high diversity and fairly equal proportional abundances among the species. The low values at the South station indicated lower diversity and less equal distribution among the species, caused by the dominance of whitebait smelt (Appendix Table 5).

During the June 1990 survey, a total of 12,476 fishes and epibenthic invertebrates were captured, representing 31 different taxa (Table 3 and Appendix Table 4). Numerically dominant species were whitebait smelt, northern crangon, and butter sole. Fishes with the highest mean weight/ha

Table 2.--Dominant benthic invertebrates collected at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Taxa	June 1989 Total number	June 1989 Mean number/m²	June 1990 Total number	June 1990 Mean number/m²
Polychaeta				
Nephtys sp.	500	80	1,096	178
Nephtys caecoides	273	44	384	63
Glycinde armigera	208	33	916	149
Leitoscoloplos elongatus	451	72	0	0
Leitoscoloplos pugettensis	0	0	882	144
Spiophanes bombyx	433	69	2,206	359
Spiophanes berkeleyorum	428	69	1,648	268
Magelona sacculata	380	61	1,537	250
Chaetozone spinosa	455	73	381	62
Miscellaneous	755	121	1,509	246
TOTAL	3,883	622	10,559	1,719
Mollusca				
Mitrella gouldi	88	14	135	22
Olivella spp.	38	6	61	10
Olivella baetica	10	2	120	20
Olivella pycna	55	9	355	58
Bivalvia	78	13	35	6
Axinopsida serricata	143	23	232	38
Tellina sp.	59	10	8	1
Miscellaneous	116	17	296	47
TOTAL	587	94	1,242	202
Cumacea/Mysidacea				
Acanthomysis columbiae	5	1	0	0
Archaeomysis grebnitzkii	15	2	22	4
Neomysis priops	0	0	69	11
Hemilamprops californica	0	0	206	34
Leuconidae	5	1	1	0
Diastylopsis dawsoni	10	2	29	5
Diastylopsis tenuis	1	0	279	45
Colurostylis occidentalis	3	1	136	22
Miscellaneous	10	1	89	14
TOTAL	49	8	831	135

Table 2.--Continued.

Taxa	June 1989 Total number	June 1989 Mean number/m²	June 1990 Total number	June 1990 Mean number/m²
Amphipoda				
Ampelisca careyi	35	6	117	19
Eohaustorius sencillus	358	57	198	32
Photis macinerneyi	19	3	117	19
Anonyx cf. *liljeborgi*	58	9	2	0
Orchomene cf. *pinguis*	60	10	321	52
Rhepoxynius sp.	269	43	4	1
Rhepoxynius abronius	166	27	78	13
Rhepoxynius daboius	175	28	511	83
Rhepoxynius vigitegus	58	9	0	0
Miscellaneous	218	35	390	64
TOTAL	1,416	227	1,738	283
Echinodermata				
Amphiuridae	5	1	0	0
Amphiodia sp.	36	6	0	0
Ophiuroidea sp.	0	0	49	8
Dendraster excentricus	6	1	28	5
Miscellaneous	7	1	7	1
TOTAL	54	9	84	14
Miscellaneous taxa	711	114	1,301	212
GRAND TOTAL	6,700	1,074	15,755	2,565

Table 3.--Summary of fish and large epibenthic invertebrate catches for three trawling stations at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990. The North and South stations were outside of ODMDS F (see Fig. 1).

Station [depth (m)]	Number of taxa	Total number captured	Number/ha	Wt.(g)/ha	H′	J′
June 1989						
North (41.1)	21	441	1,904	84,518	3.28	0.75
ODMDS F (41.1)	19	718	1,683	147,694	3.04	0.72
South (41.1)	15	1,310	10,872	231,120	1.26	0.32
June 1990						
North (37.8)	24	992	3,796	103,950	3.59	0.78
ODMDS F (36.9)	26	10,112	22,743	215,771	0.54	0.11
South (41.8)	11	1,372	2,280	39,785	0.91	0.26

Table 4.--Major fish and large epibenthic invertebrates captured by bottom trawl at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990. Three trawling efforts were conducted during each survey.

	June 1989		June 1990	
Species	Mean number per ha	Mean wt.(g) per ha	Mean number per ha	Mean wt.(g) per ha
Whitebait smelt	2,963	17,375	7,905	43,015
Pacific tomcod	212	6,285	158	7,368
Pacific sanddab	326	44,658	147	14,543
Butter sole	271	27,030	268	6,254
English sole	184	24,216	214	24,717
Northern crangon	422	578	294	340
Miscellaneous	442	34,302	620	23,598
Total	4,820	154,444	9,606	119,835

were whitebait smelt, English sole, and Pacific sanddab (Table 4). ODMDS F had the highest trawl catch of the three stations (Table 3). Community structure indices H′ and J′ were highest at the North station, indicating high diversity and relatively equal proportional abundances among the species. H′ and J′ were lower at the South and ODMDS F stations because of the dominance of one or several species (Appendix Table 5).

Comparisons of number/ha and weight/ha of fishes and epibenthic invertebrates (all stations combined) between surveys showed no significant differences (t-test, $P > 0.05$).

Relatively few Dungeness crabs were captured during either survey. In 1989, a total of 18 crabs were captured, and in 1990, only 5 (Appendix Table 5).

Most of the dominant species captured at and adjacent to ODMDS F in 1989 and 1990 were represented by multiple size classes, with the total length of most fishes >75 mm (Figs. 2-4). All northern crangon were $\leq$70 mm long. With the exception of Pacific sanddab, the size ranges for individual species were similar for both surveys.

Sediments

In June 1989, sediments at all stations consisted of very fine sand (phi 3.0 to 3.4) and low percentages of silt/clay and TOC (Table 5). In June 1990, sediments at most stations consisted of very fine sand and low percentages of silt/clay and TOC, except at three stations in the disposal area (Stations C-3, C-5, and E-3). At these three stations, median grain size approached or equaled coarse silt (3.9 to 4.2), percent silt/clay was very high (32.9 to 46.8), and percent TOC was the highest of both surveys (1.9 to 2.7).

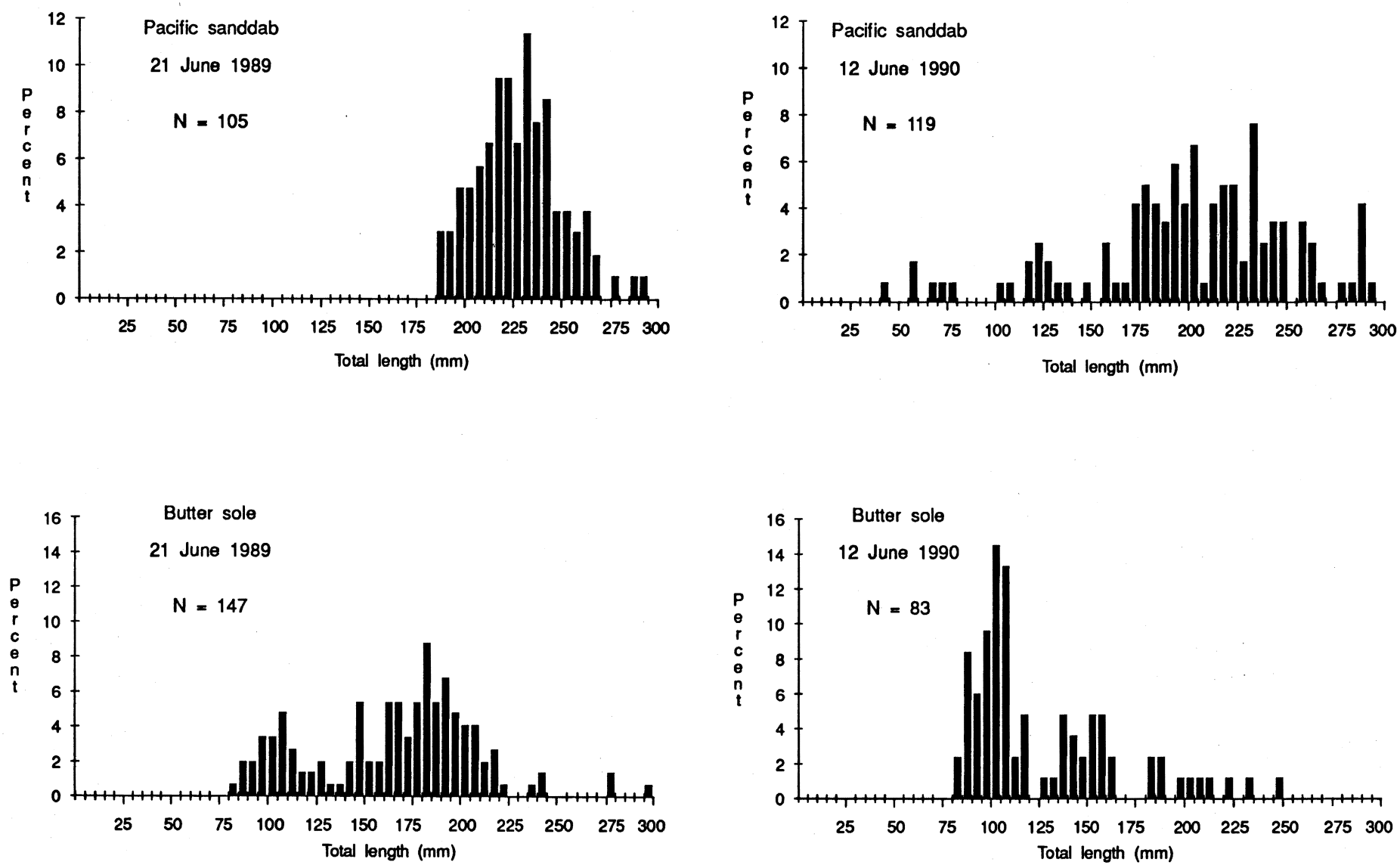

Figure 2.--Length-frequency distributions of Pacific sanddab and butter sole captured at three trawling areas at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990. Fish >300 mm are included in the 300-mm interval.

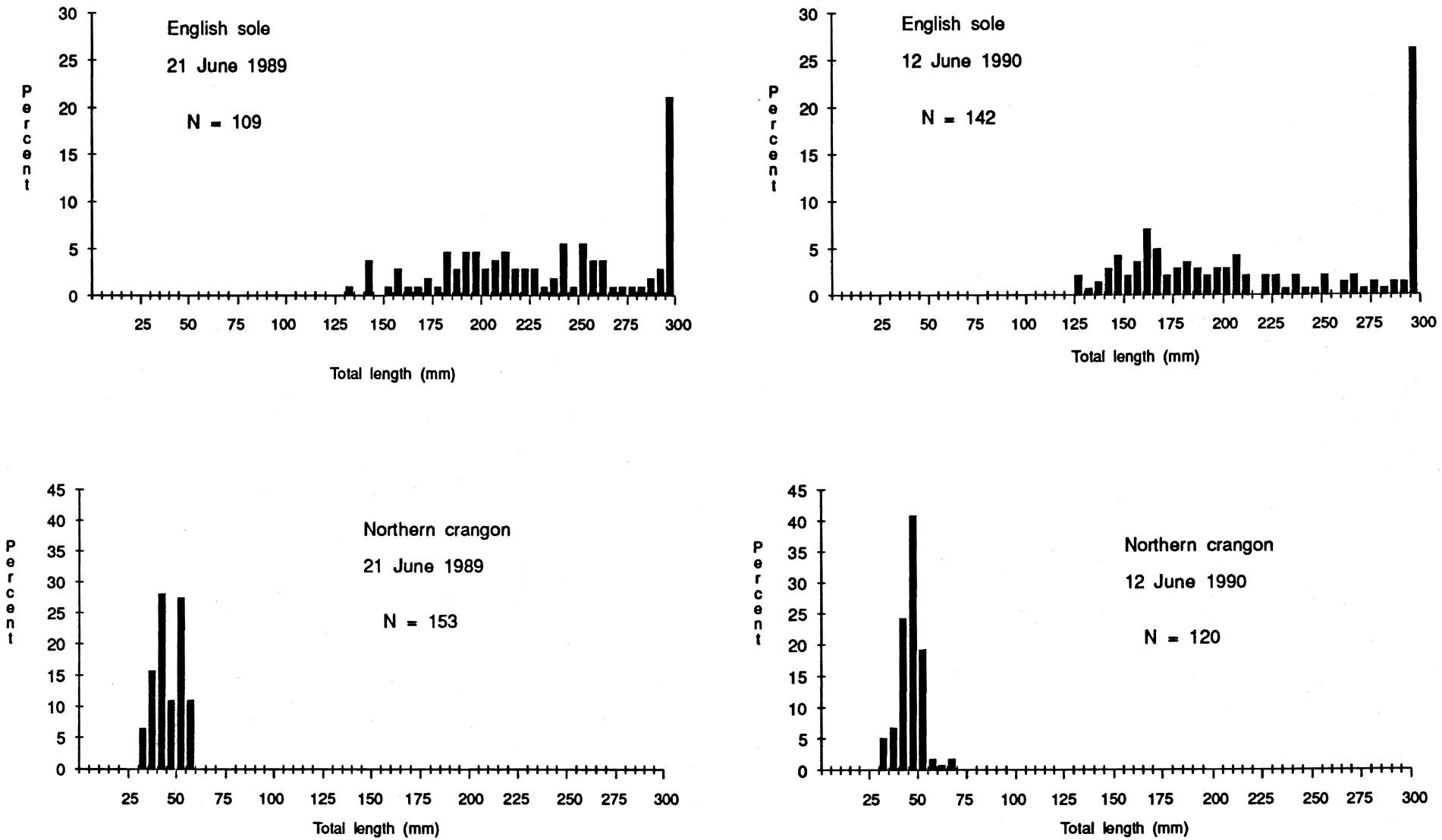

Figure 3.--Length-frequency distributions of English sole and northern crangon captured at three trawling areas at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990. Fish >300 mm are included in the 300-mm interval.

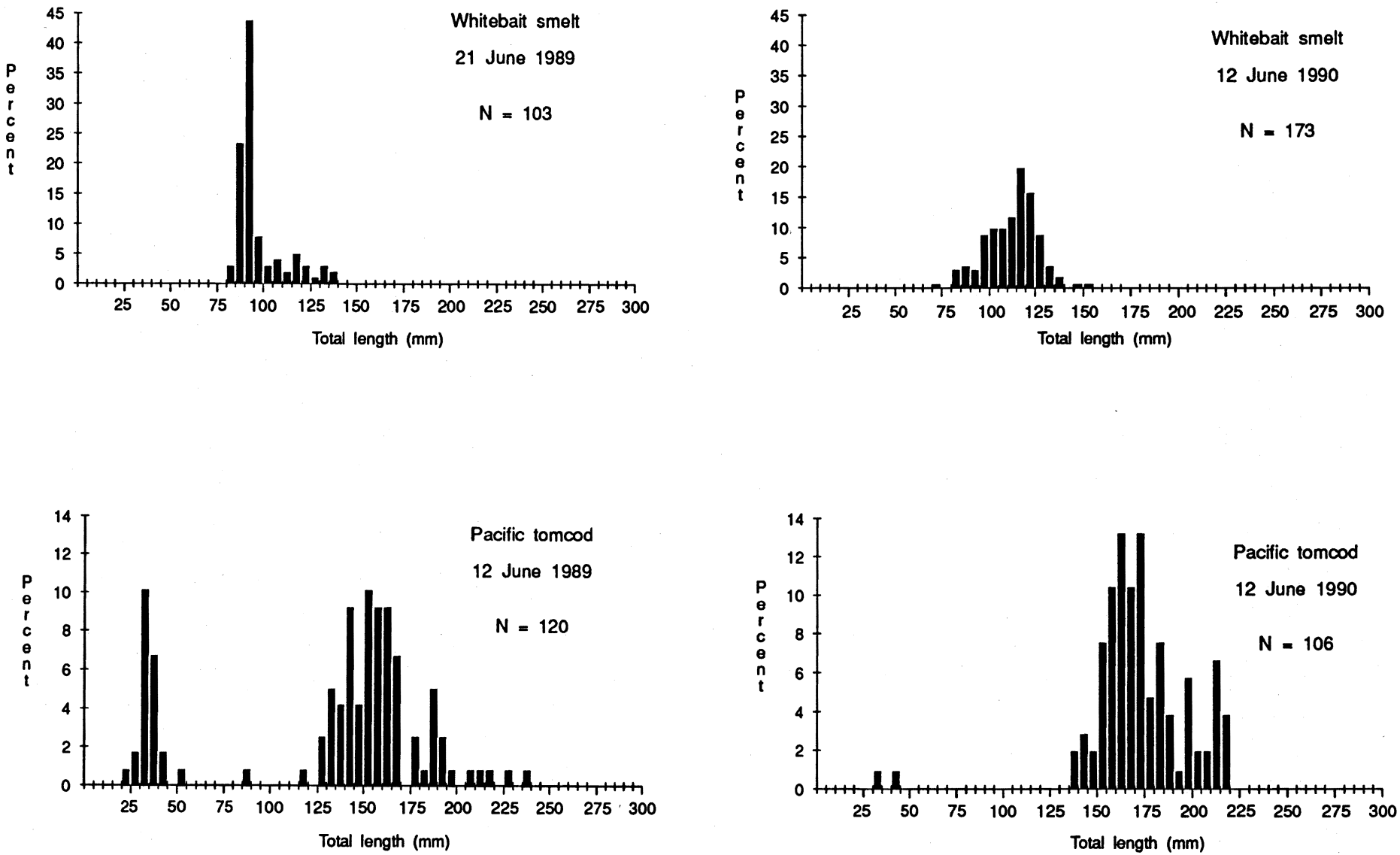

Figure 4.--Length-frequency distributions of whitebait smelt and Pacific tomcod captured at three trawling areas at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Table 5.--Sediment characteristics at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Station	Median grain size (phi)	Percent silt/clay	Percent TOC
	21 June 1989		
A-4	3.1	2.1	1.0
B-2	3.2	1.2	0.6
B-6	3.3	0.5	0.6
C-3	3.3	1.1	0.5
C-5	3.3	0.6	0.5
D-1	3.0	0.9	0.8
D-4	3.2	0.8	0.5
D-7	3.4	0.6	0.5
E-3	3.3	0.7	0.6
E-5	3.3	0.9	0.6
F-2	3.1	1.9	0.6
F-6	3.3	0.6	0.3
G-4	3.2	0.7	0.6
	27 June 1990		
A-4	3.3	2.5	1.0
B-2	3.2	1.3	0.7
B-6	3.3	0.4	0.9
C-3	4.0	38.0	2.6
C-5	3.9	32.9	1.9
D-1	3.1	1.3	0.7
D-4	3.3	3.0	1.1
D-7	3.3	0.4	0.5
E-3	4.2	46.8	2.7
E-5	3.3	0.7	0.6
F-2	3.1	3.0	0.7
F-6	3.2	0.6	0.5

Comparisons of sediment characterisitics of the disposal site stations between surveys showed significantly higher percent silt/clay and TOC in 1990 than in 1989 (t-test, $P < 0.05$). Median grain size at the disposal site in 1989 and 1990 were not significantly different (t-test, $P > 0.05$). There were no significant differences in sediment characteristics at the reference stations between surveys.

DISCUSSION

The significant increase in benthic invertebrate densities between June 1989 (pre-disposal) and June 1990 (post-disposal) at and adjacent to ODMDS F, was likely the result of natural annual variation. Large annual variations of benthic invertebrate densities ranging from $194/m^2$ to $12,124/m^2$ were observed by Richardson et al. (1977) at stations in the ODMDS F area. These variations were attributed to seasonal changes and sediment stability. It is probable that dumping of the dredged material at ODMDS F in 1989 adversely impacted benthic invertebrates during disposal operations and for a short time thereafter. However, the benthic invertebrates were able to successfully recolonize the area by June 1990. Recolonization could have occured by invertebrates burrowing up through the newly deposited sediments and (or) by recruitment from surrounding areas that were less affected (Richardson et al. 1977).

Although trawling catches indicated few Dungeness crabs used the disposal site and surrounding areas in June 1989 and 1990, these results should not be interpreted to mean these areas are not important to crabs. Use of the disposal site and surrounding areas by Dungeness crabs may be greater during other seasons. Crab densities are known to vary seasonally in the

lower Columbia River estuary and at the river mouth, indicating movement to and from the ocean (McCabe et al. 1986). Also, our description of the demersal fish community at the disposal site and surrounding areas must be viewed as only a seasonal description. It is not known if disposal of dredged material affected Dungeness crab and demersal fish use of the ODMDS F area during disposal and in the interim between completion of disposal and the June 1990 survey.

