

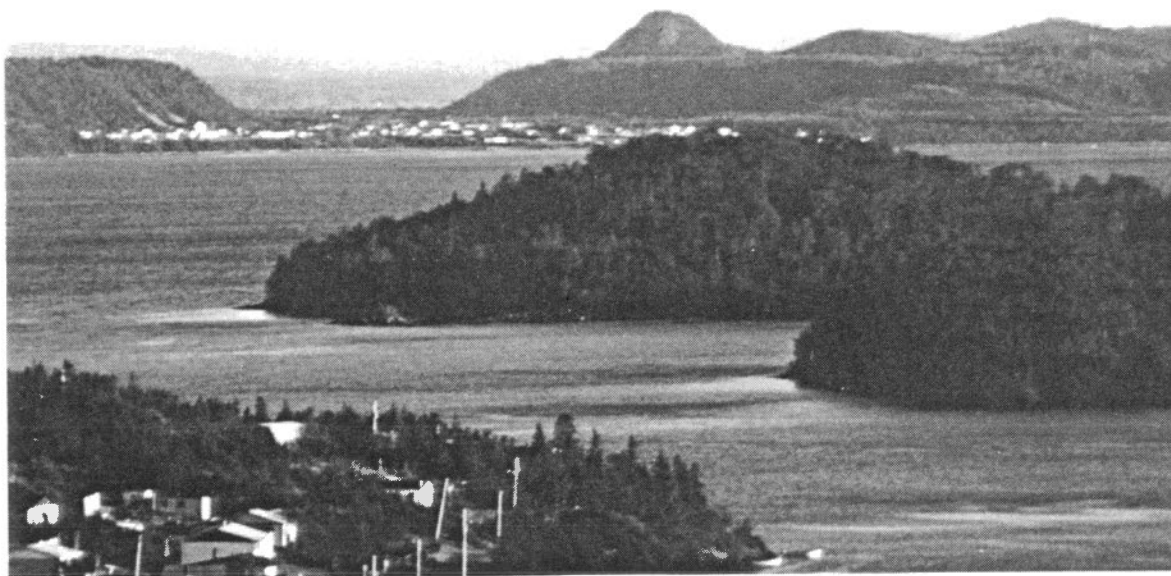
**MARINE GEOLOGICAL SURVEYS IN NORTHEAST
NEWFOUNDLAND COASTAL WATERS:
HAMILTON SOUND, BAIE VERTE, LA SCIE,
HALLS BAY, LITTLE BAY, SUNDAY COVE
ISLAND.**

CRUISE REPORT 90-035

J. Shaw, D. E. Beaver and B. Wile.

**Geological Survey of Canada
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**Atlantic Geoscience Centre,
Geological Survey of Canada,
Box 1006, Dartmouth, Nova Scotia,
B2Y 4A2, Canada**

1990



C.S.S. NAVICULA (photo by Robert O. Miller).

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GENERAL INFORMATION

Cruise:	Navicula 90-035	
Dates:	23 July to 24 August 1990	
Area of operations:	Northeast Newfoundland coastal waters: Hamilton Sound, Baie Verte, La Scie, Halls Bay, Little Bay, Sunday Cove Island area.	
Agency:	Geological Survey of Canada, Atlantic Geoscience Centre.	
Masters:	J. Bray, R. Arnold.	
Senior Scientist:	J. Shaw	AGC
Scientific Staff:	K. A. Asprey	AGC
	D. E. Beaver	AGC
	K. R. Robertson	AGC
	B. Wile	AGC

OBJECTIVES

Cruise 90-035 was planned as part of an effort to evaluate the placer potential off northeast Newfoundland. It was expected that mapping the unconsolidated sediments and sea-bed characteristics of coastal waters in the region would lead to an understanding of these parameters, and to a knowledge of the events and processes which have been operative in coastal waters during the Late Quaternary.

Cruise 90-035 was preceeded by C.S.S. Hudson cruise 90-013 to northeast Newfoundland during the period 14-22 June 1990 (Shaw and Wile, 1990). The larger vessel was equipped with a Hunttec Deep-Towed seismic system, a sleeve gun, and the AGC Long Corer Facility. The surveys extended from Notre Dame Bay and White Bay (Fig. 1) into embayments such as Baie Verte and Halls Bay. During Hudson cruise 90-013 five cores were collected, and a number of grab samples, including large IKU grabs, were subsampled for geochemical analyses. Unfortunately, the Klein sidescan system did not function due to winch problems. Nevertheless, the data provided useful insights into the nature and extent of Quaternary sediments in the region, and complemented earlier work farther offshore in the region (Haworth, 1975, 1978; Dale and Haworth, 1979). The results of assays and geochemical analyses on samples obtained on the cruise are contained in GSC Open File Report 2294 (Shaw et al., 1990).

Navicula cruise 90-035 was designed to provide a more complete survey coverage in those areas where a framework of high-resolution seismic reflection data had been collected during Hudson cruise 90-013. It was also hoped that good quality sidescan sonar data would be collected, in addition to grab samples and cores. Furthermore, some time was to be devoted to surveys in Hamilton Sound, which was not visited by Hudson as had been planned, because of search and rescue duties. The locations of the areas surveyed during cruise 90-035 are indicated in Figure 1. Track plots and sample locations are contained in Enclosures 1 to 6.

ORGANIZATION

Prior to the departure of AGC staff, Navicula left BIO and sailed to St. John's, Newfoundland. There she was refuelled and took delivery of the Seistec high-resolution profiling system before continuing to Carmanville. For the work in Hamilton Sound the vessel was based at the government wharf at Carmanville and the staff commuted daily from a hotel in Gander. Upon completion of work in the Hamilton Sound area, the vessel moved to the government wharf at Baie Verte and the staff stayed at a hotel in the town. The survey offshore from La Scie was accomplished with the staff still based at Baie Verte but with the vessel staying at La Scie for one night. For the final phase of operations AGC staff were accommodated in a hotel in Springdale, where Navicula was based at the government wharf. Equipment and samples were removed in Springdale, prior to the vessel's departure for Prince Edward Island.

SUMMARY OF OPERATIONS

[Times are Newfoundland Daylight Time except Atlantic daylight Time (ADT) where noted].

Monday 23 July (day 204)

Navicula leaves BIO Dartmouth.

Friday 27 July (day 208)

AGC personnel leave BIO at 14:30 ADT in government vehicle. Arrive North Sydney at 21:00 ADT. Navicula arrives in St. John's, Newfoundland.

Saturday 28 July (day 209)

Ferry Caribou departs at 01:30 ADT, arrives at Port aux Basques at 06:30. AGC staff drive to Gander, arriving at 14:00. Staff drive to Carmanville in afternoon to inspect wharf. Seistec system put aboard Navicula in St. John's. Navicula departs at 20:00.

Sunday 29 July (day 210)

Staff wait at Gander in morning, working on cruise plans. Staff drive to Fogo ferry at Farewell. Navicula arrives at Carmanville at 14:30. Staff drive to Carmanville, consult with crew. Equipment aboard vessel is prepared. Weather cold, windy and wet in afternoon.

Monday 30 July (day 211)

AGC staff leave Gander at 07:45, arrive at Navicula at 08:35. Vessel leaves port at 10:25 after repairs to sounder. Begin streaming gear at 10:48 in Hamilton Sound (line 1). Gear recovery commences at 18:45, at the end of line 7. Mishap with A frame. Upon recovery the cover of Seistec is observed to be ripped open but still attached. Vessel docks about 19:15 and staff return to Gander to work on records.

Tuesday 31 July (day 212)

Staff receive phone call from Navicula at approximately 05:30. Vessel has been on search and rescue duties during the night and will be unable to work today. Shaw works on data. Asprey, Wile and Beaver drive to Clarenville to buy parts to repair Seistec. At 10:50 the captain calls to say the vessel has returned to port.

Wednesday 1 August (day 213)

Staff leave Gander at 07:30, arrive at Carmanville at 08:15. Navicula leaves Carmanville at 09:25 and begins streaming gear in Hamilton Sound, west of Carmanville, at 09:45 (start of line 8). The survey is terminated at the end of line 20 at 18:51. Weather is fine and sea calm until 30 minutes before the end of line 20 when swell entering the sound combines with wind waves generated by a stiff southeasterly breeze.

Thursday 2 August (day 214)

Hurricane Bertha produces strong southeast to south-southeast winds (over 50 kts). Navicula remains in harbour. Shaw and two others drive down the east coast as far as Deadmans Bay to observe effects of hurricane. Only minor berm trimming is observed at Man Point beach-ridge plain although strong alongshore drifting is noted.

Friday 3 August (day 215)

Navicula remains in harbour due to continuing strong southeast winds. At hotel Shaw discusses records with D. Proudfoot, Nfld. Dept. of Mines. Staff drive to Navicula where camera is prepared. Staff drive to Musgrave Harbour to meet with local man regarding schooner wreck recently exposed on beach, returning to Gander about 16:00. Joe Bray arrives at Navicula to take over as master, and Russell Arnold leaves.

Saturday 4 August (day 216)

AGC arrive at Carmanville wharf at 08:30, the vessel departs 09:20 in a choppy sea with a stiff south to southwest breeze. Sampling begins at 10:42 west of Carmanville, near Dog Islands. Weather improves during the day. Sampling ends at 18:50. Samples 90-035-1 to 40 are collected. Navicula is back at the dock by 19:30 and staff are in Gander by 21:00.

Sunday 5 August (day 217)

Navicula departs public wharf at 09:00 and begins streaming gear east of Carmanville in Hamilton Sound at 09:50 on line 21. Weather is sunny, the sea calm. Gear is recovered at 15:20 at the end of line 27 and sampling begins near Fogo Island. Samples 90-035-041 to 60 are collected. Sampling finishes at 18:45, the vessel arrives at Carmanville public wharf at 19:30 and AGC staff are back in Gander by 21:00.

Monday 6 August (day 218)

Staff work on records in morning then depart Gander at 11:40, arriving at Baie Verte at 15:30. Navicula arrives about 16:00. Weather warm, sunny, light winds.

Tuesday 7 August (day 219)

Staff arrive at wharf at 08:15. Navicula leaves at 08:50, running lines in Baie Verte until 12:00 (lines 28 to 36). She ties up for lunch. Navicula leaves dock at 13:30 and runs lines until 18:20 (lines 37 to 52). Staff back at hotel at about 19:30. Weather warm, sunny, calm.

Wednesday 8 August (day 220)

Staff arrive at vessel at 08:30. Asprey drives to Deer Lake and flies to Halifax. Robertson flies from Halifax to Deer Lake and drives to Baie Verte. Navicula departs at 09:00 and runs lines in Baie Verte (lines 53 to 85). Lines are finished at 16:43, the vessel is at the wharf at 16:55, and staff are at the hotel by 18:00. Weather sunny, calm, a strong sea breeze in the evening.

Thursday 9 August (day 221)

Strong southwest breeze in the morning. Vessel refuels at the dock. Staff work on records. Navicula leaves wharf at 12:53 to collect samples (numbers 61 to 92). Winds become very strong, a few light rain showers, choppy sea does not impede the work.

Friday 10 August (day 222)

Navicula leaves wharf at 08:30 and gear is deployed at 09:00 at the start of line 86. Weather is fine with light winds. Finish running lines at 10:35 (line 94) in Coachman's Harbour and start sampling, beginning with 90-035-093, ending with 90-035-132. Sampling finishes at 17:50. Navicula gives assistance to a small fishing craft and is at wharf by 18:40.

Saturday 11 August (day 223)

AGC staff are at Navicula at 07:45. She departs at 09:00 to collect three cores in Baie Verte (samples 90-035-133 to 135). Navicula is back at the wharf by 10:30. Shaw, Beaver and Wile disembark, work at the hotel until noon, and drive to La Scie. Navicula sails immediately for La Scie, arriving at 13:15. She departs La Scie at 14:50 and runs lines in that vicinity until 18:30 (lines 95 to 99). Samples 90-035-136 to 141 are then collected. Sampling ends at 20:05 and Navicula is back at the dock at 20:15. AGC staff are back in Baie Verte at 21:35.

Sunday 12 August (day 224)

Navicula leaves Baie Verte at 06:30. Staff leave Baie Verte at 08:10 and arrive at the Pelly Inn, Springdale, at 10:30. Navicula arrives at 12:00. Because of strong winds gusting to 40 kts no work is done in afternoon. Staff work on records. Heavy rain showers.

Monday 13 August (day 225)

Partly cloudy with light southwest winds. Staff are at Navicula at 08:15 and she leaves the wharf at 08:30 to run lines in Halls Bay. Lines 100 to 116 are run until gear is retrieved at 15:30 and Navicula heads north to run lines east of Sunday Cove Island. However, sudden strong northerly winds produce a choppy sea and it is decided to return to Springdale so that the vessel can reprovision today rather than tomorrow.

Tuesday 14 August (day 226)

After provisioning Navicula leaves the wharf at 09:20. Lines are run in Little Bay, beginning at 10:50. The gear is pulled at 14:10 and sampling begins, beginning with 90-035-142. After sample 90-035-151 the vessel leaves Little Bay and heads south. Begin running lines in Halls Bay at 16:30. Line 134 is finished at 19:18 and Navicula is back in dock at about 19:30.

Wednesday 15 August (day 227)

Navicula departs Springdale public wharf at 08:30. Begin streaming gear in Halls Bay at 09:42. A cold front passes about noon, accompanied by heavy rain for a brief period. The wind picks up strongly from the southwest and the gear is pulled early at 15:13 because of very strong winds and choppy conditions. Vessel at dock by 17:00.

Thursday 16 August (day 228)

Navicula leaves at 08:30 in sunny weather and light winds. Start running lines at 09:30 in Halls Bay near Wellmans Cove. Finish lines at 13:50 in Long Island Tickle. Commence sampling, beginning with 90-035-152. The last sample is 90-035-179. Sampling ends at 18:30 and at 20:00 gear is deployed off Springdale to run several lines. Gear is pulled at 20:35 and vessel docks by 20:45.

Friday 17 August (day 229)

Asprey arrives during the night in a large truck. Beginning 08:15 seismic gear and samples are unloaded from the vessel. Navicula departs the wharf at 12:00 and at approx. 14:00 begins sampling near Sunday Cove Island. After collecting cores 90-035-180 to 183 the vessel returns to the vicinity of Springdale for two cores (90-035-184, 185). Vessel returns to wharf at 17:00. After dinner Asprey leaves for BIO with the large vehicle.

Saturday 18 August (day 230)

Navicula leaves wharf at 08:15. Samples 90-035-186 to 205 are collected in inner Halls Bay. Weather is overcast with a stiff southwest breeze as the vessel returns to dock. Navicula ties up at 12:00. Remaining scientific equipment and samples are unloaded as the vessel is refuelled. AGC staff leave Springdale at 13:30 and arrive at Port aux Basques at 18:30. Navicula leaves for the homeward voyage, with Carmanville as her first destination.

Sunday 19 August (day 231)

AGC staff depart hotel at 06:30 and board the ferry Joseph and Clara Smallwood for the 08:00 sailing. The vehicle is in Dartmouth by 18:30 ADT.

Friday 24 August (day 236)

Navicula ties up at government wharf, Port Hawkesbury, at 09:15 ADT approx., en route to Georgetown, P.E.I.

SUMMARY OF ACCOMPLISHMENTS

Surveys were completed in Hamilton Sound, Baie Verte, and offshore from La Scie (Figure 1). Mings Bight, a target identified in an advisory report by C-CORE, was not surveyed because it is not charted in sufficient detail. A lack of charts, both to facilitate the surveys and also to allow the vessel to dock, prevented detailed surveys of the east coast of the Baie Verte peninsula, an area also identified as high priority in the C-CORE report. The remaining surveys were in Halls Bay and in adjacent areas (Figure 1).

Acoustic data collected in the four regions included bathymetry, sidescan sonar imagery, and seismic reflection data. Navigation was by radar and Loran-C. The sampling program produced a total of 98 van Veen grab samples (Appendix 1), 98 accompanying seabed photographs (Appendix 2), and 9 gravity cores (Appendix 3). Seabed photographs were interpreted by J. Shaw, with F. Cole providing taxonomic identifications.

PRELIMINARY SCIENTIFIC RESULTS**Hamilton Sound**

Tracks and sample locations for this part of the survey are shown on Enclosure 1. Hamilton Sound is a region of shallow water - most areas of the sound lie above 40 m depth, and extensive areas are shallower than 20 m. Sand and gravel are the typical seabed sediments. Areas of gravel and bouldery gravel are underlain in many areas by an acoustic unit with incoherent reflections. This is believed to be glacial diamict, and the cap of coarse sediment is probably a result of winnowing by waves and currents.

At the mouth of Gander Bay, drumlin-like hills are present on the seabed, oriented approximately NNE to SSW. The tops of these hills are bouldery, with finer gravel in the intervening depressions. Concentrations of large boulders in many areas appear to mark the presence of bedrock close to the seabed, and extensive areas of bedrock with little Quaternary sediment cover occur east and northeast of Eastern Indian Island.

A large area of sand occurs in the middle of the sound, between Indian Islands and the mainland. The sand body appears to be ponded, with weak, continuous, low-intensity internal reflections on high resolution seismic reflection records. The sand has a patchy distribution, and is usually up to 5 m thick in depressions between gravel-capped ridges. The sand body is also present in the bay between Eastern Indian Island and Fogo Island, where it attains a maximum thickness of 10 m. However, contrary to what might be expected, a thick sand body is not present in the deep (70 m) basin west of the Dog Bay Islands. Here, only a thin veneer of sand or gravelly sand overlies bedrock, which is exposed at the seabed in many places.

Seabed sediments are mobile in many parts of the survey area. Gravel ripples are observed just south of Indian Island and north of the mouth of Gander Bay. Sand waves with wavelengths of ~20 m are present between Eastern Indian Island and Fogo Island, superimposed on a gravel substrate.

Baie Verte

The cruise 90-013 survey (Shaw and Wile, 1990) showed that Quaternary sediment cover was relatively thin in Baie Verte. The Navicula 90-035 data (Enclosure 2) confirm this general conclusion. The thickest accumulations occur in the outer bay, where stratified sediments, located in depressions between bedrock peaks, are up to 90 m thick. Two primary seismostratigraphic units are identified: 1) an upper ponded unit with low-intensity, continuous coherent reflections, and with acoustic transparency in places. This is interpreted as postglacial mud; 2) a lower unit which is conformable to the subsurface, with moderate- to high-intensity continuous coherent grouped reflections. This is interpreted as glaciomarine mud or sandy mud.

Quaternary sediments are considerably thinner in the shallow water along both sides of the outer bay. On the south side of the bay, at Deer Cove, small patches of sand and gravel up to several m thick overlie up to 15 m of acoustically unstratified material, probably glacial diamict, which fills pockets on an irregular bedrock surface. In Coachman's Harbour, sediment with weak acoustic stratification is present in depressions between bedrock highs. Sidescan sonar records and grab

samples indicate that this material is sand.

In the inner bay, the two primary acoustic units identified in the outer bay are much thinner. The lower glaciomarine unit is mostly less than about 5 m thick. The postglacial mud cover is discontinuous, and reaches about 5 m in pockets. Shallow gravity cores (Appendix 1 -Table 3, and Appendix 3) may have penetrated thin veneers of postglacial mud and intersected the glaciomarine sediments.

La Scie

The fishing community of La Scie is located in a small sheltered cove on an exposed cliffed coastline. The objective of the survey offshore from La Scie (Enclosure 3) was to provide some sidescan coverage which would confirm that the irregular seabed morphology observed offshore from the Baie Verte Peninsula (Shaw and Wile, 1990) was due to iceberg scouring. The sidescan sonar data confirm this conclusion. In addition, they show extensive sandy areas and large areas of rippled gravel in water depths to 50 m. Grab samples and seabed photographs confirm the presence of sand and gravel at the seabed in the inner part of the area surveyed.

Halls Bay

An elongate body of stratified sediments up to 150 m thick extends down the middle of Halls Bay (Enclosure 4). The flanks of the Halls Bay trough are generally bedrock, with slopes up to 30 degrees. The uppermost acoustic unit, generally less than 10 m thick, contains low-intensity, continuous coherent reflections, and is acoustically transparent in places. This is interpreted as postglacial mud. Below the postglacial unit, the next 15-20 m is a conformable drape containing moderate- to high-intensity continuous coherent reflections. Below this, intervals of moderate- to high-intensity continuous coherent reflections alternate with acoustically transparent units. It is likely that these acoustic styles represent glaciomarine sediments, either muds or sandy muds. The raised marine-deltaic sediments in the vicinity of Springdale (Tucker, 1974) are separated from the thick sediment accumulation in the bay by a zone of bedrock with only a very thin veneer of gravelly mud.

Little Bay

At the mouth of the bay (Enclosure 5) a maximum of 7 m of postglacial mud overlies up to 30 m of glaciomarine sediment in depressions between bedrock peaks. The glaciomarine sediment has strong reflections in the upper 10 m but appears to be more transparent with depth. Quaternary sediment is thin or absent over much of the inner bay. At the head of the bay, a unit up to 10 m

thick with incoherent reflections and with an irregular hummocky upper surface, may be ice-contact sediment, or glacial diamict. In places it is overlain by several metres of postglacial mud.

Sunday Cove Island area

The survey line extending in from Halls Bay (Enclosure 6) crosses the thick (up to 150 m) sediment package which lies along the middle of the bay (see above). In shallower water in the vicinity of Oil Island, the line continues across a bedrock seafloor. A range of Quaternary sediments is found in the waters between Pilley's Island, Sunday Cove Island, Long Island, and the mainland. Bedrock valleys up to 50 m deep are filled with stratified sediments which are probably glaciomarine in origin. Postglacial mud is banked against the valley walls. In several areas, as a consequence of non-deposition of postglacial mud, glaciomarine sediments are close to, or exposed at, the seafloor. A number of short piston cores penetrated a thin veneer of olive mud (postglacial) over stiff, gritty clay, believed to be of glaciomarine origin (Appendix 1 -Table 3, Appendix 3).

Typically, bottom sediments in this area are mixtures of gravel and mud. Gravel is the predominant component close to the shore, where seismic records show little or no Quaternary sediment cover over bedrock. Extensive areas of patchy sand overlying gravel occur in the shallow areas southeast of Oil Island, presumably the region of highest wave energy.

TECHNICAL SUMMARY

Navigation

Navigation provided by radar (variable logging interval) was recorded in a navigation log designed for the cruise. The data were plotted in real time, giving the captain the ship's location in relation to proposed lines plotted on the chart. Loran-C positions (raw TD's and latitude/longitude) were logged once per minute on a Corona personal computer. A hard copy was printed once per minute. Signals were acquired on the 7930 Labrador Sea Chain, with the master station at Fox Harbour, and secondary stations at Cape Race and Angissoq. A shift was applied to the Loran-C positions for each day, based on mean differences between plotted Loran-C and radar positions. In the latter part of the survey, from 11 th August (Julian day 223) onwards, a defective antenna coupler caused Loran-C to jump frequently.

Bathymetry

Bathymetric data were obtained using a hull mounted transducer and a 30-kHz Elac echosounder mounted on the bridge of Navicula. The data were recorded in analogue form on a graphic recorder.

Inventory system

The field inventory system FINS was used to store and report records and tapes collected during the cruise. Computer hardware comprised a PC-2000-AT computer with a 640K floppy disk drive and a 20Mb hard disc operating at 14Mh. The printer used was a Hewlett Packard Thinkjet.

Automated graphic annotation

Sidescan and seismic records were automatically annotated at 5 minute intervals using Technical Survey Services model 312B-S/N 040 annotator. The time events were placed as follows:

Channel 1 - Klein 595 dual frequency sidescan sonar

Channel 2 - Seismic (NSRF eel, Seistec) 4800 ch 2

Channel 3 - Not used

Channel 4 - Seismic (Bubble pulser) 8700

Cassette Recorder

Data were recorded by a TEAC XR5000 multitrack VHS cassette recorder. Tape speed was 2.4 cm/s and tape duration 2 hr 52 min. The table below indicates the recording conditions.

Channel no.	Data
1	Bubble pulser raw signal
2	Bubble Pulser / Seistec trigger
3	Seistec raw signal
4	Not used
5	Not used
6	Not used
7	Klein port 100 kHz sidescan
8	Klein sidescan trigger
9	Klein starboard 100 kHz sidescan
10	Klein port 500 kHz sidescan

11	Klein starboard 500 kHz sidescan
12	Not used
13	ID CID code
14	Not used

Sidescan sonar

The towfish was dual frequency (100 / 500 kHz), fitted with a K-wing depressor. It was deployed using a Markey remote control hydraulic winch linked to the ship's hydraulic system. Data were recorded on a Klein 595 graphic recorder/transceiver. Range was 100 m and scale lines were marked every 15 m across the record, which was also annotated at 5 minute intervals.

