Sediment Attributes and Infaunal Abundance in Simoom Sound, British Columbia, Canada

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SEDIMENT ATTRIBUTES AND INFAUNAL ABUNDANCE IN SIMOOM SOUND, BRITISH COLUMBIA, CANADA

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ABSTRACT

Sutherland, T.F., Levings, C.D., Petersen, S.A., Perry, P., McDermid, M., Byers, S.C. and Piercey, G.E. 2023. Sediment attributes and infaunal abundance in Simoom Sound, British Columbia, Canada. Can. Data Rep. Fish. Aquat. Sci. 1366: viii + 26 p.

This study covers the benthic component of a broader project investigating potential modification of marine ecosystems by shrimp trawling and trapping on the central coast of British Columbia. Sediment and infaunal samples were collected before and after fishing with commercial fishing gear consisting of otter-trawl, beam-trawl, and trap-lines. Simoom Sound was sampled in November 2000 and February 2001. Tabulated data of sediment characteristics that include sediment grain size, porosity, carbon and nitrogen content, trace-element, and chlorophyll concentrations are presented in this report. In addition, the infaunal data are comprised of both macrofaunal and meiofaunal communities.

RESUMÉ

Sutherland, T.F., Levings, C.D., Petersen, S.A., Perry, P., McDermid, M., Byers, S.C., and Piercey, G.E. 2023. Sediment attributes and infaunal abundance in Simoom Sound, British Columbia, Canada. Can. Data Rep. Fish. Aquat. Sci. 1366: viii + 26 p.

Cette étude couvre la composante benthique d'un projet plus vaste portant sur la modification potentielle des écosystèmes marins par le chalutage et le piégeage des crevettes sur la côte centrale de la Colombie-Britannique. Des échantillons de sédiments et d'endofaune ont été prélevés avant et après la pêche avec des engins de pêche commerciale constitués de chaluts à panneaux, de chaluts à perche et de lignes de piégeage. Simoom Sound a été échantillonné en novembre 2000 et février 2001. Des données tabulées sur les caractéristiques des sédiments, notamment la granulométrie, la porosité, la teneur en carbone et en azote, les concentrations d'éléments traces et de chlorophylle, sont présentées dans ce rapport. De plus, les données endofauniques comprennent à la fois les communautés macrofauniques et méiofauniques.

1.0 INTRODUCTION

The data reported here provides information on sediment attributes, and both meiofaunal and macrofauna abundance in Simoom Sound located in the south Central Coast of British Columbia. Grab sampling was conducted before and after the deployment of three types of commercial shrimp fishing gear: 1) otter trawl; 2) beam trawl; and 3) trap-lines. While the program's over-arching objective was to compare the potential benthic impact of the three fishing methods on sediment characteristics and infaunal communities, this report is focused solely on data presentation.

2.0 STUDY AREA

Simoom Sound is an elbow-shaped inlet located on the central coast of British Columbia's mainland that reaches into the Broughton Archipelago (Figure 1). More specifically, Simoom Sound (50° 49' 67" N; 126° 29' 41.77" W) is located between Tribune Channel and Kingcome Inlet. The Sound consists of two channel segments joined to create a right-angle: 1) NW – SE channel orientation with a length of 3.3 km, width of 0.9 km, and a depth range of 40 - 50 m; and 2) NE – SW channel orientation with a length of 4.2 km, width of 0.7 km, and a depth range of 50 - 60 m. The average water depth within the field study area was approximately 50 metres. A reconnaissance camera survey revealed that the central seabed was comprised of fine-silt reflecting a depositional environment. Alternately, where the seabed met the steep shoreline, the substrate was made up of a sandy gravel.

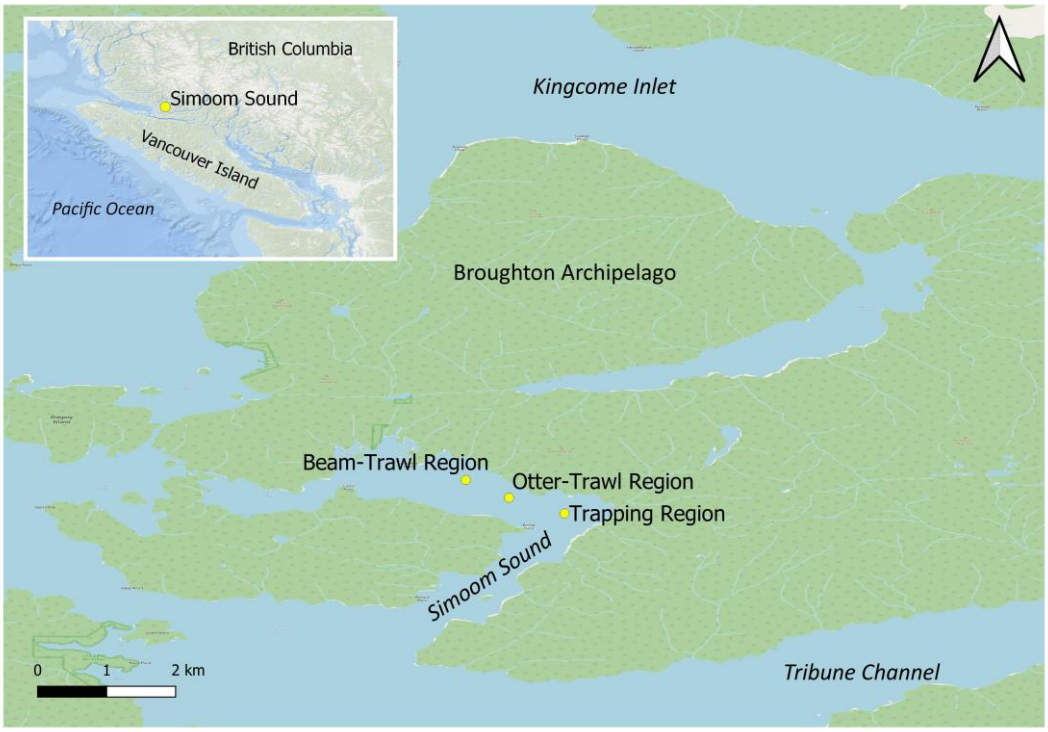

Figure 1: Locations of replicate survey transects for each fishing gear type in Simoom Sound, British Columbia, Canada.

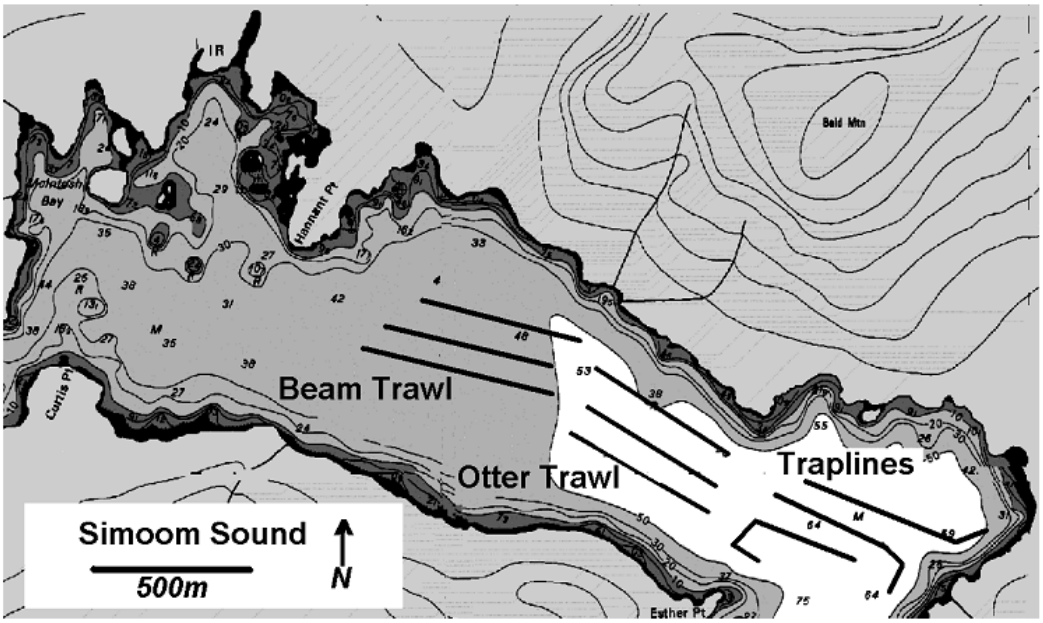

Figure 2: Locations of replicate survey transects for each fishing gear type in Simoom Sound, British Columbia, Canada. Soundings are in metres.