In 1990, the smaller median grain size and high percent silt/clay at three disposal site stations as compared to all other stations was likely the result of residual sediments (from disposal) not being dispersed out of the area by ocean currents. However, other factors may have contributed to the observed difference. Sediment structure has been found to vary annually due to river discharge, primary productivity, and storms (Richardson et al. 1977).

CONCLUSIONS

Between July and October 1989, ODMDS F received over 2.0 million yd^3 of dredged material that was high in silt/clay and TOC content. Results from the two biological surveys, pre-disposal (June 1989) and post-disposal (June 1990), indicated that the dredged material did not have an adverse impact on the benthic invertebrate, demersal fish, and large epibenthic invertebrate communities at and adjacent to the disposal site. The increases detected between surveys were within the range of annual variation. To help assess any longer-term impacts of the dredged material on the bottom communities at ODMDS F, biological samples at all stations were collected in July 1991.

This report does not constitute NMFS's formal comments under the Fish and Wildlife Coordination Act or the National Environmental Policy Act.

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LITERATURE CITED

Krebs, C. J.
1978. Ecology: the experimental analysis of distribution and abundance. Harper and Row. New York, NY. 678 p.

McCabe, G. T., Jr., R. L. Emmett, T. C. Coley, and R. J. McConnell.
1986. Distribution, abundance, and size-class structure of Dungeness crabs in the Columbia River estuary. Unpubl. rep., Northwest Fish. Cent., Natl. Mar. Fish. Serv., NOAA, 2725 Montlake Blvd. E., Seattle, WA 98112 (Report to U.S. Army Corps of Engineers, Contract DACW57-84-F-0178). 57 p.

Pequegnat, W. E., L. H. Pequegnat, P. Wilkinson, J. S. Young, and S. L. Kiessger.
1981. Procedural guide for designation surveys of ocean dredged material disposal sites. Tech. Rep. EL-81-1 to Chief of Engineers, U.S. Army, Washington D.C. 20314. 268 p. plus Appendices.

Pielou, E. L.
1966. The measurement of diversity in different types of biological collections. J. Theor. Biol. 13:131-144.

Richardson, M. D., A. G. Carey, and W. A. Colgate.
1977. Aquatic disposal field investigations Columbia River disposal site, Oregon. Appendix C: The effects of dredged material disposal on benthic assemblages. Rep. to U.S. Army Corps of Engineers,Waterways Expt. Station, Vicksburg, MS. 412 p.

Ryan, B. F., B. L. Joiner, and T. A. Ryan.
1985. Minitab, DOS microcomputer version. Minitab Inc. State College, PA. 386 p.

Appendix Table 1.--Loran-C navigational readings of benthic invertebrate, sediment, and bottom trawling stations at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Benthic invertebrate and sediment station locations[a]

Station	Depth, ft (m)	Loran reading	
A-4	162 (49.4)	12112.0	28022.6
B-2	153 (46.6)	12108.4	28022.8
B-6	147 (44.8)	12111.6	28023.4
C-3	138 (42.1)	12107.0	28023.5
C-5	138 (42.1)	12108.5	28023.8
D-1	138 (42.1)	12103.0	28023.6
D-4	132 (40.2)	12106.6	28024.1
D-7	129 (39.2)	12110.0	28024.3
E-3	126 (38.4)	12105.0	28024.3
E-5	126 (38.4)	12106.0	28024.8
F-2	114 (34.7)	12101.0	28024.9
F-6	114 (34.7)	12105.0	28025.5
G-4	105 (32.0)	12101.0	28025.6

[a]Station locations were the same for June 1989 and June 1990.

Trawling locations

Station	Mean depth, ft (m)	Loran readings: Beginning		Loran readings: Ending	
June 1989					
FS	135 (41.1)	12112.7	28023.7	12111.8	28023.5
FM	135 (41.1)	12109.0	28024.0	12106.4	28024.0
FN	135 (41.1)	12103.0	28023.9	12102.0	28024.1
June 1990					
FS	137 (41.8)	12111.3	28023.7	12111.4	28022.5
FM	121 (36.9)	12107.7	28024.0	12106.3	28023.5
FN	124 (37.8)	12103.1	28023.9	12102.1	28024.0

Appendix Table 2.--Benthic invertebrate taxa collected by box corer at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Taxon	June 1989	June 1990
Anthozoa		x
Nemertea		x
Paleonemertea	x	
Heteronemertea	x	
Nemertea sp. 1	x	
Nemertea sp. 2	x	
Nemertea sp. 3	x	
Nemertea sp. 4	x	
Nematoda	x	
Annelida		
Polychaeta		
Polynoidae	x	x
Tenonia priops	x	x
Sigalionidae		
Pholoe minuta	x	x
Sthenelais berkeleyi	x	x
Sthenelais tertiaglabra	x	x
Sigalion sp.		x
Sigalion spinosa	x	x
Phyllodocidae	x	x
Phyllodoce spp.		x
Phyllodoce (Anaitides) *groenlandica*	x	x
Anaitides papillosa	x	
Eteone spp.	x	x
Eteone californica		x
Eteone longa	x	x
Eteone fauchaldi	x	x
Phyllodoce (Paranaitis) *polynoides*	x	x
Phyllodoce (Aponaitides) *hartmanae*	x	x
Phyllodoce (Anaitides) *multipapillata*	x	x
Hesionidae	x	
Gyptis brevipalpa	x	x
Microphthalmus sp.		x
Heteropodarke heteromorpha		x
Syllidae	x	x
Autolytus cornutus		x
Syllis sp.	x	
Syllis hyalina	x	

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Nereidae		x
Nereis zonata	x	x
Nephtyidea		
Nephtys spp.	x	x
Nephtys caeca	x	x
Nephtys ferruginea	x	
Nephtys caecoides	x	x
Glyceridae		
Glycera spp.		x
Glycera capitata	x	x
Glycera americana		x
Glycera robusta		x
Glycera convoluta		x
Glycinde armigera	x	x
Goniada brunnea	x	x
Onuphidae	x	x
Onuphis spp.	x	x
Onuphis iridescens	x	x
Onuphis elegans	x	
Lumbrineridae		
Lumbrineris spp.	x	x
Lumbrineris bicirrata	x	x
Lumbrineris luti	x	
Lumbrineris limicola	x	
Orbiniidae		x
Leitoscoloplos elongatus	x	
Scoloplos armiger	x	
Leitoscoloplos pugettensis		x
Orbinia felix	x	x
Paraonidae		
Aricidea suecica		x
Aricidea (Acesta) *catherinae*	x	
Aricidea quadrilobata		x
Paraonella platybranchia	x	x
Spionidae	x	
Laonice cirrata	x	x
Polydora socialis		x
Polydora brachycephala		x
Prionospio steenstrupi	x	
Prionospio lighti	x	x
Spio spp.		x
Spio filicornis	x	x
Polydora (Boccardia) *pugettensis*		x
Spio butleri		x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Spiophanes bombyx	x	x
Spiophanes berkeleyorum	x	x
Scolelepis squamata		x
Magelonidae		
Magelona spp.		x
Magelona longicornis	x	x
Magelona sacculata	x	x
Trochochaetidae		
Trochochaeta multisetosa	x	
Chaetopteridae		
Spiochaetopterus costarum		x
Mesochaetopterus taylori		x
Cirratulidae	x	x
Tharyx sp.	x	
Tharyx multifilis		x
Chaetozone setosa	x	
Chaetozone spinosa	x	x
Opheliidae		
Ophelia sp.		x
Travisia spp.		x
Travisia brevis		x
Travisia japonica	x	
Capitellidae		x
Capitella capitata complex	x	
Heteromastus filiformis		x
Heteromastus filobranchus	x	x
Notomastus tenuis	x	
Notomastus lineatus	x	x
Mediomastus sp.		x
Mediomastus californiensis	x	x
Decamastus gracilis	x	x
Maldanidae		x
Asychis sp.		x
Oweniidae		
Owenia fusiformis	x	x
Galathowenia oculata		x
Ampharetidae		
Ampharete acutifrons	x	x
Ampharete finmarchica	x	
Terebellidae	x	
Polycirrus sp.	x	
Polycirrus sp. complex		x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Sabellidae		
Chone duneri		x
Euchone incolor	x	
Euchone hancocki		x
Oligochaeta		x
Hirudinea	x	x
Mollusca		
Gastropoda	x	x
Naticidae	x	
Polinices sp.	x	
Muricidae		
Mitrella gouldi	x	x
Nassaridae		
Nassarius mendicus	x	x
Nassarius perpinquis		x
Olividae		
Olivella spp.	x	x
Olivella biplicata	x	x
Olivella cf. *biplicata*		x
Olivella baetica	x	x
Olivella pycna	x	x
Turridae		
Kurtziella plumbea	x	x
Opistobranchia		
Pyramidellidae		
Odostomia sp.	x	x
Turbonilla sp.		x
Cylichnidae		
Cylichna spp.	x	x
Cylichna alba		x
Cylichna attonsa	x	
Aglajidae		
Aglaja diomedea	x	x
Aglaja cf. *diomedea*	x	x
Gastropteridae		
Gastropteron pacificum	x	
Cuthonidae		
Cuthona sp.		x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Bivalvia	x	x
Nuculidae	x	
Acila castrensis	x	x
Nucula tenuis	x	x
Yoldiidae		
Yoldia myalis		x
Yoldia scissurata		x
Mytilidae	x	x
Thyasiridae		
Axinopsida serricata	x	x
Cultellidae		
Siliqua patula	x	x
Tellinidae		
Macoma spp.	x	x
Macoma calcarea		x
Macoma cf. *lama*		x
Macoma carlottensis		x
Macoma balthica		x
Macoma cf.*balthica*		x
Tellina spp.	x	x
Tellina carpenteri		x
Tellina modesta	x	x
Tellina cf. *modesta*		x
Tellina cf. *bodegensis*	x	
Veneridae		
Protothaca staminea		x
Pandoridae		
Pandora filosa		x
Arthropoda		
Arachnida		x
Cladocera		
Podonidae		
Podon sp.		x
Ostracoda	x	
Ostracoda sp. 2	x	
Cylindroleberididae	x	x
Bathyleberis sp.	x	
Philomedidae		
Euphilomedes carcharodonta	x	x
Copepoda		
Calanoida	x	x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Cirripedia		x
Thoracica		
Balanus sp.		x
Rhizocephala		
Nebaliidae		
Nebalia pugettensis	x	x
Mysidacea		
Mysidae	x	
Acanthomysis columbiae	x	
Acanthomysis macrops		x
Archaeomysis grebnitzkii	x	x
Neomysis spp.		x
Neomysis kadiakensis		x
Neomysis rayii	x	
Cumacea		x
Lampropidae		
Hemilamprops californica		x
Diastylidae	x	x
Diastylis sp.	x	x
Diastylopsis spp.	x	
Diastylopsis dawsoni	x	x
Diastylopsis tenuis	x	x
Colurostylis occidentalis	x	x
Leuconiidae	x	x
Campylaspidae		
Campylaspis sp.	x	
Nannastacidae	x	
Tanaidacea		
Paratanaidae		
Leptognathia sp.	x	
Isopoda		
Spaeromatidae		
Tecticeps pugettensis	x	x
Ancinus granulatus		x
Bathycopea daltonae		x
Idoteidae		
Synidotea spp.		x
Synidotea cf. *nodulosa*		x
Synidotea angulata	x	x
Idotea sp.	x	
Edotea sublittoralis	x	x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Munnidae	x	
Pleurogonium rubicundum		x
Liriopsidae		
Liriopsis pygmaea		x
Amphipoda		x
Gammaridea	x	x
Atylidae		
Atylus tridens		x
Ampeliscidae		
Ampelisca spp.	x	
Ampelisca macrocephala	x	
Ampelisca pugetica		x
Ampelisca careyi	x	x
Aoridae		
Aoroides sp.		x
Corophiidae		
Corophium spinicorne	x	x
Haustoridae		
Eohaustorius spp.	x	x
Eohaustorius washingtonianus	x	x
Eohaustorius estuarius	x	
Eohaustorius sawyeri	x	
Eohaustorius sencillus	x	x
Isaedae		
Photis spp.	x	x
Photis brevipes	x	
Photis macinerneyi	x	x
Photis parvidons	x	x
Protomedeia sp.	x	
Protomedeia articulata		x
Cheirimedia sp.		x
Cheirimedia cf. *zotea*	x	
Ischyroceridae	x	
Lysianassidae		
Anonyx sp.	x	
Anonyx cf. *liljeborgi*	x	x
Lepidecreum gurjanovae		x
Opisa tridentata	x	x
Orchomene spp.	x	x
Orchomene pacifica	x	
Orchomene cf. *pinguis*	x	x
Pachunus cf. *barnardi*		x
Wecomedon sp.	x	
Wecomedon wecomedon	x	

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Oedicerotidae	x	x
Monoculodes sp.	x	x
Monoculodes spinipes	x	x
Synchelidium sp.	x	
Synchelidium shoemakeri		x
Westwoodilla caecula	x	x
Pardaliscidae		
Pardialisca sp.		x
Phoxocephalidae		
Paraphoxus spp.	x	
Paraphoxus obtusidens	x	x
Paraphoxus oculatus	x	x
Mandibulophoxus gilesi	x	x
Mandibulophoxus uncirostratus		x
Rhepoxynius spp.	x	x
Rhepoxynius abronius	x	x
Rhepoxynius daboius	x	x
Rhepoxynius heterocuspidata	x	
Rhepoxynius variatus	x	x
Rhepoxynius tridentatus	x	x
Rhepoxynius vigitegus	x	x
Eobrolgus spinosus	x	
Foxiphalus major	x	
Pleustidae		x
Parapleustes sp.		x
Stenothoidae	x	x
Synopiidae		
Tiron biocellata		x
Hyperiidae		x
Caprellidae		
Caprella sp.		x
Decapoda		
Crangonidae	x	
Crangon nigricauda		x
Callianassidae	x	x
Callianassa sp.	x	x
Callianassa californiensis	x	
Paguridae	x	x
Pagurus sp.	x	x
Upogebiidae		
Upogebia sp.	x	
Upogebia pugettensis	x	
Brachyura		
Cancer sp.	x	x

Appendix Table 2.--Continued.

Taxon	June 1989	June 1990
Onychophora		
Pinnotheridae		
Pinnixa sp.	x	x
Pinnixa eburna		x
Chironomidae	x	
Hemiptera	x	
Coleoptera		x
Hymenoptera		x
Sipuncula		
Sipunculidae	x	
Echiura		
Echiuridae		
Arhynchite pugettensis		x
Echiurus echiurus alaskanus		x
Phoronida		x
Phoronidae	x	x
Ophiura sp.	x	
Brachiopoda		
Ophiuridea		
Amphiuridae	x	
Amphiodia sp.	x	
Amphiodia urtica	x	
Echinodermata		
Ophiuroidea		x
Echinoidea		
Dendrasteridae		
Dendraster excentricus	x	x
Holothuroidea	x	x
Total number of taxa	194	213

Appendix Table 3.--Summary of benthic invertebrates, by station, at and adjacent to ODMDS F, offshore from the Columbia River, in June 1989 and 1990.

Station: A-4 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	3	40.0	6.3	9.3
Nemertea sp. 1	4	40.0	8.3	11.4
Nemertea sp. 2	40	80.0	83.4	65.5
Nemertea sp. 3	5	60.0	10.4	12.8
Tenonia priops	2	40.0	4.2	5.7
Sthenelais berkeleyi	1	20.0	2.1	4.7
Eteone sp.	1	20.0	2.1	4.7
Phyllodoce hartmanae	3	40.0	6.3	9.3
Hesionidae	2	40.0	4.2	5.7
Nereis zonata	1	20.0	2.1	4.7
Nephtys sp.	34	100.0	70.9	23.8
Nephtys caecoides	18	100.0	37.5	20.3
Glycera capitata	1	20.0	2.1	4.7
Glycinde armigera	22	100.0	45.8	21.6
Goniada brunnea	3	60.0	6.3	5.7
Onuphis sp.	9	60.0	18.8	22.6
Onuphis elegans	17	100.0	35.4	18.9
Lumbrineris spp.	2	20.0	4.2	9.3
Lumbrineris bicirrata	1	20.0	2.1	4.7
Lumbrineris luti	1	20.0	2.1	4.7
Leitoscoloplos elongatus	51	100.0	106.3	72.0
Orbinia felix	6	80.0	12.5	11.4
Laonice cirrata	1	20.0	2.1	4.7
Prionospio steenstrupi	1	20.0	2.1	4.7
Prionospio lighti	3	40.0	6.3	9.3
Spio filicornis	1	20.0	2.1	4.7
Spiophanes bombyx	19	100.0	39.6	17.1
Spiophanes berkeleyorum	25	100.0	52.1	36.8
Magelona longicornis	8	80.0	16.7	11.9
Magelona sacculata	17	80.0	35.4	25.1
Trochochaeta multisetosa	1	20.0	2.1	4.7
Chaetozone spinosa	63	100.0	131.3	83.9
Capitellidae	1	20.0	2.1	4.7
Notomastus lineatus	4	60.0	8.3	8.7
Decamastus gracilis	6	60.0	12.5	13.6
Ampharete acutifrons	1	20.0	2.1	4.7
Ampharete finmarchica	1	20.0	2.1	4.7
Polycirrus sp.	1	20.0	2.1	4.7
Euchone incolor	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: A-4 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Hirudinea	1	20.0	2.1	4.7
Polinices sp.	1	20.0	2.1	4.7
Mitrella gouldi	9	80.0	18.8	20.0
Kurtziella plumbea	2	20.0	4.2	9.3
Bivalvia	5	40.0	10.4	18.0
Acila castrensis	3	40.0	6.3	9.3
Nucula tenuis	6	60.0	12.5	13.6
Axinopsida serricata	23	100.0	47.9	26.2
Macoma sp.	1	20.0	2.1	4.7
Tellina sp.	2	20.0	4.2	9.3
Cylindroleberididae	4	60.0	8.3	8.7
Euphilomedes carcharodonta	63	100.0	131.3	95.4
Calanoida	4	40.0	8.3	13.6
Diastylidae	1	20.0	2.1	4.7
Nannastacidae	1	20.0	2.1	4.7
Gammaridea	1	20.0	2.1	4.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius sp.	2	40.0	4.2	5.7
Eohaustorius sencillus	9	80.0	18.8	17.1
Photis macinerneyi	1	20.0	2.1	4.7
Anonyx sp.	5	60.0	10.4	12.8
Anonyx cf. liljeborgi	1	20.0	2.1	4.7
Orchomene cf. pinguis	1	20.0	2.1	4.7
Monoculodes spinipes	1	20.0	2.1	4.7
Synchelidium sp.	1	20.0	2.1	4.7
Mandibulophoxus gilesi	1	20.0	2.1	4.7
Rhepoxynius sp.	25	80.0	52.1	43.0
Rhepoxynius abronius	8	60.0	16.7	15.8
Rhepoxynius daboius	22	80.0	45.8	35.0
Pagurus sp.	1	20.0	2.1	4.7
Pinnixa sp.	1	20.0	2.1	4.7
Phoronida	1	20.0	2.1	4.7
Amphiodia sp.	1	20.0	2.1	4.7

Number of taxa: 72

Mean number/sample: 118.2 Standard deviation: 39.1

Mean number/m²: 1,231.6 Standard deviation/m²: 407.9

H′ = 4.91 J′ = 0.80

Appendix Table 3.--Continued.