Shallow seismic reflection systems: general comments

Two seismic systems were simultaneously used on the cruise, a Datasonics Bubble Pulser seismic reflection system, and a Seistec high-resolution seismic reflection system. Two other configurations were used briefly. During 1989 surveys of Halifax Harbour it was found beneficial to synchronise all seismic equipment to the Klein 100kHz sidescan recorder. This was carried a step farther on cruise 89026 during which the seismic systems were keyed synchronously by the trigger of the sidescan system. The two systems were also fired in alternating order so as not to interfere with each other. The firing rate was set by dividing the sidescan trigger rate by 4, and alternating the resulting key between the two seismic systems so that either system was firing at a rate 1/8 that of the sidescan trigger. This arrangement involved isolation of the ORE Geopulse power supply from the seismic equipment so as to preclude out of sequence triggering. Because of the large voltages and high currents created within the power supply, one large combination isolation/power conditioner with a capacity of 240 V, 30 amp would be useful in future, to regulate and isolate the power supply.

Datasonics Bubble Pulser seismic reflection system

This consisted of a bubble pulser with transducer, mounted on a surface-towed surfboard with a BPS 530 power supply. The system was deployed from the stern of the vessel. The signal was received on a Datasonics hydrophone eel, processed in a Datasonics seismic receiver, and displayed on an EPC 8700 thermal graphic recorder. After some initial experimentation, the record was displayed on a 0.5 s sweep, with no delay. The system performed reliably and produced useful records, marred only by the ever-present ringing. In some areas it was able to penetrate shallow gas, and show reflections in underlying sediments.

Seistec high-resolution seismic reflection system

The Seistec system used on the cruise comprised a Seistec cone array and preamp, mounted on a surface-towed catamaran deployed from the vessel's stern. The preamp fed into an ORE Geopulse 5210A receiver and the data were displayed on an EPC 4800 graphic recorder. The sound source was a Hunttec 4425 boomer plate mounted on a surfboard. It was powered by an ORE Geopulse power supply set at 350 joules.

On the first deployment the brackets to attach the boomer plate were removed and the plate was mounted on a surfboard. It was noted that the support bars from the tow point to the sides of the cone were weak and added little support to the latter. The stainless steel sheet metal cover of the cone ripped off after about four hours. When the vehicle was recovered only one screw still held the cover. After repairs the cover remained attached for the remainder of the cruise.

The Seistec system worked well as an acoustic receiver except for a few shortcomings. For shallow work the seismic receiver had filter settings of 700-2000 Hz, 0 dB gain and very shallow slope TVG. These settings occasionally allowed for a small amount of water column noise to be printed on the record. When the system was used in deeper water the gain had to be increased to 18, 21 or 24 dB. Due to the large amount of noise below 1000 Hz with these higher gain settings, filter settings had to be changed to 1500-3000 Hz. The noise was present even when the boomer plate and bubble pulser transducer were not firing. It is possible that vibration of the cone cover generated random bursts of noise in the 700-1000 Hz range.

The strong return signal in shallow water did not require a large amount of gain, in contrast to the weaker signal in deeper water. In the latter situation the appearance of cone noise on the record necessitated the application of high pass filter settings. Since the energy produced when firing the plate is in the 1000-3000 Hz range, the increased filter settings did not alter the record significantly.

Suggestions for improvement of the Seistec system discussed during the survey include 1) modification of the cone cover to dampen vibration, or manufacture of a cover in some other material not prone to vibration and rattle; 2) the cone might be towed 1-2 m under the tow vehicle, away from surface turbulence.

Van Veen grab sampler and Alpine gravity corer

A capstan was used to lower and recover the van Veen grab sampler. The latter was attached to a rope which passed through a block held aloft by the ship's boom. No problems were encountered during operation. The 3-m Alpine gravity corer also worked well. It was deployed from the "A" frame at the ship's stern and raised and lowered using the large winch. When recovered, the core was pulled across the deck using the capstan.

Bottom camera

The camera system used to take seabed photographs at the sites of all grab samples was originally devised at AGC to take seabed photographs through holes in sea ice. It comprised a 35 mm camera, focal length 28 mm, contained in an aluminum housing. The camera was triggered when a weight suspended 1.5 m below the camera body reached bottom. The camera was deployed in the same manner as the van Veen grab sampler.

The system performed well. Because of misorientation of the flash unit, part of the field of view in each photograph is in shadow. It is recommended that test photographs be taken before future deployments to ensure that the flash is oriented correctly. A more serious lapse is the absence of a scale on the images. Scales for the bottom photographs were calculated using depth from bottom and focal length, and compensating for enlargement. On the photographs illustrated in Appendix 2, one cm = 12.7 cm.

One photograph (#020) was not taken because the film was at the end of the roll. Ten sample sites in the Hamilton Sound area were not photographed because the film did not advance in the camera due to operator error. Two photographs were taken at one site (#052).

LIST OF CHARTS

- 4520** Orange Bay to Cape Bonavista, Scale 1: 286,000 at lat 49° 40'. Edition 4, 24th January 1986. Note that longitudes are incorrect on this chart, particularly in the Baie Verte area.
- 4521** Baie Verte. Scale 1: 25,000. Edition 20, 15th May 1987. Longitudes on this chart differ from those on chart 4520.
- 4522** Approaches to Tilt Cove and La Scie Harbour (various scales). Edition 37, 11th September 1987.
- 4591** Halls Bay and Sunday Cove. Scale 1: 37,400. Edition 35, 28th August 1987.
- 4592** Little Bay Island to League Rock. Scale 1: 24,400. Edition 25, 24th June 1983.

ACKNOWLEDGEMENTS

We deeply appreciate the cooperation of Joe Bray, master of Navicula, and of engineer P. Lake and crewman D. Lumsden. We also thank Russell Arnold who was master of the vessel during an arduous trip to Newfoundland from Dartmouth. The positive attitude of AGC staff K. Asprey and K. Robertson ensured that the cruise proceeded smoothly. T. Cole assisted with taxonomic identification of fauna on seabed photographs. D. Locke ensured that the seabed camera system was functioning properly at the outset of the cruise. R.B. Taylor and R.O. Miller reviewed the report.

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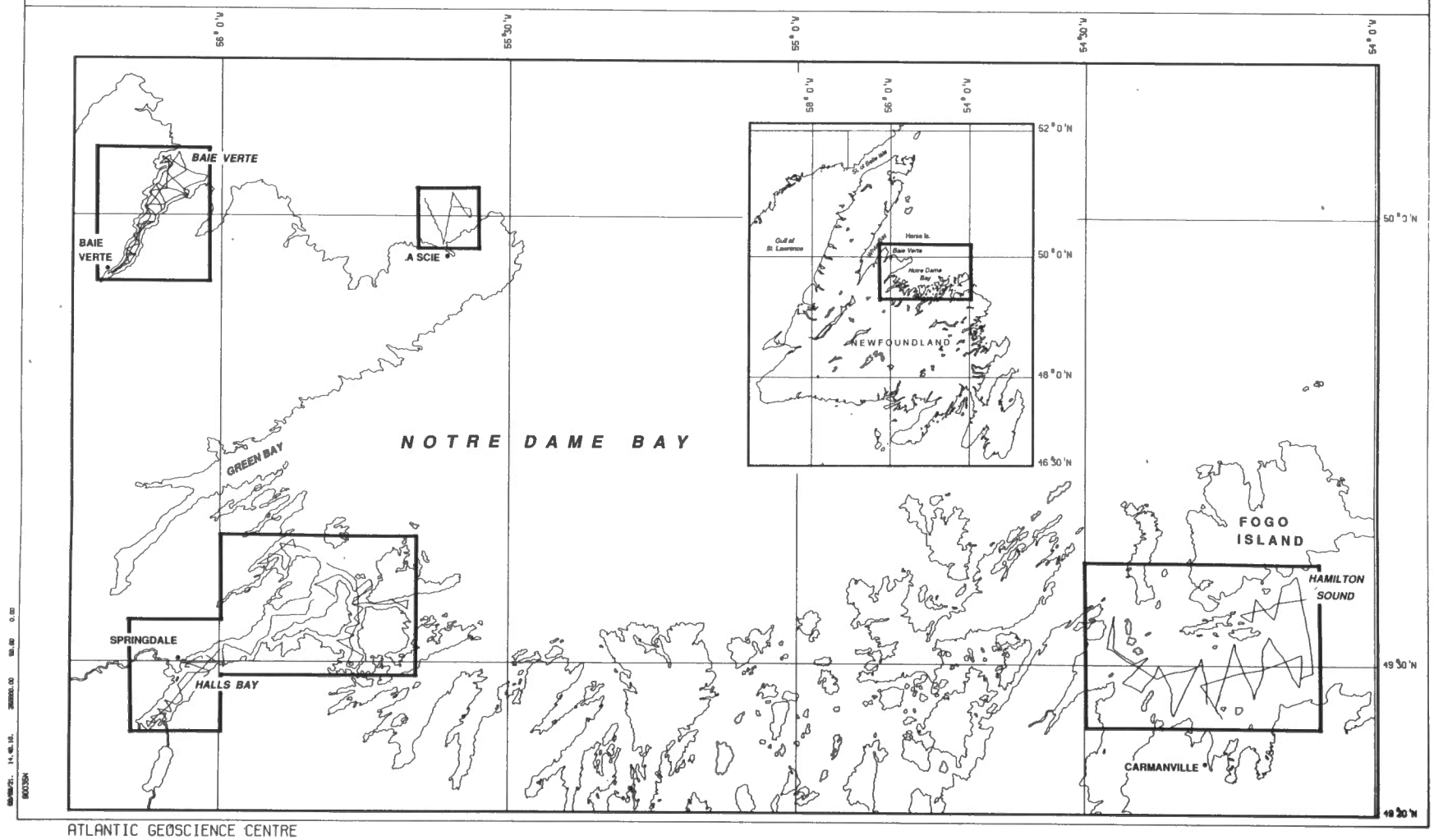


Figure 1: Locations of the survey areas.

Appendix 1

Data tables

C.S.S. Navicula, Cruise 90-035

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 1
TOTAL SAMPLE INVENTORY

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>SAMPLE NUMBER</u>	<u>SAMPLE TYPE</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>DEPTH (M)</u>	<u>GEOGRAPHIC LOCATION</u>
001	GRAB	2161314	49 32.07N	54 27.03W	80.0	HAMILTON SOUND
002	CAMERA	2161329	49 32.08N	54 26.92W	67.0	HAMILTON SOUND
003	GRAB	2161349	49 30.60N	54 25.72W	26.0	HAMILTON SOUND
004	CAMERA	2161358	49 30.62N	54 25.59W	20.0	HAMILTON SOUND
005	GRAB	2161407	49 30.26N	54 24.57W	25.0	HAMILTON SOUND
006	CAMERA	2161414	49 30.26N	54 24.44W	27.0	HAMILTON SOUND
007	GRAB	2161431	49 28.77N	54 26.20W	16.0	HAMILTON SOUND
008	CAMERA	2161445	49 28.87N	54 26.13W	16.0	HAMILTON SOUND
009	GRAB	2161454	49 28.47N	54 25.16W	26.0	HAMILTON SOUND
010	CAMERA	2161507	49 28.49N	54 25.12W	26.0	HAMILTON SOUND
011	GRAB	2161558	49 28.21N	54 24.32W	22.0	HAMILTON SOUND
012	CAMERA	2161604	49 28.24N	54 24.28W	23.0	HAMILTON SOUND
013	GRAB	2161612	49 28.54N	54 23.82W	30.0	HAMILTON SOUND
014	CAMERA	2161623	49 28.54N	54 23.78W	32.0	HAMILTON SOUND
015	GRAB	2161644	49 26.77N	54 20.80W	19.0	HAMILTON SOUND
016	CAMERA	2161651	49 26.80N	54 20.85W	19.0	HAMILTON SOUND
017	GRAB	2161719	49 30.38N	54 17.71W	21.0	HAMILTON SOUND
018	CAMERA	2161729	49 30.33N	54 17.60W	23.0	HAMILTON SOUND
019	GRAB	2161743	49 28.82N	54 17.12W	27.0	HAMILTON SOUND
020	CAMERA	2161751	49 28.81N	54 17.08W	27.0	HAMILTON SOUND
021	GRAB	2161807	49 26.98N	54 16.37W	18.0	HAMILTON SOUND
022	CAMERA	2161815	49 26.98N	54 16.31W	18.0	HAMILTON SOUND
023	GRAB	2161832	49 28.94N	54 15.86W	28.0	HAMILTON SOUND
024	CAMERA	2161837	49 28.94N	54 15.77W	27.5	HAMILTON SOUND
025	GRAB	2161857	49 31.59N	54 14.42W	15.0	HAMILTON SOUND

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026	CAMERA	2161906	49 31.57N	54 14.32W	11.0	HAMILTON SOUND
027	GRAB	2161917	49 30.37N	54 13.88W	38.0	HAMILTON SOUND
028	CAMERA	2161923	49 30.40N	54 13.90W	37.0	HAMILTON SOUND
029	GRAB	2161933	49 29.63N	54 13.02W	28.0	HAMILTON SOUND
030	CAMERA	2161940	49 29.66N	54 12.94W	29.0	HAMILTON SOUND
031	GRAB	2161951	49 30.72N	54 11.55W	46.0	HAMILTON SOUND
032	CAMERA	2161959	49 30.73N	54 11.49W	46.0	HAMILTON SOUND
033	GRAB	2162006	49 31.44N	54 11.38W	25.0	HAMILTON SOUND
034	CAMERA	2162014	49 31.44N	54 11.32W	24.5	HAMILTON SOUND
035	GRAB	2162021	49 31.90N	54 11.08W	12.0	HAMILTON SOUND
036	CAMERA	2162029	49 31.91N	54 11.15W	12.0	HAMILTON SOUND
037	GRAB	2162046	49 30.27N	54 09.26W	55.0	HAMILTON SOUND
038	CAMERA	2162049	49 30.29N	54 09.20W	56.0	HAMILTON SOUND
039	GRAB	2162115	49 28.00N	54 12.56W	24.0	HAMILTON SOUND
040	CAMERA	2162120	49 28.00N	54 12.50W	23.0	HAMILTON SOUND
041	GRAB	2171807	49 35.47N	54 07.87W	47.0	HAMILTON SOUND
042	CAMERA	2171811	49 35.44N	54 07.89W	47.0	HAMILTON SOUND
043	GRAB	2171836	49 34.36N	54 12.22W	15.0	HAMILTON SOUND
044	CAMERA	2171845	49 34.38N	54 12.27W	15.0	HAMILTON SOUND
045	GRAB	2171856	49 33.48N	54 13.88W	20.0	HAMILTON SOUND
046	CAMERA	2171903	49 33.46N	54 13.80W	19.0	HAMILTON SOUND
047	GRAB	2171911	49 33.14N	54 12.85W	22.0	HAMILTON SOUND
048	CAMERA	2171916	49 33.15N	54 12.88W	21.0	HAMILTON SOUND
049	GRAB	2171927	49 33.18N	54 10.42W	18.0	HAMILTON SOUND
050	CAMERA	2171934	49 33.17N	54 10.53W	17.5	HAMILTON SOUND

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PROJECT NUMBER = 90006

<u>SAMPLE NUMBER</u>	<u>SAMPLE TYPE</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>DEPTH (M)</u>	<u>GEOGRAPHIC LOCATION</u>
051	GRAB	2171944	49 34.11N	54 11.76W	31.0	HAMILTON SOUND
052	CAMERA	2171951	49 34.08N	54 11.90W	31.0	HAMILTON SOUND
053	GRAB	2172000	49 33.98N	54 10.86W	36.0	HAMILTON SOUND
054	CAMERA	2172003	49 34.00N	54 10.88W	35.0	HAMILTON SOUND
055	GRAB	2172014	49 34.36N	54 09.60W	36.0	HAMILTON SOUND
056	CAMERA	2172025	49 34.33N	54 09.73W	35.0	HAMILTON SOUND
057	GRAB	2172057	49 29.77N	54 09.19W	55.0	HAMILTON SOUND
058	CAMERA	2172102	49 29.82N	54 09.32W	54.0	HAMILTON SOUND
059	GRAB	2172115	49 28.88N	54 08.47W	38.0	HAMILTON SOUND
060	CAMERA	2172119	49 28.90N	54 08.50W	38.0	HAMILTON SOUND
061	GRAB	2211551	49 59.54N	56 07.60W	55.0	BAIE VERTE
062	CAMERA	2211602	49 59.63N	56 07.51W	67.0	BAIE VERTE
063	GRAB	2211609	49 59.42N	56 07.65W	29.0	BAIE VERTE
064	CAMERA	2211619	49 59.49N	56 07.45W	44.5	BAIE VERTE
065	GRAB	2211630	49 59.26N	56 08.85W	64.0	BAIE VERTE
066	CAMERA	2211634	49 59.34N	56 08.69W	68.0	BAIE VERTE
067	GRAB	2211642	49 59.06N	56 08.38W	37.5	BAIE VERTE
068	CAMERA	2211647	49 59.14N	56 08.28W	42.0	BAIE VERTE
069	GRAB	2211654	49 59.08N	56 08.82W	15.0	BAIE VERTE
070	CAMERA	2211659	49 59.14N	56 08.79W	16.0	BAIE VERTE
071	GRAB	2211707	49 58.76N	56 08.80W	59.0	BAIE VERTE
072	CAMERA	2211711	49 58.89N	56 08.65W	59.0	BAIE VERTE
073	GRAB	2211725	49 58.16N	56 09.58W	38.0	BAIE VERTE
074	CAMERA	2211728	49 58.19N	56 09.55W	45.5	BAIE VERTE
075	GRAB	2211737	49 58.10N	56 08.52W	42.0	BAIE VERTE

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CRUISE NUMBER = 90035
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<u>SAMPLE NUMBER</u>	<u>SAMPLE TYPE</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>DEPTH (M)</u>	<u>GEOGRAPHIC LOCATION</u>
076	CAMERA	2211742	49 58.14N	56 08.52W	36.0	BAIE VERTE
077	GRAB	2211749	49 57.79N	56 09.25W	58.0	BAIE VERTE
078	CAMERA	2211754	49 57.85N	56 09.18W	56.0	BAIE VERTE
079	GRAB	2211801	49 57.76N	56 09.62W	28.5	BAIE VERTE
080	CAMERA	2211804	49 57.80N	56 09.59W	31.0	BAIE VERTE
081	GRAB	2211813	49 57.36N	56 08.86W	25.0	BAIE VERTE
082	CAMERA	2211819	49 57.41N	56 08.81W	24.0	BAIE VERTE
083	GRAB	2211828	49 57.16N	56 09.82W	32.0	BAIE VERTE
084	CAMERA	2211835	49 57.22N	56 09.76W	33.0	BAIE VERTE
085	GRAB	2211844	49 56.70N	56 09.65W	20.0	BAIE VERTE
086	CAMERA	2211849	49 56.74N	56 09.60W	18.0	BAIE VERTE
087	GRAB	2211858	49 56.53N	56 10.47W	27.0	BAIE VERTE
088	CAMERA	2211901	49 56.55N	56 10.40W	28.0	BAIE VERTE
089	GRAB	2211910	49 56.37N	56 10.58W	31.0	BAIE VERTE
090	CAMERA	2211915	49 56.40N	56 10.53W	32.0	BAIE VERTE
091	GRAB	2211927	49 56.11N	56 11.43W	13.0	BAIE VERTE
092	CAMERA	2211930	49 56.12N	56 11.38W	12.0	BAIE VERTE
093	GRAB	2221327	50 03.47N	56 05.82W	29.0	BAIE VERTE
094	CAMERA	2221335	50 03.50N	56 05.74W	30.0	BAIE VERTE
095	GRAB	2221343	50 03.45N	56 06.60W	18.0	BAIE VERTE
096	CAMERA	2221351	50 03.49N	56 06.53W	19.0	BAIE VERTE
097	GRAB	2221358	50 03.78N	56 05.87W	26.5	BAIE VERTE
098	CAMERA	2221412	50 03.81N	56 05.71W	47.0	BAIE VERTE
099	GRAB	2221417	50 03.86N	56 05.40W	57.0	BAIE VERTE
100	CAMERA	2221430	50 03.84N	56 05.28W	45.0	BAIE VERTE

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TABLE 1
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<u>SAMPLE NUMBER</u>	<u>SAMPLE TYPE</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>DEPTH (M)</u>	<u>GEOGRAPHIC LOCATION</u>
101	GRAB	2221451	50 02.37N	56 02.01W	47.0	BAIE VERTE
102	CAMERA	2221505	50 02.36N	56 01.96W	39.0	BAIE VERTE
103	GRAB	2221552	50 01.53N	56 03.69W	35.0	BAIE VERTE
104	CAMERA	2221608	50 01.54N	56 03.49W	43.0	BAIE VERTE
105	GRAB	2221614	50 01.55N	56 03.19W	41.0	BAIE VERTE
106	CAMERA	2221626	50 01.50N	56 03.20W	44.0	BAIE VERTE
107	GRAB	2221631	50 01.42N	56 03.28W	46.0	BAIE VERTE
108	CAMERA	2221639	50 01.34N	56 03.31W	48.0	BAIE VERTE
109	GRAB	2221645	50 01.26N	56 03.60W	50.5	BAIE VERTE
110	CAMERA	2221702	50 01.32N	56 03.58W	53.0	BAIE VERTE
111	GRAB	2221709	50 01.20N	56 03.50W	47.0	BAIE VERTE
112	CAMERA	2221715	50 01.20N	56 03.45W	46.0	BAIE VERTE
113	GRAB	2221733	50 01.91N	56 06.89W	38.0	BAIE VERTE
114	CAMERA	2221747	50 01.93N	56 06.73W	74.0	BAIE VERTE
115	GRAB	2221802	50 00.31N	56 06.10W	72.0	BAIE VERTE
116	CAMERA	2221822	50 00.33N	56 06.11W	90.0	BAIE VERTE
117	GRAB	2221832	50 00.02N	56 06.84W	60.0	BAIE VERTE
118	CAMERA	2221840	50 00.03N	56 06.80W	56.0	BAIE VERTE
119	GRAB	2221849	50 00.62N	56 07.75W	32.5	BAIE VERTE
120	CAMERA	2221856	50 00.66N	56 07.71W	33.5	BAIE VERTE
121	GRAB	2221901	50 00.63N	56 07.91W	28.0	BAIE VERTE
122	CAMERA	2221908	50 00.64N	56 07.83W	30.5	BAIE VERTE
123	GRAB	2221916	50 00.54N	56 08.18W	18.0	BAIE VERTE
124	CAMERA	2221920	50 00.55N	56 08.14W	20.5	BAIE VERTE
125	GRAB	2221931	50 00.48N	56 08.02W	21.5	BAIE VERTE

TABLE 1
TOTAL SAMPLE INVENTORY

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126	CAMERA	2221938	50 00.49N	56 07.94W	22.0	BAIE VERTE
127	GRAB	2221948	49 59.84N	56 06.96W	45.0	BAIE VERTE
128	CAMERA	2221954	49 59.85N	56 06.86W	44.0	BAIE VERTE
129	GRAB	2222003	49 59.42N	56 07.04W	33.0	BAIE VERTE
130	CAMERA	2222012	49 59.42N	56 07.00W	32.0	BAIE VERTE
131	GRAB	2222017	49 59.52N	56 06.88W	32.5	BAIE VERTE
132	CAMERA	2222023	49 59.53N	56 06.86W	32.0	BAIE VERTE
133	CORE	2231140	49 57.05N	56 09.84W	33.0	BAIE VERTE
134	CORE	2231200	49 57.85N	56 09.18W	66.0	BAIE VERTE
135	CORE	2231231	49 58.36N	56 08.73W	60.5	BAIE VERTE
136	GRAB	2232132	49 59.92N	55 34.17W	80.0	OFF LA SCIE HARBOUR
137	CAMERA	2232141	49 59.98N	55 34.10W	80.0	OFF LA SCIE HARBOUR
138	GRAB	2232156	50 00.13N	55 36.35W	110.0	OFF LA SCIE HARBOUR
139	CAMERA	2232206	50 00.23N	55 36.30W	110.0	OFF LA SCIE HARBOUR
140	GRAB	2232226	49 58.33N	55 36.88W	52.0	OFF LA SCIE HARBOUR
141	CAMERA	2232235	49 58.33N	55 36.88W	52.0	OFF LA SCIE HARBOUR
142	GRAB	2261701	49 36.22N	55 53.28W	57.0	LITTLE BAY AREA
143	CAMERA	2261706	49 36.19N	55 53.30W	57.0	LITTLE BAY AREA
144	GRAB	2261712	49 36.27N	55 53.50W	56.0	LITTLE BAY AREA
145	CAMERA	2261717	49 36.23N	55 53.52W	56.0	LITTLE BAY AREA
146	GRAB	2261737	49 36.58N	55 55.86W	54.0	LITTLE BAY AREA
147	CAMERA	2261745	49 36.54N	55 55.88W	48.0	LITTLE BAY AREA