3.0 METHODS

Beam trawling, otter trawling and trapping were conducted in three different regions in Simoom Sound. More specifically, otter trawling and trapping took place in November, 2000, while beam trawling took place in February, 2001 (Figure 2). Each fishing-gear type and deployment method used in this study were representative of that used in the commercial shrimp fishery in British Columbia. Complete details of fishing gear type, deployment methods, and associated catches are described in Ong et al. 2002 and Troffe et al. 2003. Figure 2 shows a map identifying individual fishing regions to support beam-trawl, otter-trawl, and trapping surveys along three replicate fishing transects. This fishing survey design avoids the potential for overlapping seabed impacts between the three fishing-gear types. The locations of the replicate fishing survey transects and grab stations in each region were plotted on *Nobeltec Visual Navigation Suite 5.0* prior to the fishing surveys. The mid-point of each replicate transect was identified as the location for sediment sampling. Sediment samples were obtained 1) the day prior to trawling and trapping activities; and 2) within 30 minutes of the completion of each replicate trawling and trapping transect survey. Two sediment grab samples were collected at each replicate survey transect: Grab 1: surface subsamples (2-cm height) were collected for sediment grain size, organic and water contents, total organic and nitrogen contents, trace-element concentration, chlorophyll and phaeopigment concentration, and meiofaunal abundance; and Grab 2: macrofaunal extraction from the entire volume of the grab sample.

SEDIMENT ATTRIBUTES

Once the grab sample had settled on the boat deck, temperature was measured with a hand-held thermometer inserted into the top 10-cm of the sediment and held in position until the temperature stabilized.

A syringe-core was used to obtain a vertical profile of chlorophyll concentration by carefully inserting the syringe-core into the intact sediment surface of the grab sample. Once the syringe-core was retracted from the sediment, it was capped, sealed, and kept upright in a cooler for storage. An additional syringe-core was also deployed into the grab for meiofauna sampling. Each core was sliced every 1 cm and placed into individual 50-ml jars filled to 1/3 of the jar volume with 4% buffered formalin. Surface sediments were also collected for geotechnical analyses (Table 4) before removing the meiofauna and chlorophyll syringe cores. Sediment samples from the top 2-cm of the grab sediment were obtained using plastic putty knives. The first sample (500 ml) was reserved for grain size analysis, while the second sample (100 ml) was collected for porosity and organic content measurements, carbon and nitrogen content, and trace-element concentrations.

Sediment grain size analysis was conducted by Pacific Soil Analysis using the methods described below (Table 3). Samples were wet sieved through a 63 μm mesh to separate coarse and fine fractions while percent silt and clay fractions were determined by pipette analysis as outlined by McKeague (1978). Porosity (% water content) was determined at the Pacific Science Enterprise Centre by weighing the sediments before and after drying at 55°C for 2 days and percent organic content was determined by comparing weights of dried and ashed sediment samples after they had been fired in a furnace at 550°C for two hours. Total Carbon, Total Nitrogen, and % Organic Carbon analyses were conducted at the Department of Earth (University of British Columbia) using a Carlo-Erba CHN analyser (precision ± 1.2%), while trace-elements analyses (strong acid leachable) were conducted by Norwest Labs with

ultrasonic nebulization and inductively coupled plasma optical emission spectroscopy (Tables 5 - 7).

The second syringe-core was removed from the grab sample following the collection of the surface sediments, sealed at the base using a plastic bag and electrician's tape, and stored vertically at -20°C. Chlorophyll concentration was determined with the acidification method as described by Arar and Collins (1997). Once in the lab, the chlorophyll syringe cores were partially thawed while clamp mounted to an apparatus stand. Starting with the surface layer, 0.5 cm increments were extruded with an inverted core plunger and sediments removed with a clean razor blade. Each 0.5 cm sediment increment was transferred to a scintillation vial with 10 ml of 90% acetone. These samples were stored in a dark refrigerator at 4°C for 24 hours. The acetone supernatant of each sample was transferred to a cuvette and the fluorescence readings recorded using Turner Designs 10-AU Fluorometer to measure chlorophyll a (F_a). Two drops of 10% HCL were then mixed into the aqueous extraction and the solution was re-assayed with the fluorometer to measure chlorophyll-b (F_b) (Tables 8 - 10).

MEIOFAUNA SAMPLING

Meiofauna samples were collected from one grab sample deployed before and after fishing. A 6-cc syringe-core was carefully inserted into the deepest portion of the grab sample before the grab was emptied. The core sample for meiofauna was removed from the grab sample, extruded using the syringe plunger, and sliced to provide 1 cm depth intervals. Each of the 1 cm (5 ml) sediment slices was placed in a labelled jar with 5% formalin and seawater. At the laboratory, the meiofauna samples were washed through a 63 μm mesh to remove formalin and soaked overnight in an alcohol rose-bengal solution. Meiofauna were identified and sorted to 21 different taxonomic categories as shown in Table 5. A binocular dissecting microscope (35-400 X) was used in the sorting (Tables 11 – 14).

MACROFAUNA SAMPLING

Sieving was conducted using a stack of sieves (1.0 cm, 0.5 mm mesh size; 70 x 70 cm frame) set on the deck and a wash down hose. The contents of the grabs were emptied into a 65 litre tote then washed with seawater onto the sieves. Larger invertebrates retained on the 1.0 cm sieve were removed with forceps and put into a labelled jar. The washed contents remaining on the 0.5 mm mesh were then transferred to a 0.5 mm Tyler sieve (approx. 20.5 cm diameter) and then into the jar and fixed with 10% formalin and seawater. Once in the laboratory, samples were washed through a 0.5 mm sieve, stained with an alcohol rose-bengal solution overnight and preserved in 70% isopropanol. Macrofauna identification to the lowest taxonomic category possible was conducted under a binocular dissecting scope at 60-500 times resolving power. Broken animals were only counted as individuals when the head or shell hinge (in the case of bivalves) were present. Macrofauna counts are standardized by the grab sediment-sample volume (dm^3) and a standard grab surface area (0.1 m^2 van Veen Grab).

4.0 RESULTS

In general, the soft, muddy sediment texture was dominated with grain size fractions ranging between clay (2 μm) and silt (63 μm), suggesting that Simoom Sound favours depositional processes over seabed resuspension and consolidation processes. The high water content and organic content supports deposition and near-bed recycling. The trace-elements represent

background values typical of British Columbia's coastline. The meiofauna community consisted of the following taxa: Acari, isopod, amphipod, cumacean, ostracod, polychaetes, bivalvia, calanoid and harpacticoid copepods, copepod nauplii, gastropod, foraminifera, rotifers, scaphopod, and turbellaria. The macrofauna community was comprised of the following taxa categories: polychaeta, oligochaeta, anopla, bivalvia, gastropoda, crustacea, copepoda, and Ophiuroidea.

DATA TABLES

Table 1: Position data for grab locations supporting sediment and meiofaunal attributes collection at Simoom Sound in November 13-16, 2000, and February 21, 2001. TR = Otter trawl; TRB = Beam trawl; TP = Trap lines; PRE = before fishing; POST = after fishing; n.d. = no data.