Station: B-2 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	1	20.0	2.1	4.7
Nemertea sp. 1	1	20.0	2.1	4.7
Nemertea sp. 2	25	80.0	52.1	32.1
Nemertea sp. 3	3	40.0	6.3	9.3
Tenonia priops	1	20.0	2.1	4.7
Sthenelais berkeleyi	1	20.0	2.1	4.7
Phyllodoce (Anaitides) *groenlandica*	1	20.0	2.1	4.7
Eteone longa	1	20.0	2.1	4.7
Phyllodoce hartmanae	7	100.0	14.6	5.7
Hesionidae	1	20.0	2.1	4.7
Nephtys sp.	55	80.0	114.6	85.0
Nephtys caeca	1	20.0	2.1	4.7
Nephtys caecoides	18	100.0	37.5	14.0
Glycinde armigera	19	80.0	39.6	35.6
Goniada brunnea	5	60.0	10.4	12.8
Onuphis sp.	4	60.0	8.3	8.7
Onuphis elegans	17	100.0	35.4	22.8
Lumbrineris sp.	2	20.0	4.2	9.3
Lumbrineris bicirrata	2	40.0	4.2	5.7
Leitoscoloplos elongatus	50	100.0	104.2	89.3
Orbinia felix	3	40.0	6.3	9.3
Aricidea (Acesta) *catherinae*	1	20.0	2.1	4.7
Paraonella platybranchia	2	20.0	4.2	9.3
Laonice cirrata	1	20.0	2.1	4.7
Prionospio lighti	3	40.0	6.3	9.3
Spiophanes bombyx	19	100.0	39.6	37.9
Spiophanes berkeleyorum	36	80.0	75.0	47.4
Magelona longicornis	6	40.0	12.5	18.6
Magelona sacculata	45	100.0	93.8	123.3
Chaetozone spinosa	41	100.0	85.4	52.3
Notomastus lineatus	5	60.0	10.4	12.8
Decamastus gracilis	10	80.0	20.8	16.5
Ampharete acutifrons	1	20.0	2.1	4.7
Gastropoda	7	40.0	14.6	27.2
Mitrella gouldi	10	40.0	20.8	41.0
Olivella sp.	2	20.0	4.2	9.3
Olivella baetica	1	20.0	2.1	4.7
Olivella pycna	5	20.0	10.4	23.3
Cylichna attanosa	1	20.0	2.1	4.7
Aglaja cf. *diomedea*	1	20.0	2.1	4.7
Gastropteron pacificum	2	20.0	4.2	9.3
Bivalvia	13	80.0	27.1	32.6
Acila castrensis	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: B-2 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Axinopsida serricata	24	100.0	50.0	35.6
Siliqua patula	1	20.0	2.1	4.7
Macoma sp.	1	20.0	2.1	4.7
Tellina sp.	5	60.0	10.4	10.4
Cylindroleberididae	2	40.0	4.2	5.7
Euphilomedes carcharodonta	40	80.0	83.4	108.8
Acanthomysis columbiae	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	1	20.0	2.1	4.7
Diastylopsis dawsoni	2	40.0	4.2	5.7
Ampelisca macrocephala	1	20.0	2.1	4.7
Ampelisca careyi	3	40.0	6.3	9.3
Eohaustorius sencillus	28	80.0	58.4	45.2
Photis macinerneyi	1	20.0	2.1	4.7
Photis parvidons	3	20.0	6.3	14.0
Protomedeia sp.	1	20.0	2.1	4.7
Anonyx cf. liljeborgi	17	40.0	35.4	49.8
Orchomene sp.	1	20.0	2.1	4.7
Westwoodilla caecula	2	20.0	4.2	9.3
Paraphoxus obtusidens	1	20.0	2.1	4.7
Rhepoxynius sp.	23	100.0	47.9	17.4
Rhepoxynius abronius	14	80.0	29.2	22.6
Rhepoxynius daboius	13	40.0	27.1	41.4
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Eobrolgus spinosus	2	20.0	4.2	9.3
Amphiuridae	2	20.0	4.2	9.3

Number of taxa: 68

Mean number/sample: 124.2 Standard deviation: 51.4

Mean number/m²: 1,294.2 Standard deviation/m²: 536.1

H′ = 4.97 J′ = 0.82

Appendix Table 3.--Continued.

Station: B-6 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	4	20.0	8.3	18.6
Nemertea sp. 1	1	20.0	2.1	4.7
Nemertea sp. 2	7	40.0	14.6	20.3
Paleonemertea	5	20.0	10.4	23.3
Heteronemertea	1	20.0	2.1	4.7
Phyllodocidae	1	20.0	2.1	4.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce hartmanae	3	40.0	6.3	9.3
Hesionidae	1	20.0	2.1	4.7
Nephtys sp.	22	100.0	45.8	54.9
Nephtys ferruginea	3	20.0	6.3	14.0
Nephtys caecoides	16	80.0	33.3	32.5
Glycinde armigera	10	80.0	20.8	14.7
Goniada brunnea	3	40.0	6.3	9.3
Onuphis sp.	10	80.0	20.8	12.8
Onuphis (Nothria) *iridescens*	2	20.0	4.2	9.3
Onuphis elegans	5	60.0	10.4	10.4
Lumbrineris sp.	1	20.0	2.1	4.7
Leitoscoloplos elongatus	25	100.0	52.1	64.2
Scoloplos armiger	3	40.0	6.3	9.3
Orbinia felix	6	60.0	12.5	13.6
Aricidea (Acesta) *catherinae*	1	20.0	2.1	4.7
Spionidae	1	20.0	2.1	4.7
Spiophanes bombyx	49	100.0	102.1	31.6
Spiophanes berkeleyorum	13	100.0	27.1	11.9
Magelona longicornis	2	20.0	4.2	9.3
Magelona sacculata	13	100.0	27.1	17.4
Chaetozone setosa	11	20.0	22.9	51.3
Chaetozone spinosa	22	80.0	45.8	36.5
Capitella capitata	1	20.0	2.1	4.7
Notomastus lineatus	5	60.0	10.4	12.8
Mediomastus californiensis	1	20.0	2.1	4.7
Decamastus gracilis	4	40.0	8.3	13.6
Owenia fusiformis	1	20.0	2.1	4.7
Ampharete acutifrons	1	20.0	2.1	4.7
Ampharete finmarchica	1	20.0	2.1	4.7
Terebellidae	1	20.0	2.1	4.7
Euchone incolor	1	20.0	2.1	4.7
Mitrella gouldi	9	80.0	18.8	24.9
Olivella sp.	3	60.0	6.3	5.7
Olivella pycna	5	80.0	10.4	7.4
Cylichna attanosa	1	20.0	2.1	4.7
Bivalvia	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: B-6 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Acila castrensis	1	20.0	2.1	4.7
Nucula tenuis	1	20.0	2.1	4.7
Axinopsida serricata	4	80.0	8.3	4.7
Tellina sp.	2	40.0	4.2	5.7
Ostracoda	1	20.0	2.1	4.7
Euphilomedes carcharodonta	18	80.0	37.5	27.2
Calanoida	1	20.0	2.1	4.7
Diastylis sp.	1	20.0	2.1	4.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius sp.	1	20.0	2.1	4.7
Eohaustorius sencillus	37	100.0	77.1	84.8
Photis macinerneyi	1	20.0	2.1	4.7
Photis parvidons	1	20.0	2.1	4.7
Anonyx sp.	6	60.0	12.5	17.1
Orchomene sp.	2	20.0	4.2	9.3
Wecomedon wecomus	1	20.0	2.1	4.7
Rhepoxynius sp.	21	80.0	43.8	28.0
Rhepoxynius abronius	19	100.0	39.6	24.9
Rhepoxynius daboius	7	60.0	14.6	15.8
Rhepoxynius tridentatus	1	20.0	2.1	4.7
Rhepoxynius vigitegus	2	20.0	4.2	9.3
Callianassa sp.	2	20.0	4.2	9.3
Callianassa californiensis	1	20.0	2.1	4.7
Pagurus sp.	5	80.0	10.4	7.4
Upogebia sp.	1	20.0	2.1	4.7
Phoronida	3	40.0	6.3	9.3

Number of taxa: 69

Mean number/sample: 83.8 Standard deviation: 26.6

Mean number/m²: 873.2 Standard deviation/m²: 277.1

H′ = 5.09 J′ = 0.83

Appendix Table 3.--Continued.

Station: C-3 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	1	20.0	2.1	4.7
Nemertea sp. 2	3	40.0	6.3	9.3
Nemertea sp. 4	10	20.0	20.8	46.6
Polynoidae	1	20.0	2.1	4.7
Tenonia priops	1	20.0	2.1	4.7
Pholoe minuta	1	20.0	2.1	4.7
Sthenelais tertiaglabra	3	60.0	6.3	5.7
Eteone longa	1	20.0	2.1	4.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce hartmanae	10	100.0	20.8	7.4
Gyptis brevipalpa	1	20.0	2.1	4.7
Syllidae	1	20.0	2.1	4.7
Nereis zonata	1	20.0	2.1	4.7
Nephtys sp.	19	100.0	39.6	22.6
Nephtys caecoides	19	100.0	39.6	32.5
Glycinde armigera	7	80.0	14.6	11.9
Goniada brunnea	8	80.0	16.7	11.9
Onuphis (Nothria) *iridescens*	2	40.0	4.2	5.7
Onuphis elegans	9	40.0	18.8	36.4
Lumbrineris bicirrata	1	20.0	2.1	4.7
Leitoscoloplos elongatus	36	100.0	75.0	71.6
Scoloplos armiger	1	20.0	2.1	4.7
Orbinia felix	12	100.0	25.0	11.9
Prionospio lighti	1	20.0	2.1	4.7
Spiophanes bombyx	9	100.0	18.8	8.7
Spiophanes berkeleyorum	102	100.0	212.6	108.2
Magelona longicornis	9	80.0	18.8	17.1
Magelona sacculata	10	80.0	20.8	16.5
Chaetozone spinosa	22	100.0	45.8	17.4
Notomastus lineatus	1	20.0	2.1	4.7
Mediomastus californiensis	1	20.0	2.1	4.7
Decamastus gracilis	3	40.0	6.3	9.3
Mitrella gouldi	6	80.0	12.5	8.7
Olivella sp.	1	20.0	2.1	4.7
Olivella pycna	1	20.0	2.1	4.7
Kurtziella plumbea	1	20.0	2.1	4.7
Odostomia sp.	1	20.0	2.1	4.7
Bivalvia	2	40.0	4.2	5.7
Axinopsida serricata	9	80.0	18.8	13.6
Macoma sp.	2	20.0	4.2	9.3
Tellina sp.	1	20.0	2.1	4.7
Cylindroleberididae	4	60.0	8.3	8.7
Euphilomedes carcharodonta	2	20.0	4.2	9.3

Appendix Table 3.--Continued.

Station: C-3 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Calanoida	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	1	20.0	2.1	4.7
Leuconidae	1	20.0	2.1	4.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius sp.	3	20.0	6.3	14.0
Eohaustorius washingtonianus	2	20.0	4.2	9.3
Eohaustorius estuarius	1	20.0	2.1	4.7
Eohaustorius sencillus	48	100.0	100.0	41.4
Photis sp.	1	20.0	2.1	4.7
Photis macinerneyi	2	40.0	4.2	5.7
Anonyx sp.	2	20.0	4.2	9.3
Mandibulophoxus gilesi	2	40.0	4.2	5.7
Rhepoxynius sp.	22	80.0	45.8	34.2
Rhepoxynius abronius	4	40.0	8.3	13.6
Rhepoxynius daboius	29	100.0	60.4	38.6
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Pagurus sp.	1	20.0	2.1	4.7
Upogebia sp.	2	40.0	4.2	5.7
Pinnixa sp.	1	20.0	2.1	4.7
Amphiodia sp.	1	20.0	2.1	4.7
Holothuroidea	1	20.0	2.1	4.7

Number of taxa: 64

Mean number/sample: 93.0 Standard deviation: 12.5

Mean number/m²: 969.1 Standard deviation/m²: 130.4

H′ = 4.55 J′ = 0.76

Appendix Table 3.--Continued.

Station: C-5 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	1	20.0	2.1	4.7
Nemertea sp. 1	10	60.0	20.8	30.4
Nemertea sp. 2	39	80.0	81.3	103.0
Nematoda	1	20.0	2.1	4.7
Tenonia priops	1	20.0	2.1	4.7
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Sigalion spinosa	1	20.0	2.1	4.7
Phyllodoce (Anaitides) *groenlandica*	1	20.0	2.1	4.7
Phyllodoce hartmanae	6	80.0	12.5	8.7
Gyptis brevipalpa	1	20.0	2.1	4.7
Nephtys sp.	25	80.0	52.1	61.2
Nephtys caecoides	25	100.0	52.1	41.7
Glycinde armigera	14	100.0	29.2	13.6
Goniada brunnea	1	20.0	2.1	4.7
Onuphidae	2	20.0	4.2	9.3
Onuphis sp.	8	60.0	16.7	15.8
Onuphis elegans	18	80.0	37.5	27.2
Lumbrineris bicirrata	2	40.0	4.2	5.7
Leitoscoloplos elongatus	33	100.0	68.8	39.4
Scoloplos armiger	1	20.0	2.1	4.7
Orbinia felix	4	60.0	8.3	8.7
Laonice cirrata	2	40.0	4.2	5.7
Spio filicornis	1	20.0	2.1	4.7
Spiophanes bombyx	42	100.0	87.5	49.2
Spiophanes berkeleyorum	41	100.0	85.4	68.5
Magelona longicornis	6	60.0	12.5	13.6
Magelona sacculata	24	100.0	50.0	29.8
Chaetozone spinosa	50	100.0	104.2	62.5
Notomastus lineatus	3	40.0	6.3	9.3
Decamastus gracilis	8	80.0	16.7	15.8
Ampharete acutifrons	1	20.0	2.1	4.7
Mitrella gouldi	13	100.0	27.1	24.0
Olivella pycna	2	40.0	4.2	5.7
Kurtziella plumbea	1	20.0	2.1	4.7
Bivalvia	6	60.0	12.5	13.6
Nucula tenuis	1	20.0	2.1	4.7
Axinopsida serricata	2	20.0	4.2	9.3
Macoma sp.	5	20.0	10.4	23.3
Tellina sp.	1	20.0	2.1	4.7
Cylindroleberididae	2	40.0	4.2	5.7
Euphilomedes carcharodonta	1	20.0	2.1	4.7
Calanoida	2	40.0	4.2	5.7
Nebalia pugettensis	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: C-5 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Leuconidae	1	20.0	2.1	4.7
Munnidae	1	20.0	2.1	4.7
Ampelisca careyi	4	40.0	8.3	13.6
Corophium spinicorne	1	20.0	2.1	4.7
Eohaustorius sp.	2	20.0	4.2	9.3
Eohaustorius estuarius	2	20.0	4.2	9.3
Eohaustorius sawyeri	1	20.0	2.1	4.7
Eohaustorius sencillus	34	100.0	70.9	43.2
Photis sp.	2	20.0	4.2	9.3
Photis macinerneyi	1	20.0	2.1	4.7
Anonyx sp.	1	20.0	2.1	4.7
Anonyx cf. *liljeborgi*	12	20.0	25.0	55.9
Orchomene sp.	11	60.0	22.9	30.7
Orchomene cf. *pinguis*	4	20.0	8.3	18.6
Oedicerotidae	1	20.0	2.1	4.7
Monoculodes spinipes	1	20.0	2.1	4.7
Rhepoxynius sp.	29	100.0	60.4	18.6
Rhepoxynius abronius	11	100.0	22.9	8.7
Rhepoxynius daboius	12	80.0	25.0	26.2
Rhepoxynius heterocuspidata	1	20.0	2.1	4.7
Rhepoxynius variatus	1	20.0	2.1	4.7
Rhepoxynius tridentatus	2	40.0	4.2	5.7
Crangonidae	1	20.0	2.1	4.7
Pagurus sp.	2	40.0	4.2	5.7
Phoronida	2	20.0	4.2	9.3

Number of taxa: 68

Mean number/sample: 110.0 Standard deviation: 51.1

Mean number/m²: 1,146.2 Standard deviation/m²: 532.7

H′ = 4.94 J′ = 0.81

Appendix Table 3.--Continued.

Station: D-1 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	1	20.0	2.1	4.7
Nemertea sp. 1	7	80.0	14.6	11.9
Nemertea sp. 2	74	100.0	154.2	70.8
Nemertea sp. 3	2	40.0	4.2	5.7
Tenonia priops	1	20.0	2.1	4.7
Pholoe minuta	1	20.0	2.1	4.7
Sthenelais berkeleyi	2	20.0	4.2	9.3
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Sigalion spinosa	1	20.0	2.1	4.7
Anaitides papillosa	1	20.0	2.1	4.7
Eteone sp.	1	20.0	2.1	4.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce hartmanae	3	20.0	6.3	14.0
Syllidae	1	20.0	2.1	4.7
Nephtys sp.	63	120.0	131.3	84.2
Nephtys caecoides	34	80.0	70.9	56.3
Glycinde armigera	33	100.0	68.8	41.4
Goniada brunnea	3	40.0	6.3	9.3
Onuphis sp.	3	60.0	6.3	5.7
Onuphis elegans	11	100.0	22.9	13.6
Lumbrineris sp.	3	40.0	6.3	9.3
Leitoscoloplos elongatus	39	100.0	81.3	46.2
Scoloplos armiger	1	20.0	2.1	4.7
Orbinia felix	12	60.0	25.0	31.8
Spiophanes bombyx	28	80.0	58.4	47.5
Spiophanes berkeleyorum	48	100.0	100.0	45.2
Magelona longicornis	1	20.0	2.1	4.7
Magelona sacculata	12	80.0	25.0	17.4
Chaetozone spinosa	59	100.0	123.0	84.1
Notomastus lineatus	3	60.0	6.3	5.7
Ampharete acutifrons	1	20.0	2.1	4.7
Gastropoda	1	20.0	2.1	4.7
Mitrella gouldi	3	60.0	6.3	5.7
Nassarius mendicus	2	40.0	4.2	5.7
Olivella sp.	6	60.0	12.5	13.6
Olivella biplicata	1	20.0	2.1	4.7
Olivella pycna	1	20.0	2.1	4.7
Cylichna sp.	2	20.0	4.2	9.3
Cylichna attanosa	3	40.0	6.3	9.3
Aglaja diomedea	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: D-1 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Bivalvia	14	80.0	29.2	22.6
Acila castrensis	1	20.0	2.1	4.7
Nucula tenuis	2	40.0	4.2	5.7
Mytilidae (mollusca)	2	20.0	4.2	9.3
Axinopsida serricata	48	100.0	100.0	71.3
Macoma sp.	1	20.0	2.1	4.7
Tellina sp.	14	80.0	29.2	32.5
Ostracoda	1	20.0	2.1	4.7
Cylindroleberididae	2	20.0	4.2	9.3
Bathyleberis sp.	1	20.0	2.1	4.7
Euphilomedes carcharodonta	2	40.0	4.2	5.7
Mysidae	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	2	40.0	4.2	5.7
Diastylidae	1	20.0	2.1	4.7
Colurostylis occidentalis	2	20.0	4.2	9.3
Idotea sp.	2	20.0	4.2	9.3
Edotea sublittoralis	1	20.0	2.1	4.7
Ampelisca macrocephala	2	40.0	4.2	5.7
Ampelisca careyi	4	40.0	8.3	11.4
Eohaustorius sp.	1	20.0	2.1	4.7
Eohaustorius estuarius	2	40.0	4.2	5.7
Eohaustorius sencillus	13	60.0	27.1	33.4
Photis sp.	1	20.0	2.1	4.7
Photis brevipes	1	20.0	2.1	4.7
Photis macinerneyi	1	20.0	2.1	4.7
Ischyroceridae	1	20.0	2.1	4.7
Anonyx cf. liljeborgi	26	20.0	54.2	121.2
Opisa tridentata	1	20.0	2.1	4.7
Orchomene sp.	2	20.0	4.2	9.3
Orchomene pacifica	5	20.0	10.4	23.3
Orchomene cf. pinquis	55	60.0	114.6	125.0
Paraphoxus sp.	1	20.0	2.1	4.7
Rhepoxynius sp.	13	80.0	27.1	33.4
Rhepoxynius abronius	6	40.0	12.5	18.6
Rhepoxynius daboius	10	40.0	20.8	32.1
Callianassidae	1	20.0	2.1	4.7
Pagurus sp.	2	20.0	4.2	9.3
Ophiura sp.	2	20.0	4.2	9.3
Amphiodia sp.	8	80.0	16.7	20.3
Dendraster excentricus	2	20.0	4.2	9.3

Appendix Table 3.--Continued.

Station: D-1 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²

Number of taxa: 80

Mean number/sample: 145.6 Standard deviation: 55.8

Mean number/m²: 1,517.2 Standard deviation/m²: 581.0

H′ = 4.89 J′ = 0.77

Appendix Table 3.--Continued.