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148	GRAB	2261755	49 36.57N	55 55.52W	63.0	LITTLE BAY AREA
149	CAMERA	2261758	49 36.56N	55 55.56W	59.0	LITTLE BAY AREA
150	GRAB	2261804	49 36.75N	55 55.52W	49.0	LITTLE BAY AREA
151	CAMERA	2261810	49 36.72N	55 55.58W	52.0	LITTLE BAY AREA
152	GRAB	2281718	49 29.59N	55 46.34W	34.0	EAST HALLS BAY AREA
153	CAMERA	2281727	49 29.56N	55 46.26W	39.0	EAST HALLS BAY AREA
154	GRAB	2281734	49 29.76N	55 45.57W	48.5	EAST HALLS BAY AREA
155	CAMERA	2281739	49 29.75N	55 45.54W	47.0	EAST HALLS BAY AREA
156	GRAB	2281744	49 30.03N	55 45.47W	54.0	EAST HALLS BAY AREA
157	CAMERA	2281748	49 30.02N	55 45.41W	53.0	EAST HALLS BAY AREA
158	GRAB	2281756	49 30.57N	55 45.39W	67.0	EAST HALLS BAY AREA
159	CAMERA	2281802	49 30.59N	55 45.32W	66.0	EAST HALLS BAY AREA
160	GRAB	2281818	49 31.44N	55 47.66W	74.0	EAST HALLS BAY AREA
161	CAMERA	2281828	49 31.44N	55 47.66W	74.0	EAST HALLS BAY AREA
162	GRAB	2281834	49 31.38N	55 47.75W	75.0	EAST HALLS BAY AREA
163	CAMERA	2281845	49 31.38N	55 47.60W	73.0	EAST HALLS BAY AREA
164	GRAB	2281851	49 31.25N	55 47.30W	56.0	EAST HALLS BAY AREA
165	CAMERA	2281857	49 31.28N	55 47.26W	52.0	EAST HALLS BAY AREA

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166	GRAB	2281906	49 32.00N	55 46.89W	82.0	EAST HALLS BAY AREA
167	CAMERA	2281910	49 32.04N	55 46.87W	80.0	EAST HALLS BAY AREA
168	GRAB	2281918	49 31.86N	55 46.23W	152.0	EAST HALLS BAY AREA
169	CAMERA	2281931	49 31.89N	55 46.06W	148.0	EAST HALLS BAY AREA
170	GRAB	2281943	49 32.35N	55 46.65W	50.0	EAST HALLS BAY AREA
171	CAMERA	2281947	49 32.36N	55 46.63W	45.0	EAST HALLS BAY AREA
172	GRAB	2282001	49 33.57N	55 44.96W	40.0	EAST HALLS BAY AREA
173	CAMERA	2282009	49 33.60N	55 44.91W	41.5	EAST HALLS BAY AREA
174	GRAB	2282019	49 33.84N	55 46.22W	106.0	EAST HALLS BAY AREA
175	CAMERA	2282025	49 33.85N	55 46.16W	116.0	EAST HALLS BAY AREA
176	GRAB	2282039	49 34.78N	55 45.08W	80.0	EAST HALLS BAY AREA
177	CAMERA	2282044	49 34.79N	55 45.03W	62.0	EAST HALLS BAY AREA
178	GRAB	2282053	49 35.42N	55 44.60W	39.0	EAST HALLS BAY AREA
179	CAMERA	2282100	49 35.43N	55 44.53W	40.0	EAST HALLS BAY AREA
180	CORE	2291634	49 30.65N	55 45.98W	100.0	EAST HALLS BAY AREA
181	CORE	2291654	49 31.88N	55 46.05W	146.0	EAST HALLS BAY AREA
182	CORE	2291717	49 34.19N	55 45.66W	177.0	EAST HALLS BAY AREA

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183	CORE	2291735	49 34.16N	55 45.79W	178.0	EAST HALLS BAY AREA
184	CORE	2291907	49 29.93N	56 03.14W	74.0	EAST HALLS BAY AREA
185	CORE	2291928	49 30.10N	56 02.54W	60.0	HALLS BAY
186	GRAB	2301137	49 25.62N	56 07.08W	30.5	HALLS BAY
187	CAMERA	2301140	49 25.63N	56 07.05W	31.0	HALLS BAY
188	GRAB	2301145	49 25.95N	56 06.82W	54.0	HALLS BAY
189	CAMERA	2301154	49 25.94N	56 06.76W	51.0	HALLS BAY
190	GRAB	2301201	49 26.33N	56 06.18W	72.0	HALLS BAY
191	CAMERA	2301209	49 26.33N	56 06.12W	66.0	HALLS BAY
192	GRAB	2301216	49 25.96N	56 05.60W	80.0	HALLS BAY
193	CAMERA	2301220	49 25.96N	56 05.58W	80.5	HALLS BAY
194	GRAB	2301230	49 26.90N	56 05.28W	196.0	HALLS BAY
195	CAMERA	2301242	49 26.89N	56 05.23W	192.0	HALLS BAY
196	GRAB	2301259	49 27.27N	56 03.69W	58.0	HALLS BAY
197	CAMERA	2301311	49 27.30N	56 03.61W	38.0	HALLS BAY
198	GRAB	2301331	49 29.90N	56 02.50W	121.0	HALLS BAY
199	CAMERA	2301340	49 29.88N	56 02.48W	128.0	HALLS BAY
200	GRAB	2301351	49 29.93N	56 02.84W	78.0	HALLS BAY
201	CAMERA	2301355	49 29.94N	56 02.82W	72.0	HALLS BAY
202	GRAB	2301403	49 29.95N	56 03.22W	64.0	HALLS BAY
203	CAMERA	2301412	49 29.96N	56 03.21W	61.0	HALLS BAY
204	GRAB	2301419	49 29.88N	56 03.38W	66.0	HALLS BAY
205	CAMERA	2301422	49 29.88N	56 03.33W	67.0	HALLS BAY

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
001	VAN VEEN	2161314	49 32.07N 54 27.03W	80.0	2	HAMILTON SOUND	COARSE SUB-ANGULAR TO SUB-ROUNDED GRAVEL, PEBBLES, TRACE OF COARSE SAND.
003	VAN VEEN	2161349	49 30.60N 54 25.72W	26.0	2	HAMILTON SOUND	SUB-ROUNDED GRAVEL COATED WITH RED CORAL, COARSE BROWN SAND, SHELL FRAGMENTS, WORM TUBES. 2 ATTEMPTS - 1 BUCKET FOR EACH ATTEMPT.
005	VAN VEEN	2161407	49 30.26N 54 24.57W	25.0	2	HAMILTON SOUND	2 ATTEMPTS. GRAVEL, SUB-ROUNDED TO SUB-ANGULAR, GRAVEL, SOME CORAL-ENCRUSTED, SOME CLEAN; SMALL AMOUNT BROWN MEDIUM SAND, SHELLS, SHELL FRAGMENTS, SEA URCHIN, SMALL STARFISH. JAWS PARTLY OPEN AFTER 1ST ATTEMPT. 1 BAG FOR EACH IN 2 BUCKETS.
007	VAN VEEN	2161431	49 28.77N 54 26.20W	16.0	6	HAMILTON SOUND	GRAVEL AND SAND. GRAVEL IS SUB-ROUNDED TO SUB- ANGULAR, CORAL ENCRUSTED ON ONE SIDE. SAND IS COARSE, WITH GRANULES AND PEBBLES. SPONGES, SEA URCHINS. ATTEMPTS 1 AND 2 IN 1ST BUCKET, 3 AND 4 DID NOT TRIP, ATTEMPT 5 LARGE SLAB OF ROCK 35X20X 10CM, CORAL ON TOP. ATTEMPT 6 IN BUCKET NO. 2.
009	VAN VEEN	2161454	49 28.47N 54 25.16W	26.0	4	HAMILTON SOUND	SANDY GRAVEL, 1ST ATTEMPT (BUCKET 1) BROWN FINE- MEDIUM SAND, NUMEROUS CLASTS SUB-ROUNDED TO SUB- ANGULAR GRAVEL, CORAL-COATED ON ONE SIDE. A FEW SHELLS, SOME SMALL SHELLS ON GRAVEL. ATTEMPT 2 AND 3 DID NOT TRIP. ATTEMPT 4 PUT IN BUCKET NO. 2 - SANDY GRAVEL.
011	VAN VEEN	2161558	49 28.21N 54 24.32W	22.0	2	HAMILTON SOUND	SANDY GRAVEL. BROWN MEDIUM-FINE SAND AND SUB- ANGULAR TO SUB-ROUNDED GRAVEL, SOME WITH RED CORAL ON ONE SIDE. SMALL STARFISH, SAND DOLLARS, A FEW SHELL FRAGMENTS. 1 ATTEMPT IN EACH OF 2 BUCKETS.
013	VAN VEEN	2161612	49 28.54N 54 23.82W	30.0	3	HAMILTON SOUND	SANDY GRAVEL. 1ST ATTEMPT (BUCKET 1) FINE-MEDIUM SAND, ANGULAR GRAVEL WITH RED CORAL ON TOP SIDE. SEA URCHIN, SHELL FRAGMENTS, SOME ATTACHED SEAWEED. 2ND ATTEMPT DID NOT TRIP. 3RD ATTEMPT (IN 2ND BUCKET) POORLY SORTED SAND WITH GRANULES AND PEBBLES.
015	VAN VEEN	2161644	49 26.77N 54 20.80W	19.0	1	HAMILTON SOUND	MEDIUM-FINE DARK GREY BROWN SAND, A FEW WORMS. 1 BAG IN EACH OF 2 BUCKETS.
017	VAN VEEN	2161719	49 30.38N 54 17.71W	21.0	1	HAMILTON SOUND	SANDY GRAVEL. GREY BROWN FINE-MEDIUM SAND AND SUB-ROUNDED GRAVEL, MOSTLY LARGE-PEBBLE SIZE, TRACES OF CORAL. SAND DOLLAR, MOLLUSCS, SEVERAL ROCK SLATERS ON PEBBLES.

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019	VAN VEEN	2161743	49 28.82N 54 17.12W	27.0	1	HAMILTON SOUND	COARSE GRAVEL HEAVILY COATED ALL OVER WITH RED CORAL. SMALLER PEBBLE-SIZE CLASTS NOT COATED. NUMEROUS STARFISH, SOME SEAWEED ATTACHED TO A PEBBLE. 2 BAGS IN 1 BUCKET.
021	VAN VEEN	2161807	49 26.98N 54 16.37W	18.0	7	HAMILTON SOUND	SANDY GRAVEL. GREY BROWN FINE-MEDIUM SAND AND ANGULAR TO SUB-ANGULAR CLASTS, SOME WITH PATCHES OF RED CORAL ON ONE SIDE. SOME SPONGES. 1ST ATTEMPT WAS EMPTY. 2 BUCKETS - 1 BAG IN EACH BUCKET.
023	VAN VEEN	2161832	49 28.94N 54 15.86W	28.0	2	HAMILTON SOUND	GRAVEL; MAINLY COARSE GRAVEL COMPLETELY COATED WITH RED CORAL, ON THE 1ST ATTEMPT. 2ND ATTEMPT PRODUCED PEBBLES AND A TRACE OF MEDIUM BROWN SAND. 1 BUCKET.
025	VAN VEEN	2161857	49 31.59N 54 14.42W	15.0	6	HAMILTON SOUND	SAND. MEDIUM-COARSE BROWN GREY SAND WITH GRANULES AND PEBBLES. NUMEROUS SAND DOLLARS. 1ST ATTEMPT SMALL AMOUNT. ATTEMPTS 2-5 EMPTY. 2 BAGS + 1 VIAL IN ONE BUCKET.
027	VAN VEEN	2161917	49 30.37N 54 13.88W	38.0	2	HAMILTON SOUND	DARK OLIVE BROWN MEDIUM-FINE SAND WITH SOME SILT. SAND DOLLARS. 2 BAGS AND A VIAL IN 2 BUCKETS. JAWS STILL OPEN AFTER 1ST ATTEMPT.
029	VAN VEEN	2161933	49 29.63N 54 13.02W	28.0	3	HAMILTON SOUND	COARSE GRAVEL, SUB-ROUNDED TO SUB-ANGULAR, HEAVILY COATED WITH RED CORAL, MAINLY ON ONE SIDE. 1ST ATTEMPT BAGGED, 2ND ATTEMPT EMPTY, 3RD ATTEMPT 2 LARGE CLASTS, INCLUDING ONE 30CM LONG HEAVILY ENCRUSTED WITH RED CORAL.
031	VAN VEEN	2161951	49 30.72N 54 11.55W	46.0	1	HAMILTON SOUND	DARK OLIVE MEDIUM TO FINE SAND WITH SOME SILT. NUMEROUS WORMS AND WORM TUBES. 2 BAGS AND 1 VIAL IN 1 BUCKET.
033	VAN VEEN	2162006	49 31.44N 54 11.38W	25.0	2	HAMILTON SOUND	COARSE GREY BROWN SAND WITH GRANULES AND PEBBLES, SOME COATED WITH RED CORAL. 1 STARFISH. 2 BUCKETS (1 FOR EACH ATTEMPT).
035	VAN VEEN	2162021	49 31.90N 54 11.08W	12.0	3	HAMILTON SOUND	GRAVEL. 1ST ATTEMPT EMPTY. 2ND ONE LARGE BOULDER (SUB-ROUNDED TO SUB-ANGULAR) 30X30X25CM, CORAL ENCRUSTED ON TOP, BARE BELOW. 3RD ATTEMPT CORAL ENCRUSTED SUB-ROUNDED TO SUB-ANGULAR GRAVEL, NUMEROUS SMALL SEA URCHINS. 1 BUCKET. (LARGE CLAST NOT KEPT).
037	VAN VEEN	2162046	49 30.27N 54 09.26W	55.0	1	HAMILTON SOUND	DARK OLIVE SILTY FINE SAND WITH THICK (1CM) WORM TUBES, ABOUT 20CM LONG. 1 BUCKET CONTAINING 2 BAGS AND 1 VIAL.

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TABLE 2
GRAB SAMPLES

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
039	VAN VEEN	2162115	49 28.00N 54 12.56W	24.0	3	HAMILTON SOUND	GRAVEL. GENERALLY SUB-ANGULAR AND SUB-ROUNDED, INCLUDING SOME ROUNDED CLASTS. HEAVY CORAL ENCRUSTATION, GENERALLY MORE THAN 3/4 OF EACH CLAST. SEA URCHIN, 2 TYPES OF STARFISH, SEAWEED. 3 BAGS IN 2 BUCKETS.
041	VAN VEEN	2171807	49 35.47N 54 07.87W	47.0	1	HAMILTON SOUND	DARK OLIVE GREY FINE SAND WITH A TRACE OF SILT. 1 WORM AND 1 SMALL BIVALVE MOLLUSC. 1 BUCKET CONTAINING 2 BAGS AND 1 VIAL.
043	VAN VEEN	2171836	49 34.36N 54 12.22W	15.0	5	HAMILTON SOUND	GRAVEL WITH SAND. COARSE GRAVEL, ROUNDED, SUB-ROUNDED AND SUB-ANGULAR. HEAVILY ENCRUSTED WITH RED CORAL. NUMEROUS LARGE BIVALVES (HALF) COATED WITH CORAL. COARSE, LOOSLY SORTED SAND WITH GRANULES AND PEBBLES, SHELL FRAGMENTS, SEA URCHIN SPINES. SEVERAL SEA URCHINS. 3 BAGS IN 2 BUCKETS (ATTEMPT 3 AND 4 EMPTY).
045	VAN VEEN	2171856	49 33.48N 54 13.88W	20.0	4	HAMILTON SOUND	GRAVELLY SAND. MEDIUM OLIVE GREY SAND WITH SOME GRANULES AND A FEW LIVING BIVALVES, GRAVEL MOSTLY 2-3CM SIZE, SOME WITH RED CORAL, MOST WITH NO CORAL. SUB-ROUNDED. FIRST 3 ATTEMPTS BROUGHT UP A LARGE BOULDER WHICH FELL OUT, A FEW CORAL FRAGMENTS, SEAWEED AND SEA URCHINS. SAMPLE IS ATTEMPT 4. 2 BUCKETS, 1 BAG IN EACH.
047	VAN VEEN	2171911	49 33.14N 54 12.85W	22.0	2	HAMILTON SOUND	SANDY GRAVEL. FINE GRAVEL WITH COARSE SAND AND GRANULES. LARGER CLASTS HAVE RED CORAL. SHELL FRAGMENTS, SAND DOLLAR, WORM. 1ST ATTEMPT DID NOT TRIP. 2 BAGS IN 1 BUCKET.
049	VAN VEEN	2171927	49 33.18N 54 10.42W	18.0	3	HAMILTON SOUND	GRAVEL. COARSE CORAL-COATED GRAVEL, SUB-ROUNDED TO SUB-ANGULAR, SOME COARSE SAND. LARGE DEAD GASTROPOD, STARFISH, HERMIT CRAB. SOME GRAVEL HAS SEAWEED ATTACHED. 2 BAGS IN 1ST BUCKET, 1 BAG IN 2ND BUCKET (1 BAG FOR EACH ATTEMPT).
051	VAN VEEN	2171944	49 34.11N 54 11.76W	31.0	2	HAMILTON SOUND	FINE SAND, OLIVE GREY, SAND DOLLAR, 2 BAGS AND 1 VIAL IN 1 BUCKET (1ST BAG FROM 1ST ATTEMPT).
053	VAN VEEN	2172000	49 33.98N 54 10.86W	36.0	1	HAMILTON SOUND	FINE TO MEDIUM SAND, OLIVE GREY, WORM TUBES, GASTROPOD. 2 BUCKETS, 1 BAG IN EACH, + 1 VIAL.
055	VAN VEEN	2172014	49 34.36N 54 09.60W	36.0	5	HAMILTON SOUND	GRAVEL. COBBLES AND PEBBLES, ROUNDED TO SUB-ROUNDED, SUB-ANGULAR, COATED WITH CORAL ALL OVER (MOSTLY). STARFISH, GASTROPOD, SHELL FRAGMENT. TRACE OF COARSE SAND. 4 BAGS IN 3 BUCKETS.

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057	VAN VEEN	2172057	49 29.77N 54 09.19W	55.0	1	HAMILTON SOUND	DARK OLIVE GREY FINE TO MEDIUM SAND WITH SOME GRAVEL, ROUNDED, SUB-ROUNDED AND SUB-ANGULAR PEBBLE AND COBBLE SIZED CLASTS. NUMEROUS BIVALVE FRAGMENTS, SOME WORM TUBES. 2 BAGS AND 1 UIAL IN 2 BUCKETS.
059	VAN VEEN	2172115	49 28.88N 54 08.47W	38.0	1	HAMILTON SOUND	GRAVELLY SHELLY SAND. FINE, SUB-ANGULAR TO SUB-ROUNDED GRAVEL, MEDIUM OLIVE GREY SAND AND A HASH OF BROKEN BIVALVE SHELLS. 1 BAG IN 1 BUCKET.
061	VAN VEEN	2211551	49 59.54N 56 07.60W	55.0	2	BAIE VERTE	MUDDY SANDY GRAVEL. SUB-ANGULAR TO SUB-ROUNDED GRAVEL WITH MEDIUM SAND (DARK OLIVE) AND A TRACE OF MUD. SOME COARSE GRAVEL IN THE 2ND ATTEMPT. WORMS, STARFISH, CRAB. 2 BAGS FROM 1ST ATTEMPT AND 1 BAG FROM SECOND IN 1 LARGE BUCKET. NOTE: ALSO CONTAINED SOME BLACK (REDUCED) SEDIMENT.
063	VAN VEEN	2211609	49 59.42N 56 07.65W	29.0	3	BAIE VERTE	MUDDY GRAVELLY SAND. FINE GRAVEL IN A MATRIX OF SLIGHTLY MUDDY MEDIUM SAND. INCLUDES A NUMBER OF LARGER CORAL COATED SUB-ANGULAR CLASTS. 1ST ATTEMPT 1 PEBBLE ONLY. 2 BAGS IN 1 LARGE BUCKET. NOTE: SOME REDUCED (BLACK) SEDIMENT.
065	VAN VEEN	2211630	49 59.26N 56 08.85W	64.0	1	BAIE VERTE	GRAVELLY MUD. PEA SIZED GRAVEL, SUB-ANGULAR TO ROUNDED, IN A MATRIX OF SILTY MUD, (STRONG ODOUR) WHICH IS MAINLY BLACK ON THE SURFACE, AND DARK OLIVE WITH BLACK MOTTLES BELOW. 2 BAGS IN 1 LARGE BUCKET.
067	VAN VEEN	2211642	49 59.06N 56 08.38W	37.5	1	BAIE VERTE	GRAVELLY SANDY MUD. PEA-SIZED GRAVEL IN A MATRIX OF COARSE-MEDIUM SAND AND DARK OLIVE SILTY MUD. SURFACE LAYER MAINLY SAND AND FINE GRAVEL. BLACK MOTTLES IN PLACES. SHELL FRAGMENTS, BIVALVE HALVES, 1 SHRIMP, SOME LITHOTHAMNION FRAGMENTS. 2 BAGS IN 1 LARGE BUCKET.
069	VAN VEEN	2211654	49 59.08N 56 08.82W	15.0	2	BAIE VERTE	SAND. COARSE OLIVE GREY SHELLY SAND WITH A BLACK SLIMY, PUNGENT, OOZE ON THE SURFACE. 1 BAG FOR EACH ATTEMPT IN A LARGE BUCKET. NOTE: ALSO CONTAINED SOME FINE GRAVEL AND 2 COBBLES.
071	VAN VEEN	2211707	49 58.76N 56 08.80W	59.0	1	BAIE VERTE	GRAVELLY SANDY MUD. GRAVEL WITH ROUNDED, SUB-ROUNDED AND SUB-ANGULAR CLASTS IN A MATRIX OF SANDY OLIVE BROWN MUD. PROBABLY WITH A CONCENTRATION OF GRAVEL ON THE SURFACE. 2 BAGS IN A BUCKET.
073	VAN VEEN	2211725	49 58.16N 56 09.58W	38.0	1	BAIE VERTE	GRAVELLY SANDY MUD. MAINLY FINE SUB-ROUNDED TO SUB-ANGULAR GRAVEL IN A MATRIX OF OLIVE BROWN MUD WITH SOME FINE SAND. WORMS, BLACK MOTTLES. INCLUDES A LARGE (25CM) SUB ANGULAR COBBLE WITH RED CORAL AND SPONGES ON ITS TOP SIDE. 2 BAGS IN A BUCKET.

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075	VAN VEEN	2211737	49 58.10N 56 08.52W	42.0	1	BAIE VERTE	MUD. VERY DARK OLIVE TO BLACK MUD WITH A FEW CLASTS OF FINE GRAVEL. SOME WORMS, A FEW BIVALVES. SURFACE 1/2CM IS LIGHT OLIVE BROWN IN COLOR. 2 BAGS IN 1 BUCKET.
077	VAN VEEN	2211749	49 57.79N 56 09.25W	58.0	1	BAIE VERTE	MUD. SOFT DARK OLIVE MUD WITH A FEW FINE GRAVEL CLASTS, SOME (COMPLETE BUT DEAD) BIVALVES, BLACK MOTTLES IN PLACES. 2 BAGS IN A BUCKET, 2 BAGS IN A LARGE BUCKET.
079	VAN VEEN	2211801	49 57.76N 56 09.62W	28.5	1	BAIE VERTE	GRAVELLY MUDDY SAND. MAINLY FINE GRAVEL AND GRANULES BUT WITH SEVERAL CORAL COATED COBBLES IN A MATRIX OF MID-BROWN MEDIUM TO COARSE SAND WITH SOME SILTY MUD. CORAL FRAGMENTS, NUMEROUS (DEAD) BIVALVES. 2 BAGS IN A BUCKET.
081	VAN VEEN	2211813	49 57.36N 56 08.86W	25.0	3	BAIE VERTE	GRAVELLY MUD. NUMEROUS CLASTS OF GRAVEL, SUB- ANGULAR, SUB-ROUNDED AND ANGULAR, IN A MATRIX OF VERY DARK OLIVE MUD. SOME CORAL LUMPS, WORMS, AND A JUVENILE SCALLOP (ABOUT 8CM DIAMETER). 2 BAGS IN A LARGE BUCKET. 1ST GRAB HAD ONLY THE SCALLOP SHELL.
083	VAN VEEN	2211828	49 57.16N 56 09.82W	32.0		BAIE VERTE	MUD WITH GRAVEL. A FEW CLASTS OF COARSE GRAVEL IN A MATRIX OF DARK OLIVE MUD, MOTTLED BLACK IN PLACES. NUMEROUS WORMS OF VARIOUS TYPES AND NUMEROUS "UNICORN HORNS" UP TO 4CM LONG, AGGLUTINATED WALLS.
085	VAN VEEN	2211844	49 56.70N 56 09.65W	20.0	2	BAIE VERTE	SAND. POORLY SORTED COARSE TO MEDIUM SAND WITH GRANULES, SOME MUD, SOME PEBBLES AND COBBLES COATED WITH CORAL ON ONE SIDE ONLY. BIVALVES (DEAD), SMALL GASTROPODS, "UNICORNS" (SEE SAMPLE 083 NOTES). 2 BAGS IN A LARGE BUCKET.
087	VAN VEEN	2211858	49 56.53N 56 10.47W	27.0	1	BAIE VERTE	MUD. BLACK MUD WITH DARK BROWN MOTTLES, A FEW PEBBLES. 2 BAGS IN A LARGE BUCKET.
089	VAN VEEN	2211910	49 56.37N 56 10.58W	31.0	2	BAIE VERTE	MUD. SOFT OLIVE BROWN MUD WITH BLACK MOTTLES AND A FEW PEBBLES. A FEW "UNICORNS" AND BIVALVE SHELLS . 1ST ATTEMPT EMPTY, 2 BAGS IN A LARGE BUCKET.
091	VAN VEEN	2211927	49 56.11N 56 11.43W	13.0	1	BAIE VERTE	WOOD CHIPS WITH BLACK MUD. A MIXTURE OF WOOD CHIPS UP TO 10CM LONG, PLUS SOUPY BLACK MUD. 2 BAGS IN A LARGE BUCKET.
093	VAN VEEN	2221327	50 03.47N 56 05.82W	29.0	2	BAIE VERTE	SAND. CLEAN, WELL SORTED MEDIUM TO FINE BROWNISH GREY SAND WITH NUMEROUS SAND DOLLARS. 2 BAGS AND 1 VIAL IN A LARGE BUCKET.