Date	Time (PST)	Location / transect	Latitude (N)	Longitude (W)	Depth (m)	% grab fullness
13-Nov-00	12:50	TR1 PRE	50° 51.104’	126° 29.300’	64.0	100
13-Nov-00	12:14	TR2 PRE	50° 51.043’	126° 29.348’	51.2	100
13-Nov-00	14:22	TR3 PRE	50° 50.940’	126° 29.249’	62.2	100
13-Nov-00	15:05	TP1 PRE	50° 50.912’	126° 28.557’	64.0	100
13-Nov-00	15:48	TP2 PRE	50° 50.836’	126° 28.685’	67.6	100
13-Nov-00	16:24	TP3 PRE	50° 50.774’	126° 28.723’	71.3	100
21-Feb-01	16:42	TRB1 PRE	50° 51.323’	126° 29.835’	45.2	n.d.
21-Feb-01	18:00	TRB2 PRE	50° 51.278’	126° 29.873’	48.0	n.d.
22-Feb-01	8:43	TRB3 PRE	50° 51.174’	126° 29.867’	49.5	n.d.
15-Nov-00	12:23	TR1 POST	50° 51.113’	126° 29.298’	62.2	100
15-Nov-00	12:55	TR2 POST	50° 51.053’	126° 29.356’	60.0	100
15-Nov-00	13:41	TR3 POST	50° 50.949’	126° 29.298’	60.3	100
15-Nov-00	16:07	TP1 POST	50° 50.910’	126° 28.615’	65.8	100
15-Nov-00	15:47	TP2 POST	50° 50.852’	126° 28.665’	65.8	100
15-Nov-00	15:12	TP3 POST	50° 50.787’	126° 28.717’	64.0	100
22-Feb-01	10:00	TRB1POST	50° 51.347’	126° 29.827’	52.5	100
22-Feb-01	10:50	TRB2 POST	50° 51.270’	126° 29.948’	50.1	100
22-Feb-01	11:29	TRB3 POST	50° 51.185’	126° 29.898’	50.5	100

Table 2: The relative proportion of grain size categories collected from replicate seabed samples (1, 2, 3) at Simoom Sound in November 13-16, 2000 and February 21, 2001. TR = Otter trawl; TRB = Beam trawl; TP = Trap lines; PRE = before fishing; POST = after fishing; n.d. = no data.

Date	Station	<2mm	<1mm	<.5mm	<.25mm	<.10mm	<63 μm	<4 μm	<2 μm
13-Nov-00	TR1 PRE	0.2	0.2	0.2	4.2	2.6	33.1	18.9	40.6
13-Nov-00	TR2 PRE	0.1	0.4	2.7	7.3	3.3	47.4	5.0	33.8
13-Nov-00	TR3 PRE	0.5	0.5	0.5	5.1	0.9	49.9	6.4	36.2
15-Nov-00	TR1 POST	0.1	0.1	0.3	8.0	2.9	46.8	7.5	34.3
15-Nov-00	TR2 POST	0.1	0.1	0.1	1.4	1.4	38.4	10.1	48.4
15-Nov-00	TR3 POST	0.7	0.7	0.6	0.5	0.2	41.7	13.5	42.1
13-Nov-00	TP1 PRE	0.1	0.3	0.3	4.5	3.6	45.6	10.7	34.9
13-Nov-00	TP2 PRE	0.2	0.3	0.2	2.9	2.3	50.9	6.7	36.5
13-Nov-00	TP3 PRE	0.1	0.4	0.3	1.4	1.6	46.0	6.3	43.9
16-Nov-00	TP1 POST	0.1	0.3	0.6	1.7	1.0	54.8	5.2	36.3
16-Nov-00	TP2 POST	0.6	0.6	0.5	1.1	0.6	56.4	3.5	36.7
16-Nov-00	TP3 POST	0.1	0.1	0.1	0.4	0.5	47.0	5.8	46.0
21-Feb-01	TRB1 PRE	1.8	n.d.	n.d.	n.d.	n.d.	63.9	3.9	30.4
21-Feb-01	TRB2 PRE	1.5	n.d.	n.d.	n.d.	n.d.	60.2	5.3	33
21-Feb-01	TRB3 PRE	1.5	n.d.	n.d.	n.d.	n.d.	53.6	16.9	28.0
21-Feb-01	TRB1 POST	0.5	n.d.	n.d.	n.d.	n.d.	64.8	4.7	30.0
21-Feb-01	TRB2 POST	1.7	n.d.	n.d.	n.d.	n.d.	68.2	2.1	28.0
21-Feb-01	TRB3 POST	2.3	n.d.	n.d.	n.d.	n.d.	69.4	3.7	24.6

Table 3: Proportion estimates of biochemical sediment variables collected from replicate seabed samples (1,2,3) at Simoom Sound in November 13 - 16, 2000, and February 21, 2001. TR = Otter trawl; TRB = Beam trawl; TP = Trap lines; PRE = before fishing; POST = after fishing.

Date	Station	Organic content (%)	Water content (%)	Total Nitrogen (%)	Total Carbon (%)	Organic Carbon (%)
13-Nov-00	TR1 PRE	18.0	84.5	0.81	8.23	6.68
13-Nov-00	TR2 PRE	22.1	82.4	0.85	8.52	7.03
13-Nov-00	TR3 PRE	22.7	82.0	0.84	8.35	6.67
15-Nov-00	TR1 POST	20.6	85.4	0.81	8.06	6.48
15-Nov-00	TR2 POST	21.6	83.0	0.80	8.17	6.76
15-Nov-00	TR3 POST	23.1	82.6	0.84	8.21	6.97
13-Nov-00	TP1 PRE	21.1	81.2	0.72	7.89	6.59
13-Nov-00	TP2 PRE	20.2	80.9	0.70	7.64	6.11
13-Nov-00	TP3 PRE	20.0	81.9	0.71	7.33	5.87
16-Nov-00	TP1 POST	20.3	81.5	0.73	8.02	6.44
16-Nov-00	TP2 POST	21.2	81.9	0.70	7.45	6.02
16-Nov-00	TP3 POST	21.0	80.9	0.72	7.39	5.98
21-Feb-01	TRB1 PRE	22.1	84.4	0.93	8.95	8.82
21-Feb-01	TRB2 PRE	21.1	86.5	0.91	8.67	8.56
21-Feb-01	TRB3 PRE	23.7	83.6	0.99	9.61	9.49
21-Feb-01	TRB1 POST	21.7	83.5	0.90	8.97	8.87
21-Feb-01	TRB2 POST	23.2	84.0	0.95	9.26	9.09
21-Feb-01	TRB3 POST	23.7	84.2	0.99	9.40	9.30

Table 4: Sediment trace-element concentrations ($\mu g\ g^{-1}$) in Simoom Sound collected before (PRE) and after (POST) otter trawling in November 13-16, 2000.

	TR1 PRE	TR2 PRE	TR3 PRE	TR1 POST	TR2 POST	TR3 POST
Aluminum	16400	12700	15300	12600	17800	17100
Antimony	7	2	6.9	5	6.5	6.5
Arsenic	14.4	9.5	17.9	11	14.5	16.4
Barium	77.7	48.2	73.4	48	83.8	83.2
Beryllium	0.085	0.075	0.089	0.05	0.07	0.11
Bismuth	1	1	1	1	1	1
Cadmium	1.4	1.2	1.4	1.05	1.54	1.54
Calcium	14200	10200	13200	11300	15000	14500
Chromium	18.2	14.4	17.2	13	19	19.4
Cobalt	4.38	3.39	4.07	3.19	4.34	4.53
Copper	30.1	21.2	27.2	22	31.2	31.3
Iron	22400	15900	20300	16000	24000	22400
Lead	4.88	3.24	5.61	3.49	4.54	5.03
Lithium	13.7	9.41	12.2	9.88	14	13.5
Magnesium	14400	9710	12400	11400	14900	13900
Manganese	136	110	127	103	143	142
Molybdenum	3.5	3	4	3	4	4
Nickel	11.4	8.32	10.3	7.93	11.4	11.5
Phosphorus	827	657	764	649	838	921
Potassium	6030	4380	5260	4940	6240	5880
Selenium	2	2	2	2	2	2
Silicon	163	215	115	112	126	84.2
Silver	1.15	0.1	0.2	0.15	0.15	0.2
Sodium	51800	31500	40100	44400	50400	46200
Strontium	64.2	47.4	55.6	51.4	63.9	62.7
Sulphur	14200	10100	12700	10400	15800	14400
Thorium	0.2	0.2	0.2	0.2	0.2	0.2
Tin	0.7	0.75	0.89	0.6	0.2	0.35
Titanium	742	682	483	399	788	822
Uranium	3	3	3	3	3	3
Vanadium	33.7	26.2	30.4	24.6	34.4	34.5
Zinc	54.3	40.1	52.6	39.6	56.9	56.3
Zirconium	5.13	4.08	4.76	3.49	5.09	5.78

Table 5: Sediment trace-element concentrations ($\mu g\ g^{-1}$) in Simoom Sound collected before (PRE) and after (POST) beam trawling in February 21, 2001