Station: D-4 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	2	40.0	4.2	5.7
Nemertea sp. 1	4	60.0	8.3	8.7
Nemertea sp. 2	19	80.0	39.6	46.2
Nemertea sp. 3	1	20.0	2.1	4.7
Pholoe minuta	1	20.0	2.1	4.7
Eteone sp.	1	20.0	2.1	4.7
Phyllodoce hartmanae	4	40.0	8.3	11.4
Phyllodoce multipapillata	1	20.0	2.1	4.7
Hesionidae	1	20.0	2.1	4.7
Syllis hyalina	1	20.0	2.1	4.7
Nereis zonata	1	20.0	2.1	4.7
Nephtys sp.	14	80.0	29.2	32.5
Nephtys caecoides	16	80.0	33.3	22.6
Glycinde armigera	11	100.0	22.9	17.1
Goniada brunnea	3	60.0	6.3	5.7
Onuphidae	2	20.0	4.2	9.3
Onuphis sp.	4	40.0	8.3	11.4
Onuphis elegans	7	100.0	14.6	5.7
Lumbrineris bicirrata	5	60.0	10.4	10.4
Lumbrineris limicola	1	20.0	2.1	4.7
Leitoscoloplos elongatus	22	100.0	45.8	24.0
Scoloplos armiger	2	40.0	4.2	5.7
Orbinia felix	1	20.0	2.1	4.7
Spio filicornis	2	20.0	4.2	9.3
Spiophanes bombyx	53	100.0	110.5	53.9
Spiophanes berkeleyorum	25	100.0	52.1	32.1
Magelona longicornis	3	40.0	6.3	9.3
Magelona sacculata	23	100.0	47.9	27.2
Tharyx sp.	1	20.0	2.1	4.7
Chaetozone spinosa	33	100.0	68.8	49.2
Travisia japonica	1	20.0	2.1	4.7
Notomastus tenuis	1	20.0	2.1	4.7
Notomastus lineatus	5	60.0	10.4	10.4
Decamastus gracilis	4	80.0	8.3	4.7
Polycirrus sp.	1	20.0	2.1	4.7
Gastropoda	1	20.0	2.1	4.7
Naticidae	1	20.0	2.1	4.7
Mitrella gouldi	7	100.0	14.6	5.7
Nassarius mendicus	1	20.0	2.1	4.7
Olivella sp.	1	20.0	2.1	4.7
Olivella baetica	1	20.0	2.1	4.7
Olivella pycna	4	40.0	8.3	11.4
Kurtziella plumbea	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: D-4 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Cylichna attanosa	1	20.0	2.1	4.7
Bivalvia	2	20.0	4.2	9.3
Nucula tenuis	1	20.0	2.1	4.7
Axinopsida serricata	3	20.0	6.3	14.0
Macoma sp.	1	20.0	2.1	4.7
Tellina sp.	3	40.0	6.3	9.3
Euphilomedes carcharodonta	2	20.0	4.2	9.3
Acanthomysis columbiae	1	20.0	2.1	4.7
Leuconidae	1	20.0	2.1	4.7
Synidotea angulata	2	40.0	4.2	5.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius estuarius	2	20.0	4.2	9.3
Eohaustorius sencillus	51	100.0	106.3	108.6
Anonyx sp.	12	40.0	25.0	37.3
Paraphoxus obtusidens	2	20.0	4.2	9.3
Rhepoxynius sp.	16	80.0	33.3	22.6
Rhepoxynius abronius	11	60.0	22.9	22.6
Rhepoxynius daboius	14	80.0	29.2	22.6
Pagurus sp.	1	20.0	2.1	4.7
Upogebia sp.	1	20.0	2.1	4.7
Amphiuridae	1	20.0	2.1	4.7

Number of taxa: 64

Mean number/sample: 84.6 Standard deviation: 37.0

Mean number/m²: 881.5 Standard deviation/m²: 385.4

H′ = 4.82 J′ = 0.80

Appendix Table 3.--Continued.

Station: D-7 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	3	40.0	6.3	9.3
Nemertea sp. 1	1	20.0	2.1	4.7
Nemertea sp. 2	12	40.0	25.0	37.3
Nemertea sp. 3	1	20.0	2.1	4.7
Tenonia priops	1	20.0	2.1	4.7
Phyllodoce (Anaitides) papillosa	1	20.0	2.1	4.7
Eteone fauchaldi	3	60.0	6.3	5.7
Phyllodoce (Paranaitis) polynoides	2	40.0	4.2	5.7
Phyllodoce (Anaitides) hartmanae	4	80.0	8.3	4.7
Syllidae	3	20.0	6.3	14.0
Nephtys sp.	19	80.0	39.6	51.8
Nephtys caecoides	13	100.0	27.1	9.3
Glycinde armigera	9	60.0	18.8	21.4
Goniada brunnea	9	60.0	18.8	18.6
Onuphis sp.	7	80.0	14.6	11.9
Onuphis elegans	7	80.0	14.6	11.9
Lumbrineris sp.	2	20.0	4.2	9.3
Leitoscoloplos elongatus	26	100.0	54.2	23.8
Orbinia felix	1	20.0	2.1	4.7
Aricidea (Acesta) catherinae	1	20.0	2.1	4.7
Paraonella platybranchia	2	40.0	4.2	5.7
Spiophanes bombyx	36	100.0	75.0	37.9
Spiophanes berkeleyorum	11	100.0	22.9	11.4
Magelona longicornis	5	40.0	10.4	18.0
Magelona sacculata	23	100.0	47.9	50.3
Chaetozone spinosa	17	100.0	35.4	21.6
Notomastus lineatus	7	60.0	14.6	21.6
Decamastus gracilis	5	60.0	10.4	12.8
Ampharete acutifrons	2	20.0	4.2	9.3
Mitrella gouldi	4	80.0	8.3	4.7
Olivella sp.	7	40.0	14.6	20.3
Olivella pycna	7	60.0	14.6	14.0
Kurtziella plumbea	1	20.0	2.1	4.7
Cylichna attanosa	1	20.0	2.1	4.7
Aglaja diomedea	1	20.0	2.1	4.7
Bivalvia	1	20.0	2.1	4.7
Nuculidae	1	20.0	2.1	4.7
Acila castrensis	1	20.0	2.1	4.7
Nucula tenuis	1	20.0	2.1	4.7
Axinopsida serricata	7	80.0	14.6	9.3
Macoma sp.	1	20.0	2.1	4.7
Tellina sp.	4	40.0	8.3	13.6
Calanoida	2	40.0	4.2	5.7

Appendix Table 3.--Continued.

Station: D-7 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nebalia pugettensis	1	20.0	2.1	4.7
Colurostylis occidentalis	1	20.0	2.1	4.7
Ampelisca macrocephala	1	20.0	2.1	4.7
Ampelisca careyi	1	20.0	2.1	4.7
Eohaustorius sp.	5	20.0	10.4	23.3
Eohaustorius estuarius	1	20.0	2.1	4.7
Eohaustorius sencillus	31	100.0	64.6	34.1
Anonyx sp.	8	40.0	16.7	24.0
Westwoodilla caecula	1	20.0	2.1	4.7
Mandibulophoxus gilesi	1	20.0	2.1	4.7
Rhepoxynius sp.	26	100.0	54.2	17.1
Rhepoxynius abronius	7	60.0	14.6	17.4
Rhepoxynius daboius	16	100.0	33.3	15.5
Rhepoxynius heterocuspidata	3	20.0	6.3	14.0
Rhepoxynius vigitegus	2	20.0	4.2	9.3
Stenothoidae	1	20.0	2.1	4.7
Pagurus sp.	2	40.0	4.2	5.7

Number of taxa: 60

Mean number/sample: 76.0 Standard deviation: 32.1

Mean number/m²: 791.9 Standard deviation/m²: 334.0

H′ = 5.04 J′ = 0.85

Appendix Table 3.--Continued.

Station: E-3 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	4	40.0	8.3	13.6
Nemertea sp. 1	2	40.0	4.2	5.7
Nemertea sp. 2	38	100.0	79.2	43.3
Nemertea sp. 3	2	20.0	4.2	9.3
Tenonia priops	1	20.0	2.1	4.7
Phyllodoce (Anaitides) *groenlandica*	3	20.0	6.3	14.0
Eteone sp.	1	20.0	2.1	4.7
Phyllodoce hartmanae	2	40.0	4.2	5.7
Syllidae	2	40.0	4.2	5.7
Nephtys sp.	55	100.0	114.6	72.2
Nephtys caecoides	11	100.0	22.9	11.4
Glycinde armigera	10	100.0	20.8	12.8
Goniada brunnea	1	20.0	2.1	4.7
Onuphis sp.	1	20.0	2.1	4.7
Onuphis elegans	9	80.0	18.8	11.4
Leitoscoloplos elongatus	23	100.0	47.9	24.0
Scoloplos armiger	5	40.0	10.4	14.7
Orbinia felix	7	80.0	14.6	11.9
Prionospio lighti	1	20.0	2.1	4.7
Spio filicornis	3	40.0	6.3	9.3
Spiophanes bombyx	43	100.0	89.6	76.8
Spiophanes berkeleyorum	19	80.0	39.6	39.3
Magelona longicornis	1	20.0	2.1	4.7
Magelona sacculata	43	100.0	89.6	54.4
Chaetozone spinosa	46	100.0	95.9	65.7
Notomastus lineatus	6	80.0	12.5	8.7
Mediomastus californiensis	1	20.0	2.1	4.7
Decamastus gracilis	1	20.0	2.1	4.7
Mitrella gouldi	1	20.0	2.1	4.7
Olivella sp.	1	20.0	2.1	4.7
Olivella baetica	3	40.0	6.3	9.3
Olivella pycna	5	60.0	10.4	12.8
Kurtziella plumbea	1	20.0	2.1	4.7
Odostomia sp.	1	20.0	2.1	4.7
Aglaja diomedea	1	20.0	2.1	4.7
Bivalvia	7	100.0	14.6	9.3
Axinopsida serricata	6	60.0	12.5	13.6
Macoma sp.	2	40.0	4.2	5.7
Tellina sp.	5	60.0	10.4	12.8
Tellina modesta	1	20.0	2.1	4.7
Cylindroleberididae	5	60.0	10.4	10.4
Calanoida	1	20.0	2.1	4.7
Acanthomysis columbiae	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: E-3 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Archaeomysis grebnitzkii	3	40.0	6.3	9.3
Leptognathia sp.	1	20.0	2.1	4.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius sp.	3	40.0	6.3	9.3
Eohaustorius washingtonianus	3	40.0	6.3	9.3
Eohaustorius sencillus	26	100.0	54.2	46.2
Photis macinerneyi	1	20.0	2.1	4.7
Anonyx sp.	6	40.0	12.5	18.6
Orchomene sp.	4	60.0	8.3	8.7
Monoculodes sp.	1	20.0	2.1	4.7
Rhepoxynius sp.	14	80.0	29.2	20.0
Rhepoxynius abronius	6	40.0	12.5	18.6
Rhepoxynius daboius	19	100.0	39.6	35.6
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Amphiodia sp.	4	40.0	8.3	13.6
Dendraster excentricus	1	20.0	2.1	4.7

Number of taxa: 59

Mean number/sample: 95.4 Standard deviation: 24.9

Mean number/m²: 994.1 Standard deviation/m²: 259.2

H′ = 4.72 , J′ = 0.80

Appendix Table 3.--Continued.

Station: E-5 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	3	60.0	6.3	5.7
Nemertea sp. 1	2	40.0	4.2	5.7
Nemertea sp. 2	17	80.0	35.4	45.8
Tenonia priops	1	20.0	2.1	4.7
Eteone fauchaldi	2	20.0	4.2	9.3
Phyllodoce hartmanae	2	40.0	4.2	5.7
Phyllodoce multipapillata	1	20.0	2.1	4.7
Hesionidae	1	20.0	2.1	4.7
Gyptis brevipalpa	1	20.0	2.1	4.7
Syllidae	1	20.0	2.1	4.7
Nephtys sp.	23	100.0	47.9	40.8
Nephtys caecoides	14	100.0	29.2	21.4
Glycinde armigera	14	100.0	29.2	21.4
Goniada brunnea	4	60.0	8.3	8.7
Onuphis sp.	1	20.0	2.1	4.7
Onuphis elegans	4	80.0	8.3	4.7
Lumbrineris bicirrata	3	20.0	6.3	14.0
Leitoscoloplos elongatus	26	100.0	54.2	23.8
Scoloplos armiger	1	20.0	2.1	4.7
Orbinia felix	2	40.0	4.2	5.7
Prionospio lighti	3	20.0	6.3	14.0
Spio filicornis	1	20.0	2.1	4.7
Spiophanes bombyx	47	100.0	97.9	21.6
Spiophanes berkeleyorum	14	100.0	29.2	15.5
Magelona longicornis	2	40.0	4.2	5.7
Magelona sacculata	27	100.0	56.3	40.1
Chaetozone spinosa	16	100.0	33.3	30.7
Notomastus lineatus	6	60.0	12.5	13.6
Decamastus gracilis	5	40.0	10.4	14.7
Gastropoda	1	20.0	2.1	4.7
Mitrella gouldi	4	60.0	8.3	8.7
Olivella sp.	2	40.0	4.2	5.7
Olivella biplicata	2	40.0	4.2	5.7
Olivella baetica	1	20.0	2.1	4.7
Olivella pycna	4	40.0	8.3	13.6
Cylichna attanosa	1	20.0	2.1	4.7
Axinopsida serricata	2	40.0	4.2	5.7
Macoma sp.	1	20.0	2.1	4.7
Tellina modesta	1	20.0	2.1	4.7
Cylindroleberididae	2	20.0	4.2	9.3
Archaeomysis grebnitzkii	1	20.0	2.1	4.7
Neomysis rayii	1	20.0	2.1	4.7
Ampelisca sp.	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: E-5 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Ampelisca macrocephala	1	20.0	2.1	4.7
Ampelisca careyi	2	40.0	4.2	5.7
Eohaustorius estuarius	1	20.0	2.1	4.7
Eohaustorius sencillus	36	100.0	75.0	32.5
Photis sp.	1	20.0	2.1	4.7
Photis macinerneyi	2	20.0	4.2	9.3
Anonyx sp.	3	40.0	6.3	9.3
Monoculodes sp.	1	20.0	2.1	4.7
Monoculodes spinipes	3	40.0	6.3	9.3
Rhepoxynius sp.	6	40.0	12.5	22.6
Rhepoxynius abronius	23	100.0	47.9	15.8
Rhepoxynius daboius	14	80.0	29.2	20.0
Rhepoxynius vigitegus	13	80.0	27.1	28.2
Foxiphalus major	1	20.0	2.1	4.7
Paguridae	3	20.0	6.3	14.0
Upogebia sp.	1	20.0	2.1	4.7
Cancer sp.	1	20.0	2.1	4.7
Amphiodia sp.	3	40.0	6.3	9.3

Number of taxa: 61

Mean number/sample: 76.6 Standard deviation: 20.9

Mean number/m²: 798.2 Standard deviation/m²: 217.7

H′ = 4.85 J′ = 0.82

Appendix Table 3.--Continued.

Station: F-2 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	2	40.0	4.2	5.7
Nemertea sp. 1	2	40.0	4.2	5.7
Nemertea sp. 2	17	80.0	35.4	22.8
Nemertea sp. 3	6	60.0	12.5	11.4
Tenonia priops	1	20.0	2.1	4.7
Sthenelais berkeleyi	1	20.0	2.1	4.7
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce hartmanae	4	60.0	8.3	8.7
Hesionidae	1	20.0	2.1	4.7
Syllis sp.	1	20.0	2.1	4.7
Nephtys sp.	41	100.0	85.4	42.6
Nephtys caecoides	53	100.0	110.5	166.5
Glycinde armigera	33	100.0	68.8	80.2
Goniada brunnea	2	40.0	4.2	5.7
Onuphis sp.	1	20.0	2.1	4.7
Onuphis elegans	6	60.0	12.5	17.1
Lumbrineris sp.	1	20.0	2.1	4.7
Leitoscoloplos elongatus	48	100.0	100.0	45.8
Orbinia felix	3	60.0	6.3	5.7
Spionidae	1	20.0	2.1	4.7
Prionospio lighti	2	40.0	4.2	5.7
Spiophanes bombyx	8	80.0	16.7	11.9
Spiophanes berkeleyorum	63	80.0	131.3	195.2
Magelona longicornis	1	20.0	2.1	4.7
Magelona sacculata	14	100.0	29.2	11.4
Chaetozone spinosa	16	80.0	33.3	27.0
Heteromastus filobranchus	1	20.0	2.1	4.7
Notomastus lineatus	5	40.0	10.4	18.0
Ampharete finmarchica	1	20.0	2.1	4.7
Polycirrus sp.	1	20.0	2.1	4.7
Gastropoda	1	20.0	2.1	4.7
Mitrella gouldi	4	40.0	8.3	11.4
Olivella sp.	6	40.0	12.5	22.6
Olivella pycna	3	60.0	6.3	5.7
Cylichna sp.	1	20.0	2.1	4.7
Cylichna attanosa	4	20.0	8.3	18.6
Aglaja cf. *diomedea*	1	20.0	2.1	4.7
Bivalvia	14	60.0	29.2	37.1
Acila castrensis	1	20.0	2.1	4.7
Axinopsida serricata	4	40.0	8.3	13.6
Macoma sp.	3	20.0	6.3	14.0
Tellina sp.	7	80.0	14.6	11.9

Appendix Table 3.--Continued.

Station: F-2 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Tellina cf. bodegensis	3	20.0	6.3	14.0
Cylindroleberididae	4	20.0	8.3	18.6
Calanoida	2	20.0	4.2	9.3
Acanthomysis columbiae	2	40.0	4.2	5.7
Archaeomysis grebnitzkii	5	80.0	10.4	7.4
Leuconidae	2	20.0	4.2	9.3
Diastylopsis sp.	1	20.0	2.1	4.7
Diastylopsis dawsoni	7	60.0	14.6	15.8
Diastylopsis tenuis	1	20.0	2.1	4.7
Tecticeps pugettensis	1	20.0	2.1	4.7
Synidotea angulata	11	60.0	22.9	40.0
Ampelisca careyi	2	40.0	4.2	5.7
Corophium spinicorne	3	60.0	6.3	5.7
Eohaustorius sencillus	12	80.0	25.0	21.6
Photis sp.	4	20.0	8.3	18.6
Photis macinerneyi	1	20.0	2.1	4.7
Photis parvidons	1	20.0	2.1	4.7
Anonyx sp.	5	80.0	10.4	7.4
Paraphoxus sp.	1	20.0	2.1	4.7
Paraphoxus oculatus	1	20.0	2.1	4.7
Rhepoxynius sp.	8	20.0	16.7	37.3
Rhepoxynius abronius	16	60.0	33.3	38.6
Rhepoxynius daboius	4	40.0	8.3	11.4
Rhepoxynius vigitequs	9	60.0	18.8	21.4
Upogebia pugettensis	1	20.0	2.1	4.7
Ophiura sp.	1	20.0	2.1	4.7
Amphiuridae	2	40.0	4.2	5.7
Amphiodia sp.	4	40.0	8.3	11.4
Dendraster excentricus	3	40.0	6.3	9.3

Number of taxa: 72

Mean number/sample: 100.8 Standard deviation: 39.0

Mean number/m²: 1,050.3 Standard deviation/m²: 406.1

H′ = 4.95 J′ = 0.80

Appendix Table 3.--Continued.

Station: F-6 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	1	20.0	2.1	4.7
Nemertea sp. 1	3	40.0	6.3	9.3
Nemertea sp. 2	24	60.0	50.0	52.8
Nemertea sp. 3	3	60.0	6.3	5.7
Paleonemertea	8	20.0	16.7	37.3
Polynoidae	1	20.0	2.1	4.7
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Sigalion spinosa	3	60.0	6.3	5.7
Eteone longa	1	20.0	2.1	4.7
Eteone fauchaldi	2	20.0	4.2	9.3
Phyllodoce hartmanae	5	60.0	10.4	12.8
Nephtys sp.	60	100.0	125.0	70.3
Nephtys caecoides	18	100.0	37.5	26.2
Glycinde armigera	12	60.0	25.0	26.2
Goniada brunnea	2	40.0	4.2	5.7
Onuphis sp.	1	20.0	2.1	4.7
Onuphis elegans	5	60.0	10.4	10.4
Lumbrineris bicirrata	2	20.0	4.2	9.3
Leitoscoloplos elongatus	33	100.0	68.8	50.3
Scoloplos armiger	4	60.0	8.3	8.7
Orbinia felix	4	40.0	8.3	13.6
Prionospio lighti	1	20.0	2.1	4.7
Spiophanes bombyx	58	100.0	120.9	67.4
Spiophanes berkeleyorum	13	100.0	27.1	26.2
Magelona longicornis	2	40.0	4.2	5.7
Magelona sacculata	48	100.0	100.0	95.1
Cirratulidae	1	20.0	2.1	4.7
Chaetozone spinosa	44	80.0	91.7	78.8
Notomastus lineatus	5	40.0	10.4	18.0
Decamastus gracilis	4	20.0	8.3	18.6
Polycirrus sp.	1	20.0	2.1	4.7
Gastropoda	1	20.0	2.1	4.7
Mitrella gouldi	10	80.0	20.8	24.4
Nassarius mendicus	3	40.0	6.3	9.3
Olivella sp.	1	20.0	2.1	4.7
Olivella biplicata	2	40.0	4.2	5.7
Olivella baetica	1	20.0	2.1	4.7
Olivella pycna	2	40.0	4.2	5.7
Odostomia sp.	1	20.0	2.1	4.7
Cylichna attanosa	1	20.0	2.1	4.7
Bivalvia	4	40.0	8.3	13.6
Axinopsida serricata	6	40.0	12.5	18.6
Tellina sp.	3	20.0	6.3	14.0

Appendix Table 3.--Continued.