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095	VAN VEEN	2221343	50 03.45N 56 06.60W	18.0	4	BAIE VERTE	SAND. CLEAN, MEDIUM SAND, WELL SORTED, BROWNISH GREY, NUMEROUS SAND DOLLARS. 2 BAGS AND 1 VIAL IN 1 LARGE BUCKET. ATTEMPTS 2 AND 3 WERE EMPTY EXCEPT FOR 1 SAND DOLLAR, NO. 3.
097	VAN VEEN	2221358	50 03.78N 56 05.87W	26.5	6	BAIE VERTE	CLEAN, BROWNISH GREY, WELL SORTED MEDIUM TO FINE SAND. SAND DOLLARS, STARFISH. (ATTEMPT 1 ONLY). ATTEMPT 2 A LARGE SUB-ANGULAR GNEISS COBBLE (22X13X9CM) COATED ON ONE SIDE WITH RED CORAL. ATTEMPTS 3,4,5 AND 6 EMPTY EXCEPT FOR A SEA URCHIN IN ATTEMPT 4. 1 BAG, 1 VIAL AND 1 COBBLE IN THE BUCKET.
099	VAN VEEN	2221417	50 03.86N 56 05.40W	57.0	5	BAIE VERTE	COARSE SHELLY SAND WITH ANGULAR AND SUB-ANGULAR GRAVEL (COBBLE SIZE) COATED ON ONE SIDE WITH RED CORAL. SMALL STARFISH, PIECE OF SEAWEED, LIVING BIVALVES, GASTROPODS. JAWS PARTLY OPEN ON ATTEMPT NO. 2, 3 EMPTY, 4 JAWS DID NOT TRIP. 1 BAG AND 1 VIAL IN A LARGE BUCKET.
101	VAN VEEN	2221451	50 02.37N 56 02.01W	47.0	4	BAIE VERTE	GRAVEL. ONLY A SMALL SAMPLE, ATTEMPT 1 1 PIECE OF ANGULAR GRAVEL (GNEISS/GRANITE). ATTEMPT 2 A FISH (CAPELIN) AND 1 LOBSTER LEG. ATTEMPT 3 JAWS REMAINED OPEN, ATTEMPT 4 SEA URCHIN, 2 SUB-ANGULAR COBBLES (ONE WITH RED CORAL AND ATTACHED SEAWEED), TRACE OF COARSE GREY BROWN SHELLY SAND. 1 AND 1 VIAL IN A BUCKET.
103	VAN VEEN	2221552	50 01.53N 56 03.69W	35.0	7	BAIE VERTE	SANDY GRAVEL. COARSE SHELLY SAND, YELLOW BROWN, WITH PEBBLES AND COBBLES, MAINLY SUB-ANGULAR, CORAL COATED. 1 ROUNDED PEBBLE. STARFISH, SEAWEED, A CAPLIN, SPONGE ON SOME COBBLES. 1 VIAL AND 2 BAGS IN A BUCKET (1 BAG HAS THE MUD, THE SECOND HAS THE GRAVEL).
105	VAN VEEN	2221614	50 01.55N 56 03.19W	41.0	4	BAIE VERTE	COARSE TO MEDIUM SAND WITH COMMUNUTED SHELLS AND BIVALVES, YELLOW BROWN COLORED AND PEBBLE-COBBLE GRAVEL, INCLUDING ROUNDED CLASTS, ALL CORAL COATED (ALL OVER). ATTEMPT 4 WAS LARGELY SAND ONLY, ATTEMPT 2 WAS EMPTY. 2 BAGS IN A BUCKET.
107	VAN VEEN	2221631	50 01.42N 56 03.28W	46.0	2	BAIE VERTE	GRAVELLY SAND. POORLY SORTED BROWN MEDIUM-COARSE SAND WITH COMMUNUTED SHELLS AND BIVALVES. FINE GRAVEL (PEBBLE TO COBBLE SIZE), WITH LARGER CLASTS COATED ON ONE SIDE WITH RED CORAL. SMALL STARFISH, WORMS. 2 BAGS AND 1 VIAL IN 1 BUCKET.
109	VAN VEEN	2221645	50 01.26N 56 03.60W	50.5	4	BAIE VERTE	GRAVELLY SAND. MEDIUM-FINE SAND, GREY BROWN COLOR, WELL SORTED, WITH SOME FINE GRAVEL, SUB-ROUNDED TO SUB-ANGULAR. SAND DOLLARS, BIVALVE HALVES. 3 BAGS AND 1 VIAL (BAG 1-ATTEMPTS 1 AND 2, BAG 2-ATTEMPTS 3 AND 4).

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111	VAN VEEN	2221709	50 01.20N 56 03.50W	47.0	2	BAIE VERTE	GRAVELLY SHELLY SAND, BROWN MEDIUM SAND, WELL SORTED, WITH A LOT OF 1/2 BIVALVES, PEBBLES AND COBBLES. SOME CORAL COATED ON 1 SIDE. MUCH OF THE GRAVEL IS ROUNDED. SEA URCHINS, SAND DOLLARS. 2 BAGS AND 1 VIAL IN A BUCKET.
113	VAN VEEN	2221733	50 01.91N 56 06.88W	38.0	5	BAIE VERTE	GRAVEL-SAND, MIXTURE OF COARSE SAND WITH COMMINUTED SHELL, GRANULES AND SUB-ANGULAR AND ANGULAR COBBLE SIZE GRAVEL, WITH RED CORAL ON 1 SIDE. ATTEMPTS 1,3 AND 5 WERE EMPTY. ONE LARGE ANGULAR COBBLE HAD RED CORAL ON TOP AND DEAD (YELLOW) CORAL ELSEWHERE. 1 BAG AND 1 VIAL.
115	VAN VEEN	2221802	50 00.31N 56 06.10W	72.0	5	BAIE VERTE	GRAVELLY MUD, SUB-ANGULAR, SUB-ROUNDED AND MANY WELL ROUNDED GRAVEL CLASTS (UP TO COBBLE SIZE) IN A MATRIX OF MUD WITH SOME FINE SAND. WORMS OF VARIOUS TYPES. 2 BAGS IN A BUCKET. BAG 1 IS ATTEMPT 1, BAG 2 IS ATTEMPT 5. ATTEMPT 2 AND 4 DID NOT TRIP, ATTEMPT 3 WAS EMPTY.
117	VAN VEEN	2221832	50 00.02N 56 06.84W	60.0	2	BAIE VERTE	GRAVELLY MUDDY SAND, ANGULAR, SUB-ANGULAR, SUB-ROUNDED AND WELL ROUNDED GRAVEL, UP TO COBBLE SIZE IN A MATRIX OF DARK OLIVE MUDDY FINE SAND. A STARFISH AND SOME AGGLUTINATED WORM TUBES. 2 BAGS IN A BUCKET (1 FOR EACH ATTEMPT).
119	VAN VEEN	2221849	50 00.62N 56 07.75W	32.5	3	BAIE VERTE	SAND AND GRAVEL. ATTEMPTS 1 AND 2 (IN BAG 1) GAVE MEDIUM GRAVEL, SUB-ANGULAR AND SUB-ROUNDED, PARTLY COATED IN RED CORAL (DEAD CORAL ON SOME CLASTS). A TRACE OF MEDIUM SAND. ATTEMPT 3 (BAG 2) PRODUCED WELL SORTED MEDIUM/FINE SAND, OLIVE GREY IN COLOR. 2 BAGS IN A BUCKET.
121	VAN VEEN	2221901	50 00.63N 56 07.91W	28.0	3	BAIE VERTE	GRAVELLY SAND, MEDIUM SAND, OLIVE GREY COLOR WITH CLASTS OF SUB-ANGULAR GRAVEL, UP TO COBBLE SIZE, THE LARGER CLASTS PARTLY CORAL COATED. ATTEMPT 3 WAS MOSTLY GRAVEL. SMALL CRAB, LARGE GASTROPOD. 2 BAGS IN A BUCKET.
123	VAN VEEN	2221916	50 00.54N 56 08.18W	18.0	2	BAIE VERTE	SAND, MEDIUM, OLIVE GREY, SAND DOLLARS, LARGE GASTROPOD, A FEW PEBBLES. 2 BAGS A 1 VIAL IN A BUCKET.
125	VAN VEEN	2221931	50 00.48N 56 08.02W	21.5	3	BAIE VERTE	SAND AND GRAVEL. 1ST ATTEMPT GAVE POORLY SORTED COARSE SAND WITH GRANULES AND PEBBLES, SEA URCHINS AND SMALL STARFISH. ATTEMPTS 2 AND 3 GAVE MEDIUM GRAVEL, SUB-ANGULAR TO ROUNDED, COATED ENTIRELY WITH RED CORAL. 2 BAGS IN THE SAME BUCKET WITH SAMPLE NO. 127.

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
127	VAN VEEN	2221948	49 59.84N 56 06.96W	45.0	2	BAIE VERTE	GRAVELLY SAND. COARSE BROWN SAND WITH SOME MUD, GRANULES, PEBBLES AND COBBLEY GRAVEL, SOME CORAL COATED, SUB-ANGULAR TO ROUNDED. SHELL FRAGMENTS, SEA URCHINS. 2 BAGS AND A VIAL IN THE SAME BUCKET WITH SAMPLE NO. 125.
129	VAN VEEN	2222003	49 59.42N 56 07.04W	33.0	4	BAIE VERTE	GRAVELLY SAND. ATTEMPT 1 IS ONLY A FEW PEBBLES AND COBBLES WITH SOME FINE SAND, SOME MUD. ATTEMPT 2 GAVE SOME GRAVEL, CORAL COATED, SOME MUDDY FINE SAND, SEA URCHIN, SEAWEED, ATTEMPTS 3 AND 4 GAVE FINE-MEDIUM SAND, A FEW PEBBLES, SOME WELL-ROUNDED, A LARGE SCALLOP SHELL (BROKEN DURING SAMPLING). 2 BAGS IN THE SAME BUCKET AS SAMPLE NO. 131.
131	VAN VEEN	2222017	49 59.52N 56 06.88W	32.5	2	BAIE VERTE	SAND WITH SOME GRAVEL. OLIVE MEDIUM SAND, SOME MUD WITH SOME PEBBLY GRAVEL, SOME OF THE CLASTS WELL ROUNDED. 2 BAGS AND A VIAL IN THE SAME BUCKET AS SAMPLE NO. 129.
136	VAN VEEN	2232132	49 59.92N 55 34.17W	80.0	2	OFF LA SCIE HARBOUR	SAND WITH GRAVEL. VERY DARK BROWN WELL SORTED MEDIUM SAND WITH SOME FINE GRAVEL, SMALL CRAB, SMALL STARFISH. ATTEMPT 1 GAVE (ALSO) SOME ANGULAR COBBLES. 2 BAGS AND 1 VIAL IN A BUCKET.
138	VAN VEEN	2232156	50 00.13N 55 36.35W	110.0	2	OFF LA SCIE HARBOUR	FINE TO MEDIUM SAND, A FEW PEBBLES, DARK BROWNISH GREY COLOR. ATTEMPT 1 WASHED OUT ON THE WAY UP. 1 BAG AND A VIAL IN A BUCKET.
140	VAN VEEN	2232226	49 58.33N 55 36.88W	52.0	3	OFF LA SCIE HARBOUR	SANDY GRAVEL. POORLY SORTED MIXTURE OF COBBLES, PEBBLES, GRANULES AND SAND. SHELL FRAGMENTS, A BEER CAN LID, A DEAD FISH, WORM. SOME GRAVEL IS ROUNDED, MOST SUB-ROUNDED TO ANGULAR. 1 BAG IN A BUCKET.
142	VAN VEEN	2261701	49 36.22N 55 53.28W	57.0	1	LITTLE BAY AREA	DARK OLIVE MUD, MAINLY SILT SIZED. 2 BUCKETS WITH 1 BAG IN EACH. ALSO CONTAINED 1 COBBLE AND 1 PEBBLE.
144	VAN VEEN	2261712	49 36.27N 55 53.50W	56.0	1	LITTLE BAY AREA	OLIVE MUD (MAINLY SILT), LIGHT BROWN ON THE SURFACE. BIVALVES, WORMS, WORMTUBES, A FEW ROUNDED PEBBLES. 2 BUCKETS, 1 BAG IN EACH.
146	VAN VEEN	2261737	49 36.58N 55 55.86W	54.0	3	LITTLE BAY AREA	SANDY GRAVEL. ANGULAR TO SUB-ROUNDED GRAVEL, PEBBLE TO COBBLE SIZE RANGE, WITH DARK OLIVE MUDDY FINE SAND. WORMS, STARFISH, GASTROPOD, "UNICORNS". ATTEMPT 2 1 PEBBLE, ATTEMPT 3 HAD FINE GRAVEL. 2 BAGS IN 2 BUCKETS (ATTEMPT 1 IN BUCKET 1, ATTEMPT 3 IN 2ND BUCKET).

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
148	VAN VEEN	2261755	49 36.57N 55 55.52W	63.0	1	LITTLE BAY AREA	DARK OLIVE SILTY MUD, A FEW BIVALVES, A STRANGE JELLY-LIKE WORM. 1 BAG IN EACH OF 2 BUCKETS.
150	VAN VEEN	2261804	49 36.75N 55 55.52W	49.0	2	LITTLE BAY AREA	GRAVELLY MUD. COBBLES AND PEBBLES IN A MATRIX OF DARK OLIVE MUD WITH SOME GRANULES AND GRIT. SOME OF THE CLASTS ARE ROUNDED, SOME SUB-ANGULAR, WORMS, A FEW BIVALVE SHELLS. ATTEMPT 1 JAWS PARTLY OPEN ON RECOVERY. 1 BAG FOR EACH ATTEMPT; 2 BUCKETS.
152	VAN VEEN	2261718	49 29.59N 55 46.34W	34.0	4	EAST HALLS BAY AREA	SAND AND GRAVEL. ATTEMPT 1 AND 2 WERE EMPTY. ATTEMPT 3 GAVE A FEW COBBLES WITH RED CORAL ON TOP AND SOME MUDDY SAND. ATTEMPT 4 GAVE A DARK OLIVE BROWN SLIGHTLY MUDDY MEDIUM SAND WITH GRANULES AND PEBBLES. WORM, BIVALVES, STARFISH. 1 BAG IN A BUCKET.
154	VAN VEEN	2261734	49 29.76N 55 45.57W	48.5	1	EAST HALLS BAY AREA	MUDDY SAND WITH GRAVEL. DARK OLIVE BROWN MUDDY MEDIUM SAND WITH GRIT, GRANULES, SUB-ANGULAR GRAVEL AND A LARGE COBBLE (30X20X15CM) WITH A SEA ANEMONE AND SEAWEED ATTACHED. SHELL FRAGMENTS, MANY WORMS OF VARIOUS TYPES. 3 BAGS IN 3 BUCKETS (1 FOR THE COBBLE).
156	VAN VEEN	2261744	49 30.03N 55 45.47W	54.0	1	EAST HALLS BAY AREA	GRAVELLY MUD. SUB-ANGULAR TO SUB-ROUNDED GRAVEL, UP TO COBBLE SIZE, IN A MATRIX OF SMELLY VERY DARK OLIVE BROWN MUD WITH GRIT AND SAND. SEA ANEMONE ATTACHED TO A LARGE COBBLE, SHELLS (BIVALVES), WORMS. 1 BAG IN EACH OF 2 BUCKETS.
158	VAN VEEN	2261756	49 30.57N 55 45.39W	67.0	2	EAST HALLS BAY AREA	MUDDY GRAVEL. MAINLY FINE GRAVEL, SUB-ANGULAR AND CREAMY, VERY DARK GREY/OLIVE MUD. A FEW BIVALVES, "UNICORNS", WORM, SEA ANEMONE ATTACHED TO A GRAVEL CLAST. 2 BAGS IN 2 BUCKETS.
160	VAN VEEN	2261818	49 31.44N 55 47.66W	74.0	2	EAST HALLS BAY AREA	GRAVELLY MUD. VERY ANGULAR GRAVEL IN A MATRIX OF SOFT DARK OLIVE BROWN MUD, A FEW WORMS AND BIVALVES (LIVING). 2 BAGS IN 2 BUCKETS.
162	VAN VEEN	2261834	49 31.38N 55 47.75W	75.0	1	EAST HALLS BAY AREA	GRAVELLY MUD. DARK OLIVE BROWN MUD WITH VERY IRREGULAR, ANGULAR GRAVEL. 2 BAGS IN 2 BUCKETS.
164	VAN VEEN	2261851	49 31.25N 55 47.30W	56.0	2	EAST HALLS BAY AREA	SANDY MUDDY GRAVEL. A MIXTURE OF ANGULAR FINE GRAVEL, GRANULES, SAND AND DARK OLIVE GREY MUD. SOME STARFISH, SEA ANEMONE ATTACHED TO A PEBBLE. 2 BAGS IN 2 BUCKETS, ATTEMPT 1 WAS EMPTY.
166	VAN VEEN	2261906	49 32.00N 55 46.89W	82.0	1	EAST HALLS BAY AREA	MUDDY GRAVEL. ANGULAR FINE GRAVEL AND DARK OLIVE BROWN MUD. STRANGE LONG RED NODULAR WORM. 2 BAGS IN 2 BUCKETS.

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
168	VAN VEEN	2281918	49 31.86N 55 46.23W	152.0	2	EAST HALLS BAY AREA	GRAVELLY MUD, VERY ANGULAR GRAVEL IN A MATRIX OF DARK OLIVE BROWN MUD, SOME WORMS AND WORM TUBES. ATTEMPT 1 DID NOT TRIP. 2 BAGS IN 2 BUCKETS.
170	VAN VEEN	2281943	49 32.35N 55 46.65W	50.0	1	EAST HALLS BAY AREA	SANDY GRAVEL, SOME MUD. GRAVEL MAINLY FINE, WITH SAND AND SOME MUD. CLASTS ARE SUB-ANGULAR. SEA URCHINS AND SMALL STARFISH. 1 BAG IN 1 BUCKET.
172	VAN VEEN	2282001	49 33.57N 55 44.96W	40.0	3	EAST HALLS BAY AREA	SANDY GRAVEL. MIXTURE OF COARSE AND FINE GRAVEL AND MEDIUM SAND. LARGER CLASTS HAVE RED CORAL ON ONE SIDE. SEAWEED, STARFISH, LIVING BIVALVES, RED CORAL. ATTEMPTS 1 AND 3 SIMILAR, ATTEMPT 1 LARGE SUB-ANGULAR COBBLE WITH CORAL ON ONE SIDE ONLY. 2 BAGS IN 2 BUCKETS.
174	VAN VEEN	2282019	49 33.84N 55 46.22W	106.0	1	EAST HALLS BAY AREA	MUDDY GRAVEL. SUB-ANGULAR GRAVEL IN A MATRIX OF DARK OLIVE BROWN MUD WITH SOME SAND, WORM TUBES. 1 BAG IN A BUCKET.
176	VAN VEEN	2282039	49 34.78N 55 45.08W	80.0	1	EAST HALLS BAY AREA	MUDDY GRAVEL. FINE TO MEDIUM GRAVEL, SUB-ANGULAR, IN A MATRIX OF STIFF OLIVE BROWN MUD, STRONG SMELLING. WORM TUBES. 2 BAGS IN 2 BUCKETS. POSSIBILITY THAT THE GRAVEL IS MAINLY ON TOP OF THE MUD.
178	VAN VEEN	2282053	49 35.42N 55 44.60W	39.0	3	EAST HALLS BAY AREA	MEDIUM SAND, WELL SORTED, DARK GREY. ATTEMPT 2 RECOVERED A BOULDER 40X25X15CM, RED CORAL ON TOP SIDE ONLY. 2 BAGS IN 2 BUCKETS PLUS 1 BAG CONTAINING THE BOULDER.
186	VAN VEEN	2301137	49 25.62N 56 07.08W	30.5	1	HALLS BAY	DARK OLIVE BROWN MEDIUM SAND, NUMEROUS SMALL BIVALVES, TWIG, ROTTING FISH REMAINS, WORMS. 2 BAGS IN 2 BUCKETS.
188	VAN VEEN	2301145	49 25.95N 56 06.82W	54.0	3	HALLS BAY	GRAVELLY SANDY MUD. SUB-ANGULAR TO SUB-ROUNDED CLASTS IN A MATRIX OF MOTTLED BLACK AND DARK OLIVE MUD. ATTEMPT 1 PRODUCED AN ANGULAR COBBLE 30X20X10 CM WITH RED CORAL ON TOP. THE MATRIX IN ATTEMPT 2 CONTAINED FINE SAND WHICH WAS ABSENT FROM ATTEMPT 1. 2 BAGS IN 2 BUCKETS (PLASTIC BAG CONTAINING THE COBBLE).
190	VAN VEEN	2301201	49 26.33N 56 06.18W	72.0	2	HALLS BAY	ATTEMPT 1 EMPTY, ATTEMPT 2 GAVE GRAVELLY MUD, SUB- ROUNDED TO SUB-ANGULAR CLASTS, ONE WITH A SEA ANEMONE ATTACHED AND STIFF BLACK TO DARK OLIVE BROWN MUD. THERE IS SOME SUGGESTION THAT THE LARGER GRAVEL CLASTS FORM A "PAVEMENT" ON TOP OF A LESS GRAVELLY MUD. SOME SAND AT THE SURFACE WHICH IS ALSO LIGHT BROWN IN COLOR.

<u>SAMPLE NUMBER</u>	<u>TYPE OF SAMPLER</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (M)</u>	<u>NO. OF ATTEMPTS</u>	<u>GEOGRAPHIC LOCATION</u>	<u>GRAB SAMPLE NOTES</u>
192	VAN VEEN	2301216	49 25.96N 56 05.60W	80.0	1	HALLS BAY	MUD WITH GRAVEL. BLACK/VERY DARK BROWN MOTTLED MUD WITH SOME GRIT AND SAND AND ANGULAR TO SUB-ROUNDED GRAVEL. GRAVEL FORMS A SURFACE PAVEMENT. LARGER CLASTS HAVE RED CORAL AND SEA ANEMONES. SMALL STARFISH, WORMS. 2 BAGS IN 2 BUCKETS.
194	VAN VEEN	2301230	49 26.90N 56 05.28W	196.0	1	HALLS BAY	MUD. OLIVE BROWN, SILTY WITH A FEW SUB-ROUNDED PEBBLES. SOME BRITTLE STARS, GASTROPOD. DARKER MOTTLES AND A LIGHT BROWN SURFACE LAYER. 2 BAGS IN 2 BUCKETS.
196	VAN VEEN	2301259	49 27.27N 56 03.69W	58.0	4	HALLS BAY	GRAVELLY SAND. POORLY SORTED DARK OLIVE BROWN MEDIUM SAND WITH GRANULES, PEBBLES AND COBBLES. LARGEST COBBLES ARE ANGULAR TO SUB-ROUNDED AND COATED ON ONE SIDE WITH RED CORAL; ONE COBBLE HAS SPONGES ATTACHED. SAND CONTAINS A TRACE OF MUD. BRITTLESTARS, BIVALVES, GASTROPODS. ATTEMPT 1 WAS EMPTY. IT APPEARS THAT THE COARSER GRAVEL FORMS A SURFACE PAVEMENT. 2 BAGS IN 1 BUCKET.
198	VAN VEEN	2301331	49 29.90N 56 02.50W	121.0	1	HALLS BAY	GRAVELLY MUD. SUB-ANGULAR TO SUB-ROUNDED GRAVEL, COBBLE TO PEBBLE SIZE IN A MATRIX OF BLACK MUD. SOME COARSE SAND, POSSIBLY IN A SURFACE LAYER. NUMEROUS THICK WORM TUBES. 2 BAGS IN 2 BUCKETS.
200	VAN VEEN	2301351	49 29.93N 56 02.84W	78.0	1	HALLS BAY	MUDDY GRAVEL. NUMEROUS CLASTS OF SUB-ROUNDED GRAVEL, INCLUDING LARGE COBBLES, PEBBLES, GRANULES IN A MATRIX OF DARK OLIVE BROWN MUD, BLACK IN PLACES. JAWS PARTLY OPEN ON RECOVERY. 2 BAGS IN 2 BUCKETS.
202	VAN VEEN	2301403	49 29.95N 56 03.22W	64.0	1	HALLS BAY	MUDDY GRAVEL. ROUNDED TO SUB-ROUNDED GRAVEL, SOME COBBLES, MOSTLY PEBBLE SIZE, GRANULES AND SOME SAND IN A MATRIX OF OLIVE BROWN MUD. SOME PEBBLES HAVE SEA ANEMONES ATTACHED, BIVALVES. 2 BAGS IN 2 BUCKETS,
204	VAN VEEN	2301419	49 29.88N 56 03.38W	66.0	1	HALLS BAY	MUDDY SANDY GRAVEL. ROUNDED AND SUB-ROUNDED GRAVEL INCLUDING COBBLES, PEBBLES AND GRANULES, IN A MATRIX OF MUDDY SAND, VERY GRITTY. THE GRAVEL AND SAND APPEARS TO BE A SURFACE LAYER, SEDIMENT IS A STIFF MUD BELOW. 2 BAGS IN 2 BUCKETS.