	TRB1 PRE	TRB2 PRE	TRB3 PRE	TRB1 POST	TRB2 POST	TRB3 POST
Aluminum	13700	18600	12500	16200	19500	18100
Antimony	2.5	7.5	<.1	6	7.9	5.5
Arsenic	11	14.4	8.5	11.5	13.9	20
Barium	68.2	89.6	65.2	82.3	99.7	99.3
Beryllium	0.055	0.04	0.05	0.03	0.069	0.085
Bismuth	1	1	1	1	1	1
Cadmium	1.35	1.75	1.32	1.69	2.23	1.95
Calcium	10500	13300	9560	14400	14400	12700
Chromium	16.2	20	14.8	19.3	23.7	21.9
Cobalt	3.34	4.73	3.34	4.04	5.11	4.69
Copper	24.4	33.3	24	31.1	38.2	37.7
Iron	16900	23900	16400	21000	25300	23500
Lead	3.29	3.88	2.3	2.64	5.06	4.79
Lithium	10.3	14.2	9.86	12.7	15.8	14.3
Magnesium	11400	15400	10900	13800	15500	15200
Manganese	115	145	104	130	234	211
Molybdenum	2.5	4.98	3	4.5	5.95	4.5
Nickel	9.06	11.8	8.67	11	14	12.6
Phosphorus	707	1010	772	953	1090	1120
Potassium	4630	6270	4580	5840	6700	6590
Selenium	2	2	2	2	2	2
Silicon	129	128	116	95.8	117	114
Silver	0.1	0.1	0.1	0.1	0.15	0.15
Sodium	39500	52700	40000	48300	50100	52900
Strontium	50.8	63.2	48.3	63.4	68.5	65.4
Sulphur	10800	16100	11800	14800	18000	16200
Thorium	0.2	0.2	0.2	0.2	0.2	0.2
Tin	0.2	0.2	0.2	0.2	0.2	0.2
Titanium	323	896	460	803	858	808
Uranium	3	3	3	3	3	3
Vanadium	27.8	36.5	25.4	32.4	41.2	36.7
Zinc	43.9	61.7	42.9	56.4	68.5	63.4
Zirconium	3.34	5.52	3.74	4.84	5.95	5.79

Table 6: Sediment trace-element concentrations ($\mu g\ g^{-1}$) in Simoom Sound collected before (PRE) and after (POST) trapping in November 13-16, 2000.

	TP1 PRE	TP2 PRE	TP3 PRE	TP1 POST	TP2 POST	TP3 POST
Aluminum	17800	17600	17400	18300	15800	17600
Antimony	8.4	8	7	8.5	8	6
Arsenic	11.9	9.97	10.5	14	13.9	10.4
Barium	82.5	82.3	76.8	84.2	72.6	77.6
Beryllium	0.04	0.06	<.02	0.045	0.1	0.035
Bismuth	1	1	1	1	1	1
Cadmium	1.4	1.3	1.09	1.45	1.31	1.15
Calcium	15100	19900	16300	15400	14200	16200
Chromium	18	18	16.4	18.5	17.4	17.4
Cobalt	4.72	4.54	4.39	4.84	4.63	4.58
Copper	32	30.6	28.6	33.3	30.3	29.9
Iron	23900	24400	23400	25900	21900	23400
Lead	4.72	4.79	4.74	4.69	6.12	4.53
Lithium	15.5	14.5	13.4	15.4	14.3	13.8
Magnesium	14100	13900	14200	13700	13100	14000
Manganese	224	223	136	232	140	140
Molybdenum	3	3	3	3.5	4	4
Nickel	10.8	11	10.6	11.8	11.1	11.2
Phosphorus	750	778	778	823	806	781
Potassium	5720	5830	5730	5680	5270	5670
Selenium	2	2	2	2	2	2
Silicon	71.6	94.7	309	118	103	109
Silver	0.15	0.25	0.1	0.15	0.3	0.1
Sodium	43400	54100	47400	36900	44000	46700
Strontium	62.1	68.3	61.3	60.3	62.2	63.7
Sulphur	13100	13400	12500	13800	11800	13100
Thorium	0.2	0.2	0.2	0.2	0.2	0.2
Tin	0.2	0.2	0.2	0.2	1	0.2
Titanium	746	808	758	872	677	831
Uranium	3	3	3	3	3	3
Vanadium	36.8	35.5	32.3	36.6	33.3	34.4
Zinc	54.7	53.8	50.8	56.8	53.2	52.7
Zirconium	4.62	4.84	4.59	5.28	4.98	4.88

Table 7: Sediment chlorophyll concentration (μg ml^{-1}) in Simoom Sound collected before (PRE) and after (POST) otter trawling (TR) in November 13-16, 2000. Depth refers to syringe-core slice depth-interval. ON = overnight.

Date	Station	Depth (mm)	[chl a] (μg mL^{-1})	[pheo a] (μg mL^{-1})
13-Nov-00	TR1 PRE	0-5	0.103	0.540
13-Nov-00	TR1 PRE	5-10	0.107	0.501
13-Nov-00	TR1 PRE	10-15	0.087	0.535
13-Nov-00	TR1 PRE	15-20	0.097	0.503
13-Nov-00	TR1 PRE	20-25	0.116	0.441
15-Nov-00	TR1 POST	0-5	0.093	0.488
15-Nov-00	TR1 POST	5-10	0.095	0.527
15-Nov-00	TR1 POST	10-15	0.097	0.511
15-Nov-00	TR1 POST	15-20	0.091	0.507
15-Nov-00	TR1 POST	20-25	0.103	0.494
13-Nov-00	TR2 PRE	0-5	0.097	0.398
13-Nov-00	TR2 PRE	5-10	0.124	0.405
13-Nov-00	TR2 PRE	10-15	0.107	0.447
13-Nov-00	TR2 PRE	15-20	0.114	0.429
13-Nov-00	TR2 PRE	20-25	0.107	0.413
15-Nov-00	TR2 POST	0-5	0.087	0.466
15-Nov-00	TR2 POST	5--10	0.077	0.443
15-Nov-00	TR2 POST	10-15	0.083	0.459
15-Nov-00	TR2 POST	15-20	0.087	0.462
15-Nov-00	TR2 POST	20-25	0.101	0.451
13-Nov-00	TR3 PRE	0-5	0.095	0.468
13-Nov-00	TR3 PRE	5-10	0.109	0.406
13-Nov-00	TR3 PRE	10-15	0.103	0.431
13-Nov-00	TR3 PRE	15-20	0.105	0.429
13-Nov-00	TR3 PRE	20-25	0.103	0.433
15-Nov-00	TR3 POST	0-5	0.093	0.521
15-Nov-00	TR3 POST	5-10	0.065	0.498
15-Nov-00	TR3 POST	10-15	0.041	0.523
15-Nov-00	TR3 POST	15-20	0.089	0.425
15-Nov-00	TR3 POST	20-25	0.077	0.474

Table 8: Sediment chlorophyll concentration (μg ml^{-1}) in Simoom Sound collected before (PRE) and after (POST) beam trawling (TR), in February 21, 2001. Depth refers to syringe-core slice depth-interval.

Date	Station	Depth (mm)	[chl a] (μg mL^{-1})	[pheo a] (μg mL^{-1})
21-Feb-01	TRB1 PRE	0-5	0.087	0.478
21-Feb-01	TRB1 PRE	5-10	0.079	0.519
21-Feb-01	TRB1 PRE	10-15	0.089	0.498
21-Feb-01	TRB1 PRE	15-20	0.103	0.497
21-Feb-01	TRB1 PRE	20-25	0.103	0.492
23-Feb-01	TRB1 POST	0-5	0.105	0.482
23-Feb-01	TRB1 POST	5-10	0.109	0.499
23-Feb-01	TRB1 POST	10-15	0.122	0.527
23-Feb-01	TRB1 POST	15-20	0.081	0.545
23-Feb-01	TRB1 POST	20-25	0.097	0.527
21-Feb-01	TRB2 PRE	0-1	0.132	0.751
21-Feb-01	TRB2 PRE	1-2	0.124	0.661
21-Feb-01	TRB2 PRE	3-5	0.116	0.742
21-Feb-01	TRB2 PRE	5-10	0.083	0.402
21-Feb-01	TRB2 PRE	10-15	0.081	0.392
21-Feb-01	TRB2 PRE	15-20	0.073	0.355
21-Feb-01	TRB2 PRE	20-25	0.059	0.400
23-Feb-01	TRB2 POST	0-5	0.097	0.324
23-Feb-01	TRB2 POST	5-10	0.067	0.390
23-Feb-01	TRB2 POST	10-15	0.071	0.408
23-Feb-01	TRB2 POST	15-20	0.093	0.492
23-Feb-01	TRB2 POST	20-25	0.111	0.552
22-Feb-01	TRB3 PRE	0-5	0.087	0.460
22-Feb-01	TRB3 PRE	5-10	0.083	0.445
22-Feb-01	TRB3 PRE	10-15	0.089	0.394
22-Feb-01	TRB3 PRE	15-20	0.089	0.421
22-Feb-01	TRB3 PRE	20-25	0.089	0.419
23-Feb-01	TRB3 POST	0-5	0.109	0.566
23-Feb-01	TRB3 POST	5-10	0.097	0.464
23-Feb-01	TRB3 POST	10-15	0.099	0.507
23-Feb-01	TRB3 POST	15-20	0.124	0.493
23-Feb-01	TRB3 POST	20-25	0.111	0.562

Table 9: Sediment chlorophyll concentration (μg ml^{-1}) in Simoom Sound collected before (PRE) and after (POST) trapping (TR), in November 13-16, 2000. Depth refers to syringe-core slice depth-interval.