Station: F-6 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Cylindroleberididae	2	40.0	4.2	5.7
Euphilomedes carcharodonta	4	40.0	8.3	13.6
Calanoida	2	40.0	4.2	5.7
Archaeomysis grebnitzkii	2	20.0	4.2	9.3
Neomysis rayii	1	20.0	2.1	4.7
Diastylopsis dawsoni	1	20.0	2.1	4.7
Synidotea angulata	1	20.0	2.1	4.7
Ampelisca sp.	2	20.0	4.2	9.3
Ampelisca careyi	3	40.0	6.3	9.3
Corophium spinicorne	1	20.0	2.1	4.7
Eohaustorius sp.	1	20.0	2.1	4.7
Eohaustorius estuarius	2	20.0	4.2	9.3
Eohaustorius sencillus	25	100.0	52.1	52.6
Photis sp.	2	40.0	4.2	5.7
Photis macinerneyi	6	60.0	12.5	11.4
Photis parvidons	1	20.0	2.1	4.7
Anonyx sp.	3	40.0	6.3	9.3
Anonyx cf. liljeborgi	2	20.0	4.2	9.3
Wecomedon sp.	1	20.0	2.1	4.7
Wecomedon wecomus	4	20.0	8.3	18.6
Monoculodes spinipes	3	40.0	6.3	9.3
Westwoodilla caecula	2	20.0	4.2	9.3
Rhepoxynius sp.	26	80.0	54.2	37.1
Rhepoxynius abronius	12	80.0	25.0	20.3
Rhepoxynius daboius	12	60.0	25.0	31.8
Rhepoxynius vigitegus	12	60.0	25.0	24.0
Foxiphalus major	1	20.0	2.1	4.7
Paguridae	1	20.0	2.1	4.7
Pagurus sp.	1	20.0	2.1	4.7
Chironomidae	1	20.0	2.1	4.7
Amphiodia sp.	4	40.0	8.3	11.4

Number of taxa: 74

Mean number/sample: 109.2 Standard deviation: 44.7

Mean number/m²: 1,137.9 Standard deviation/m²: 465.6

H′ = 4.96 J′ = 0.80

Appendix Table 3.--Continued.

Station: G-4 Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Nemertea	3	40.0	6.3	9.3
Nemertea sp. 1	1	20.0	2.1	4.7
Nemertea sp. 2	20	80.0	41.7	34.6
Nemertea sp. 3	4	60.0	8.3	8.7
Sthenelais berkeleyi	1	20.0	2.1	4.7
Eteone fauchaldi	3	20.0	6.3	14.0
Phyllodoce (Paranaitis) *polynoides*	1	20.0	2.1	4.7
Phyllodoce (Aponaitides) *hartmanae*	5	40.0	10.4	18.0
Syllidae	1	20.0	2.1	4.7
Syllis sp.	1	20.0	2.1	4.7
Nephtys sp.	70	100.0	145.9	50.0
Nephtys caecoides	18	100.0	37.5	20.3
Glycinde armigera	14	80.0	29.2	27.0
Goniada brunnea	3	40.0	6.3	9.3
Onuphis sp.	6	40.0	12.5	22.6
Onuphis elegans	9	80.0	18.8	15.5
Lumbrineris bicirrata	2	40.0	4.2	5.7
Leitoscoloplos elongatus	39	100.0	81.3	81.2
Scoloplos armiger	2	40.0	4.2	5.7
Orbinia felix	12	60.0	25.0	26.2
Paraonella platybranchia	2	40.0	4.2	5.7
Prionospio lighti	1	20.0	2.1	4.7
Spio filicornis	1	20.0	2.1	4.7
Spiophanes bombyx	22	100.0	45.8	18.9
Spiophanes berkeleyorum	18	40.0	37.5	72.8
Magelona longicornis	3	20.0	6.3	14.0
Magelona sacculata	81	100.0	168.8	95.3
Chaetozone spinosa	26	100.0	54.2	60.0
Notomastus lineatus	4	60.0	8.3	8.7
Decamastus gracilis	3	40.0	6.3	9.3
Ampharete finmarchica	1	20.0	2.1	4.7
Mitrella gouldi	8	60.0	16.7	26.2
Olivella sp.	8	40.0	16.7	27.2
Olivella biplicata	5	40.0	10.4	18.0
Olivella baetica	3	20.0	6.3	14.0
Olivella pycna	16	40.0	33.3	54.3
Cylichna attanosa	4	40.0	8.3	13.6
Bivalvia	9	100.0	18.8	13.6
Axinopsida serricata	5	40.0	10.4	18.0
Siliqua patula	1	20.0	2.1	4.7
Tellina sp.	12	80.0	25.0	24.0
Tellina modesta	1	20.0	2.1	4.7
Cylindroleberididae	3	40.0	6.3	9.3

Appendix Table 3.--Continued.

Station: G-4 (continued) Date: 21 Jun 89 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number /m²	Standard deviation /m²
Euphilomedes carcharodonta	9	20.0	18.8	41.9
Campylaspis sp.	2	20.0	4.2	9.3
Synidotea angulata	1	20.0	2.1	4.7
Gammaridea	1	20.0	2.1	4.7
Ampelisca macrocephala	1	20.0	2.1	4.7
Ampelisca careyi	6	60.0	12.5	17.1
Eohaustorius sencillus	8	80.0	16.7	11.9
Photis sp.	2	20.0	4.2	9.3
Photis macinerneyi	2	20.0	4.2	9.3
Cheirimedia cf. zotea	1	20.0	2.1	4.7
Anonyx sp.	6	40.0	12.5	17.1
Monoculodes sp.	2	20.0	4.2	9.3
Westwoodilla caecula	1	20.0	2.1	4.7
Paraphoxus obtusidens	11	60.0	22.9	25.9
Paraphoxus oculatus	1	20.0	2.1	4.7
Rhepoxynius sp.	40	100.0	83.4	63.0
Rhepoxynius abronius	29	100.0	60.4	49.6
Rhepoxynius daboius	3	20.0	6.3	14.0
Rhepoxynius vigitequs	17	80.0	35.4	41.4
Sipunculidae	4	20.0	8.3	18.6
Amphiodia sp.	11	60.0	22.9	22.6
Amphiodia urtica	3	20.0	6.3	14.0

Number of taxa: 65

Mean number/sample: 122.6 Standard deviation: 43.2

Mean number/m²: 1,277.5 Standard deviation/m²: 450.4

H′ = 4.96 J′ = 0.82

Appendix Table 3.--Continued.

Station: A-4 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	20	80.0	41.7	24.4
Polynoidae	3	20.0	6.3	14.0
Pholoe minuta	2	40.0	4.2	5.7
Sthenelais berkeleyi	1	20.0	2.1	4.7
Sigalion spinosa	3	60.0	6.3	5.7
Eteone longa	2	40.0	4.2	5.7
Phyllodoce (Aponaitides) *hartmanae*	10	80.0	20.8	19.5
Syllidae	4	20.0	8.3	18.6
Nephtys sp.	55	100.0	114.6	79.0
Nephtys caecoides	24	100.0	50.0	23.8
Glycera americana	1	20.0	2.1	4.7
Glycinde armigera	111	100.0	231.3	135.7
Goniada brunnea	6	60.0	12.5	13.6
Onuphis sp.	4	40.0	8.3	13.6
Onuphis (Nothria) *iridescens*	11	100.0	22.9	18.6
Lumbrineris bicirrata	8	80.0	16.7	15.8
Leitoscoloplos pugettensis	77	100.0	160.5	46.9
Orbinia felix	5	80.0	10.4	7.4
Aricidea suecica	1	20.0	2.1	4.7
Paraonella platybranchia	2	40.0	4.2	5.7
Laonice cirrata	1	20.0	2.1	4.7
Prionopsio lighti	6	40.0	12.5	18.6
Spiophanes bombyx	62	100.0	129.2	75.4
Spiophanes berkeleyorum	132	100.0	275.1	368.4
Magelona longicornis	9	80.0	18.8	11.4
Magelona sacculata	50	100.0	104.2	53.6
Spiochaetopterus costarum	3	40.0	6.3	9.3
Chaetozone spinosa	48	100.0	100.0	50.3
Heteromastus filobranchus	4	20.0	8.3	18.6
Notomastus lineatus	5	60.0	10.4	12.8
Decamastus gracilis	1	20.0	2.1	4.7
Asychis sp.	1	20.0	2.1	4.7
Owenia fusiformis	1	20.0	2.1	4.7
Galathowenia oculata	3	20.0	6.3	14.0
Ampharete acutifrons	1	20.0	2.1	4.7
Polycirrus sp. complex	3	40.0	6.3	9.3
Hirudinea	1	20.0	2.1	4.7
Mitrella gouldi	7	100.0	14.6	9.3

Appendix Table 3.--Continued.

Station: A-4 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Olivella sp.	1	20.0	2.1	4.7
Olivella baetica	1	20.0	2.1	4.7
Cylichna alba	1	20.0	2.1	4.7
Bivalvia	5	40.0	10.4	18.0
Acila castrensis	6	80.0	12.5	8.7
Nucula tenuis	6	80.0	12.5	8.7
Yoldia myalis	3	40.0	6.3	9.3
Yoldia scissurata	1	20.0	2.1	4.7
Axinopsida serricata	69	100.0	143.8	100.3
Macoma calcarea	2	40.0	4.2	5.7
Pandora filosa	1	20.0	2.1	4.7
Arachnida	1	20.0	2.1	4.7
Cylindroleberididae	5	40.0	10.4	14.7
Euphilomedes carcharodonta	58	100.0	120.9	69.7
Calanoida	7	40.0	14.6	27.2
Cumacea	42	20.0	87.5	195.7
Hemilamprops californica	10	100.0	20.8	7.4
Diastylopsis dawsoni	1	20.0	2.1	4.7
Colurostylis occidentalis	1	20.0	2.1	4.7
Bathycopea daltonae	1	20.0	2.1	4.7
Amphipoda	1	20.0	2.1	4.7
Ampelisca careyi	11	100.0	22.9	17.1
Aoroides sp.	3	40.0	6.3	9.3
Eohaustorius sp.	2	20.0	4.2	9.3
Eohaustorius sencillus	27	100.0	56.3	91.0
Photis sp.	3	40.0	6.3	9.3
Lepidecreum gurjanovae	4	40.0	8.3	13.6
Orchomene cf. pinguis	50	100.0	104.2	108.5
Oedicerotidae	3	60.0	6.3	5.7
Rhepoxynius abronius	7	80.0	14.6	15.8
Rhepoxynius daboius	49	80.0	102.1	77.8
Rhepoxynius variatus	3	20.0	6.3	14.0
Callianassa sp.	2	40.0	4.2	5.7
Pinnixa sp.	1	20.0	2.1	4.7
Hemiptera	1	20.0	2.1	4.7
Coleoptera	1	20.0	2.1	4.7
Phoronida	4	80.0	8.3	4.7
Holothuroidea	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: A-4 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2

Number of taxa: 76

Mean number/sample: 216.6 Standard deviation/sample: 63.9

Mean numberm^2: 2,257.0 Standard deviation: 665.4

H′ = 4.78 J′= 0.77

Appendix Table 3.--Continued.

Station: B-2 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	53	120.0	110.5	18.9
Polynoidae	2	40.0	4.2	5.7
Tenonia priops	3	40.0	6.3	9.3
Pholoe minuta	1	20.0	2.1	4.7
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Sigalion spinosa	1	20.0	2.1	4.7
Phyllodocidae	5	80.0	10.4	7.4
Eteone californica	4	40.0	8.3	11.4
Eteone fauchaldi	2	40.0	4.2	5.7
Phyllodoce (Paranaitis) *polynoides*	1	20.0	2.1	4.7
Phyllodoce (Aponaitides) *hartmanae*	8	60.0	16.7	21.6
Phyllodoce (Anaitides) *multipapillata*	2	40.0	4.2	5.7
Gyptis brevipalpa	2	20.0	4.2	9.3
Heteropodarke heteromorpha	22	80.0	45.8	52.4
Syllidae	2	20.0	4.2	9.3
Neridae	1	20.0	2.1	4.7
Nephtys sp.	111	100.0	231.3	144.6
Nephtys caeca	1	20.0	2.1	4.7
Nephtys caecoides	28	100.0	58.4	24.0
Glycera capitata	2	20.0	4.2	9.3
Glycinde armigera	117	100.0	243.8	91.9
Goniada brunnea	9	80.0	18.8	11.4
Onuphis (Nothria) *iridescens*	28	100.0	58.4	17.4
Lumbrineris sp.	3	60.0	6.3	5.7
Lumbrineris bicirrata	10	80.0	20.8	14.7
Orbiniidae	1	20.0	2.1	4.7
Leitoscoloplos pugettensis	78	100.0	162.6	45.8
Orbinia (Phylo) *felix*	17	80.0	35.4	20.3
Paraonella platybranchia	2	20.0	4.2	9.3
Laonice cirrata	3	40.0	6.3	9.3
Polydora brachycephala	1	20.0	2.1	4.7
Prionopsio lighti	10	80.0	20.8	24.4
Spiophanes bombyx	146	100.0	304.3	176.4
Spiophanes berkeleyorum	209	100.0	435.6	244.3
Magelona sp.	10	100.0	20.8	10.4
Magelona longicornis	44	100.0	91.7	61.4
Magelona sacculata	113	100.0	235.5	199.7
Spiochaetopterus costarum	1	20.0	2.1	4.7
Chaetozone spinosa	35	100.0	72.9	33.0
Travisia sp.	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: B-2 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Heteromastus filobranchus	1	20.0	2.1	4.7
Mediomastus californiensis	5	60.0	10.4	10.4
Decamastus gracilis	14	60.0	29.2	28.9
Maldanidae	1	20.0	2.1	4.7
Owenia fusiformis	6	60.0	12.5	13.6
Polycirrus sp. complex	4	40.0	8.3	13.6
Hirudinea	1	20.0	2.1	4.7
Mitrella gouldi	19	100.0	39.6	4.7
Nassarius mendicus	1	20.0	2.1	4.7
Olivella sp.	5	40.0	10.4	18.0
Olivella baetica	2	20.0	4.2	9.3
Olivella pycna	3	40.0	6.3	9.3
Kurtziella plumbea	2	40.0	4.2	5.7
Odostomia sp.	4	40.0	8.3	11.4
Cylichna sp.	1	20.0	2.1	4.7
Cylichna alba	3	60.0	6.3	5.7
Bivalvia	3	40.0	6.3	9.3
Acila castrensis	2	40.0	4.2	5.7
Nucula tenuis	2	40.0	4.2	5.7
Yoldia myalis	1	20.0	2.1	4.7
Mytilidae	2	40.0	4.2	5.7
Axinopsida serricata	43	100.0	89.6	49.2
Macoma sp.	3	40.0	6.3	9.3
Macoma calcerea	5	80.0	10.4	7.4
Macoma balthica	1	20.0	2.1	4.7
Cylindroleberididae	10	100.0	20.8	23.3
Euphilomedes carcharodonta	73	100.0	152.1	48.7
Calanoida	24	80.0	50.0	36.4
Acanthomysis macrops	1	20.0	2.1	4.7
Neomysis kadiakensis	2	40.0	4.2	5.7
Hemilamprops californica	11	60.0	22.9	40.0
Diastylis sp.	1	20.0	2.1	4.7
Diastylopsis dawsoni	1	20.0	2.1	4.7
Colurostylis occidentalis	7	60.0	14.6	14.0
Synidotea angulata	12	60.0	25.0	31.8
Gammaridea	1	20.0	2.1	4.7
Ampelisca careyi	28	100.0	58.4	14.0
Aoroides sp.	6	60.0	12.5	13.6
Corophium spinicorne	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: B-2 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Eohaustorius sencillus	2	40.0	4.2	5.7
Photis macinerneyi	9	80.0	18.8	11.4
Lepidecreum gurjanovae	11	100.0	22.9	22.6
Orchomene cf. pinquis	55	100.0	114.6	52.6
Monoculodes spinipes	7	80.0	14.6	15.8
Westwoodilla caecula	2	20.0	4.2	9.3
Rhepoxynius sp.	1	20.0	2.1	4.7
Rhepoxynius abronius	3	60.0	6.3	5.7
Rhepoxynius daboius	61	100.0	127.1	63.1
Stenothoidae	3	40.0	6.3	9.3
Callianassa sp.	9	60.0	18.8	18.6
Pinnixa sp.	2	20.0	4.2	9.3
Echiurus echiurus alaskanus	1	20.0	2.1	4.7
Phoronida	21	100.0	43.8	29.8

Number of taxa: 93

Mean number/sample: 317.8 Standard deviation/sample: 76.7

Mean numberm^2: 3,311.5 Standard deviation: 799.0

H′ = 4.94 J′= 0.75

Appendix Table 3.--Continued.

Station: B-6 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	36	100.0	75.0	32.5
Sigalion sp.	1	20.0	2.1	4.7
Phyllodocidae	4	60.0	8.3	8.7
Eteone sp.	2	40.0	4.2	5.7
Eteone longa	3	60.0	6.3	5.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce (Paranaitis) polynoides	3	60.0	6.3	5.7
Phyllodoce (Aponaitides) hartmanae	7	60.0	14.6	17.4
Nephtys sp.	130	100.0	270.9	153.3
Nephtys caecoides	60	100.0	125.0	53.6
Glycinde armigera	66	100.0	137.5	51.8
Goniada brunnea	2	20.0	4.2	9.3
Onuphidae	4	80.0	8.3	4.7
Onuphis (Nothria) iridescens	1	20.0	2.1	4.7
Lumbrineris sp.	5	80.0	10.4	7.4
Lumbrineris bicirrata	2	40.0	4.2	5.7
Orbiniidae	2	40.0	4.2	5.7
Leitoscoloplos pugettensis	52	100.0	108.4	30.0
Orbinia felix	5	60.0	10.4	10.4
Paraonella platybranchia	1	20.0	2.1	4.7
Spio butleri	2	40.0	4.2	5.7
Spiophanes bombyx	294	100.0	612.7	43.2
Spiophanes berkeleyorum	67	100.0	139.6	43.3
Magelona longicornis	11	100.0	22.9	8.7
Magelona sacculata	124	100.0	258.4	94.2
Cirratulidae	4	40.0	8.3	11.4
Chaetozone spinosa	48	100.0	100.0	30.0
Notomastus lineatus	6	60.0	12.5	17.1
Mediomastus sp.	1	20.0	2.1	4.7
Decamastus gracilis	6	60.0	12.5	13.6
Maldanidae	1	20.0	2.1	4.7
Ampharete acutifrons	1	20.0	2.1	4.7
Polycirrus sp. complex	3	40.0	6.3	9.3
Euchone hancocki	1	20.0	2.1	4.7
Gastropoda	2	20.0	4.2	9.3
Mitrella gouldi	9	60.0	18.8	17.1
Olivella sp.	2	20.0	4.2	9.3
Olivella pycna	18	60.0	37.5	43.3
Odostomia sp.	3	60.0	6.3	5.7
Turbonilla sp.	2	20.0	4.2	9.3

Appendix Table 3.--Continued.

Station: B-6 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Cylichna sp.	1	20.0	2.1	4.7
Cylichna alba	3	40.0	6.3	9.3
Aglaja diomedeum	2	40.0	4.2	5.7
Bivalvia	6	60.0	12.5	13.6
Acila castrensis	4	80.0	8.3	4.7
Nucula tenuis	2	40.0	4.2	5.7
Yoldia myalis	1	20.0	2.1	4.7
Mytilidae	1	20.0	2.1	4.7
Axinopsida serricata	21	100.0	43.8	34.1
Macoma balthica	2	20.0	4.2	9.3
Cylindroleberididae	1	20.0	2.1	4.7
Euphilomedes carcharodonta	37	100.0	77.1	39.4
Calanoida	6	80.0	12.5	11.4
Hemilamprops californica	37	100.0	77.1	48.7
Ancinus granulatus	1	20.0	2.1	4.7
Gammaridea	1	20.0	2.1	4.7
Ampelisca careyi	9	80.0	18.8	20.0
Corophium spinicorne	2	20.0	4.2	9.3
Eohaustorius sp.	3	40.0	6.3	9.3
Eohaustorius sencillus	13	100.0	27.1	15.8
Photis macinerneyi	2	20.0	4.2	9.3
Lepidecreum gurjanovae	2	40.0	4.2	5.7
Orchomene cf. pinquis	15	100.0	31.3	24.4
Synchelidium shoemakeri	2	20.0	4.2	9.3
Westwoodilla caecula	1	20.0	2.1	4.7
Rhepoxynius abronius	1	20.0	2.1	4.7
Rhepoxynius daboius	59	100.0	123.0	82.8
Stenothoidae	1	20.0	2.1	4.7
Callianassa sp.	1	20.0	2.1	4.7
Pagurus sp.	1	20.0	2.1	4.7
Phoronidae	8	80.0	16.7	15.8
Ophiuroidea	1	20.0	2.1	4.7
Dendraster excentricus	2	40.0	4.2	5.7

Number of taxa: 73

Mean number/sample: 248.2 Standard deviation/sample: 39.8

Mean numberm^2: 2,586.2 Standard deviation: 414.2

H′ = 4.30 J′= 0.69

Appendix Table 3.--Continued.