ATLANTIC GEOSCIENCE CENTRE
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-FINS- REPORTING PACKAGE

TABLE 3

CORE SAMPLES

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	SAMPLE TYPE	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	CORER LENGTH (CM)	APP. PENN (CM)	CORE LENGTH (CM)	NO OF SECT	GEOGRAPHIC LOCATION	NOTES
133	GRAVITY	2231140	49 57.05N 56 09.04W	33.0	236	127	39	1	BAIE VERTE	CATCHER CONTAINED STIFF GREY CLAY, VERY GRITTY, WITH ANGULAR PEBBLES. SEDIMENT AT BOTTOM OF CORE WAS SAME AS CATCHER. SEDIMENT AT TOP WAS DARK OLIVE MUD WITH A LARGE SUB-ANGULAR PEBBLE.
134	GRAVITY	2231200	49 57.05N 56 09.18W	66.0	236	204	117	1	BAIE VERTE	CATCHER HAD STIFF, BUTTERY GREY CLAY WITH SOME GRIT AND ANGULAR PEBBLES. MOST OF THE CORE SEEMS TO CONSIST OF THIS MATERIAL BUT THE TOP 20CM IS DARK OLIVE MUD, MUCH DISTURBED DURING RECOVERY. WEIGHTS WERE SMEARED WITH STIFF GREY CLAY, WITH ANGULAR PEBBLES AND DARK OLIVE MUD WITH SHELL FRAGMENTS.
135	GRAVITY	2231231	49 58.36N 56 08.73W	60.5	236	208	93	1	BAIE VERTE	DARK OLIVE PEBBLY MUD AROUND TOP OF WEIGHTS, AND A MIXTURE OF DARK OLIVE MUD AND STIFF GREY CLAY AROUND BOTTOM OF WEIGHTS. CATCHER HAD A SMALL AMOUNT OF STIFF GREY CLAY. TOP (APPROX) 15CM OF CORE IS OLIVE MUD, NEXT IS GREY CLAY. CUTTER DENTED. NOTE: CATCHER SAMPLE IS IN SAME BUCKET AS THAT FROM SAMPLE NO. 134.
180	GRAVITY	2291634	49 30.65N 55 45.98W	100.0	236	254	96	1	EAST HALLS BAY AREA	CATCHER EMPTY. AROUND WEIGHTS AND BARREL WAS A STIFF LIGHT OLIVE CLAY WITH SHELL FRAGMENTS + SOME SMALL BIVALVES, PLUS A TRACE OF VERY DARK OLIVE BROWN MUD. BASE OF CORE WAS STIFF BUTTERY LIGHT OLIVE GREY CLAY. TOP WAS VERY DARK OLIVE BROWN MUD. SEDIMENT AT THE TOP OF CORE IS DISTURBED.
181	GRAVITY	2291654	49 31.08N 55 46.05W	146.0	236	279	84	1	EAST HALLS BAY AREA	CATCHER HAD LIGHT OLIVE GREY GRITTY CLAY. TOP OF CORE WAS VERY DARK, ALMOST BLACK, OLIVE MUD. BASE OF CORE WAS LIGHT GREY GRITTY CLAY. WHEN RECOVERED, THERE WAS A GAP 10CM DEEP, ABOUT 22CM UP FROM THE BOTTOM. CORE COLLAPSED AND CLOSED THIS. AROUND WEIGHTS AND BARREL WAS STIFF VERY DARK OLIVE MUD WITH SHELL FRAGMENTS AND A ROUNDED PEBBLE.

ATLANTIC GEOSCIENCE CENTRE
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TABLE 3

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

CORE SAMPLES

<u>SAMPLE NUMBER</u>	<u>SAMPLE TYPE</u>	<u>DAY/TIME (GMT)</u>	<u>LATITUDE LONGITUDE</u>	<u>DEPTH (MTRS)</u>	<u>CORER LENGTH (CM)</u>	<u>APP. CORE PENN LENGTH (CM)</u>	<u>NO CORE LENGTH (CM)</u>	<u>NO OF SECT</u>	<u>GEOGRAPHIC LOCATION</u>	<u>NOTES</u>
182	GRAVITY	2291717	49 34.19N 55 45.66W	177.0	236	193	64	1	EAST HALLS BAY AREA	CATCHER HAD A BUTTERY GREY CLAY (SLIGHT PINKISH TINGE). BASE OF CORE WAS GRITTY GREY CLAY, REDDISH TINGE. TOP OF CORE WAS APPROX 13CM OF DARK OLIVE MUD WITH NUMEROUS ANGULAR PEBBLES. WEIGHTS WERE SMEARED WITH DARK OLIVE BROWN MUD WITH PEBBLES. BARREL IS SMEARED WITH GREY CLAY.
183	GRAVITY	2291735	49 34.16N 55 45.79W	178.0	236	203	99	1	EAST HALLS BAY AREA	CATCHER SAMPLE IS BUTTERY GREY CLAY WITH A PINKISH TINGE. DARK OLIVE MUD AROUND WEIGHTS, GREY CLAY ON THE BARREL. TOP IS DARK OLIVE MUD, BOTTOM IS BUTTERY GREY CLAY, SLIGHT PINKISH TINGE.
184	GRAVITY	2291907	49 29.93N 56 03.14W	74.0	236	41	0	0	EAST HALLS BAY AREA	ATTEMPT 1 CUTTER DAMAGED, 50CM APP. PENN., ATTEMPT 2 ONLY A CUTTER SAMPLE WAS RETAINED, LENGTH 13CM. TOP WAS OLIVE DARK MUD WITH PEBBLES. BOTTOM WAS GRAVELLY MUDDY SAND, DARK OLIVE COLOR. A FEW PEBBLES IN THE CORE BARREL. OUTSIDE OF BARREL HAS DARK OLIVE MUD. CUTTER SLIGHTLY DAMAGED ON ATTEMPT NO. 2.
185	GRAVITY	2291928	49 30.10N 56 02.54W	60.0	236	10	0	0	HALLS BAY	ABOUT 10CM PENETRATION, CUTTER SMEARED WITH HARD, TOUGH SILT. CUTTER DAMAGED, NO SAMPLE RETAINED. BARREL CONTAINED A SMALL AMOUNT OF MUDDY ANGULAR FINE GRAVEL (BAGGED).

ATLANTIC GEOSCIENCE CENTRE
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TABLE 4
CAMERA STATIONS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF.	STEREO BOT	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
002	PENTAX AE100	2161329	49 32.08N 54 26.92W	67.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
004	PENTAX AE100	2161358	49 30.62N 54 25.59W	20.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
006	PENTAX AE100	2161414	49 30.26N 54 24.44W	27.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
008	PENTAX AE100	2161445	49 28.87N 54 26.13W	16.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
010	PENTAX AE100	2161507	49 28.49N 54 25.12W	26.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
012	PENTAX AE100	2161604	49 28.24N 54 24.28W	23.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
014	PENTAX AE100	2161623	49 28.54N 54 23.78W	32.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
016	PENTAX AE100	2161651	49 26.80N 54 20.85W	19.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
018	PENTAX AE100	2161729	49 30.33N 54 17.60W	23.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
020	PENTAX AE100	2161751	49 28.81N 54 17.08W	27.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
022	PENTAX AE100	2161815	49 26.98N 54 16.31W	18.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
024	PENTAX AE100	2161837	49 28.94N 54 15.77W	27.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
026	PENTAX AE100	2161906	49 31.57N 54 14.32W	11.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
028	PENTAX AE100	2161923	49 30.40N 54 13.90W	37.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
030	PENTAX AE100	2161940	49 29.66N 54 12.94W	29.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
032	PENTAX AE100	2161959	49 30.73N 54 11.49W	46.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
034	PENTAX AE100	2162014	49 31.44N 54 11.32W	24.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 4
CAMERA STATIONS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF, BOT	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
036	PENTAX AE100	2162029	49 31.91N 54 11.15W	12.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
038	PENTAX AE100	2162049	49 30.29N 54 09.20W	56.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
040	PENTAX AE100	2162120	49 28.00N 54 12.50W	23.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
042	PENTAX AE100	2171811	49 35.44N 54 07.89W	47.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
044	PENTAX AE100	2171845	49 34.38N 54 12.27W	15.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
046	PENTAX AE100	2171903	49 33.46N 54 13.80W	19.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
048	PENTAX AE100	2171916	49 33.15N 54 12.88W	21.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
050	PENTAX AE100	2171934	49 33.17N 54 10.53W	17.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
052	PENTAX AE100	2171951	49 34.08N 54 11.90W	31.0	2	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
054	PENTAX AE100	2172003	49 34.00N 54 10.88W	35.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
056	PENTAX AE100	2172025	49 34.33N 54 09.73W	35.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
058	PENTAX AE100	2172102	49 29.82N 54 09.32W	54.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
060	PENTAX AE100	2172119	49 28.90N 54 08.50W	38.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HAMILTON SOUND
062	PENTAX AE100	2211602	49 59.63N 56 07.51W	67.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
064	PENTAX AE100	2211619	49 59.49N 56 07.45W	44.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
066	PENTAX AE100	2211634	49 59.34N 56 08.69W	68.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
068	PENTAX AE100	2211647	49 59.14N 56 08.28W	42.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 4
CAMERA STATIONS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF.	STEREO BOT	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
070	PENTAX AE100	2211659	49 59.14N 56 08.79W	16.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
072	PENTAX AE100	2211711	49 58.89N 56 08.65W	59.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
074	PENTAX AE100	2211728	49 58.19N 56 09.55W	45.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
076	PENTAX AE100	2211742	49 58.14N 56 08.52W	36.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
078	PENTAX AE100	2211754	49 57.85N 56 09.18W	56.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
080	PENTAX AE100	2211804	49 57.80N 56 09.59W	31.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
082	PENTAX AE100	2211819	49 57.41N 56 08.81W	24.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
084	PENTAX AE100	2211835	49 57.22N 56 09.76W	33.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
086	PENTAX AE100	2211849	49 56.74N 56 09.60W	18.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
088	PENTAX AE100	2211901	49 56.55N 56 10.40W	28.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
090	PENTAX AE100	2211915	49 56.40N 56 10.53W	32.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
092	PENTAX AE100	2211930	49 56.12N 56 11.38W	12.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
094	PENTAX AE100	2221335	50 03.50N 56 05.74W	30.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
096	PENTAX AE100	2221351	50 03.49N 56 06.53W	19.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
098	PENTAX AE100	2221412	50 03.81N 56 05.71W	47.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
100	PENTAX AE100	2221430	50 03.84N 56 05.28W	45.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
102	PENTAX AE100	2221505	50 02.36N 56 01.96W	39.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 4
CAMERA STATIONS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF.	STEREO BOTI	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
104	PENTAX AE100	2221608	50 01.54N 56 03.49W	43.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
106	PENTAX AE100	2221626	50 01.50N 56 03.20W	44.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
108	PENTAX AE100	2221639	50 01.34N 56 03.31W	48.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
110	PENTAX AE100	2221702	50 01.32N 56 03.58W	53.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
112	PENTAX AE100	2221715	50 01.20N 56 03.45W	46.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
114	PENTAX AE100	2221747	50 01.93N 56 06.73W	74.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
116	PENTAX AE100	2221822	50 00.33N 56 06.11W	90.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
118	PENTAX AE100	2221840	50 00.03N 56 06.80W	56.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
120	PENTAX AE100	2221856	50 00.66N 56 07.71W	33.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
122	PENTAX AE100	2221908	50 00.64N 56 07.83W	30.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
124	PENTAX AE100	2221920	50 00.55N 56 08.14W	20.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
126	PENTAX AE100	2221938	50 00.49N 56 07.94W	22.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
128	PENTAX AE100	2221954	49 59.85N 56 06.86W	44.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
130	PENTAX AE100	2222012	49 59.42N 56 07.00W	32.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
132	PENTAX AE100	2222023	49 59.53N 56 06.86W	32.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	BAIE VERTE
137	PENTAX AE100	2232141	49 59.98N 55 34.10W	80.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	OFF LA SCIE HARBOUR
139	PENTAX AE100	2232206	50 00.23N 55 36.30W	110.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	OFF LA SCIE HARBOUR

ATLANTIC GEOSCIENCE CENTRE
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-FINS- REPORTING PACKAGE

TABLE 4
CAMERA STATIONS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF. BOTI	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
141	PENTAX AE100	2232235	49 58.33N 55 36.88W	52.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	OFF LA SCIE HARBOUR
143	PENTAX AE100	2261706	49 36.19N 55 53.30W	57.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	LITTLE BAY AREA
145	PENTAX AE100	2261717	49 36.23N 55 53.52W	56.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	LITTLE BAY AREA
147	PENTAX AE100	2261745	49 36.54N 55 55.88W	48.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	LITTLE BAY AREA
149	PENTAX AE100	2261758	49 36.56N 55 55.56W	59.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	LITTLE BAY AREA
151	PENTAX AE100	2261810	49 36.72N 55 55.58W	52.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	LITTLE BAY AREA
153	PENTAX AE100	2281727	49 29.56N 55 46.26W	39.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
155	PENTAX AE100	2281739	49 29.75N 55 45.54W	47.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
157	PENTAX AE100	2281748	49 30.02N 55 45.41W	53.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
159	PENTAX AE100	2281802	49 30.59N 55 45.32W	66.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
161	PENTAX AE100	2281828	49 31.44N 55 47.66W	74.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
163	PENTAX AE100	2281845	49 31.38N 55 47.60W	73.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
165	PENTAX AE100	2281857	49 31.28N 55 47.26W	52.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
167	PENTAX AE100	2281910	49 32.04N 55 46.87W	80.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
169	PENTAX AE100	2281931	49 31.89N 55 46.06W	148.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
171	PENTAX AE100	2281947	49 32.36N 55 46.63W	45.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
173	PENTAX AE100	2282009	49 33.60N 55 44.91W	41.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 4

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

CAMERA STATIONS

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF.	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	POSITION1 POSITION2	GEOGRAPHIC LOCATION
175	PENTAX AE100	2282025	49 33.85N 55 46.16W	116.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
177	PENTAX AE100	2282044	49 34.79N 55 45.03W	62.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
179	PENTAX AE100	2282100	49 35.43N 55 44.53W	40.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	EAST HALLS BAY AREA
187	PENTAX AE100	2301140	49 25.63N 56 07.05W	31.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
189	PENTAX AE100	2301154	49 25.94N 56 06.76W	51.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
191	PENTAX AE100	2301209	49 26.33N 56 06.12W	66.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
193	PENTAX AE100	2301220	49 25.96N 56 05.58W	80.5	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
195	PENTAX AE100	2301242	49 26.89N 56 05.23W	192.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
197	PENTAX AE100	2301311	49 27.30N 56 03.61W	38.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
199	PENTAX AE100	2301340	49 29.88N 56 02.48W	128.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
201	PENTAX AE100	2301355	49 29.94N 56 02.82W	72.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
203	PENTAX AE100	2301412	49 29.96N 56 03.21W	61.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY
205	PENTAX AE100	2301422	49 29.88N 56 03.33W	67.0	1	152	N	B-W	400	8.0	152	TRI-X-PAN	VERTICAL	HALLS BAY

ATLANTIC GEOSCIENCE CENTRE
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-FIMS- REPORTING PACKAGE

TABLE 5
SIDESCAN RECORDS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>ROLL NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>LINE NUMBERS</u>	<u>RECORD TYPE</u>	<u>GEOGRAPHIC LOCATION</u>	<u>RECORDER</u>	<u>SIDESCAN SYSTEM</u>
001	2111334	2112041	1 - 6	COMBINED	HAMILTON SOUND	KLEIN 595	595 (100/500 KHZ)
002	2112048	2132121	7 - 20	COMBINED	HAMILTON SOUND	KLEIN 595	595 (100/500 KHZ)
003	2171117	2171751	21 - 27	COMBINED	HAMILTON SOUND	KLEIN 595	595 (100/500 KHZ)
004	2191129	2191656	28 - 40	COMBINED	BAIE VERTE	KLEIN 595	595 (100/500 KHZ)
005	2191658	2192049	40 - 52	COMBINED	BAIE VERTE	KLEIN 595	595 (100/500 KHZ)
006	2201200	2201807	53 - 76	COMBINED	BAIE VERTE	KLEIN 595	595 (100/500 KHZ)
007	2201810	2201915	76 - 85	COMBINED	BAIE VERTE	KLEIN 595	595 (100/500 KHZ)
008	2221137	2221307	86 - 94	COMBINED	BAIE VERTE	KLEIN 595	595 (100/500 KHZ)
009	2231754	2232107	95 - 99	COMBINED	LA SCIE AREA	KLEIN 595	595 (100/500 KHZ)
010	2251130	2251740	100 - 116	COMBINED	HALLS BAY	KLEIN 595	595 (100/500 KHZ)
011	2261325	2261635	117 - 126	COMBINED	LITTLE BAY AREA	KLEIN 595	595 (100/500 KHZ)
012	2271257	2271742	135 - 152	COMBINED	HALLS BAY	KLEIN 595	595 (100/500 KHZ)
013	2281206	2281529	153 - 160	COMBINED	HALLS BAY	KLEIN 595	595 (100/500 KHZ)
014	2281531	2282305	161 - 166	COMBINED	HALLS BAY	KLEIN 595	595 (100/500 KHZ)

ATLANTIC GEOSCIENCE CENTRE
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TABLE 6
SEISMIC RECORDS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>ROLL NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>HYDROPHONE</u>	<u>LINE NUMBERS</u>	<u>RECORD TYPE</u>	<u>GEOGRAPHIC LOCATION</u>	<u>RECORDER</u>	<u>SYSTEM / SOUND SOURCE</u>
001	2111330	2111625	INTERNAL	1 - 3	SINGLE	HAMILTON SOUND	EPC 1600	DATASONICS BUBBLE PULSER
002	2111627	2112120	INTERNAL	3 - 7	SINGLE	HAMILTON SOUND	EPC 1600	DATASONICS BUBBLE PULSER
003	2131222	2132121	INTERNAL	8 - 20	SINGLE	HAMILTON SOUND	EPC 1600	DATASONICS BUBBLE PULSER
004	2171224	2171751	INTERNAL	21 - 27	SINGLE	HAMILTON SOUND	EPC 1600	DATASONICS BUBBLE PULSER
005	2191127	2192050	INTERNAL	28 - 52	SINGLE	BAIE VERTE	EPC 1600	DATASONICS BUBBLE PULSER
006	2201159	2201915	INTERNAL	53 - 85	SINGLE	BAIE VERTE	EPC 1600	DATASONICS BUBBLE PULSER
007	2221137	2221306	INTERNAL	86 - 94	SINGLE	BAIE VERTE	EPC 1600	DATASONICS BUBBLE PULSER
008	2231753	2232103	INTERNAL	95 - 99	SINGLE	LA SCIE ARER	EPC 1600	DATASONICS BUBBLE PULSER
009	2251139	2251800	INTERNAL	100 - 116	SINGLE	HALLS BAY	EPC 1600	DATASONICS BUBBLE PULSER
010	2261330	2262147	INTERNAL	117 - 134	SINGLE	HAMILTON SOUND LITTLE BAY AREA -	EPC 1600	DATASONICS BUBBLE PULSER
011	2271221	2271742	INTERNAL	139 - 152	SINGLE	HALLS BAY	EPC 1600	DATASONICS BUBBLE PULSER
012	2281207	2281320	INTERNAL	153 - 155	SINGLE	HALLS BAY	EPC 1600	DATASONICS BUBBLE PULSER
013	2281324	2282305	INTERNAL	156 - 166	SINGLE	HALLS BAY	EPC 1600	DATASONICS BUBBLE PULSER
001	2111330	2112120	INTERNAL	1 - 7	SINGLE	HAMILTON SOUND	EPC 8700	SEISTEC BOOMER
002	2131216	2132121	INTERNAL	8 - 20	SINGLE	HAMILTON SOUND	EPC 8700	SEISTEC BOOMER
003	2171224	2171751	INTERNAL	21 - 27	SINGLE	HAMILTON SOUND	EPC 8700	SEISTEC BOOMER
004	2191127	2192050	INTERNAL	28 - 52	SINGLE	BAIE VERTE	EPC 8700	SEISTEC BOOMER

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-FINS- REPORTING PACKAGE

TABLE 6
SEISMIC RECORDS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>ROLL NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>HYDROPHONE</u>	<u>LINE NUMBERS</u>	<u>RECORD TYPE</u>	<u>GEOGRAPHIC LOCATION</u>	<u>RECORDER</u>	<u>SYSTEM / SOUND SOURCE</u>
005	2201202	2201915	INTERNAL	53 - 95	SINGLE	BAIE VERTE	EPC 8700	SEISTEC BOOMER
006	2221141	2221306	INTERNAL	86 - 94	SINGLE	BAIE VERTE	EPC 8700	SEISTEC BOOMER
007	2231754	2232103	INTERNAL	95 - 99	SINGLE	LA SCIE AREA	EPC 8700	SEISTEC BOOMER
008	2251200	2251800	INTERNAL	100 - 116	SINGLE	HALLS BAY	EPC 8700	SEISTEC BOOMER
009	2261326	2262148	INTERNAL	117 - 134	SINGLE	LITTLE BAY AREA - HALLS BAY	EPC 8700	SEISTEC BOOMER
010	2271221	2271428	INTERNAL	135 - 139	SINGLE	HALLS BAY	EPC 8700	SEISTEC BOOMER
011	2271429	2271742	INTERNAL	139 - 152	SINGLE	HALLS BAY	EPC 8700	SEISTEC BOOMER
012	2281205	2282305	INTERNAL	153 - 166	SINGLE	HALLS BAY	EPC 8700	SEISTEC BOOMER

<u>TAPE NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>GEOGRAPHIC LOCATION</u>	<u>CHANNEL INFO</u>			<u>NOTES</u>
001	2111440	2111734	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
002	2111735	2112025	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
003	2112026	2131425	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
004	2131425	2131719	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
005	2131719	2132023	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
006	2132023	2171420	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
007	2171420	2171715	HAMILTON SOUND	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
008	2171715	2191357	HAMILTON SOUND - BAIE VERTE	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
009	2191357	2191820	BAIE VERTE	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		
010	2191820	2201221	BAIE VERTE	1-B.P. RAW	8-SS TRIG	13-ID	
				2-B.P.-SEISTEC TRIG	9-ST SS 100		
				3-SEISTEC RAW	10-PT SS 500		
				7-PT SS 100	11-ST SS 500		

ATLANTIC GEOSCIENCE CENTRE
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TABLE 7

SEISMICS/SIDESCAN COMBINED ON-LINE DATA TAPES

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>TAPE NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>GEOGRAPHIC LOCATION</u>	<u>CHANNEL INFO</u>			<u>NOTES</u>
011	2201221	2201520	BATE VERTE	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
012	2201520	2201810	BATE VERTE	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
013	2201810	2221305	BATE VERTE	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
014	2231754	2232044	LA SCIE AREA	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
015	2232044	2251444	LA SCIE AREA - HALLS BAY	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
016	2251444	2251756	HALLS BAY	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
017	2251756	2261611	HALLS BAY - LITTLE BAY AREA	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
018	2261611	2262130	LITTLE BAY AREA - HALLS BAY	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
019	2262130	2271447	HALLS BAY	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	
020	2271447	2271737	HALLS BAY	1-B.P. RAW 2-B.P.-SEISTEC TRIG 3-SEISTEC RAW 7-PT SS 100	8-SS TRIG 9-ST SS 100 10-PT SS 500 11-ST SS 500	13-ID	

ATLANTIC GEOSCIENCE CENTRE
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TABLE 7

SEISMICS/SIDESCAN COMBINED ON-LINE DATA TAPES

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

<u>TAPE NUMBERS</u>	<u>START DAY/TIME</u>	<u>STOP DAY/TIME</u>	<u>GEOGRAPHIC LOCATION</u>	<u>CHANNEL INFO</u>	<u>NOTES</u>
021	2271737	2281443	HALLS BAY	1-B.P. RAW 8-SS TRIG 13-ID 2-B.P.-SEISTEC TRIG 9-ST SS 100 3-SEISTEC RAW 10-PT SS 500 7-PT SS 100 11-ST SS 500	
022	2281443	2282305	HALLS BAY	1-B.P. RAW 8-SS TRIG 13-ID 2-B.P.-SEISTEC TRIG 9-ST SS 100 3-SEISTEC RAW 10-PT SS 500 7-PT SS 100 11-ST SS 500	