Date	Station	Depth (mm)	[chl a] (μg mL^{-1})	[pheo a] (μg mL^{-1})
13-Nov-00	TP1 PRE	0-5	0.116	0.509
13-Nov-00	TP1 PRE	5-10	0.109	0.484
13-Nov-00	TP1 PRE	10-15	0.103	0.494
13-Nov-00	TP1 PRE	15-20	0.089	0.521
13-Nov-00	TP1 PRE	20-25	0.099	0.503
16-Nov-00	TP1 POST ON	0-5	0.083	0.343
16-Nov-00	TP1 POST ON	5-10	0.087	0.427
16-Nov-00	TP1 POST ON	10-15	0.109	0.507
16-Nov-00	TP1 POST ON	15-20	0.116	0.497
16-Nov-00	TP1 POST ON	20-25	0.124	0.427
13-Nov-00	TP2 PRE	0-5	0.093	0.472
13-Nov-00	TP2 PRE	5-10	0.097	0.488
13-Nov-00	TP2 PRE	10-15	0.107	0.480
13-Nov-00	TP2 PRE	15-20	0.128	0.468
13-Nov-00	TP2 PRE	20-25	0.093	0.486
16-Nov-00	TP2 POST ON	0-5	0.065	0.402
16-Nov-00	TP2 POST ON	5-10	0.111	0.548
16-Nov-00	TP2 POST ON	10-15	0.101	0.468
16-Nov-00	TP2 POST ON	15-20	0.097	0.480
16-Nov-00	TP2 POST ON	20-25	0.124	0.515
13-Nov-00	TP3 PRE	0-5	0.097	0.503
13-Nov-00	TP3 PRE	5-10	0.081	0.535
13-Nov-00	TP3 PRE	10-15	0.099	0.507
13-Nov-00	TP3 PRE	15-20	0.093	0.511
13-Nov-00	TP3 PRE	20-25	0.093	0.560
16-Nov-00	TP3 POST ON	0-5	0.101	0.636
16-Nov-00	TP3 POST ON	5-10	0.114	0.531
16-Nov-00	TP3 POST ON	10-15	0.142	0.526
16-Nov-00	TP3 POST ON	15-20	0.152	0.532
16-Nov-00	TP3 POST ON	20-25	0.134	0.566

Table 10: Meiofauna taxonomic abbreviations referred to in Tables 11, 12, and 13.

Abbreviated Name	Taxa	Stage
ACAR	Acari	adult
AMPH	Amphipoda	adult
BIVA	Bivalvia	larvae
CALN	Calanoida	adult
COPN	Copepoda	nauplii
CUMA	Cumacea	adult
EGG	Invertebrate	
FORA	Foraminifera	
GASA	Gastropoda	adult
HARP	Harpacticoida	adult
HYDR	Hydroida	sessile
ISOP	Isopoda	adult
KINO	Kinorhyncha	adult
NEMA	Nematoda	adult
NEMR	Nemertea	adult
OLIG	Oligochaeta	adult
OSTR	Ostracoda	adult
POLA	Polychaeta	adult
ROTI	Rotifera	adult
SCAP	Scaphopoda	adult
TURB	Turbellaria	adult

Table 11: Meiofaunal abundance (No. ml^{-3}) before (PRE) and after (POST) otter trawling in Simoom Sound, in November 13-16, 2000. Refer to Table 5 for meiofauna acronyms. Each 1-cm core-slice has a volume of 5.5 ml and a surface area of 5.5 cm^2

Date	Site		Depth (cm)	FORA	TURB	NEMR	NEMA	KINO	POLA	BIVA	CALN	HARP	COPN	OSTR	LARV	EGG
13-Nov-00	TR1	PRE	1	16.0	0.0	0.0	20.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	2.4
13-Nov-00	TR1	PRE	2	3.3	0.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Nov-00	TR1	PRE	3	2.4	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
13-Nov-00	TR1	PRE	4	1.1	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4
13-Nov-00	TR1	PRE	5	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Nov-00	TR2	PRE	1	3.1	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
13-Nov-00	TR2	PRE	2	2.2	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Nov-00	TR2	PRE	3	6.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Nov-00	TR2	PRE	4	2.4	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4
13-Nov-00	TR2	PRE	5	2.7	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
13-Nov-00	TR3	PRE	1	0.7	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Nov-00	TR3	PRE	2	0.5	0.0	0.0	4.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
13-Nov-00	TR3	PRE	3	3.8	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Nov-00	TR3	PRE	4	5.8	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4
13-Nov-00	TR3	PRE	5	2.5	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
15-Nov-00	TR1	POST	1	6.9	0.0	0.0	27.0	0.4	0.0	0.0	0.0	1.8	0.5	0.0	0.0	5.8
15-Nov-00	TR1	POST	2	2.9	0.2	0.0	10.7	0.0	0.4	0.0	0.0	0.2	0.4	0.0	0.0	3.1
15-Nov-00	TR1	POST	3	0.5	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.2
15-Nov-00	TR1	POST	4	1.6	0.0	0.0	10.2	0.0	0.2	0.0	0.0	0.5	0.4	0.0	0.0	2.7
15-Nov-00	TR1	POST	5	5.3	0.0	0.0	18.1	0.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	55.1
15-Nov-00	TR2	POST	1	9.2	0.0	0.2	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.7
15-Nov-00	TR2	POST	2	5.1	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
15-Nov-00	TR2	POST	3	4.2	0.0	0.2	8.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.1
15-Nov-00	TR2	POST	4	12.5	0.0	0.0	31.7	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.3
15-Nov-00	TR2	POST	5	8.5	0.0	0.0	15.4	0.2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	2.4
15-Nov-00	TR3	POST	1	5.4	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4
15-Nov-00	TR3	POST	2	6.3	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
15-Nov-00	TR3	POST	3	4.7	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
15-Nov-00	TR3	POST	4	6.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
15-Nov-00	TR3	POST	5	1.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 12: Meiofaunal abundance (No. ml^{-3}) before (PRE) and after (POST) beam trawling in Simoom Sound, in February 21, 2001. Refer to Table 5 for meiofauna acronyms. Each 1-cm core-slice has a volume of 5.5 ml and a surface area of 5.5 cm^2