Station: C-3 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	43	80.0	89.6	78.2
Pholoe minuta	1	20.0	2.1	4.7
Sthenelais tertiaglabra	2	40.0	4.2	5.7
Phyllodocidae	1	20.0	2.1	4.7
Eteone sp.	7	80.0	14.6	11.9
Eteone fauchaldi	3	40.0	6.3	9.3
Phyllodoce (Aponaitides) hartmanae	15	80.0	31.3	31.3
Phyllodoce (Anaitides) multipapillata	1	20.0	2.1	4.7
Heteropodarke heteromorpha	3	20.0	6.3	14.0
Syllidae	3	40.0	6.3	9.3
Nereis zonata	2	40.0	4.2	5.7
Nephtys sp.	104	100.0	216.7	141.8
Nephtys caecoides	27	100.0	56.3	15.8
Glycera capitata	1	20.0	2.1	4.7
Glycera robusta	1	20.0	2.1	4.7
Glycinde armigera	136	100.0	283.4	232.8
Goniada brunnea	4	60.0	8.3	8.7
Onuphis (Nothria) iridescens	19	80.0	39.6	27.0
Lumbrineris sp.	1	20.0	2.1	4.7
Lumbrineris bicirrata	4	60.0	8.3	8.7
Orbiniidae	5	60.0	10.4	12.8
Leitoscoloplos pugettensis	126	100.0	262.6	94.8
Orbinia (Phylo) felix	5	80.0	10.4	7.4
Aricidea suecica	1	20.0	2.1	4.7
Paraonella platybranchia	4	60.0	8.3	8.7
Polydora socialis	1	20.0	2.1	4.7
Polydora brachycephala	1	20.0	2.1	4.7
Prionopsio lighti	21	60.0	43.8	62.7
Spio filicornis	2	40.0	4.2	5.7
Polydora (Boccardia) pugettensis	3	40.0	6.3	9.3
Spiophanes bombyx	165	100.0	343.9	254.6
Spiophanes berkeleyorum	357	100.0	744.0	699.9
Magelona sp.	3	40.0	6.3	9.3
Magelona longicornis	30	100.0	62.5	37.6
Magelona sacculata	153	100.0	318.9	217.3
Spiochaetopterus costarum	1	20.0	2.1	4.7
Mesochaetopterus taylori	1	20.0	2.1	4.7
Chaetozone spinosa	21	60.0	43.8	47.4
Travisia sp.	1	20.0	2.1	4.7
Heteromastus filobranchus	3	40.0	6.3	9.3

Appendix Table 3.--Continued.

Station: C-3 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Notomastus lineatus	4	60.0	8.3	8.7
Decamastus gracilis	5	40.0	10.4	18.0
Owenia fusiformis	5	40.0	10.4	14.7
Ampharete acutifrons	1	20.0	2.1	4.7
Polycirrus sp. complex	6	60.0	12.5	17.1
Gastropoda	1	20.0	2.1	4.7
Mitrella gouldi	16	80.0	33.3	24.9
Nassarius mendicus	1	20.0	2.1	4.7
Olivella sp.	9	80.0	18.8	13.6
Olivella baetica	7	60.0	14.6	17.4
Olivella pycna	45	100.0	93.8	80.4
Odostomia sp.	1	20.0	2.1	4.7
Turbonilla sp.	1	20.0	2.1	4.7
Aglaja diomedeum	2	40.0	4.2	5.7
Bivalvia	1	20.0	2.1	4.7
Acila castrensis	4	40.0	8.3	13.6
Nucula tenuis	3	40.0	6.3	9.3
Mytilidae	1	20.0	2.1	4.7
Axinopsida serricata	20	100.0	41.7	47.2
Siliqua patula	1	20.0	2.1	4.7
Macoma sp.	7	40.0	14.6	20.3
Macoma calcerea	3	60.0	6.3	5.7
Tellina sp.	1	20.0	2.1	4.7
Tellina carpenteri	1	20.0	2.1	4.7
Pandora filosa	1	20.0	2.1	4.7
Cylindroleberididae	4	40.0	8.3	11.4
Euphilomedes carcharodonta	27	100.0	56.3	52.4
Calanoida	54	100.0	112.5	121.8
Acanthomysis macrops	2	20.0	4.2	9.3
Archaeomysis grebnitzkii	3	40.0	6.3	9.3
Neomysis kadiakensis	4	20.0	8.3	18.6
Hemilamprops californica	27	60.0	56.3	68.2
Diastylis sp.	8	40.0	16.7	24.0
Diastylopsis dawsoni	8	60.0	16.7	26.2
Colurostylis occidentalis	9	60.0	18.8	21.4
Tecticeps pugettensis	1	20.0	2.1	4.7
Synidotea sp.	25	80.0	52.1	60.3
Synidotea angulata	9	40.0	18.8	28.0
Edotea sublittoralis	2	40.0	4.2	5.7
Pleurogonium rubicundum	3	60.0	6.3	5.7

Appendix Table 3.--Continued.

Station: C-3 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Gammaridea	4	20.0	8.3	18.6
Ampelisca pugetica	1	20.0	2.1	4.7
Ampelisca careyi	8	80.0	16.7	14.0
Aoroides sp.	7	80.0	14.6	9.3
Atylus tridens	1	20.0	2.1	4.7
Corophium spinicorne	5	60.0	10.4	10.4
Eohaustorius sp.	2	40.0	4.2	5.7
Eohaustorius sencillus	6	40.0	12.5	22.6
Photis macinerneyi	10	40.0	20.8	32.1
Protomedeia articulata	1	20.0	2.1	4.7
Lepidecreum gurjanovae	2	20.0	4.2	9.3
Orchomene sp.	1	20.0	2.1	4.7
Orchomene cf. pinquis	52	100.0	108.4	100.4
Monoculodes spinipes	21	80.0	43.8	80.5
Synchelidium shoemakeri	6	40.0	12.5	17.1
Westwoodilla caecula	1	20.0	2.1	4.7
Mandibulophoxus gilesi	2	20.0	4.2	9.3
Rhepoxynius abronius	3	60.0	6.3	5.7
Rhepoxynius daboius	17	80.0	35.4	25.1
Parapleustes sp.	12	60.0	25.0	39.4
Stenothoidae	12	40.0	25.0	37.3
Tiron biocellata	1	20.0	2.1	4.7
Crangon nigricauda	5	40.0	10.4	18.0
Callianassa sp.	21	100.0	43.8	51.8
Paguridae	2	20.0	4.2	9.3
Pinnixa eburna	2	40.0	4.2	5.7
Echiurus echiurus alaskanus	2	20.0	4.2	9.3
Phoronida	7	60.0	14.6	15.8
Ophiuroidea	3	40.0	6.3	9.3
Dendraster excentricus	3	20.0	6.3	14.0

Number of taxa: 110

Mean number/sample: 367.0 Standard deviation/sample: 193.2

Mean numberm^2: 3,824.1 Standard deviation: 2,012.7

H′ = 4.85 J′= 0.71

Appendix Table 3.--Continued.

Station: C-5 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	42	100.0	87.5	36.5
Polynoidae	4	20.0	8.3	18.6
Pholoe minuta	2	20.0	4.2	9.3
Sthenelais tertiaglabra	3	40.0	6.3	9.3
Phyllodocidae	8	80.0	16.7	15.8
Phyllodoce (Anaitides) groenlandica	1	20.0	2.1	4.7
Eteone sp.	6	60.0	12.5	13.6
Eteone californica	4	20.0	8.3	18.6
Eteone fauchaldi	3	40.0	6.3	9.3
Phyllodoce (Aponaitides) hartmanae	7	80.0	14.6	11.9
Gyptis brevipalpa	2	40.0	4.2	5.7
Heteropodarke heteromorpha	6	60.0	12.5	13.6
Syllidae	8	60.0	16.7	17.4
Autolytus cornutus	1	20.0	2.1	4.7
Nereis zonata	1	20.0	2.1	4.7
Nephtys sp.	55	100.0	114.6	80.7
Nephtys caecoides	27	100.0	56.3	28.2
Glycera sp.	1	20.0	2.1	4.7
Glycera americana	1	20.0	2.1	4.7
Glycinde armigera	81	100.0	168.8	84.5
Goniada brunnea	3	60.0	6.3	5.7
Onuphidae	1	20.0	2.1	4.7
Onuphis (Nothria) iridescens	22	100.0	45.8	41.4
Lumbrineris sp.	3	40.0	6.3	9.3
Lumbrineris bicirrata	11	100.0	22.9	17.1
Leitoscoloplos pugettensis	108	100.0	225.1	110.9
Orbinia felix	8	80.0	16.7	20.3
Aricidea suecica	3	40.0	6.3	9.3
Paraonella platybranchia	5	40.0	10.4	18.0
Laonice cirrata	1	20.0	2.1	4.7
Prionopsio lighti	14	80.0	29.2	27.0
Polydora (Boccardia) pugettensis	3	40.0	6.3	9.3
Spiophanes bombyx	68	80.0	141.7	121.7
Spiophanes berkeleyorum	241	100.0	502.2	187.8
Magelona sp.	14	40.0	29.2	54.3
Magelona longicornis	51	100.0	106.3	53.8
Magelona sacculata	61	100.0	127.1	78.8
Spiochaetopterus costarum	1	20.0	2.1	4.7
Cirratulidae	2	40.0	4.2	5.7
Chaetozone spinosa	17	100.0	35.4	18.9

Appendix Table 3.--Continued.

Station: C-5 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Heteromastus filobranchus	1	20.0	2.1	4.7
Mediomastus californiensis	1	20.0	2.1	4.7
Decamastus gracilis	13	100.0	27.1	15.8
Owenia fusiformis	7	40.0	14.6	22.8
Ampharete acutifrons	1	20.0	2.1	4.7
Polycirrus sp. complex	3	20.0	6.3	14.0
Oligochaeta	2	20.0	4.2	9.3
Mitrella gouldi	19	100.0	39.6	23.8
Olivella sp.	3	20.0	6.3	14.0
Olivella biplicata	1	20.0	2.1	4.7
Olivella baetica	1	20.0	2.1	4.7
Olivella pycna	25	80.0	52.1	78.3
Kurtziella plumbea	2	40.0	4.2	5.7
Odostomia sp.	2	20.0	4.2	9.3
Cylichna alba	4	60.0	8.3	8.7
Aglaja diomedeum	1	20.0	2.1	4.7
Bivalvia	1	20.0	2.1	4.7
Acila castrensis	2	20.0	4.2	9.3
Nucula tenuis	1	20.0	2.1	4.7
Mytilidae	3	40.0	6.3	9.3
Axinopsida serricata	49	100.0	102.1	66.9
Macoma sp.	4	20.0	8.3	18.6
Macoma calcerea	1	20.0	2.1	4.7
Macoma balthica	1	20.0	2.1	4.7
Tellina modesta	3	60.0	6.3	5.7
Cylindroleberididae	4	40.0	8.3	11.4
Euphilomedes carcharodonta	22	100.0	45.8	26.2
Calanoida	11	40.0	22.9	36.4
Cirripedia	2	20.0	4.2	9.3
Neomysis sp.	1	20.0	2.1	4.7
Neomysis kadiakensis	32	20.0	66.7	149.1
Hemilamprops californica	66	40.0	137.5	301.8
Diastylis sp.	2	40.0	4.2	5.7
Diastylopsis dawsoni	1	20.0	2.1	4.7
Colurostylis occidentalis	4	40.0	8.3	13.6
Synidotea sp.	11	20.0	22.9	51.3
Synidotea cf. nodulosa	1	20.0	2.1	4.7
Synidotea angulata	17	100.0	35.4	27.2
Pleuroqonium rubicundum	2	20.0	4.2	9.3
Gammaridea	2	40.0	4.2	5.7

Appendix Table 3.--Continued.

Station: C-5 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Ampelisca careyi	11	60.0	22.9	25.9
Aoroides sp.	3	60.0	6.3	5.7
Atylus tridens	1	20.0	2.1	4.7
Eohaustorius sp.	1	20.0	2.1	4.7
Photis sp.	1	20.0	2.1	4.7
Photis macinerneyi	17	40.0	35.4	48.7
Photis parvidons	2	20.0	4.2	9.3
Cheirimedia sp.	3	20.0	6.3	14.0
Anonyx cf. liljeborgi	2	20.0	4.2	9.3
Opisa tridentata	2	40.0	4.2	5.7
Orchomene cf. pinquis	47	80.0	97.9	184.4
Monoculodes spinipes	1	20.0	2.1	4.7
Synchelidium shoemakeri	19	20.0	39.6	88.5
Westwoodilla caecula	3	20.0	6.3	14.0
Pardalisca sp.	1	20.0	2.1	4.7
Rhepoxynius abronius	3	60.0	6.3	5.7
Rhepoxynius daboius	25	100.0	52.1	36.1
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Pleustidae	3	20.0	6.3	14.0
Parapleustes sp.	18	20.0	37.5	83.9
Stenothoidae	10	20.0	20.8	46.6
Tiron biocellata	1	20.0	2.1	4.7
Crangon nigricauda	6	20.0	12.5	28.0
Callianassa sp.	7	80.0	14.6	11.9
Pinnixa eburna	1	20.0	2.1	4.7
Arhynchite pugettensis	2	40.0	4.2	5.7
Phoronidae	11	100.0	22.9	11.4
Ophiuroidea	5	80.0	10.4	7.4
Dendraster excentricus	2	40.0	4.2	5.7
Holothuroidea	2	40.0	4.2	5.7

Number of taxa: 110

Mean number/sample: 288.0 Standard deviation/sample: 164.1

Mean numberm^2: 3,024.0 Standard deviation: 1,722.8

H′ = 5.22 J′= 0.77

Appendix Table 3.--Continued.

Station: D-1 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	55	100.0	114.6	69.1
Polynoidae	2	20.0	4.2	9.3
Pholoe minuta	2	40.0	4.2	5.7
Phyllodocidae	1	20.0	2.1	4.7
Eteone sp.	6	40.0	12.5	17.1
Eteone fauchaldi	5	80.0	10.4	7.4
Phyllodoce (Aponaitides) *hartmanae*	7	40.0	14.6	22.8
Gyptis brevipalpa	3	40.0	6.3	9.3
Microphthalmus sp.	12	80.0	25.0	29.1
Syllidae	2	20.0	4.2	9.3
Nereis zonata	1	20.0	2.1	4.7
Nephtys sp.	88	100.0	183.4	108.9
Nephtys caecoides	43	100.0	89.6	30.0
Glycinde armigera	114	100.0	237.6	81.2
Goniada brunnea	8	80.0	16.7	11.9
Onuphis (Nothria) *iridescens*	18	80.0	37.5	34.2
Lumbrineris sp.	5	40.0	10.4	14.7
Lumbrineris bicirrata	5	60.0	10.4	10.4
Orbiniidae	3	20.0	6.3	14.0
Leitoscoloplos pugettensis	91	100.0	189.6	84.1
Orbinia felix	17	100.0	35.4	17.4
Prionopsio lighti	7	60.0	14.6	21.6
Spiophanes bombyx	99	100.0	206.3	140.1
Spiophanes berkeleyorum	199	100.0	414.7	324.6
Magelona longicornis	9	60.0	18.8	18.6
Magelona sacculata	81	100.0	168.8	72.7
Cirratulidae	1	20.0	2.1	4.7
Tharyx multifilis	1	20.0	2.1	4.7
Chaetozone spinosa	29	80.0	60.4	45.1
Capitellidae	1	20.0	2.1	4.7
Heteromastus filobranchus	13	60.0	27.1	44.0
Notomastus lineatus	3	60.0	6.3	5.7
Mediomastus californiensis	17	100.0	35.4	30.0
Asychis sp.	1	20.0	2.1	4.7
Owenia fusiformis	21	80.0	43.8	49.1
Ampharete acutifrons	1	20.0	2.1	4.7
Mitrella gouldi	20	100.0	41.7	19.5
Nassarius mendicus	2	40.0	4.2	5.7
Nassarius perpinquis	1	20.0	2.1	4.7
Olivella sp.	6	100.0	12.5	4.7

Appendix Table 3.--Continued.

Station: D-1 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Olivella baetica	13	80.0	27.1	17.4
Olivella pycna	46	80.0	95.9	66.5
Cylichna alba	4	60.0	8.3	8.7
Aglaja diomedeum	1	20.0	2.1	4.7
Bivalvia	8	60.0	16.7	17.4
Acila castrensis	2	40.0	4.2	5.7
Nucula tenuis	1	20.0	2.1	4.7
Mytilidae	16	80.0	33.3	32.5
Axinopsida serricata	13	60.0	27.1	49.2
Macoma sp.	2	20.0	4.2	9.3
Macoma calcerea	5	60.0	10.4	12.8
Macoma carlottensis	3	20.0	6.3	14.0
Macoma balthica	1	20.0	2.1	4.7
Tellina sp.	6	40.0	12.5	18.6
Tellina carpenteri	1	20.0	2.1	4.7
Cylindroleberididae	4	40.0	8.3	13.6
Euphilomedes carcharodonta	7	100.0	14.6	9.3
Calanoida	42	100.0	87.5	30.0
Nebalia pugettensis	1	20.0	2.1	4.7
Acanthomysis macrops	1	20.0	2.1	4.7
Neomysis kadiakensis	5	60.0	10.4	10.4
Hemilamprops californica	19	80.0	39.6	41.3
Diastylis sp.	3	40.0	6.3	9.3
Diastylopsis dawsoni	2	20.0	4.2	9.3
Diastylopsis tenuis	263	60.0	548.1	1208.1
Colurostylis occidentalis	96	80.0	200.1	395.2
Synidotea angulata	26	60.0	54.2	88.8
Edotea sublittoralis	3	40.0	6.3	9.3
Ampelisca careyi	10	60.0	20.8	30.4
Eohaustorius sencillus	7	60.0	14.6	15.8
Photis macinerneyi	15	100.0	31.3	7.4
Lepidecreum gurjanovae	10	80.0	20.8	12.8
Orchomene cf. pinguis	37	100.0	77.1	21.6
Synchelidium shoemakeri	8	80.0	16.7	15.8
Rhepoxynius sp.	1	20.0	2.1	4.7
Rhepoxynius abronius	2	20.0	4.2	9.3
Rhepoxynius daboius	49	100.0	102.1	94.2
Rhepoxynius vigitegus	2	40.0	4.2	5.7
Parapleustes sp.	4	60.0	8.3	8.7
Stenothoidae	5	80.0	10.4	7.4

Appendix Table 3.--Continued.

Station: D-1 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Crangon nigricauda	1	20.0	2.1	4.7
Callianassidae	1	20.0	2.1	4.7
Callianassa sp.	2	20.0	4.2	9.3
Pagurus sp.	2	40.0	4.2	5.7
Ophiuroidea	8	40.0	16.7	31.8
Dendraster excentricus	4	60.0	8.3	8.7
Holothuroidea	1	20.0	2.1	4.7

Number of taxa: 87

Mean number/sample: 352.6 Standard deviation/sample: 100.5

Mean numberm^2: 3,674.1 Standard deviation: 1,046.7

H′ = 4.89 J′= 0.76

Appendix Table 3.--Continued.