ATLANTIC GEOSCIENCE CENTRE
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TABLE 8
BATHYMETRY RECORDS

CRUISE NUMBER = 90035
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 90006

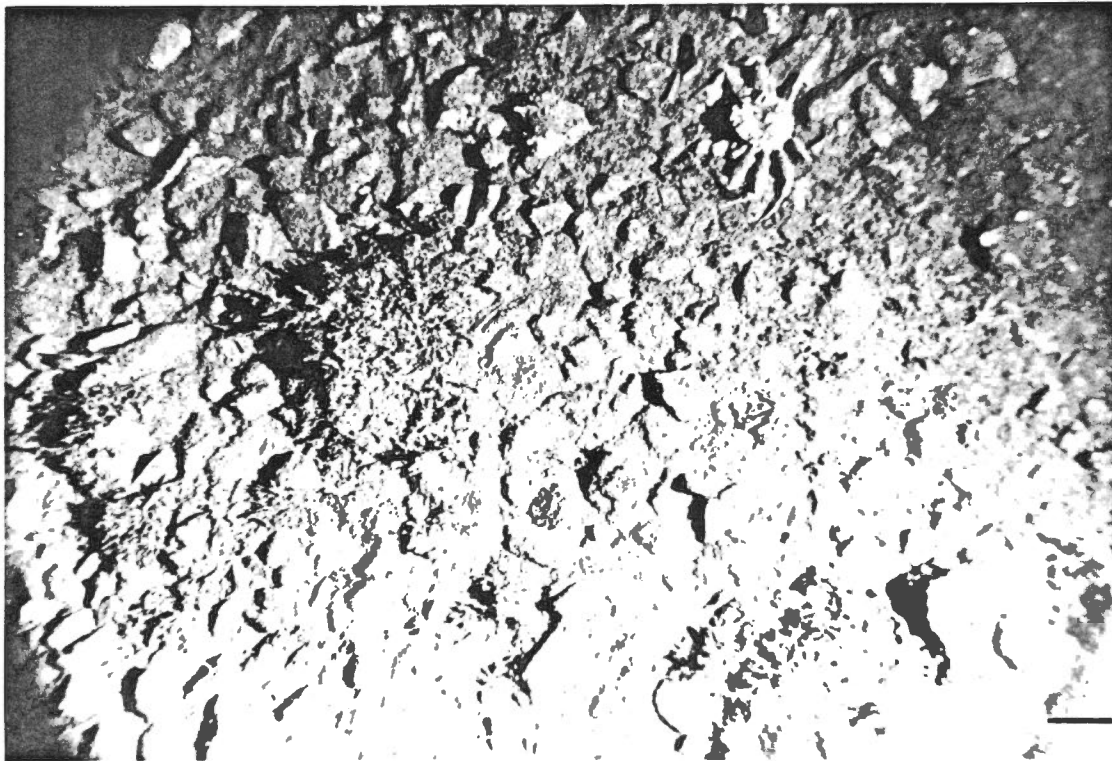
<u>ROLL</u> <u>NUMBERS</u>	<u>START</u> <u>DAY/TIME</u>	<u>STOP</u> <u>DAY/TIME</u>	<u>FREQUENCY</u>	<u>LINE NUMBERS</u>	<u>PARAMETER</u>	<u>GEOGRAPHIC LOCATION</u>	<u>RECORDER</u>	<u>NOTES</u>
001	2111321	2171645	30 KHZ	1 - 27	30 KHZ	HAMILTON SOUND	ELAC	
002	2171647	2222023	30 KHZ	27 - 94	30 KHZ	HAMILTON SOUND - BAIE VERTE	ELAC	
003	2231140	2301422	30 KHZ	95 - 166	30 KHZ	BAIE VERTE - LA SCIE -HALLS BAY - LITTLE	ELAC	

Appendix 2

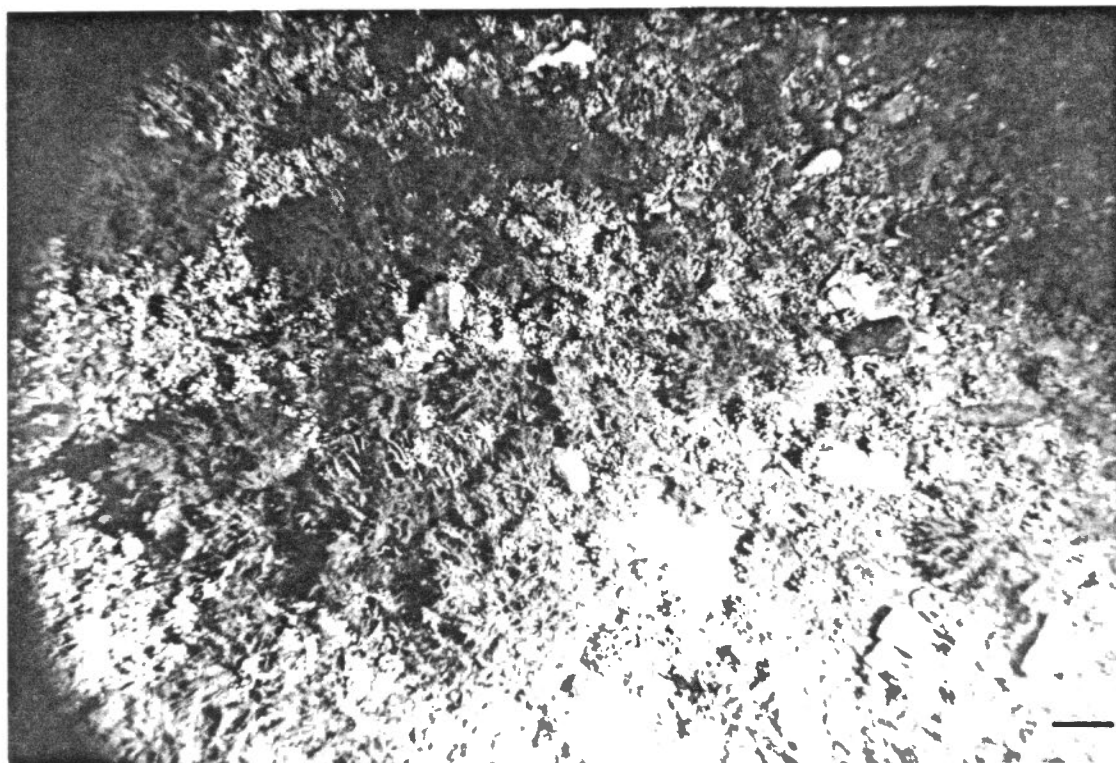
Descriptions of seabed photographs.

C.S.S. Navicula, Cruise 90-035

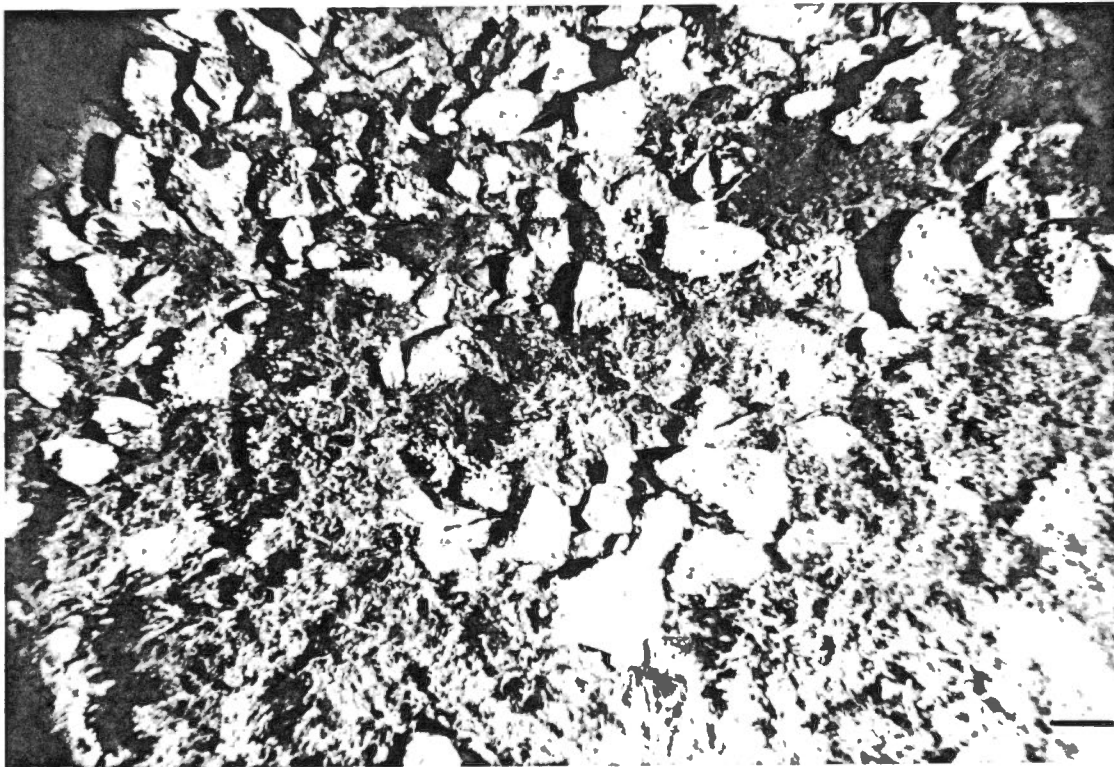
Note: Add 3 m to sample depths to compensate for depth of sounder below water level . The scale bar on the photographs represents 10 cm.



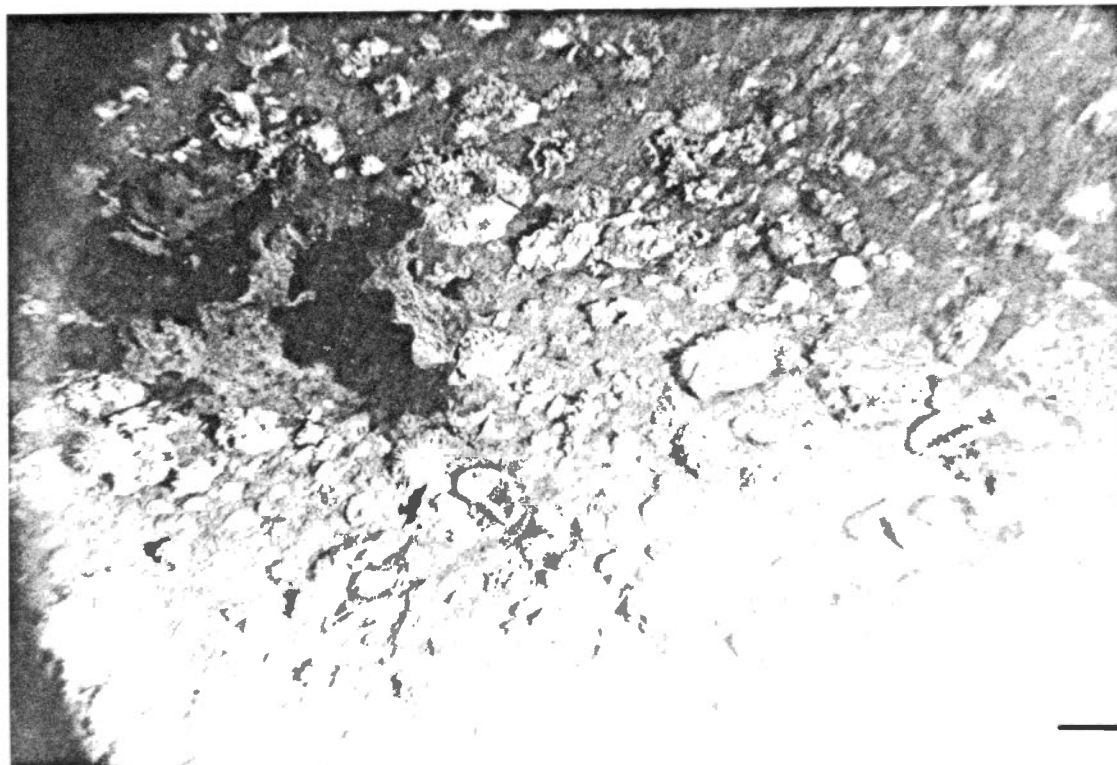
002 Hamilton Sound 67 m. Subangular gravel, consisting of very coarse pebbles and small cobbles, with a thin veneer of fine sediment, possibly sand. Seaweed is attached to several cobbles and a crab is visible.



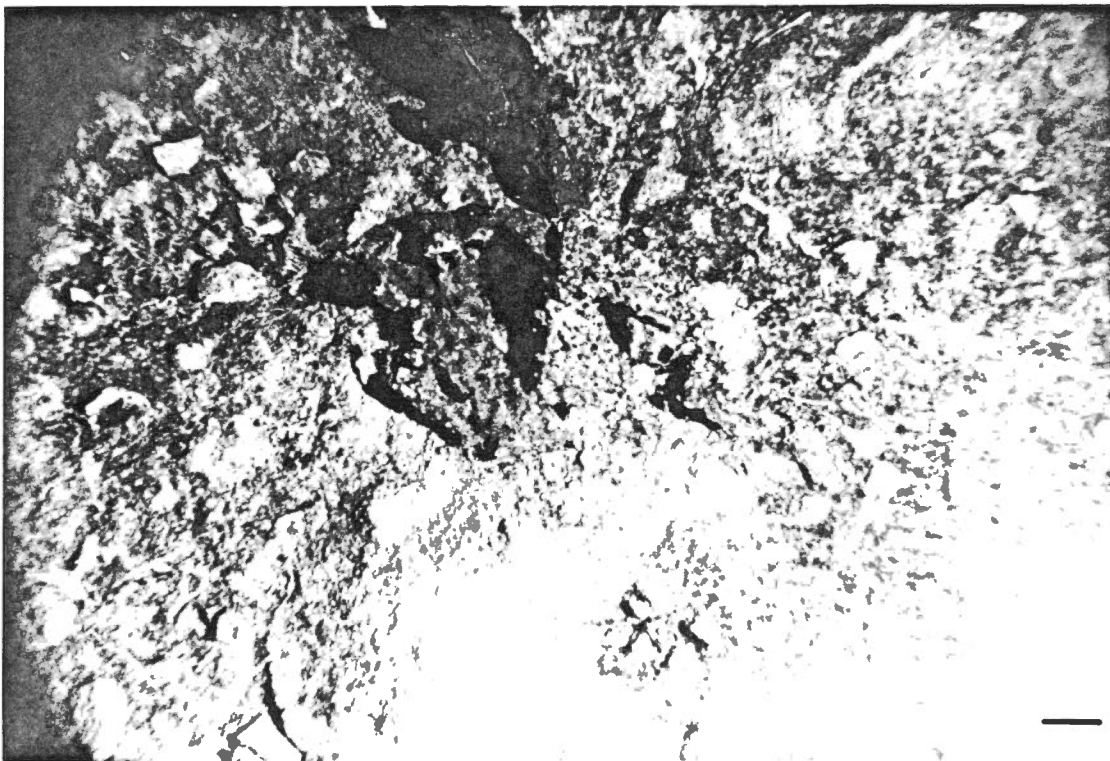
004 Hamilton Sound 20 m. Very coarse pebbles, subangular to subrounded, with a sandy bottom appearing in places. Many pebbles have seaweed attached. Abundance of branched coralline algae (*Lithothamnion* sp.) on clasts.



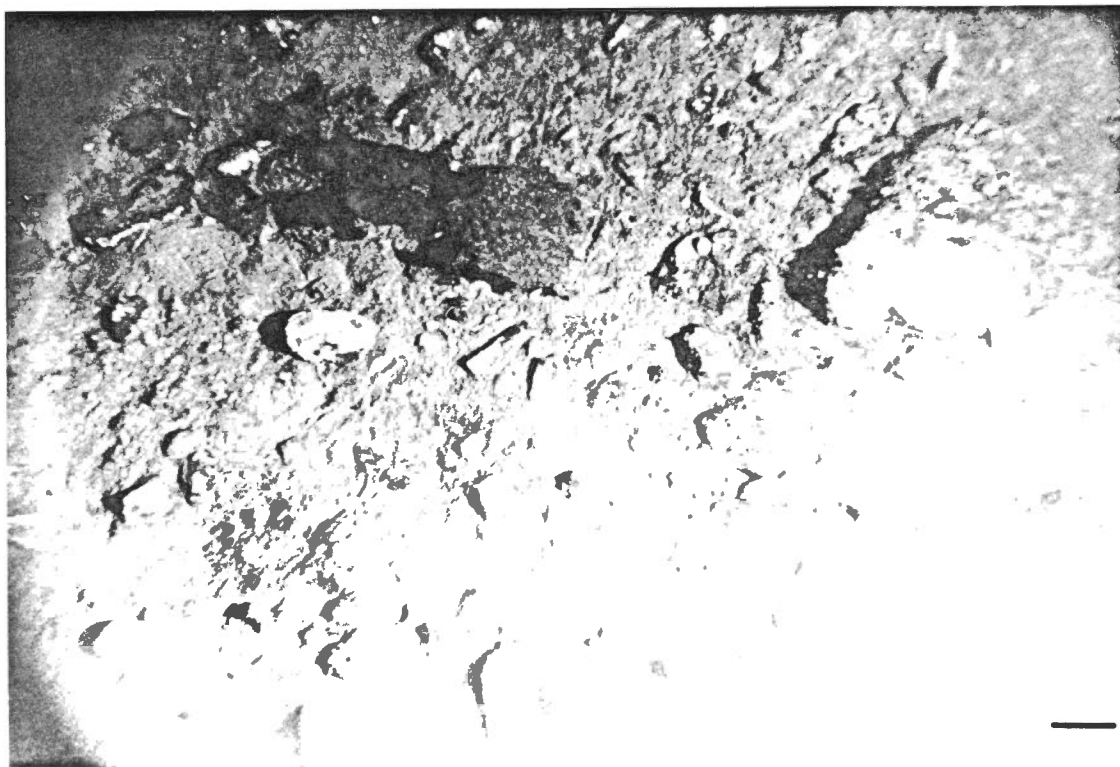
006 Hamilton Sound 27 m. Subangular to subrounded gravel, consisting of very coarse pebbles, small and large cobbles. About half of the field of view is obscured by seaweed. Much of the gravel supports branched coralline algae (*Lithothamnion* sp.). One algae-encrusted pelecypod valve is visible.



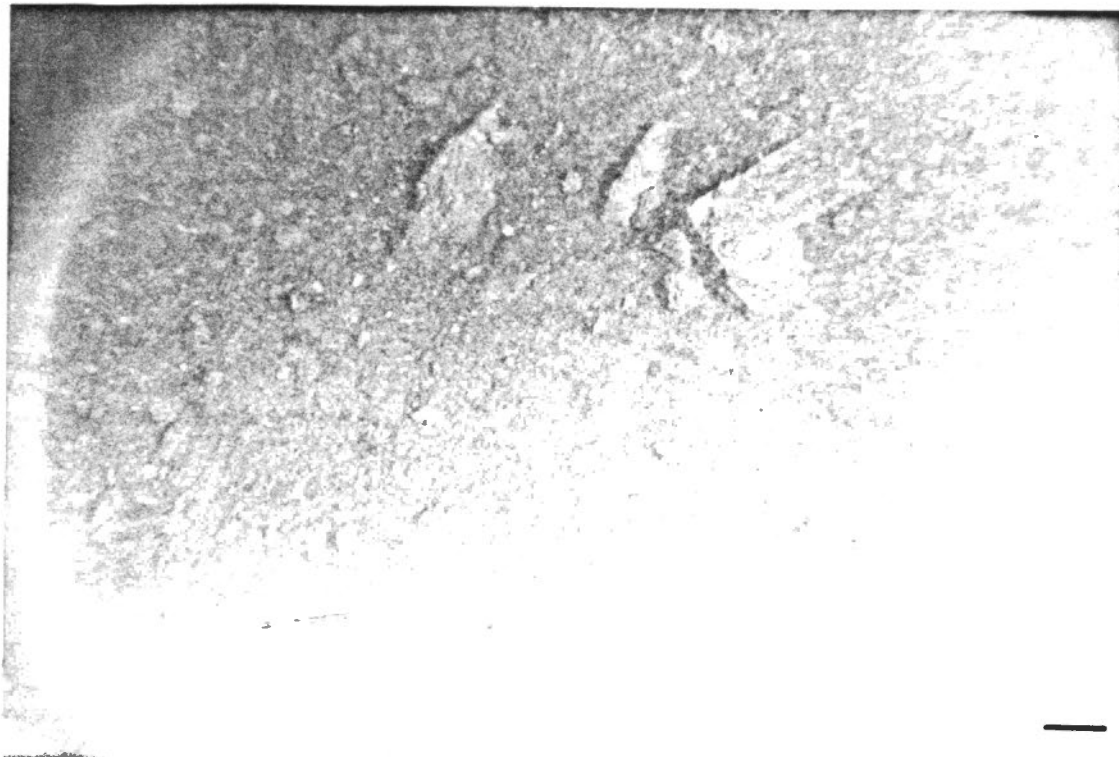
008 Hamilton Sound 16 m. Gravel, ranging from coarse pebbles to large cobbles, mostly subangular and largely encrusted with *Lithothamnion*. The gravel sits on a sandy bottom. Also in the view are two encrusted pelecypod valves, two sea urchins, and a sand dollar



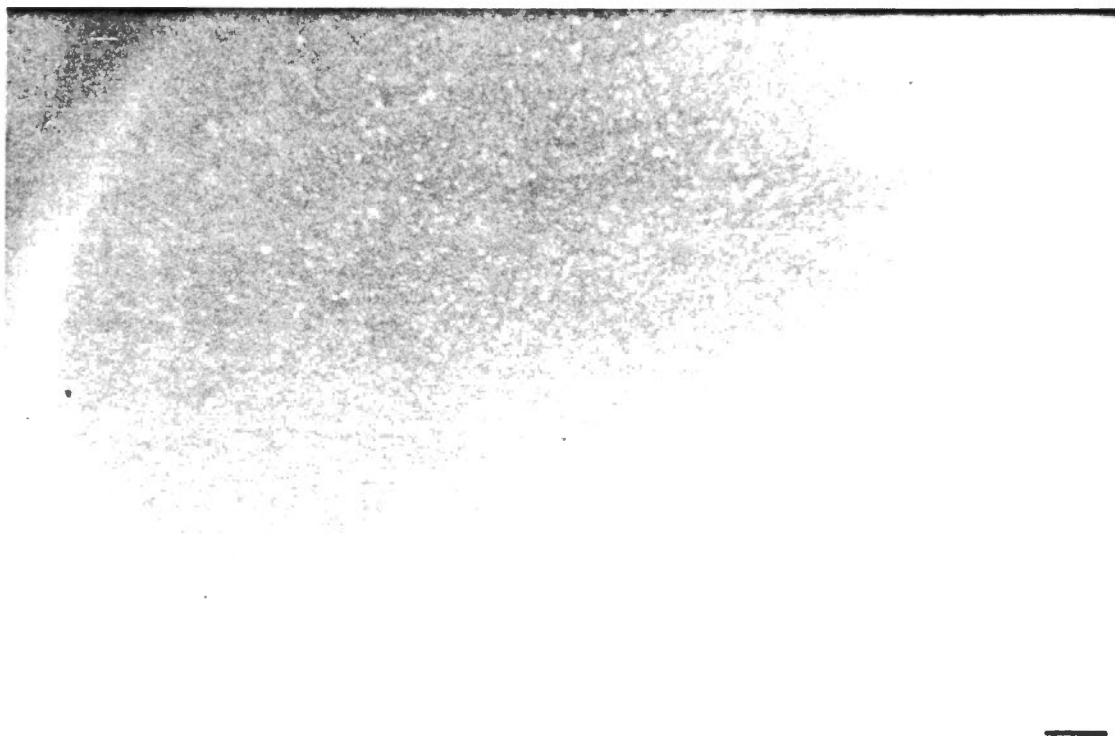
010 Hamilton Sound 26 m. Gravel, mainly small, subangular cobbles, on a sandy bottom. A few tracks are visible; a pelecypod valve is partly buried in the sand. Several seaweed fronds visible in this view are probably not attached to the bottom.