Date	Site		Depth (cm)	FORA	TURB	KINO	ROTI	NEMA	POLA	BIVA	CALN	HARP	COPN	OSTR	EGG
21-Feb-01	TRB1	PRE	1	5.1	0.0	0.2	0.0	14.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2
21-Feb-01	TRB1	PRE	2	6.0	0.0	0.0	0.0	17.8	0.0	0.2	0.0	0.4	0.2	0.2	21.0
21-Feb-01	TRB1	PRE	3	1.5	0.0	0.0	0.0	6.0	0.2	0.2	0.0	0.0	0.2	0.0	0.4
21-Feb-01	TRB1	PRE	4	11.2	0.5	0.2	0.0	6.7	0.7	0.0	0.0	0.4	0.2	0.0	0.9
21-Feb-01	TRB1	PRE	5	15.8	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	2.0
21-Feb-01	TRB1	PRE	6	28.6	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	2.2
21-Feb-01	TRB1	PRE	7	20.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	2.7
21-Feb-01	TRB2	PRE	1	16.7	0.0	0.0	0.0	9.8	0.2	0.0	0.0	1.3	0.0	0.0	3.4
21-Feb-01	TRB2	PRE	2	14.3	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	1.5
21-Feb-01	TRB2	PRE	3	15.4	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	2.9
21-Feb-01	TRB2	PRE	4	23.6	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.2	1.6
21-Feb-01	TRB2	PRE	5	39.2	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	2.5
21-Feb-01	TRB2	PRE	6	29.0	0.0	0.0	0.0	2.2	0.2	0.0	0.0	0.2	0.0	0.0	2.4
21-Feb-01	TRB2	PRE	7	19.8	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.4
22-Feb-01	TRB3	PRE	1	10.0	0.0	0.0	0.0	4.5	0.2	0.0	0.0	0.2	0.0	0.0	4.2
22-Feb-01	TRB3	PRE	2	34.1	1.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	2.2
22-Feb-01	TRB3	PRE	3	22.5	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	2.0
22-Feb-01	TRB3	PRE	4	32.5	0.0	0.2	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	20.9
22-Feb-01	TRB3	PRE	5	24.8	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5
22-Feb-01	TRB3	PRE	6	21.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2
23-Feb-01	TRB1	POST	1	39.7	0.0	0.0	0.0	20.7	0.7	0.2	0.0	0.5	0.2	0.0	2.7
23-Feb-01	TRB1	POST	2	23.9	0.0	0.0	0.0	16.3	0.4	0.0	0.0	1.3	0.7	0.0	7.3
23-Feb-01	TRB1	POST	3	26.5	0.0	0.4	0.0	8.3	0.0	0.0	0.0	0.2	0.0	0.0	5.1
23-Feb-01	TRB1	POST	4	23.9	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.2	0.0	0.0	5.1
23-Feb-01	TRB1	POST	5	33.7	0.2	0.2	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	4.2
23-Feb-01	TRB1	POST	6	16.7	0.4	0.0	0.0	3.4	0.2	0.0	0.0	0.0	0.0	0.0	2.0
23-Feb-01	TRB2	POST	1	13.1	0.0	0.0	0.0	12.9	0.4	0.0	0.0	0.2	0.0	0.0	3.6
23-Feb-01	TRB2	POST	2	19.4	0.0	0.0	0.0	13.6	0.0	0.0	0.0	0.2	0.0	0.0	1.3
23-Feb-01	TRB2	POST	3	14.5	0.0	0.0	0.0	8.2	0.2	0.0	0.4	0.0	0.0	0.0	1.8
23-Feb-01	TRB2	POST	4	22.7	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.4	0.0	2.2
23-Feb-01	TRB2	POST	5	29.4	0.0	0.2	0.4	11.6	0.0	0.0	0.0	0.2	0.2	0.0	4.7
23-Feb-01	TRB2	POST	6	12.5	0.0	0.0	0.0	4.2	0.0	0.2	0.0	0.0	0.0	0.0	1.6
23-Feb-01	TRB2	POST	7	19.9	0.0	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0	0.0	3.4
23-Feb-01	TRB3	POST	1	23.0	0.0	0.0	0.0	11.8	0.4	0.0	0.0	0.0	0.4	0.2	6.7
23-Feb-01	TRB3	POST	2	82.9	0.0	0.4	0.0	10.9	0.0	0.0	0.0	0.0	0.0	0.0	4.4
23-Feb-01	TRB3	POST	3	16.1	0.0	0.0	0.0	1.6	0.0	0.2	0.0	0.0	0.0	0.0	0.4
23-Feb-01	TRB3	POST	4	40.1	0.0	0.0	0.0	5.6	0.2	0.0	0.0	0.2	0.0	0	2.2
23-Feb-01	TRB3	POST	5	31.9	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0	1.1
23-Feb-01	TRB3	POST	6	16.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0	1.8
23-Feb-01	TRB3	POST	7	38.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0	2.4
23-Feb-01	TRB3	POST	8	53.9	0.0	0.0	0.0	2.7	0.0	0.	0.0	0.0	0.0	0	2.9

Table13: Meiofaunal abundance (No. ml^{-3}) before (PRE) and after (POST) trapping in Simoom Sound, in November 13-16, 2000. Refer to Table 5 for abbreviations. Each 1-cm core-slice has a volume of 5.5 ml and a surface area of 5.5 cm^2

Date	Site		Depth (cm)	FORA	TURB	NEMR	NEMA	KINO	POLA	BIVA	CALN	HARP	COPN	OSTR	LARV	EGG
15-Nov-00	TP1	PRE	1	4.2	0.0	0.2	4.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.9
15-Nov-00	TP1	PRE	2	3.1	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	1.1
15-Nov-00	TP1	PRE	3	0.7	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
15-Nov-00	TP1	PRE	4	0.4	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Nov-00	TP1	PRE	5	0.9	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
13-Nov-00	TP2	PRE	1	15.2	0.0	0.0	1.8	0.0	0.5	0.0	0.0	4.2	2.5	0.5	0.0	3.1
13-Nov-00	TP2	PRE	2	1.5	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.4
13-Nov-00	TP2	PRE	3	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Nov-00	TP2	PRE	4	2.7	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Nov-00	TP2	PRE	5	1.6	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.4
13-Nov-00	TP3	PRE	1	2.0	0.5	0.5	14.3	0.0	1.1	0.2	0.0	4.7	0.7	0.0	0.0	0.7
13-Nov-00	TP3	PRE	2	0.9	0.0	0.0	3.6	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.4
13-Nov-00	TP3	PRE	3	1.6	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
13-Nov-00	TP3	PRE	4	4.7	0.0	0.0	1.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
13-Nov-00	TP3	PRE	5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Nov-00	TP1	POST	1	5.4	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.5
16-Nov-00	TP1	POST	2	2.4	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
16-Nov-00	TP1	POST	3	10.9	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.0	0.2
16-Nov-00	TP1	POST	4	1.8	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Nov-00	TP1	POST	5	17.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
16-Nov-00	TP2	POST	1	1.8	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
16-Nov-00	TP2	POST	2	6.7	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
16-Nov-00	TP2	POST	3	5.8	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
16-Nov-00	TP2	POST	4	5.8	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
16-Nov-00	TP2	POST	5	4.9	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4
16-Nov-00	TP3	POST	1	3.4	0.0	0.2	10.9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4
16-Nov-00	TP3	POST	2	0.5	0.0	0.0	5.1	0.0	0.5	0.2	0.0	0.2	0.0	0.2	0.0	0.0
16-Nov-00	TP3	POST	3	0.9	0.0	0.0	4.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
16-Nov-00	TP3	POST	4	0.7	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Nov-00	TP3	POST	5	2.2	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5

Table14: Position data for grab locations supporting macrofaunal collection at Simoom Sound in November 13-16, 2000, and February 21, 2001. TR = Otter trawl; TRB = Beam trawl; TP = Trap-lines; PRE = before fishing; POST = after fishing; n.d. = no data.

Date	Time (PST)	Location / transect	Latitude (N)	Longitude (W)	Depth (m)	% grab fullness
13-Nov-00	9:17	TR1 PRE	50° 51.112’	126° 29.309’	62.2	100
13-Nov-00	12:07	TR2 PRE	50° 51.042’	126° 29.356’	51.2	100
13-Nov-00	14:16	TR3 PRE	50° 50.956’	126° 29.301’	62.2	100
13-Nov-00	15:54	TP1 PRE	50° 50.904’	126° 28.610’	65.8	100
13-Nov-00	15:35	TP2 PRE	50° 50.847’	126° 28.672’	67.6	100
13-Nov-00	16:15	TP3 PRE	50° 50.782’	126° 28.727’	71.3	100
21-Feb-01	16:02	TRB1 PRE	50° 51.353’	126° 30.893’	51.2	n.d.
21-Feb-01	17:47	TRB2 PRE	50° 51.265’	126° 29.832’	48.5	n.d.
22-Feb-01	8:21	TRB3 PRE	50° 51.205’	126° 29.952’	48.2	n.d.
15-Nov-00	12:12	TR1 POST	50° 51.116’	126° 29.312’	58.2	100
15-Nov-00	12:46	TR2 POST	50° 51.051’	126° 29.368’	58.5	100
15-Nov-00	13:30	TR3 POST	50° 50.955’	126° 29.295’	60.3	100
15-Nov-00	14:28	TP1 POST	50° 50.912’	126° 28.620’	64.0	100
15-Nov-00	14:46	TP2 POST	50° 50.850’	126° 28.668’	65.8	100
15-Nov-00	14:46	TP3 POST	50° 50.784’	126° 28.720’	65.8	100
22-Feb-01	9:35	TRB1POST	50° 51.382’	126° 29.967’	50.8	100
22-Feb-01	10:33	TRB2 POST	50° 51.256’	126° 29.851’	50.8	100
22-Feb-01	11:29	TRB3 POST	50° 51.185’	126° 29.898’	50.5	100

Table15: Macrofauna abundance (No. m^{-2}) before (PRE) and after (POST) otter trawling in Simoom Sound, in November 13-16, 2000. Please see polychaete abundance in Table 18.