Station: D-4 Date: 27 Jun 90 Sample size: 4

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Anthozoa	1	25.0	2.6	5.2
Nemertea	11	25.0	28.7	57.3
Sthenelais tertiaglabra	2	50.0	5.2	6.0
Eteone fauchaldi	1	25.0	2.6	5.2
Phyllodoce (Paranaitis) *polynoides*	1	25.0	2.6	5.2
Phyllodoce (Aponaitides) *hartmanae*	1	25.0	2.6	5.2
Nephtys sp.	3	25.0	7.8	15.6
Nephtys caecoides	12	75.0	31.3	33.0
Glycinde armigera	25	100.0	65.1	31.1
Goniada brunnea	5	75.0	13.0	10.0
Onuphis (Nothria) *iridescens*	3	50.0	7.8	10.0
Leitoscoloplos pugettensis	21	100.0	54.7	23.1
Paraonella platybranchia	1	25.0	2.6	5.2
Spiophanes bombyx	10	75.0	26.1	24.8
Spiophanes berkeleyorum	1	25.0	2.6	5.2
Magelona sacculata	23	100.0	59.9	48.4
Chaetozone spinosa	5	100.0	13.0	5.2
Decamastus gracilis	1	25.0	2.6	5.2
Ampharete acutifrons	1	25.0	2.6	5.2
Polycirrus sp. complex	1	25.0	2.6	5.2
Mitrella gouldi	8	75.0	20.8	14.7
Nassarius mendicus	1	25.0	2.6	5.2
Olivella sp.	12	50.0	31.3	49.6
Olivella biplicata	1	25.0	2.6	5.2
Olivella baetica	2	50.0	5.2	6.0
Olivella pycna	24	100.0	62.5	35.1
Kurtziella plumbea	2	50.0	5.2	6.0
Cylichna sp.	1	25.0	2.6	5.2
Cylichna alba	2	50.0	5.2	6.0
Aglaja diomedeum	1	25.0	2.6	5.2
Acila castrensis	2	50.0	5.2	6.0
Nucula tenuis	2	50.0	5.2	6.0
Yoldia scissurata	1	25.0	2.6	5.2
Mytilidae	14	25.0	36.5	72.9
Axinopsida serricata	1	25.0	2.6	5.2
Macoma sp.	4	50.0	10.4	14.7
Macoma calcerea	2	50.0	5.2	6.0
Tellina sp.	1	25.0	2.6	5.2
Cylindroleberididae	2	50.0	5.2	6.0
Calanoida	1	25.0	2.6	5.2

Appendix Table 3.--Continued.

Station: D-4 (continued) Date: 27 Jun 90 Sample size: 4

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Cirripedia	4	25.0	10.4	20.8
Balanus sp.	1	25.0	2.6	5.2
Hemilamprops californica	1	25.0	2.6	5.2
Synidotea angulata	2	50.0	5.2	6.0
Ampelisca careyi	6	75.0	15.6	18.0
Eohaustorius sencillus	4	50.0	10.4	12.0
Photis sp.	2	25.0	5.2	10.4
Lepidecreum gurjanovae	2	50.0	5.2	6.0
Orchomene cf. *pinquis*	3	50.0	7.8	10.0
Monoculodes spinipes	2	25.0	5.2	10.4
Synchelidium shoemakeri	1	25.0	2.6	5.2
Paraphoxus obtusidens	1	25.0	2.6	5.2
Rhepoxynius abronius	3	25.0	7.8	15.6
Rhepoxynius daboius	24	100.0	62.5	70.2
Rhepoxynius vigitegus	1	25.0	2.6	5.2
Paguridae	2	50.0	5.2	6.0
Coleoptera	3	25.0	7.8	15.6
Phoronida	1	25.0	2.6	5.2
Ophiuroidea	4	75.0	10.4	8.5
Dendraster excentricus	1	25.0	2.6	5.2
Holothuroidea	1	25.0	2.6	5.2

Number of taxa: 61

Mean number/sample: 70.5 Standard deviation/sample: 32.3

Mean numberm^2: 734.6 Standard deviation: 336.3

H′ = 4.99 J′= 0.84

Appendix Table 3.--Continued.

Station: D-7 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	19	100.0	39.6	25.9
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Phyllodoce sp.	1	20.0	2.1	4.7
Phyllodoce (Aponaitides) hartmanae	8	100.0	16.7	9.3
Heteropodarke heteromorpha	1	20.0	2.1	4.7
Syllidae	2	20.0	4.2	9.3
Nephtys sp.	100	100.0	208.4	85.3
Nephtys caeca	1	20.0	2.1	4.7
Nephtys caecoides	45	100.0	93.8	20.8
Glycinde armigera	34	100.0	70.9	30.7
Goniada brunnea	6	100.0	12.5	4.7
Onuphis (Nothria) iridescens	31	100.0	64.6	44.5
Lumbrineris sp.	1	20.0	2.1	4.7
Lumbrineris bicirrata	3	40.0	6.3	9.3
Orbiniidae	1	20.0	2.1	4.7
Leitoscoloplos pugettensis	61	100.0	127.1	18.6
Orbinia felix	9	80.0	18.8	11.4
Aricidea suecica	2	20.0	4.2	9.3
Prionopsio lighti	3	40.0	6.3	9.3
Spio butleri	1	20.0	2.1	4.7
Spiophanes bombyx	352	100.0	733.6	194.6
Spiophanes berkeleyorum	71	100.0	148.0	46.8
Magelona sp.	4	60.0	8.3	8.7
Magelona longicornis	14	100.0	29.2	15.5
Magelona sacculata	132	100.0	275.1	98.5
Spiochaetopterus costarum	2	40.0	4.2	5.7
Chaetozone spinosa	33	100.0	68.8	22.8
Travisia brevis	1	20.0	2.1	4.7
Notomastus lineatus	11	100.0	22.9	13.6
Decamastus gracilis	4	40.0	8.3	13.6
Owenia fusiformis	3	60.0	6.3	5.7
Ampharete acutifrons	2	40.0	4.2	5.7
Polycirrus sp. complex	1	20.0	2.1	4.7
Euchone hancocki	1	20.0	2.1	4.7
Mitrella gouldi	11	100.0	22.9	8.7
Olivella sp.	11	60.0	22.9	27.0
Olivella baetica	13	60.0	27.1	29.1
Olivella pycna	18	80.0	37.5	31.8
Cylichna alba	2	40.0	4.2	5.7
Bivalvia	2	40.0	4.2	5.7

Appendix Table 3.--Continued.

Station: D-7 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nucula tenuis	2	40.0	4.2	5.7
Axinopsida serricata	2	20.0	4.2	9.3
Macoma calcerea	3	60.0	6.3	5.7
Macoma balthica	1	20.0	2.1	4.7
Podon sp.	1	20.0	2.1	4.7
Cylindroleberididae	4	80.0	8.3	4.7
Euphilomedes carcharodonta	3	20.0	6.3	14.0
Calanoida	16	60.0	33.3	30.7
Balanus sp.	5	20.0	10.4	23.3
Acanthomysis macrops	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	1	20.0	2.1	4.7
Neomysis kadiakensis	3	40.0	6.3	9.3
Hemilamprops californica	6	60.0	12.5	17.1
Diastylis sp.	1	20.0	2.1	4.7
Synidotea angulata	1	20.0	2.1	4.7
Liriopsis pygmaea	1	20.0	2.1	4.7
Ampelisca careyi	9	100.0	18.8	8.7
Eohaustorius sencillus	65	100.0	135.5	91.7
Photis sp.	1	20.0	2.1	4.7
Photis macinerneyi	6	40.0	12.5	18.6
Orchomene cf. pinquis	14	80.0	29.2	22.6
Synchelidium shoemakeri	3	40.0	6.3	9.3
Westwoodilla caecula	1	20.0	2.1	4.7
Rhepoxynius abronius	10	80.0	20.8	16.5
Rhepoxynius daboius	58	100.0	120.9	62.8
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Stenothoidae	2	40.0	4.2	5.7
Callianassa sp.	3	40.0	6.3	9.3
Pagurus sp.	2	40.0	4.2	5.7
Phoronida	6	80.0	12.5	8.7
Ophiuroidea	2	40.0	4.2	5.7
Dendraster excentricus	4	60.0	8.3	8.7

Number of taxa: 72

Mean number/sample: 251.2 Standard deviation/sample: 51.8

Mean numberm^2: 2,617.5 Standard deviation: 539.4

H′ = 4.24 J′= 0.69

Appendix Table 3.--Continued.

Station: E-3 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	26	100.0	54.2	28.0
Pholoe minuta	1	20.0	2.1	4.7
Sigalion sp.	1	20.0	2.1	4.7
Phyllodoce sp.	6	60.0	12.5	13.6
Eteone sp.	3	60.0	6.3	5.7
Eteone fauchaldi	3	60.0	6.3	5.7
Phyllodoce (Aponaitides) hartmanae	8	80.0	16.7	15.8
Heteropodarke heteromorpha	9	80.0	18.8	17.1
Syllidae	4	40.0	8.3	13.6
Nereis zonata	2	20.0	4.2	9.3
Nephtys sp.	106	100.0	220.9	132.9
Nephtys caecoides	24	100.0	50.0	18.6
Glycera convoluta	1	20.0	2.1	4.7
Glycinde armigera	63	100.0	131.3	49.8
Goniada brunnea	1	20.0	2.1	4.7
Onuphis (Nothria) iridescens	13	100.0	27.1	11.9
Lumbrineris sp.	4	80.0	8.3	4.7
Lumbrineris bicirrata	3	40.0	6.3	9.3
Orbiniidae	10	100.0	20.8	12.8
Leitoscoloplos pugettensis	80	100.0	166.7	76.9
Orbinia felix	21	100.0	43.8	20.0
Aricidae quadrilobata	1	20.0	2.1	4.7
Paraonella platybranchia	5	80.0	10.4	7.4
Prionopsio lighti	21	60.0	43.8	42.6
Spiophanes bombyx	246	100.0	512.7	360.8
Spiophanes berkeleyorum	245	100.0	510.6	215.1
Magelona sp.	1	20.0	2.1	4.7
Magelona longicornis	14	80.0	29.2	30.7
Magelona sacculata	161	100.0	335.5	219.2
Chaetozone spinosa	18	100.0	37.5	18.9
Capitellidae	3	60.0	6.3	5.7
Heteromastus filobranchus	1	20.0	2.1	4.7
Decamastus gracilis	1	20.0	2.1	4.7
Asychis sp.	1	20.0	2.1	4.7
Owenia fusiformis	2	40.0	4.2	5.7
Ampharete acutifrons	4	60.0	8.3	8.7
Chone duneri	1	20.0	2.1	4.7
Oligochaeta	1	20.0	2.1	4.7
Mitrella gouldi	7	80.0	14.6	11.9
Olivella sp.	4	60.0	8.3	8.7

Appendix Table 3.--Continued.

Station: E-3 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Olivella biplicata	3	40.0	6.3	9.3
Olivella baetica	7	60.0	14.6	17.4
Olivella pycna	18	80.0	37.5	30.0
Cylichna alba	1	20.0	2.1	4.7
Aglaja diomedeum	2	20.0	4.2	9.3
Cuthona sp.	1	20.0	2.1	4.7
Bivalvia	1	20.0	2.1	4.7
Nucula tenuis	3	40.0	6.3	9.3
Yoldia myalis	1	20.0	2.1	4.7
Axinopsida serricata	5	80.0	10.4	7.4
Siliqua patula	1	20.0	2.1	4.7
Macoma sp.	1	20.0	2.1	4.7
Macoma calcerea	3	60.0	6.3	5.7
Protothaca staminea	1	20.0	2.1	4.7
Cylindroleberididae	3	40.0	6.3	9.3
Euphilomedes carcharodonta	4	60.0	8.3	8.7
Calanoida	17	100.0	35.4	21.6
Balanus sp.	2	20.0	4.2	9.3
Nebalia pugettensis	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	4	60.0	8.3	8.7
Neomysis kadiakensis	8	40.0	16.7	27.2
Hemilamprops californica	1	20.0	2.1	4.7
Diastylidae	1	20.0	2.1	4.7
Diastylopsis dawsoni	4	60.0	8.3	8.7
Colurostylis occidentalis	1	20.0	2.1	4.7
Synidotea angulata	21	60.0	43.8	75.6
Ampelisca careyi	2	20.0	4.2	9.3
Aoroides sp.	9	40.0	18.8	28.0
Corophium spinicorne	1	20.0	2.1	4.7
Eohaustorius sencillus	7	60.0	14.6	17.4
Photis sp.	4	40.0	8.3	13.6
Photis macinerneyi	6	40.0	12.5	22.6
Orchomene cf. pinguis	26	80.0	54.2	32.5
Monoculodes spinipes	6	40.0	12.5	17.1
Paraphoxus obtusidens	1	20.0	2.1	4.7
Mandibulophoxus uncirostratus	1	20.0	2.1	4.7
Rhepoxynius abronius	4	80.0	8.3	4.7
Rhepoxynius daboius	31	100.0	64.6	28.0
Rhepoxynius vigitegus	2	20.0	4.2	9.3
Parapleustes sp.	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: E-3 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Hyperiidae	1	20.0	2.1	4.7
Caprella sp.	1	20.0	2.1	4.7
Callianassa sp.	5	60.0	10.4	10.4
Cancer sp.	1	20.0	2.1	4.7
Pinnixa eburna	1	20.0	2.1	4.7
Coleoptera	1	20.0	2.1	4.7
Hymenoptera	1	20.0	2.1	4.7
Phoronida	1	20.0	2.1	4.7
Ophiuroidea	2	40.0	4.2	5.7
Dendraster excentricus	1	20.0	2.1	4.7
Holothuroidea	2	20.0	4.2	9.3

Number of taxa: 91

Mean number/sample: 271.8 Standard deviation/sample: 60.4

Mean numberm^2: 2,832.2 Standard deviation: 629.2

H′ = 4.39 J′= 0.67

Appendix Table 3.--Continued.

Station: E-5 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	14	100.0	29.2	8.7
Pholoe minuta	1	20.0	2.1	4.7
Sigalion spinosa	1	20.0	2.1	4.7
Phyllodocidae	1	20.0	2.1	4.7
Eteone longa	1	20.0	2.1	4.7
Eteone fauchaldi	2	40.0	4.2	5.7
Phyllodoce (Paranaitis) *polynoides*	3	20.0	6.3	14.0
Phyllodoce (Aponaitides) *hartmanae*	1	20.0	2.1	4.7
Nephtys sp.	87	100.0	181.3	100.4
Nephtys caecoides	26	100.0	54.2	20.0
Glycinde armigera	44	100.0	91.7	20.0
Goniada brunnea	7	60.0	14.6	15.8
Onuphis (Nothria) *iridescens*	19	100.0	39.6	20.0
Lumbrineris sp.	3	60.0	6.3	5.7
Lumbrineris bicirrata	3	20.0	6.3	14.0
Orbiniidae	9	80.0	18.8	20.0
Leitoscoloplos pugettensis	51	100.0	106.3	48.5
Orbinia felix	6	80.0	12.5	11.4
Paraonella platybranchia	3	60.0	6.3	5.7
Spiophanes bombyx	223	100.0	464.7	171.0
Spiophanes berkeleyorum	36	100.0	75.0	45.1
Magelona longicornis	14	80.0	29.2	17.1
Magelona sacculata	190	100.0	396.0	117.7
Chaetozone spinosa	52	100.0	108.4	87.4
Travisia sp.	1	20.0	2.1	4.7
Notomastus lineatus	3	60.0	6.3	5.7
Polycirrus sp. complex	2	40.0	4.2	5.7
Mitrella gouldi	4	60.0	8.3	8.7
Olivella sp.	3	40.0	6.3	9.3
Olivella cf. *biplicata*	4	40.0	8.3	13.6
Olivella baetica	24	100.0	50.0	25.9
Olivella pycna	34	100.0	70.9	32.5
Kurtziella plumbea	3	60.0	6.3	5.7
Odostomia sp.	2	40.0	4.2	5.7
Turbonilla sp.	1	20.0	2.1	4.7
Cylichna alba	5	80.0	10.4	7.4
Bivalvia	1	20.0	2.1	4.7
Mytilidae	2	40.0	4.2	5.7
Axinopsida serricata	1	20.0	2.1	4.7
Macoma sp.	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: E-5 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Macoma balthica	4	40.0	8.3	13.6
Tellina carpenteri	5	60.0	10.4	10.4
Cylindroleberididae	3	20.0	6.3	14.0
Calanoida	20	80.0	41.7	44.8
Balanus sp.	1	20.0	2.1	4.7
Acanthomysis macrops	2	40.0	4.2	5.7
Hemilamprops californica	17	80.0	35.4	33.4
Leuconidae	1	20.0	2.1	4.7
Diastylopsis dawsoni	1	20.0	2.1	4.7
Colurostylis occidentalis	3	20.0	6.3	14.0
Synidotea angulata	2	40.0	4.2	5.7
Ampelisca careyi	4	60.0	8.3	8.7
Eohaustorius washingtonianus	2	20.0	4.2	9.3
Eohaustorius sencillus	26	80.0	54.2	46.2
Photis sp.	3	40.0	6.3	9.3
Photis macinerneyi	10	40.0	20.8	29.5
Lepidecreum gurjanovae	6	80.0	12.5	8.7
Orchomene cf. pinquis	3	60.0	6.3	5.7
Pachynus cf. barnardi	1	20.0	2.1	4.7
Monoculodes spinipes	6	40.0	12.5	17.1
Synchelidium shoemakeri	2	40.0	4.2	5.7
Westwoodilla caecula	2	40.0	4.2	5.7
Mandibulophoxus gilesi	1	20.0	2.1	4.7
Rhepoxynius sp.	1	20.0	2.1	4.7
Rhepoxynius abronius	21	100.0	43.8	8.7
Rhepoxynius daboius	48	80.0	100.0	88.6
Rhepoxynius tridentatus	2	20.0	4.2	9.3
Rhepoxynius vigitegus	1	20.0	2.1	4.7
Parapleustes sp.	1	20.0	2.1	4.7
Stenothoidae	3	60.0	6.3	5.7
Hyperiidae	1	20.0	2.1	4.7
Paguridae	2	40.0	4.2	5.7
Phoronidae	4	60.0	8.3	8.7
Ophiuroidea	10	40.0	20.8	29.5
Dendraster excentricus	2	40.0	4.2	5.7
Occella verrucosa	1	20.0	2.1	4.7

Appendix Table 3.--Continued.

Station: E-5 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2

Number of taxa: 75

Mean number/sample: 211.8 Standard deviation/sample: 68.7

Mean numberm^2: 2,311.2 Standard deviation: 716.2

H′ = 4.45 J′= 0.71

Appendix Table 3.--Continued.

Station: F-2 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	22	100.0	45.8	35.0
Pholoe minuta	1	20.0	2.1	4.7
Sigalion sp.	1	20.0	2.1	4.7
Phyllodocidae	1	20.0	2.1	4.7
Eteone longa	2	40.0	4.2	5.7
Eteone fauchaldi	1	20.0	2.1	4.7
Phyllodoce (Aponaitides) *hartmanae*	1	20.0	2.1	4.7
Gyptis brevipalpa	1	20.0	2.1	4.7
Microphthalmus sp.	2	40.0	4.2	5.7
Syllidae	3	40.0	6.3	9.3
Nephtys sp.	72	80.0	150.0	107.2
Nephtys caecoides	17	100.0	35.4	18.9
Glycinde armigera	62	100.0	129.2	49.8
Goniada brunnea	4	40.0	8.3	13.6
Onuphis (Nothria) *iridescens*	6	80.0	12.5	8.7
Orbiniidae	7	60.0	14.6	17.4
Leitoscoloplos pugettensis	64	100.0	133.4	46.8
Orbinia felix	13	100.0	27.1	11.9
Prionopsio lighti	4	20.0	8.3	18.6
Spiophanes bombyx	115	100.0	239.7	204.7
Spiophanes berkeleyorum	55	80.0	114.6	83.4
Magelona longicornis	8	100.0	16.7	5.7
Magelona sacculata	70	100.0	145.9	71.8
Chaetozone spinosa	16	100.0	33.3	20.0
Heteromastus filobranchus	2	40.0	4.2	5.7
Notomastus lineatus	7	80.0	14.6	11.9
Owenia fusiformis	3	40.0	6.3	9.3
Ampharete acutifrons	1	20.0	2.1	4.7
Mitrella gouldi	8	40.0	16.7	27.2
Olivella sp.	5	40.0	10.4	14.7
Olivella baetica	5	60.0	10.4	10.4
Olivella pycna	28	100.0	58.4	44.0
Cylichna alba	2	40.0	4.2	5.7
Aglaja diomedeum	2	40.0	4.2	5.7
Bivalvia	2	20.0	4.2	9.3
Nucula tenuis	1	20.0	2.1	4.7
Yoldia myalis	1	20.0	2.1	4.7
Mytilidae	6	100.0	12.5	4.7
Axinopsida serricata	5	60.0	10.4	12.8
Macoma sp.	2	20.0	4.2	9.3

Appendix Table 3.--Continued.