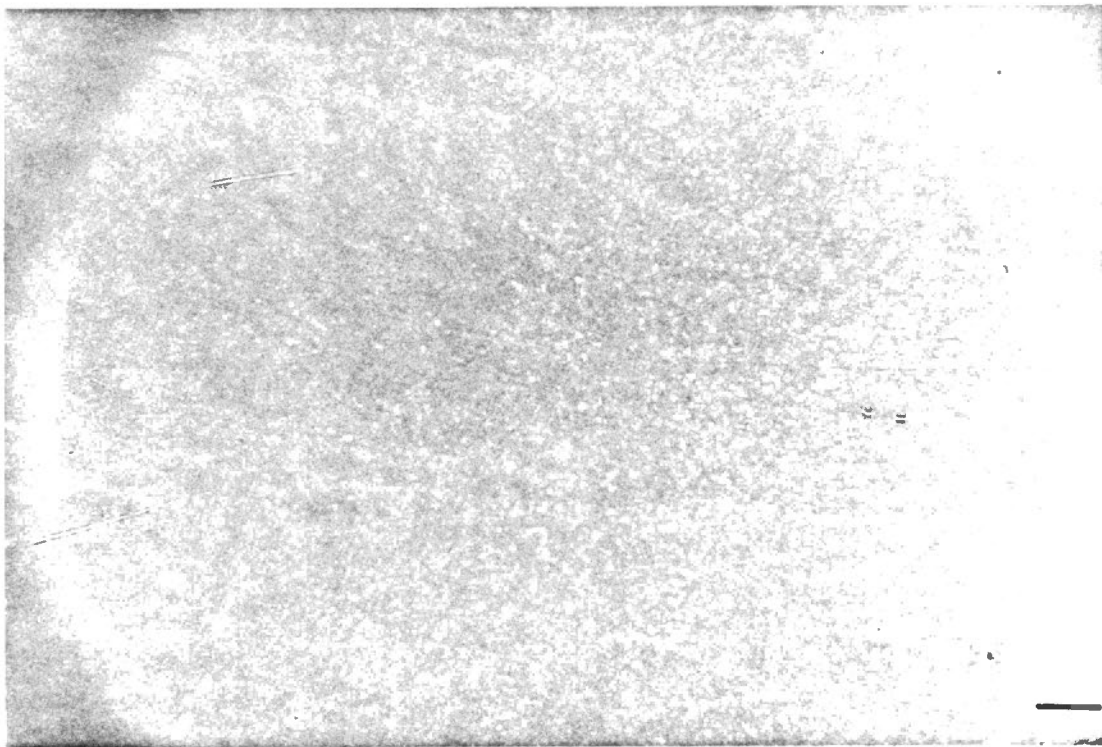
012 Hamilton Sound 23 m. Poorly sorted gravel, subangular to subrounded, ranging from medium pebbles to small boulders, on a sandy bottom. The clasts are mottled, suggestive of a discontinuous cover of coralline algae. The frond of seaweed is not attached. Faint tracks are evident on the sand surface.



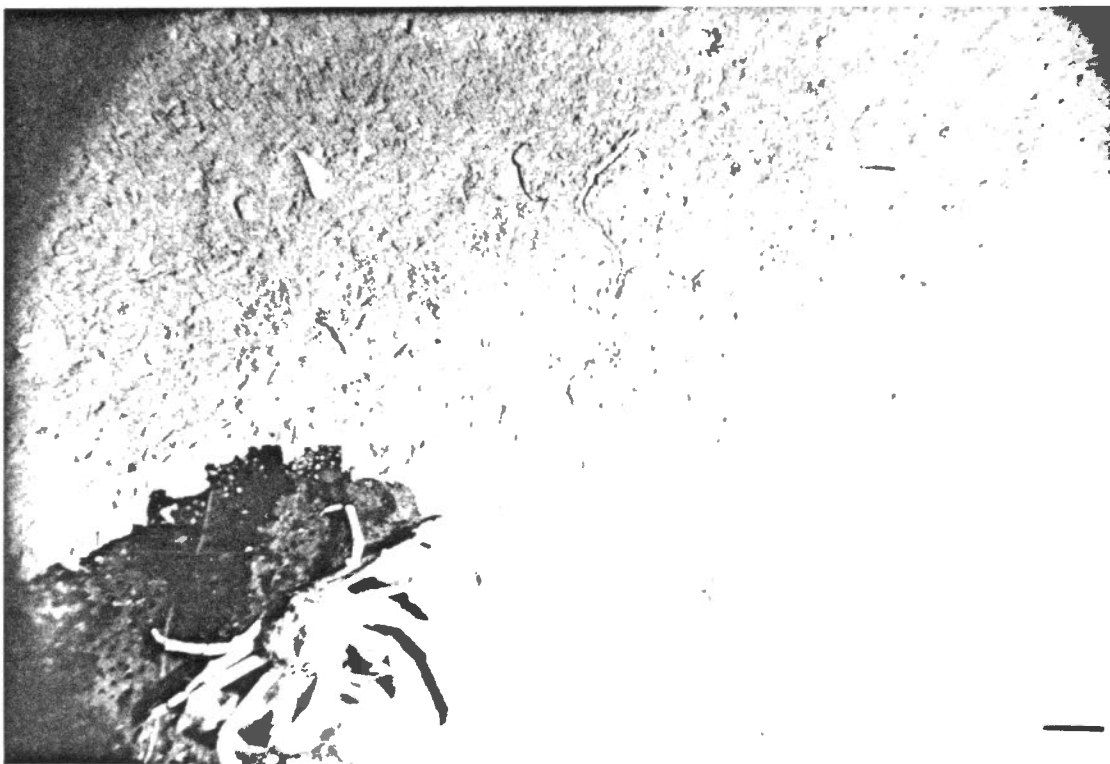
014 Hamilton Sound 32 m. In this poorly illuminated image, several large angular cobbles rest on a substrate of coarse sand and fine pebbles. A mollusc valve is visible; the bright spots may be shell fragments.



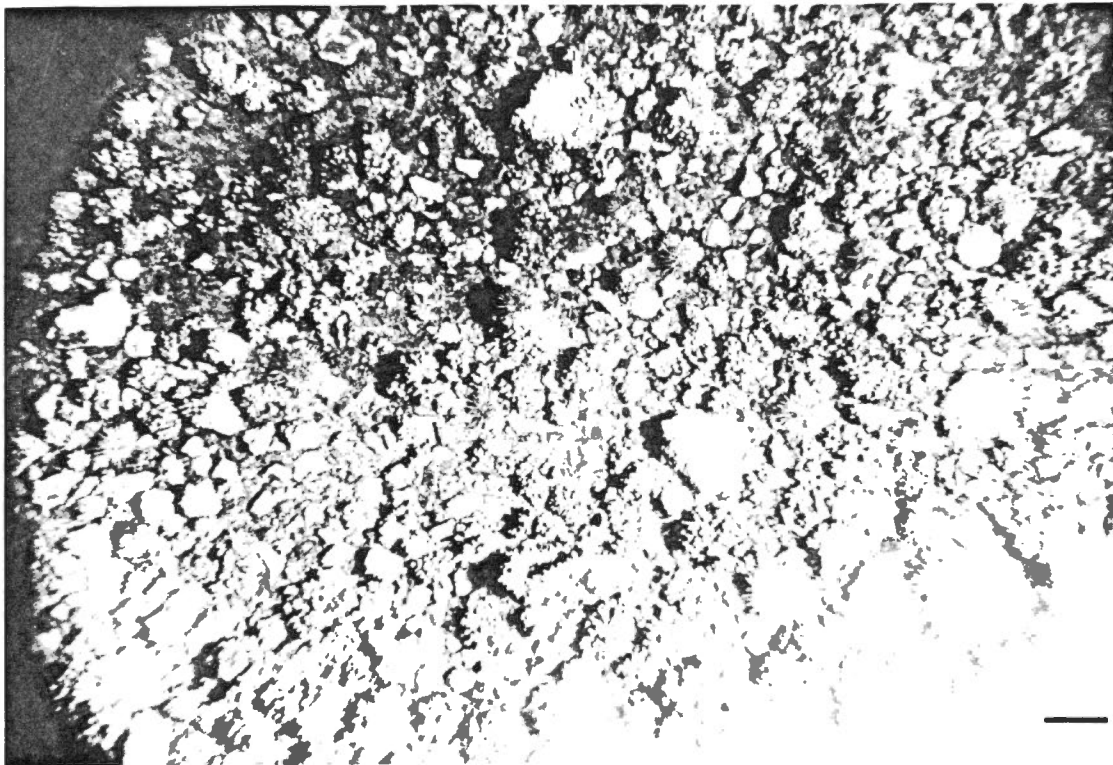
016 Hamilton Sound 19 m. The bottom in this view appears to consist of fine-medium pebbles, with no larger clasts.



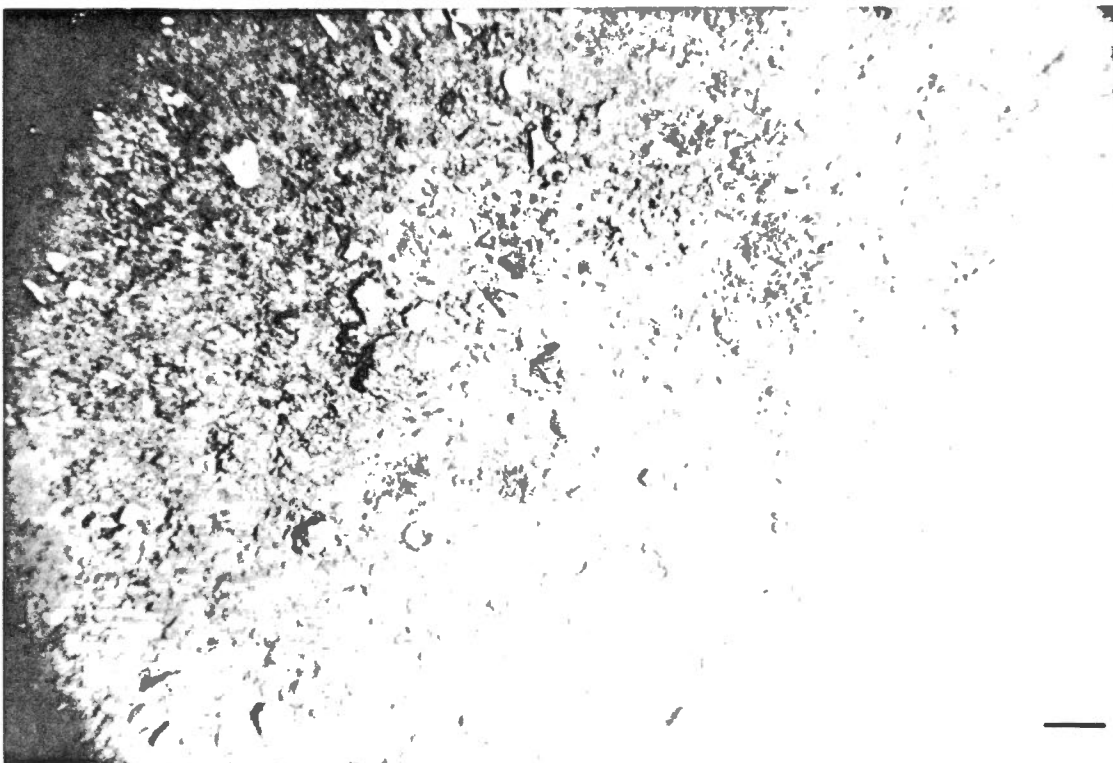
018 Hamilton Sound 23 m. The bottom here is similar to that in the preceeding image, ie. fine to medium pebbles, with no larger clasts.



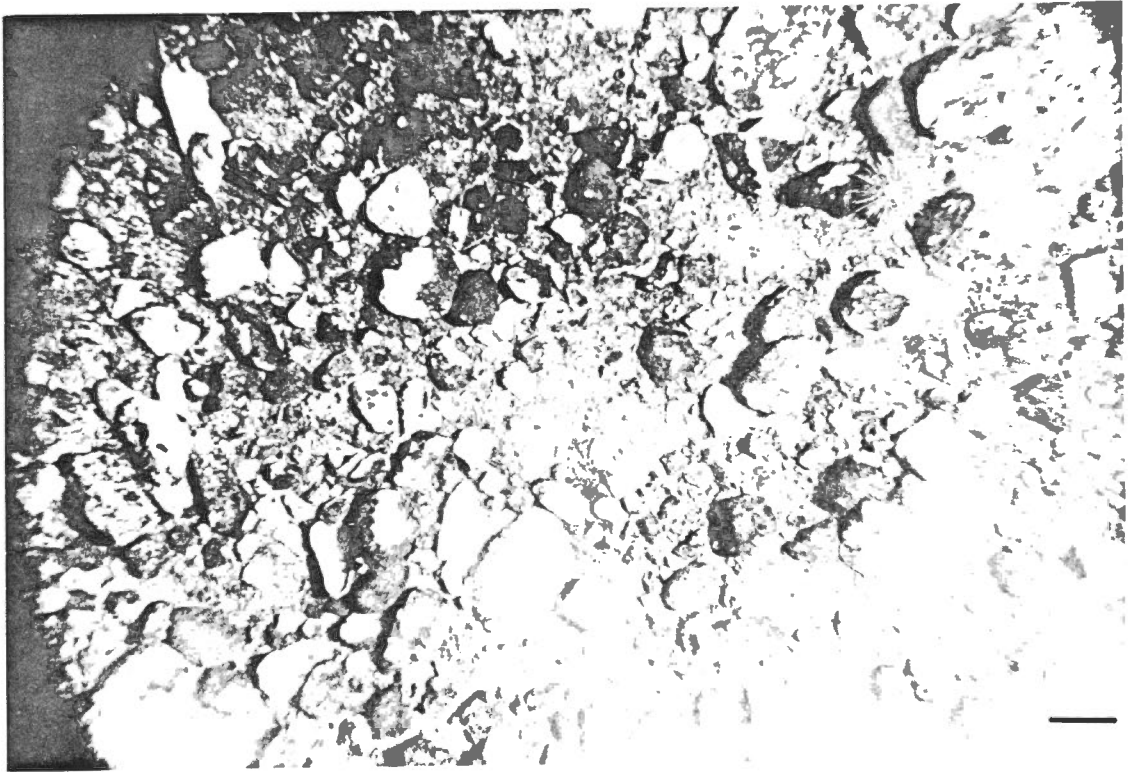
042 Hamilton Sound 47 m. A large crab (queen crab?) sits beside a frond of seaweed (unattached) on a fine, probably sandy, bottom which is scribed with numerous tracks. The white object is possibly a shell fragment 8 cm long.



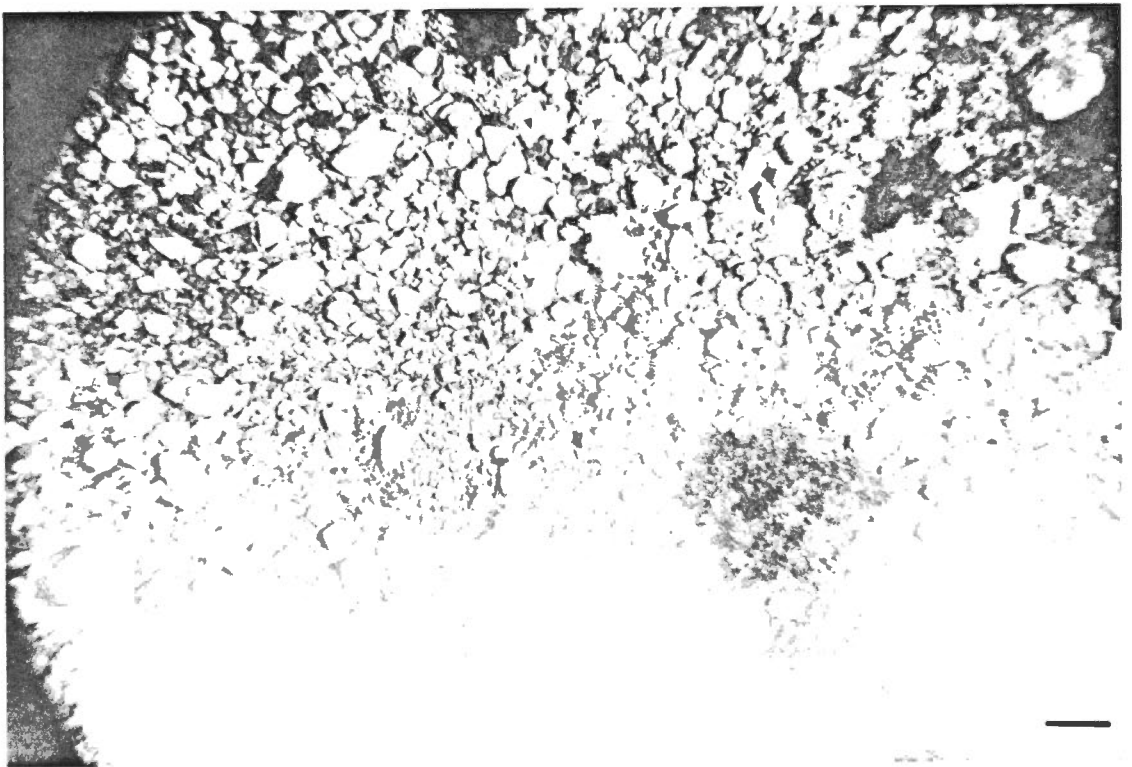
044 Hamilton Sound 15 m. The bottom consists of closely-packed gravel, mainly in the very coarse pebble range. Most clasts have a cover of Lithothamnion. Finer material, probably sand, is visible in the interstices between clasts. At least 7 sea urchins are present.



046 Hamilton Sound 19 m. A sandy seabed is strewn with poorly sorted gravel, ranging up to very coarse pebble size. A few mollusc valves are visible, and much of the lighter coloured debris may be shell fragments.



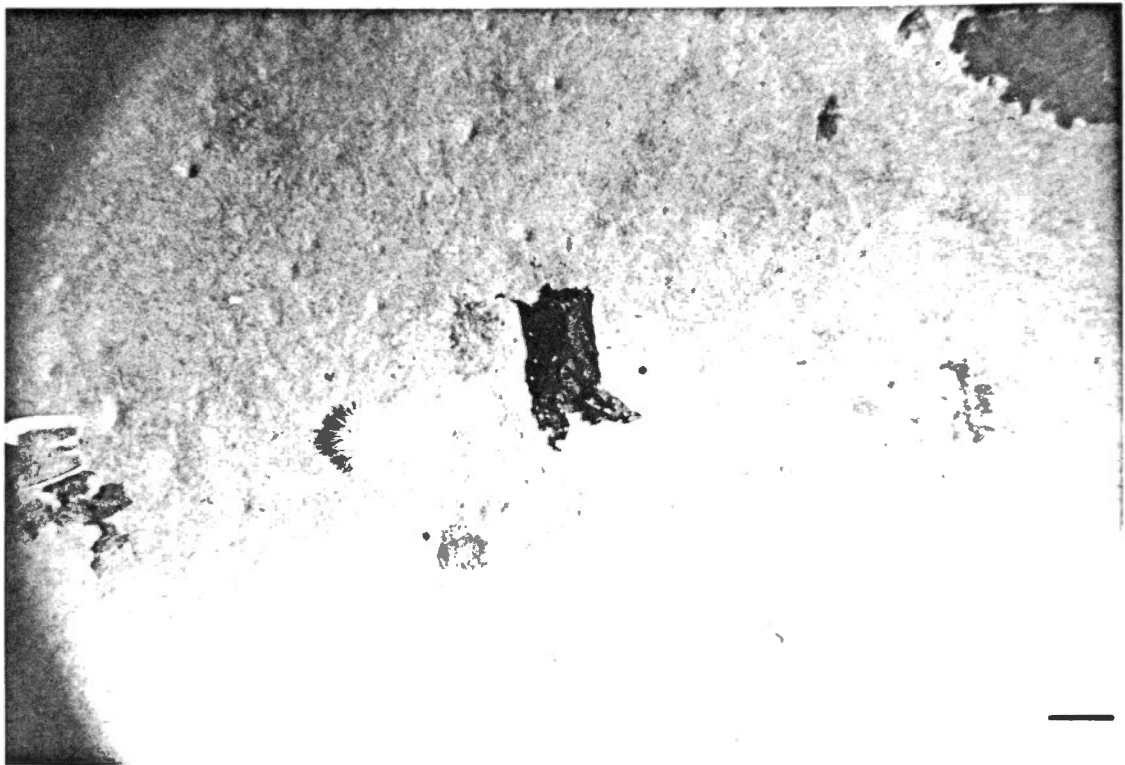
048 Hamilton Sound 21 m. Rounded to subrounded gravel, mainly small cobble-size, partly coated with coralline algae. Some clasts appear to have been rolled over, so that the coralline algae is visible on their undersides. Intermittent mobility of gravel can be inferred. A sandy bottom is visible in interstices. Numerous mollusc valves litter the bottom, some coated with coralline algae. Also visible are 2 sea urchins, 1 living and 1 dead.



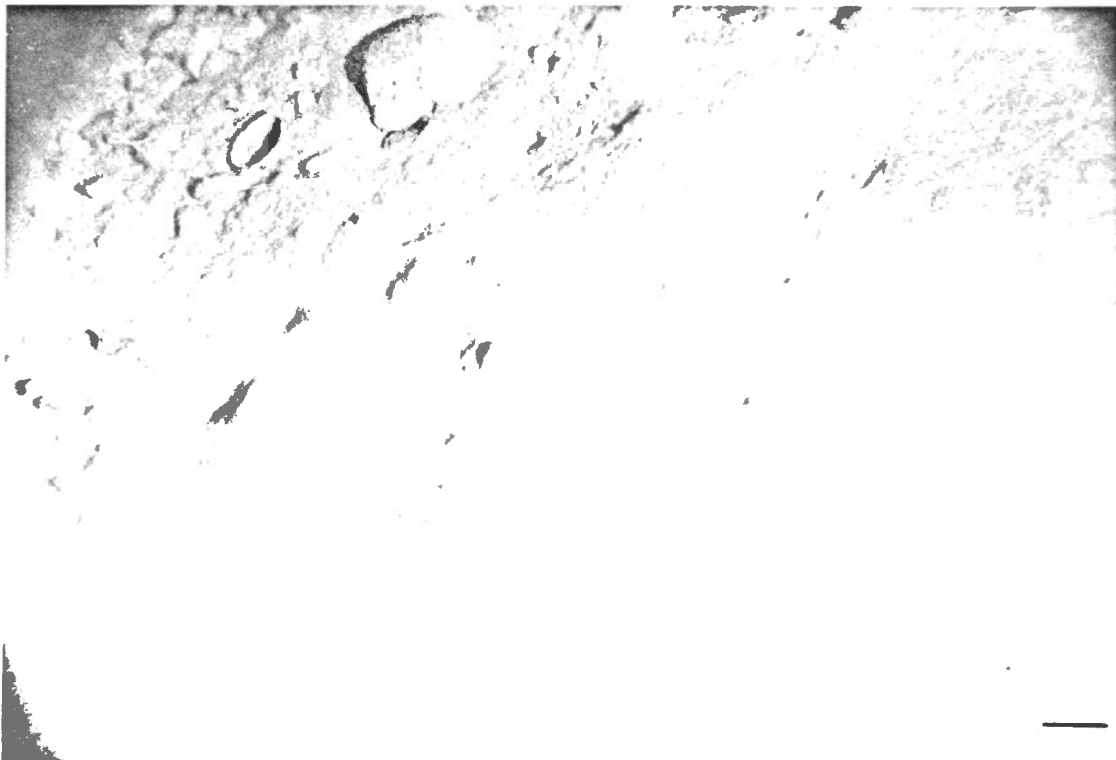
050 Hamilton Sound 18 m. Tightly packed gravel, poorly sorted, ranging from very fine to coarse pebbles, coated with coralline algae. Seaweed is attached to several clasts.



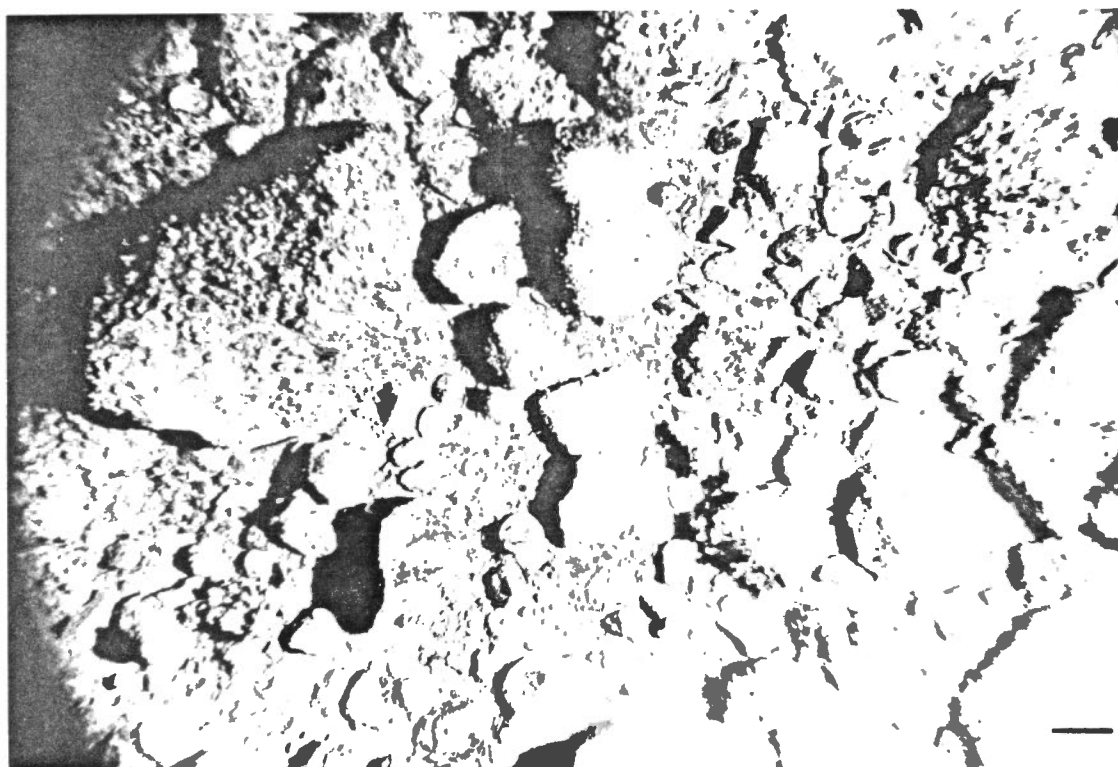
052 Hamilton Sound 31 m. A fine sandy bottom in this view is covered with numerous small pits. Several light coloured objects may be shell debris. Several seaweed fragments are suspended at the bottom.