Taxonomic Division	Species	13-Nov-00 TR1 PRE	15-Nov-00 TR1 POST	13-Nov-00 TR2 PRE	15-Nov-00 TR2 POST	13-Nov-00 TR3 PRE	15-Nov-00 TR3 POST
Cl. Oligochaeta							
F. Tubificidae		1.39	0.67	0.61	0.94	0.33	0.22
Nemertinea (Cl. Anopla)							
O. Heteronemertea	*Cerebratulus* sp.	0.11	0.06	0.00	0.11	0.00	0.00
O. Paleonemertea		0.06	0.00	0.00	0.00	0.00	0.06
Cl. Bivalvia							
F. Lucinidae	*Parvilucina tenuisculpta*	1.83	4.17	3.89	6.11	4.94	5.67
	Lucinoma annulatum	0.00	0.11	0.00	0.00	0.28	0.06
F. Nuculidae	*Acila castrensis*	0.00	0.00	0.06	0.00	0.00	0.00
Cl. Gastropoda							
F. Cyclichnidae	*Cylichna attonsa*	0.00	0.06	0.56	0.28	0.00	0.28
F. Collumbellidae	*Astyris gausapata*	0.22	0.17	0.06	0.00	0.17	0.00
	Other	0.06	0.00	0.06	0.17	0.28	0.06
Cl. Crustacea							
F. Mysidae	*Mysis litoralis*	0.06	0.00	0.06	0.06	0.00	0.00
O. Amphipoda							
SubO. Gammaridea		0.00	0.11	0.22	0.17	0.06	0.50
O. Decapoda							
F. Pinnatheridae	*Pinnixa eburna*	0.00	0.11	0.00	0.00	0.00	0.00
Cl. Copepoda							
O. Harpacticoida		0.00	0.00	0.00	0.00	0.00	0.06
Cl. Ostracoda		0.00	0.00	0.00	0.00	0.00	0.06
Cl. Ophiuroidea		0.00	0.06	0.00	0.00	0.06	0.00
P. Nematoda		0.28	0.33	0.17	0.83	0.67	0.33
P. Sarcomastigophora							
O. Foraminifera	*Ephidium* sp.	0	P	P	P	P	P

Table 16: Macrofauna abundance (No. m^{-2}) before (PRE) and after (POST) beam trawling in Simoom Sound, in February 21-23, 2001. Please see polychaete abundance in Table 19.

Taxonomic Division	Species	Feb 21/01 TRB1 PRE	Feb 23/01 TRB1 POST	Feb 21/01 TRB2 PRE	Feb 23/01 TRB2 POST	Feb 22/01 TRB3 PRE	Feb 23/01 TRB3 POST
Cl. Oligochaeta							
F. Tubificidae		1.61	1.83	0.94	2.33	2.83	1.17
Nemertinea							
Cl. Anopla							
O. Paleonemertea		0.00	0.00	0.00	0.06	0.00	0.00
Cl. Bivalvia							
F. Lucinidae	*Parvilucina tenuisculpta*	4.89	5.17	3.89	3.00	4.06	2.11
	Lucinoma annulatum	0.11	0.00	0.06	0.00	0.00	0.06
F. Nuculidae	*Ennucula tenuis*	0.11	0.00	0.00	0.00	0.00	0.00
Other		1.22	1.72	0.06	1.00	0.17	0.39
Cl. Gastropoda							
F. Cylichnidae	*Cylichna attonsa*	0.06	0.00	0.22	0.00	0.06	0.06
F. Collumbellidae	*Astyris gausapata*	0.50	0.28	0.06	0.28	0.17	0.22
	Other	0.00	0.06	0.06	0.06	0.06	0.28
Cl. Crustacea							
O. Amphipoda							
SubO. Gammaridea		0.11	0.28	0.06	0.06	0.06	0.00
O. Decapoda							
F. Pinnatheridae	*Pinnixa eburna*	0.00	0.06	0.00	0.00.	000	0.00
Cl. Copepoda							
O. Harpacticoida		0.00	0.00	0.00	0.00	0.06	0.00
O. Calanoida		0.06	0.06	0.06	0.00	0.00	0.17
Cl. Ophiuroidea	*Ophiura sarsi*	0.06	0.00	0.00	0.00	0.00	0.00
P. Nematoda		0.06	0.00	0.11	0.00	0.06	0.00
P. Cnidaria							
O. Hydroida		0.00	0.00	0.06	0.00	0.00	0.00
P. Sarcomastigophora							
O. Foraminifera		P	0.00	P	0.00	0.00	0.00
Fish embryo		0.00	0.00	0.06	0.00	Many	0.00

Table 17: Macrofauna abundance (No. m^{-2}) before (PRE) and after (POST) trapping in Simoom Sound, in November 13- 15, 2000. Please see polychaete abundance in Table 20.

Taxonomic Division	Species	13-Nov-00 TP1 PRE	15-Nov-00 TP1 ON POST	13-Nov-00 TP2 PRE	15-Nov-00 TP2 ON POST	13-Nov-00 TP3 PRE	15-Nov-00 TP3 ON POST
Cl. Oligochaeta							
F. Tubificidae		0.56	0.22	0.67	P	0.06	4.28
Nemertinea							
Cl. Anopla							
O. Paleonemertea		0	0	0.11	0	0	0
Cl. Bivalvia							
F. Lucinidae	*Parvilucina tenuisculpta*	2.72	5.39	4.28	5.33	3.33	6.22
	Lucinoma annulatum	0	0.17	0.11	0.11	0.17	0.28
F. Nuculidae	*Acila castrensis*	0	0.11	0	0.11	0.11	0.11
	Eunnucula tenuis	0.06	0	0	0	0	0.06
F. Yoldidae	*Yoldia* sp.	0	0	0.11	0	0.11	0.06
Cl. Gastropoda							
F. Cyclichnidae	*Cylichna attonsa*	0.06	0.06	0.11	0.06	0	0.06
F. Collumbellidae	*Astyris gausapata*	0	0.06	0.17	0.06	0.06	12
	other	0.06	0.17	0	0.17	0.11	0
Cl. Crustacea							
F. Mysidae		0	0	0	0	0	0.06
O. Amphipoda							
SubO. Gammaridea		0.5	0.5	0.72	0.61	0.33	0.67
O. Decapoda							
F. Pinnatheridae	*Pinnixa eburna*	0	0	0	0	0	0.06
Cl. Copepoda							
O. Harpacticoida		0	0	0.22	0	0.06	0.06
Cl. Ostracoda		0.06	0	0.06	0	0	0
Cl. Ophiuroidea		0	0	0	0	0.06	0
P. Nematoda		0.017	0.17	1.06	0.72	0.78	2.67
P. Sarcomastigophora							
O. Foraminifera	*Ephidium* sp.	P	P	P	P	P	P

Table 18: Polychaete abundance (No. m^{-2}) before (PRE) and after (POST) otter trawling in Simoom Sound, in November 13-15, 2000.