Station: F-2 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Macoma calcerea	1	20.0	2.1	4.7
Macoma cf. *balthica*	3	40.0	6.3	9.3
Tellina carpenteri	1	20.0	2.1	4.7
Tellina modesta	1	20.0	2.1	4.7
Cylindroleberididae	6	40.0	12.5	22.6
Calanoida	13	80.0	27.1	18.9
Acanthomysis macrops	1	20.0	2.1	4.7
Archaeomysis grebnitzkii	1	20.0	2.1	4.7
Neomysis kadiakensis	10	60.0	20.8	19.5
Hemilamprops californica	3	40.0	6.3	9.3
Diastylopsis dawsoni	7	80.0	14.6	15.8
Diastylopsis tenuis	1	20.0	2.1	4.7
Colurostylis occidentalis	3	40.0	6.3	9.3
Tecticeps pugettensis	1	20.0	2.1	4.7
Synidotea angulata	14	60.0	29.2	43.2
Edotea sublittoralis	1	20.0	2.1	4.7
Ampelisca careyi	6	80.0	12.5	8.7
Aoroides sp.	1	20.0	2.1	4.7
Corophium spinicorne	2	40.0	4.2	5.7
Eohaustorius sencillus	3	40.0	6.3	9.3
Photis sp.	2	20.0	4.2	9.3
Photis macinerneyi	23	80.0	47.9	42.1
Orchomene sp.	1	20.0	2.1	4.7
Orchomene cf. *pinquis*	6	40.0	12.5	18.6
Synchelidium shoemakeri	3	40.0	6.3	9.3
Westwoodilla caecula	1	20.0	2.1	4.7
Paraphoxus oculatus	2	40.0	4.2	5.7
Rhepoxynius abronius	3	40.0	6.3	9.3
Rhepoxynius daboius	16	60.0	33.3	42.6
Rhepoxynius vigitegus	2	20.0	4.2	9.3
Callianassa sp.	1	20.0	2.1	4.7
Phoronida	2	40.0	4.2	5.7
Ophiuroidea	4	40.0	8.3	13.6
Dendraster excentricus	2	40.0	4.2	5.7

Number of taxa: 74

Mean number/sample: 155.0 Standard deviation/sample: 57.2

Mean numberm^2: 1,615.1 Standard deviation: 595.6

H′ = 4.75 J′= 0.77

Appendix Table 3.--Continued.

Station: F-6 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	9	100.0	18.8	11.4
Pholoe minuta	1	20.0	2.1	4.7
Sthenelais tertiaglabra	1	20.0	2.1	4.7
Phyllodocidae	2	40.0	4.2	5.7
Phyllodoce (Anaitides) groenlandica	1	20.0	2.1	4.7
Phyllodoce (Paranaitis) polynoides	4	60.0	8.3	8.7
Phyllodoce (Aponaitides) hartmanae	1	20.0	2.1	4.7
Microphthalmus sp.	2	40.0	4.2	5.7
Nephtys sp.	136	100.0	283.4	147.8
Nephtys caecoides	27	100.0	56.3	24.0
Glycinde armigera	34	100.0	70.9	20.0
Goniada brunnea	5	80.0	10.4	7.4
Onuphis (Nothria) iridescens	10	80.0	20.8	29.5
Lumbrineris bicirrata	1	20.0	2.1	4.7
Leitoscoloplos pugettensis	45	100.0	93.8	30.4
Orbinia felix	5	60.0	10.4	10.4
Spio sp.	2	40.0	4.2	5.7
Spiophanes bombyx	308	100.0	641.9	325.7
Spiophanes berkeleyorum	18	80.0	37.5	22.8
Scolelepis squamata	1	20.0	2.1	4.7
Magelona sacculata	224	100.0	466.8	209.1
Mesochaetopterus taylori	2	40.0	4.2	5.7
Cirratulidae	3	40.0	6.3	9.3
Chaetozone spinosa	40	100.0	83.4	57.5
Notomastus lineatus	7	60.0	14.6	14.0
Asychis sp.	1	20.0	2.1	4.7
Owenia fusiformis	3	40.0	6.3	9.3
Ampharete acutifrons	2	40.0	4.2	5.7
Polycirrus sp. complex	3	40.0	6.3	9.3
Mitrella gouldi	4	40.0	8.3	13.6
Olivella biplicata	5	20.0	10.4	23.3
Olivella baetica	24	100.0	50.0	20.0
Olivella pycna	30	100.0	62.5	18.0
Kurtziella plumbea	1	20.0	2.1	4.7
Odostomia sp.	1	20.0	2.1	4.7
Cylichna alba	3	40.0	6.3	9.3
Bivalvia	5	40.0	10.4	18.0
Acila castrensis	1	20.0	2.1	4.7
Mytilidae	2	40.0	4.2	5.7
Axinopsida serricata	2	40.0	4.2	5.7

Appendix Table 3.--Continued.

Station: F-6 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Macoma cf. lama	1	20.0	2.1	4.7
Macoma balthica	6	40.0	12.5	22.6
Tellina carpenteri	1	20.0	2.1	4.7
Tellina modesta	1	20.0	2.1	4.7
Cylindroleberididae	4	60.0	8.3	8.7
Euphilomedes carcharodonta	2	40.0	4.2	5.7
Calanoida	22	100.0	45.8	56.4
Balanus sp.	2	40.0	4.2	5.7
Neomysis kadiakensis	4	60.0	8.3	8.7
Hemilamprops californica	7	40.0	14.6	20.3
Diastylopsis dawsoni	1	20.0	2.1	4.7
Diastylopsis tenuis	14	40.0	29.2	59.6
Colurostylis occidentalis	7	80.0	14.6	11.9
Synidotea sp.	8	60.0	16.7	17.4
Gammaridea	1	20.0	2.1	4.7
Ampelisca careyi	5	60.0	10.4	10.4
Eohaustorius sp.	1	20.0	2.1	4.7
Eohaustorius sencillus	38	100.0	79.2	49.8
Photis sp.	4	60.0	8.3	8.7
Photis macinerneyi	11	100.0	22.9	13.6
Orchomene cf. pinquis	7	80.0	14.6	9.3
Synchelidium shoemakeri	4	40.0	8.3	13.6
Paraphoxus oculatus	3	40.0	6.3	9.3
Rhepoxynius abronius	12	100.0	25.0	15.8
Rhepoxynius daboius	62	100.0	129.2	61.9
Rhepoxynius vigitegus	18	40.0	37.5	67.8
Stenothoidae	4	20.0	8.3	18.6
Crangon nigricauda	1	20.0	2.1	4.7
Paguridae	1	20.0	2.1	4.7
Phoronidae	3	60.0	6.3	5.7
Ophiuroidea	7	40.0	14.6	27.2
Dendraster excentricus	2	40.0	4.2	5.7
Citharichthys sordidus	1	20.0	2.1	4.7

Number of taxa: 72

Mean number/sample: 248.0 Standard deviation/sample: 106.0

Mean numberm^2: 2,584.2 Standard deviation: 1,104.5

H′ = 4.15 J′= 0.67

Appendix Table 3.--Continued.

Station: G-4 Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Nemertea	32	80.0	66.7	46.9
Eteone fauchaldi	1	20.0	2.1	4.7
Syllidae	4	60.0	8.3	8.7
Nephtys sp.	38	100.0	79.2	61.9
Nephtys caecoides	24	100.0	50.0	34.1
Glycinde armigera	29	100.0	60.4	34.9
Onuphis (Nothria) iridescens	12	80.0	25.0	28.2
Lumbrineris bicirrata	2	20.0	4.2	9.3
Orbiniidae	5	60.0	10.4	12.8
Leitoscoloplos pugettensis	28	100.0	58.4	67.4
Orbinia felix	3	40.0	6.3	9.3
Paraonella platybranchia	2	40.0	4.2	5.7
Prionopsio lighti	1	20.0	2.1	4.7
Spiophanes bombyx	118	100.0	245.9	137.4
Spiophanes berkeleyorum	17	60.0	35.4	62.3
Magelona sacculata	155	100.0	323.0	97.7
Spiochaetopterus costarum	1	20.0	2.1	4.7
Mesochaetopterus taylori	2	40.0	4.2	5.7
Chaetozone spinosa	19	100.0	39.6	28.9
Ophelia sp.	1	20.0	2.1	4.7
Heteromastus filiformis	1	20.0	2.1	4.7
Notomastus lineatus	8	80.0	16.7	11.9
Owenia fusiformis	1	20.0	2.1	4.7
Ampharete acutifrons	3	40.0	6.3	9.3
Polycirrus sp. complex	1	20.0	2.1	4.7
Mitrella gouldi	3	60.0	6.3	5.7
Olivella baetica	21	80.0	43.8	43.8
Olivella pycna	66	80.0	137.5	112.6
Cylichna alba	1	20.0	2.1	4.7
Aglaja cf. diomedea	3	40.0	6.3	9.3
Axinopsida serricata	1	20.0	2.1	4.7
Macoma sp.	1	20.0	2.1	4.7
Macoma cf. lama	1	20.0	2.1	4.7
Macoma balthica	1	20.0	2.1	4.7
Tellina cf. modesta	1	20.0	2.1	4.7
Cylindroleberididae	6	60.0	12.5	13.6
Euphilomedes carcharodonta	1	20.0	2.1	4.7
Calanoida	37	100.0	77.1	24.0
Balanus sp.	3	40.0	6.3	9.3
Acanthomysis macrops	12	80.0	25.0	33.4

Appendix Table 3.--Continued.

Station: G-4 (continued) Date: 27 Jun 90 Sample size: 5

Taxon	Total number	Frequency of occurrence (%)	Mean number m^2	Standard deviation m^2
Archaeomysis grebnitzkii	13	100.0	27.1	17.4
Neomysis kadiakensis	1	20.0	2.1	4.7
Hemilamprops californica	1	20.0	2.1	4.7
Diastylis sp.	10	80.0	20.8	12.8
Diastylopsis dawsoni	3	40.0	6.3	9.3
Diastylopsis tenuis	1	20.0	2.1	4.7
Colurostylis occidentalis	5	60.0	10.4	10.4
Synidotea angulata	4	60.0	8.3	8.7
Ampelisca careyi	8	80.0	16.7	15.8
Photis sp.	1	20.0	2.1	4.7
Photis macinerneyi	8	80.0	16.7	14.0
Lepidecreum gurjanovae	2	20.0	4.2	9.3
Orchomene cf. pinquis	6	60.0	12.5	13.6
Monoculodes sp.	1	20.0	2.1	4.7
Synchelidium shoemakeri	5	40.0	10.4	14.7
Westwoodilla caecula	3	60.0	6.3	5.7
Mandibulophoxus gilesi	4	60.0	8.3	8.7
Rhepoxynius sp.	1	20.0	2.1	4.7
Rhepoxynius abronius	6	60.0	12.5	13.6
Rhepoxynius daboius	12	60.0	25.0	39.4
Rhepoxynius vigitegus	5	40.0	10.4	18.0
Parapleustes sp.	1	20.0	2.1	4.7
Stenothoidae	2	40.0	4.2	5.7
Crangon nigricauda	1	20.0	2.1	4.7
Callianassa sp.	1	20.0	2.1	4.7
Pagurus sp.	2	40.0	4.2	5.7
Phoronida	2	40.0	4.2	5.7
Ophiuroidea	3	40.0	6.3	9.3
Dendraster excentricus	5	80.0	10.4	7.4

Number of taxa: 69

Mean number/sample: 156.6 Standard deviation/sample: 72.0

Mean numberm^2: 1,631.8 Standard deviation: 750.6

H′ = 4.53 J′= 0.74

Appendix Table 4.--Fishes and large epibenthic invertebrates captured at and adjacent to ODMDS F, offshore from the Columbia River, with an 8-m bottom trawl in June 1989 and 1990.

Scientific name	Common name	June 1989	June 1990
Squalidae			
Squalus acanthias	Spiny dogfish	x	
Rajidae			
Raja binoculata	Big skate	x	x
Clupeidae			
Clupea harengus pallasi	Pacific herring		x
Engraulidae			
Engraulis mordax	Northern anchovy		x
Osmeridae			
Larval smelt		x	x
Allosmerus elongatus	Whitebait smelt	x	x
Hypomesus pretiosus	Surf smelt		x
Spirinchus thaleichthys	Longfin smelt		x
Gadidae			
Merluccius productus	Pacific hake	x	
Microgadus proximus	Pacific tomcod	x	x
Scorpaenidae			
Unidentified rockfish		x	x
Sebastes melanops	Black rockfish		x
Hexagrammidae			
Ophiodon elongatus	Lingcod		x
Cottidae			
Leptocottus armatus	Pacific staghorn sculpin	x	x
Agonidae			
Agonus acipenserinus	Sturgeon poacher		x
Occella verrucosa	Warty poacher	x	x
Stellerina xyosterna	Pricklebreast poacher	x	
Cyclopteridae			
Unidentified snailfish		x	
Liparis pulchellus	Showy snailfish		x

Appendix table 4.--Continued.

Scientific name	Common name	June 1989	June 1990
Bothidae			
Unidentified sanddab		x	x
Citharichthys sordidus	Pacific sanddab	x	x
Citharichthys stigmaeus	Speckled sanddab		x
Pleuronectidae			
Larval flatfish		x	x
Eopsetta jordani	Petrale sole	x	x
Glyptocephalus zachirus	Rex sole	x	x
Isopsetta isolepis	Butter sole	x	x
Microstomus pacificus	Dover sole	x	
Parophrys vetulus	English sole	x	x
Psettichthys melanostictus	Sand sole	x	x
Misc.			
Loliginidae			
Loligo opalescens	Common squid	x	x
Canceridae			
Cancer magister	Dungeness crab	x	x
Cancer gracilis	Graceful crab		x
Crangonidae			
Crangon franciscorum	Bay shrimp	x	x
Crangon alaskensis	Northern shrimp	x	x
Lissocrangon stylirostris	Smooth shrimp		x
Luidiidae			
Luidia foliolata	Sand star	x	x
	Total number of taxa	25	31

Appendix Table 5.--Summary of 8-m trawling efforts at and adjacent to ODMDS F, offshore from the Columbia River in June 1989 and 1990.

Station: FS

Gear: 8-m Trawl
Date: 21 Jun 1989
Depth: 41.1 m
Distance traveled: 241 m

Species	Number captured	Total wt.(g)	Number per hectare	Wt.(g) per hectare
Big skate	1	434	8	3,602
Whitebait smelt	1,050	6,181	8,714	51,295
Pacific tomcod	17	541	141	4,490
Pacific staghorn sculpin	1	140	8	1,162
Warty poacher	4	61	33	506
Unidentified sanddab	12	26	100	216
Pacific sanddab	80	11,348	664	94,174
Petrale sole	9	2,118	75	17,577
Rex sole	1	105	8	871
Butter sole	33	1,317	274	10,929
English sole	29	3,817	241	31,676
Dover sole	1	287	8	2,382
Dungeness crab	3	1,367	25	11,344
Northern crangon	67	102	556	846
Sand star	2	6	17	50
TOTALS	1,310	27,850	10,872	231,120

H′ = 1.26 J′ = 0.32

Appendix Table 5.--Continued.

Station: FM

Gear: 8-m Trawl
Date: 21 Jun 1989
Depth: 41.1 m
Distance traveled: 852 m

Species	Number captured	Total Wt.(g)	Number per hectare	Wt.(g) per hectare
Spiny dogfish	1	873	2	2,049
Big skate	1	103	2	242
Larval smelt	3	0	7	0
Whitebait smelt	75	354	176	831
Pacific hake	2	1,461	5	3,430
Pacific tomcod	112	3,700	263	8,685
Pacific staghorn sculpin	6	969	14	2,275
Warty poacher	11	192	26	451
Unidentified sanddab	16	15	38	35
Pacific sanddab	130	16,396	305	38,488
Petrale sole	9	2,489	21	5,843
Rex sole	1	219	2	514
Butter sole	116	23,709	272	55,655
English sole	79	7,909	185	18,566
Sand sole	1	226	2	531
Dover sole	4	1,064	9	2,498
Dungeness crab	7	3,032	16	7,117
Northern crangon	141	203	331	477
Sand star	3	3	7	7
TOTALS	718	62,917	1,683	147,694

H′ = 3.04 J′ = 0.72

Appendix Table 5.--Continued.

Station: FN

Gear: 8-m Trawl
Date: 21 Jun 1989
Depth: 41.1 m
Distance traveled: 463 m

Species	Number captured	Total wt.(g)	Number per hectare	Wt.(g) per hectare
Big skate	1	279	4	1,205
Larval smelt	20	0	86	0
Pacific hake	10	6,415	43	27,711
Pacific tomcod	54	1,315	233	5,680
Unidentified rockfish	2	2	9	9
Pacific staghorn sculpin	1	161	4	695
Warty poacher	9	80	39	346
Pricklebreast poacher	35	19	151	82
Unidentified snailfish	4	0	17	0
Unidentified sanddab	11	12	48	52
Pacific sanddab	2	304	9	1,313
Rex sole	1	187	4	808
Butter sole	62	3,358	268	14,505
English sole	29	5,187	125	22,406
Dover sole	2	441	9	1,905
Larval flatfish	1	0	4	0
Dungeness crab	8	1,448	35	6,255
Northern crangon	88	95	380	410
Bay shrimp	95	206	410	890
Sand star	5	14	22	60
Common squid	1	43	4	186
TOTALS	441	19,566	1,904	84,518

$H' = 3.28$ $J' = 0.75$

Appendix Table 5.--Continued.

Station: FS

Gear: 8-m Trawl
Date: 12 Jun 1990
Depth: 41.8 m
Distance traveled: 1,204 m

Species	Number captured	Total wt.(g)	Number per hectare	Wt.(g) per hectare
Pacific herring	44	933	73	1,550
Northern anchovy	27	810	45	1,346
Surf smelt	1	34	2	56
Whitebait smelt	1,186	9,071	1,970	15,068
Pacific tomcod	3	44	5	73
Pacific staghorn sculpin	4	613	7	1,018
Pacific sanddab	40	5,455	66	9,061
Petrale sole	1	138	2	229
Rex sole	1	240	2	399
English sole	52	6,595	86	10,955
Northern crangon	13	18	22	30
TOTALS	1,372	23,951	2,280	39,785

H′ = 0.91 J′ = 0.26

Appendix Table 5.--Continued.

Station: FM

Gear: 8-m Trawl
Date: 12 Jun 1990
Depth: 36.9 m
Distance traveled: 889 m

Species	Number captured	Total wt.(g)	Number per hectare	Wt.(g) per hectare
Big skate	2	407	4	916
Pacific herring	37	749	83	1,685
Northern anchovy	16	514	36	1,156
Surf smelt	2	57	4	128
Longfin smelt	1	9	2	20
Whitebait smelt	9,472	49,489	21,309	111,336
Pacific tomcod	79	3,792	178	8,531
Unidentified rockfish	1	1	2	2
Lingcod	8	80	18	180
Pacific staghorn sculpin	25	3,702	56	8,328
Sturgeon poacher	1	9	2	20
Warty poacher	5	95	11	214
Pacific sanddab	134	13,004	301	29,255
Speckled sanddab	5	90	11	202
Petrale sole	2	610	4	1,372
Rex sole	1	156	2	351
Butter sole	31	1,011	70	2,274
English sole	186	19,909	418	44,790
Sand sole	21	1,613	47	3,629
Larval flatfish	8	13	18	29
Dungeness crab	1	450	2	1,012
Cancer gracilis	1	8	2	18
Northern crangon	70	106	157	238
Bay shrimp	1	3	2	7
Sand star	1	10	2	22
Common squid	1	25	2	56
TOTALS	10,112	95,912	22,743	215,771

H′ = 0.54 J′ = 0.11

Appendix Table 5.--Continued.

Station: FN

Gear: 8-m Trawl
Date: 12 Jun 1990
Depth: 37.8 m
Distance traveled: 523 m

Species	Number captured	Total wt.(g)	Number per hectare	Wt.(g) per hectare
Big skate	1	271	4	1,036
Pacific herring	1	25	4	96
Longfin smelt	78	473	298	1,809
Larval smelt	48	48	184	184
Whitebait smelt	114	691	436	2,642
Pacific tomcod	76	3,530	291	13,499
Black rockfish	1	2,210	4	8,451
Unidentified rockfish	6	6	23	23
Lingcod	6	54	23	207
Pacific staghorn sculpin	30	4,766	115	18,226
Warty poacher	2	51	8	195
Showy snailfish	3	132	11	505
Pacific sanddab	19	1,389	73	5,312
Speckled sanddab	23	233	88	891
Butter sole	192	4,312	734	16,489
English sole	36	4,813	138	18,405
Sand sole	30	2,053	115	7,851
Larval flatfish	27	0	103	0
Larval sanddab	61	72	233	275
Dungeness crab	4	1,788	15	6,837
Northern crangon	184	197	704	753
Bay shrimp	47	58	180	222
Smooth crangon	1	1	4	4
Sand star	2	10	8	38
TOTALS	992	27,183	3,796	103,950

H′ = 3.59 J′ = 0.78