Taxonomic Division	Species	13-Nov-2000 TR1 PRE	15-Nov-2000 TR1 POST	13-Nov-2000 TR2 PRE	15-Nov-2000 TR2 POST	13-Nov-2000 TR3 PRE	15-Nov-2000 TR3 POST
Cl. Polychaeta							
F. Capitellidae	*Heteromastus filobranchus*	0.17	0.06	0.06	0.17	0.11	0.39
F. Dorvilleidae	*Dorvillea (Schistomeringos) annulata*	0.00	0.00	0.06	0.00	0.11	0.00
F. Glyceridae	*Glycera nana*	0.00	0.00	0.00	0.11	0.06	0.11
F. Goniadidae	*Glycinde* sp.	0.00	0.06	0.00	0.00	0.00	0.00
	Goniada brunnea	0.00	0.00	0.00	0.00	0.06	0.00
F. Hesionidae	*Podarkeopsis glabra*	0.06	0.11	0.00	0.00	0.00	0.00
	Podarkeopsis perkinsi	0.28	0.17	0.61	0.56	0.50	0.67
	Gyptis plurisetis	0.00	0.11	0.06	0.33	0.00	0.00
F. Lumbrineridae	*Lumbrineris cruzensis*	0.00	0.00	0.28	0.00	0.06	0.11
	Lumbrineris cruzensis	0.00	0.06	0.00	0.00	0.00	0.00
	Scoletema luti	0.06	0.00	0.00	0.00	0.00	0.00
F. Nereidae	*Nereis procera*	0.00	P	0.00	0.00	0.06	0.06
F. Nephtyidae	*Nepthys cornuta*	0.22	2.33	2.33	1.50	2.11	2.11
F. Paraonidae	*Aricidea lopezi*	0.44	1.67	0.61	1.00	0.50	0.72
	Levinsenia gracilis	0.00	0.00	0.00	0.00	0.06	0.00
F. Pilargidae	*Pilargis berkeleyae*	0.11	0.00	0.00	0.06	0.00	0.00
F. Pholoidae	*Pholoe*	0.00	0.00	P	0.06	0.06	0.00
F. Spionidae	*Paraprionospio pinnata*	0.17	0.28	0.28	0.28	0.17	0.22
	Dipolydora caulleryi	0.83	3.61	0.00	0.28	0.06	0.00
	Prionospio (Minuspio) lighti	0.33	0.89	2.39	2.56	1.33	1.17
	Prionospio steenstrupi	0.06	0.11	0.11	0.00	0.06	0.28
	Prionospio sp.	0.00	0.06	0.00	0.00	0.00	0.00
	Spiophanes berkeleyorum	0.00	0.00	0.17	0.11	0.11	0.17
F. Syllidae	*Typosyllis alternata*	0.00	0.00	0.06	0.00	0.00	0.06

Table 19: Polychaete abundance (No. m^{-2}) before (PRE) and after (POST) beam trawling in Simoom Sound, in February 21-23, 2001.

Taxonomic Division	Species	Feb 21/01 TRB1 PRE	Feb 23/01 TRB1 POST	Feb 21/01 TRB2 PRE	Feb 23/01 TRB2 POST	Feb 22/01 TRB3 PRE	Feb 23/01 TRB3 POST
Cl. Polychaeta							
F. Capitellidae	*Heteromastus filobranchus*	0.28	0.11	0.17	0.28	0.11	0.22
	Heteromastus sp.	0.00	0.00	0.00	0.11	0.00	0.17
F. Dorvilleidae	*Dorvillea (Schistomeringos) annulata*	0.00	0.00	0.00	0.00	0.06	0.06
F. Glyceridae	*Glycera nana*	0.06	0.11	0.06	0.11	0.00	0.00
F. Goniadidae	*Glycinde* sp.	0.00	0.00	0.00	0.00	0.00	0.00
	Goniada brunnea	0.00	0.00	0.00	0.00	0.00	0.00
F. Hesionidae	*Podarkeopsis perkinsi*	0.44	0.00	0.94	0.33	0.72	0.22
	Gyptis plurisetis	0.06	0.06	0.00	0.06	0.00	0.00
F. Lumbrineridae	*Lumbrineris cruzensis*	0.06	0.06	0.00	0.00	0.00	0.00
	Lumbrineris (*cruzensis*)	0.00	0.11	0.00	0.06	0.17	0.00
	Lumbrineridae	0.06	0.00	0.00	0.06	0.00	0.00
F. Nereidae	*Nereis procera*	0.00	0.33	0.06	0.06	P	0.17
F. Nephtyidae	*Nepthys cornuta*	0.72	0.39	1.06	1.22	1.11	0.94
F. Oweniidae	*Galathowenia oculata*	P	0.00	0.00	0.00	0.00	0.00
F. Paraonidae	*Aricidea lopezi*	1.00	1.39	1.28	0.94	0.72	0.39
	Levinsenia gracilis	0.00	0.06	0.00	0.00	0.00	0.00
F. Pilargidae	*Pilargis berkeleyae*	0.06	0.06	0.06	0.06	0.00	0.06
F. Phyllodocidae	*Etone pigmentata*	0.06	0.00	0.00	0.00	0.00	0.00
F. Pholoidae	*Pholoe*	0.00	0.00	0.06	0.06	0.00	0.00
F. Spionidae	*Paraprionospio pinnata*	0.06	0.28	0.06	0.17	0.11	0.17
	Dipolydora caulleryi	0.00	0.00	0.00	0.11	0.00	0.00
	Polydorid	0.06	0.00	0.00	0.00	0.00	0.00
	Prionospio (Minuspio) lighti	0.83	0.33	1.00	0.56	0.67	0.22
	Prionospio steenstrupi	0.00	0.00	0.00	0.00	0.00	0.00
	Prionospio sp.	0.17	0.06	0.00	0.00	0.17	0.06
	Spiophanes berkeleyorum	0.00	0.06	0.01	0.00	0.11	0.00
F. Syllidae	*Typosyllis alternata*	0.00	0.00	0.00	0.06	0.11	0.00

Table 20: Polychaete abundance (No. m^{-2}) before (PRE) and after (POST) trapping in Simoom Sound, in November 13- 15, 2000.

Taxonomic Division	Species	13-Nov-00 TP1 PRE	15-Nov-00 TP1 ON POST	13-Nov-00 TP2 PRE	15-Nov-00 TP2 ON POST	13-Nov-00 TP3 PRE	15-Nov-00 TP3 ON POST
Cl. Polychaeta							
F. Ampharetidae		0.00	0.00	0.06	0.00	0.00	0.00
F. Capitellidae	*Heteromastus filobranchus*	0.00	0.00	0.06	0.00	0.00	0.00
	Heteromastus filiformis	0.11	0.00	0.00	0.00	0.11	0.06
	Heteromastus sp.	0.00	0.00	0.00	0.11	0.00	0.00
	Capitellidae	0.00	0.00	0.06	0.06	0.00	0.00
F. Cossuridae	*Cossura modica*	0.06	0.00	0.00	0.06	0.00	0.00
	Cossura pygodactylata	0.00	0.00	0.00	0.00	0.00	0.11
F. Dorvilleidae	*Dorvillea (Schistomeringos) annulata*	0.00	0.00	0.06	0.00	0.06	0.17
F. Glyceridae	*Glycera nana*	0.00	0.06	0.06	0.00	0.00	0.17
F. Hesionidae	*Podarkeopsis glabra*	0.06	0.00	0.06	0.06	0.00	0.00
	Podarkeopsis perkinsi	0.28	0.33	0.33	0.33	0.39	0.22
	Gyptis plurisetis	0.00	0.11	0.06	0.33	0.00	0.00
	Microphthalmus sp.	0.00	0.00	0.06	0.00	0.00	0.06
F. Lumbrineridae	*Lumbrineris cruzensis*	0.06	0.00	0.11	0.11	0.00	0.11
	Lumbrineris (*cruzensis*)	0.00	0.00	0.00	0.00	0.00	0.06
F. Nereidae	*Nereis procera*	0.00	0.06	0.00	0.00	0.00	0.06
F. Nephtyidae	*Nepthys cornuta*	0.94	1.78	2.28	3.28	3.11	1.72
	Nepthys ferruginea	0.06	0.00	0.00	0.00	0.00	0.00
F. Paraonidae	*Aricidea lopezi*	0.17	0.06	0.56	0.72	0.56	0.89
	Levinsenia gracilis	0.11	0.00	0.00	0.00	.000	0.06
F. Pilargidae	*Pilargis berkeleyae*	0.06	0.00	.000	0.06	0.06	0.06
F. Polynoidae	*Pholoe*	0.17	0.00	0.06	0.00	0.00	0.00
F. Spionidae	*Paraprionospio pinnata*	0.06	0.22	0.44	0.17	0.17	0.17
	Dipolydora caulleryi	0.11	0.00	1.00	0.00	0.06	0.67
	Prionospio (Minuspio) lighti	1.72	0.94	9.67	2.61	0.72	7.44
	Prionospio steenstrupi	0.06	0.11	0.11	0.22	0.06	0.17
	Spiophanes berkeleyorum	0.00	0.00	0.11	0.00	0.00	0.00
F. Syllidae	*Typosyllis alternata*	0.00	0.00	0.06	0.00	0.00	0.06

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