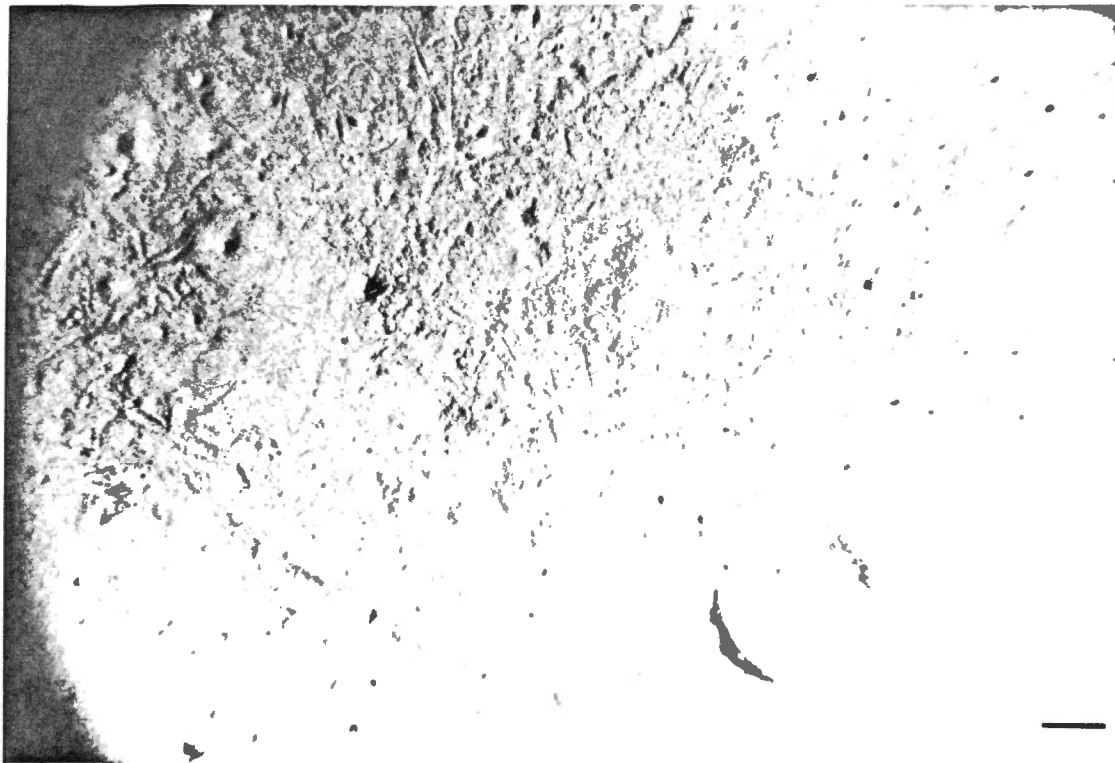
052 Hamilton Sound 35 m. This is the second photograph close to the site of grab sample 51. Again, the bottom is sandy, with numerous small pits. A lone sea urchin is visible, and also a dead pelecypod (*Cyrtodaria* sp.) partly filled with sand. Seaweed fragments drift at the bottom.



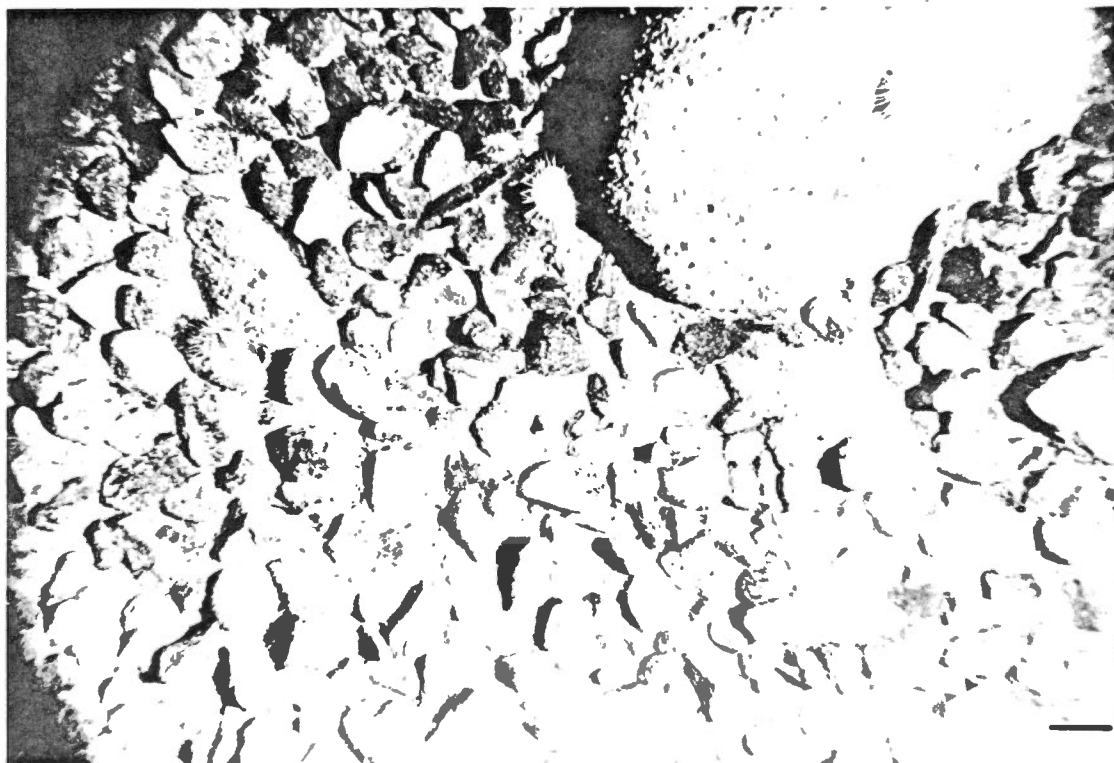
054 Hamilton Sound 35 m. The sandy bottom in this view is hummocky. Faint tracks are visible. A pelecypod valve is located close to a large cobble upon which a sea urchin is visible.



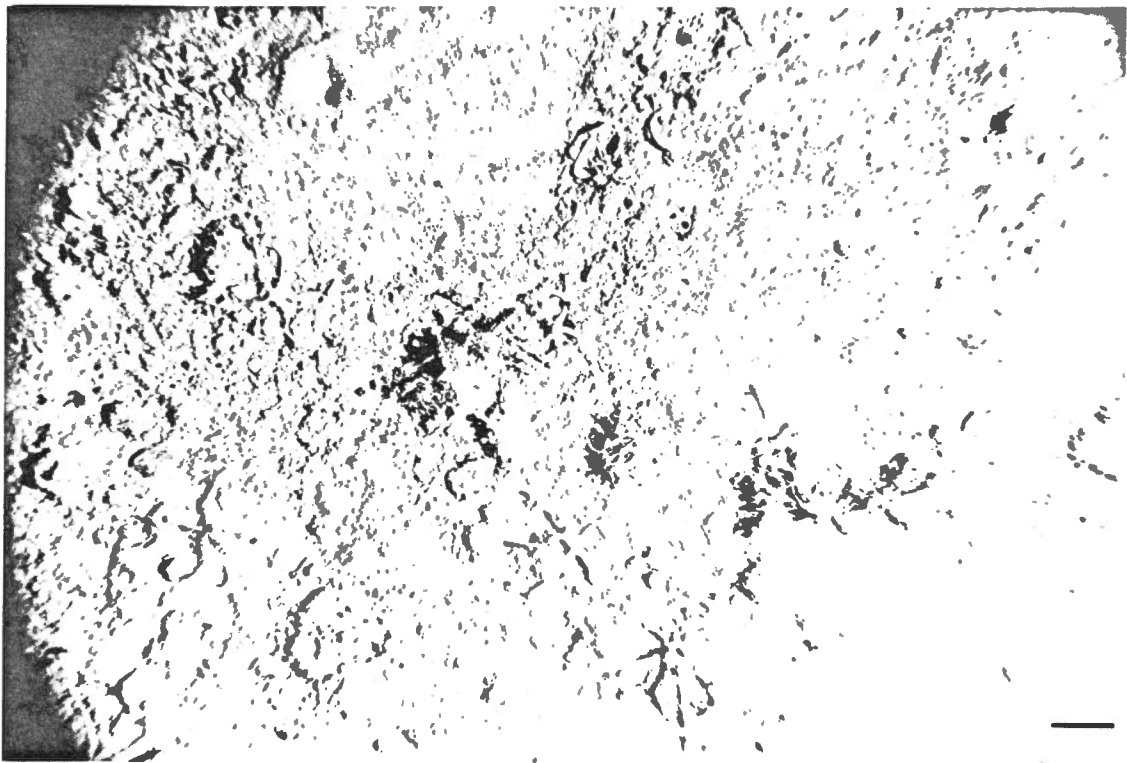
056 Hamilton Sound 35 m. The bottom consists of poorly sorted gravel, ranging from fine pebbles up to medium boulders. Most material is large cobble-sized. Clasts are extensively coated with coralline algae. Mollusc valves and shell debris litter the bottom. A single sea urchin is visible.



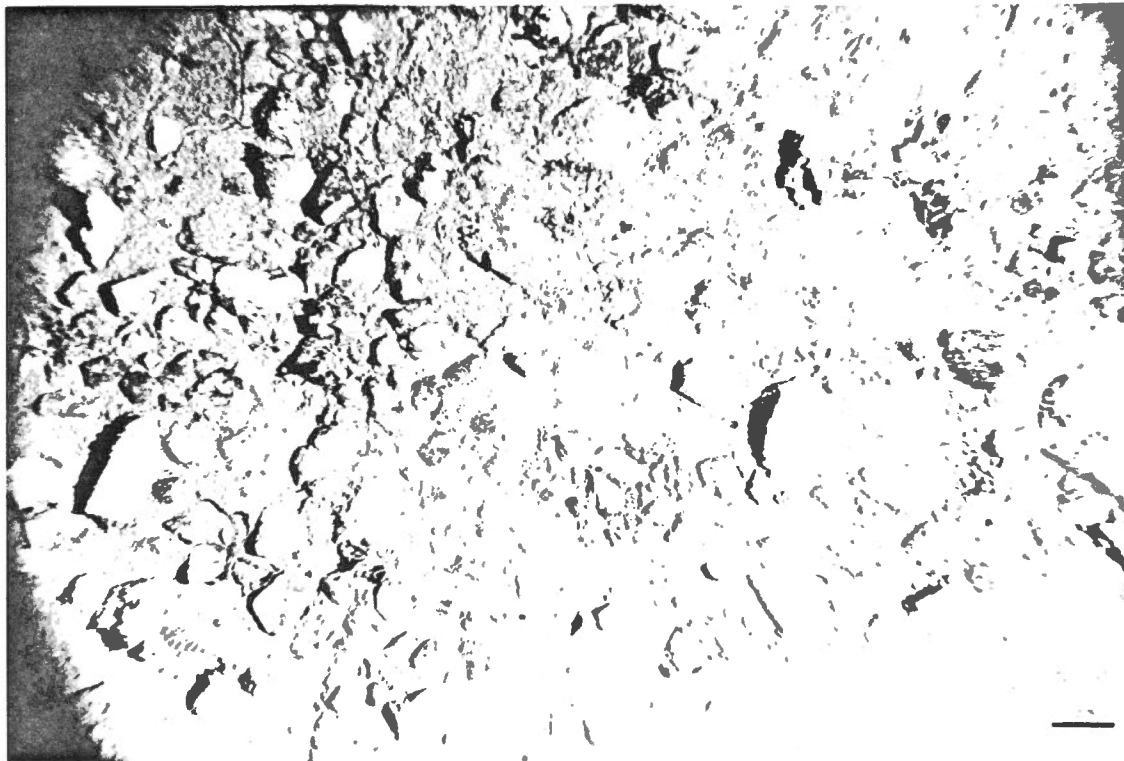
058 Hamilton Sound 54 m. The photograph shows a sandy bottom with numerous mounds with pits, and many tracks of differing widths and lengths. A large pelecypod valve is almost completely buried.



060 Hamilton Sound 38 m. The view shows a tightly packed pavement of gravel clasts, mostly subangular to subrounded and in the small cobble range. Also in view is a boulder 0.9 m long. The boulder and gravel are coated with coralline algae. Five sea urchins are visible.



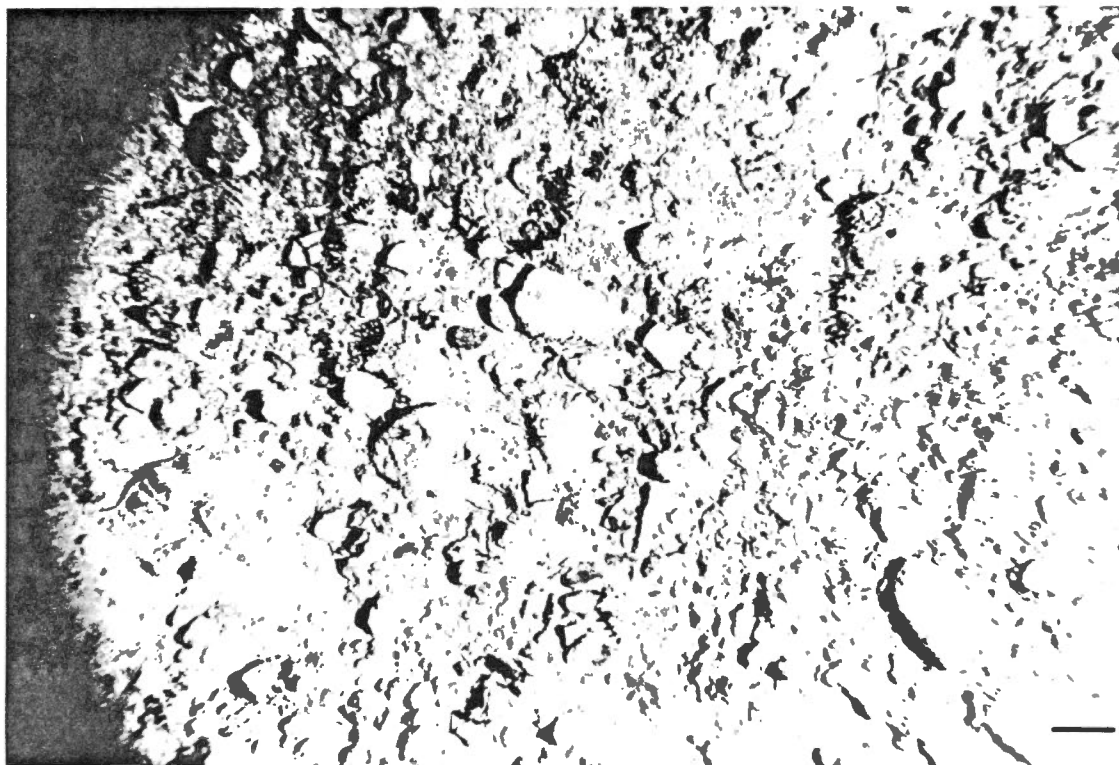
062 Baie Verte 67 m. The bottom in this image is mainly fine-grained, probably sand or muddy sand, with scattered gravel in the pebble to small cobble size range. There is considerable evidence of biological activity: 8 brittlestars, pelecypod valves, shell debris, a tube worm, siphons of a pelecypod, and an active burrow pit.



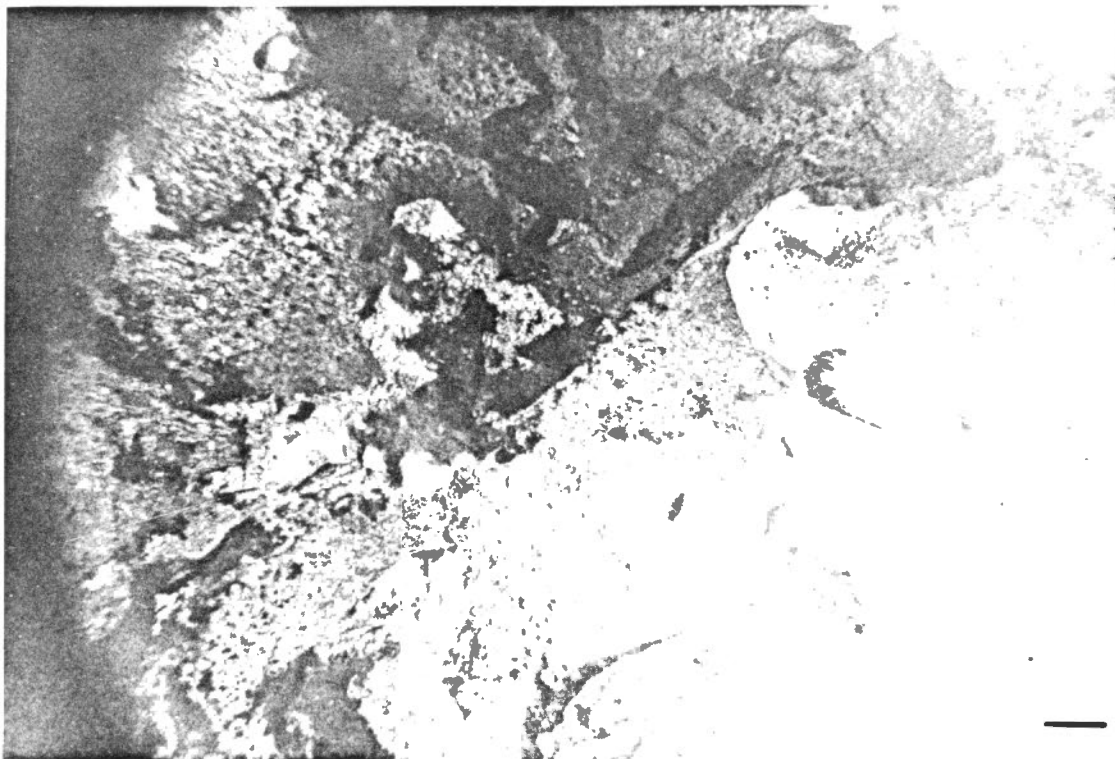
064 Baie Verte 45 m. Subangular to subrounded gravel, very coarse pebble to coarse cobble size range, is strewn across a sandy bottom with tracks. Lithothamnion is evident on some clasts. At least four brittlestars are seen, plus several tube-building polychaetes (family Eunicidae), a few partly buried pelecypod valves, an anemone, a scaphapod making a track.



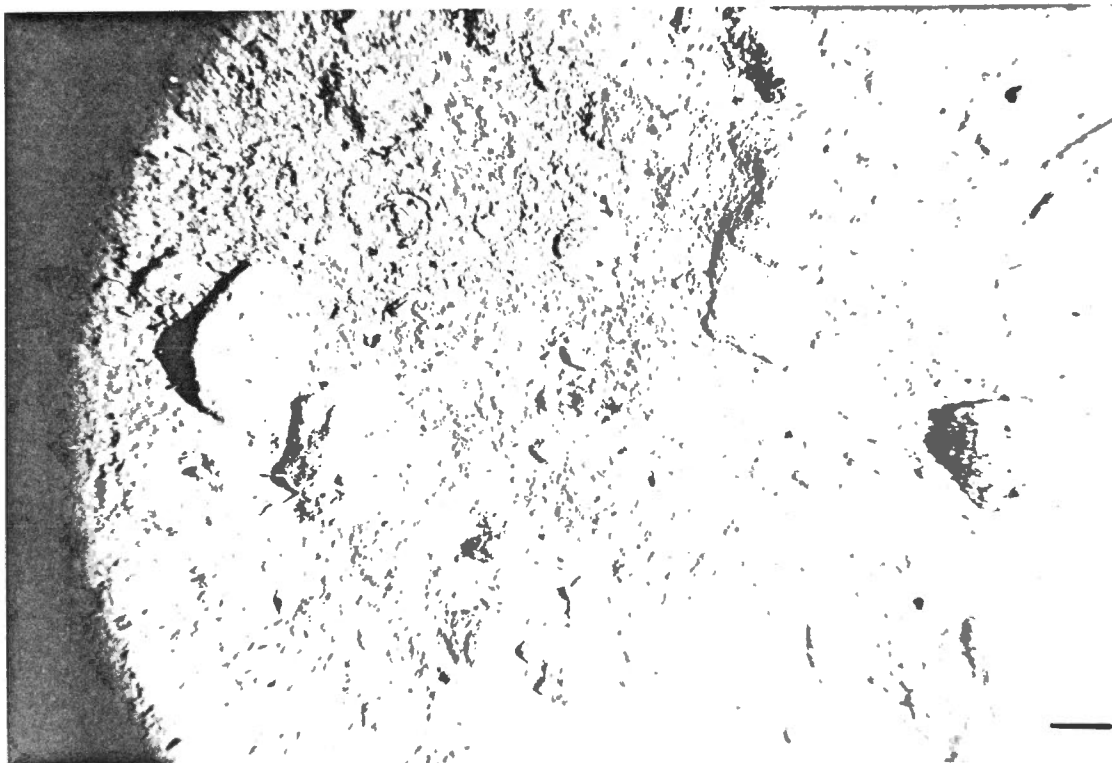
066 Baie Verte 68 m. It is difficult to objectively determine the nature of the sediment on this image. The bottom is characterized by small-scale roughness, possibly with a layer of flocculated material. The grab sample from this vicinity (065) comprised gravelly mud. If gravel clasts are present, they are buried.



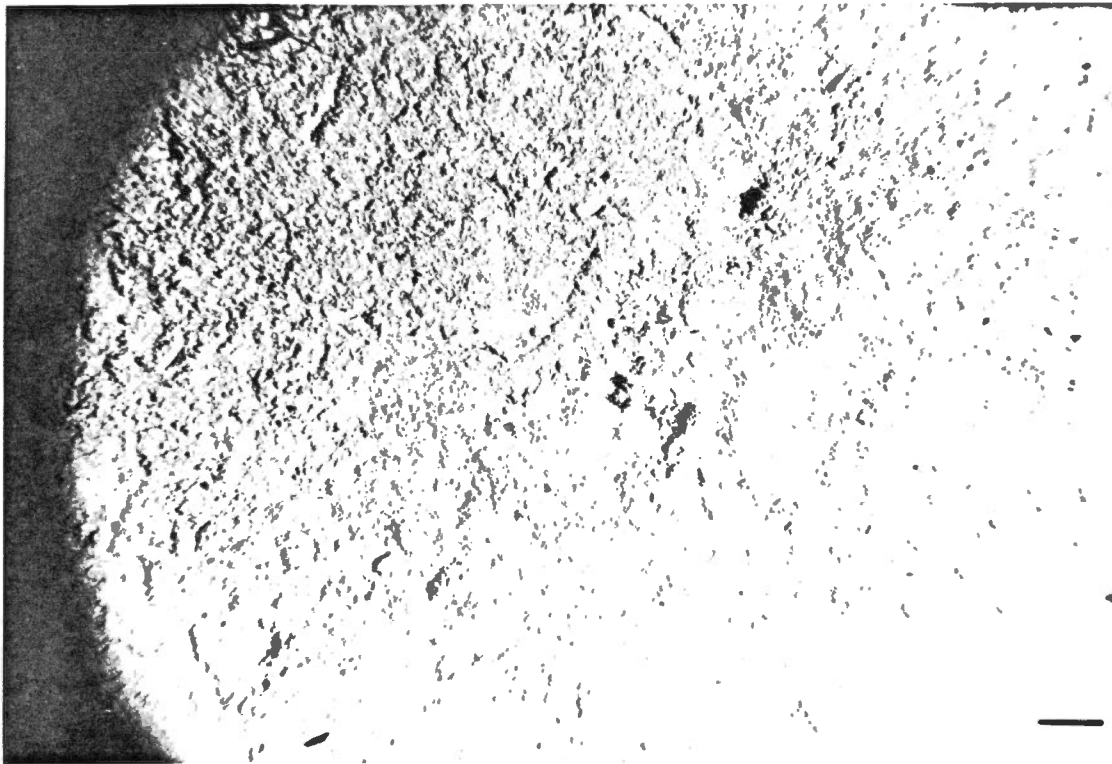
068 Baie Verte 42 m. This photograph shows numerous clasts of gravel in the coarse pebble - large cobble size range, with sand or muddy sand visible in the interstices. Some clasts are coated with coralline algae. Careful inspection reveals the presence of large numbers of brittlestars.



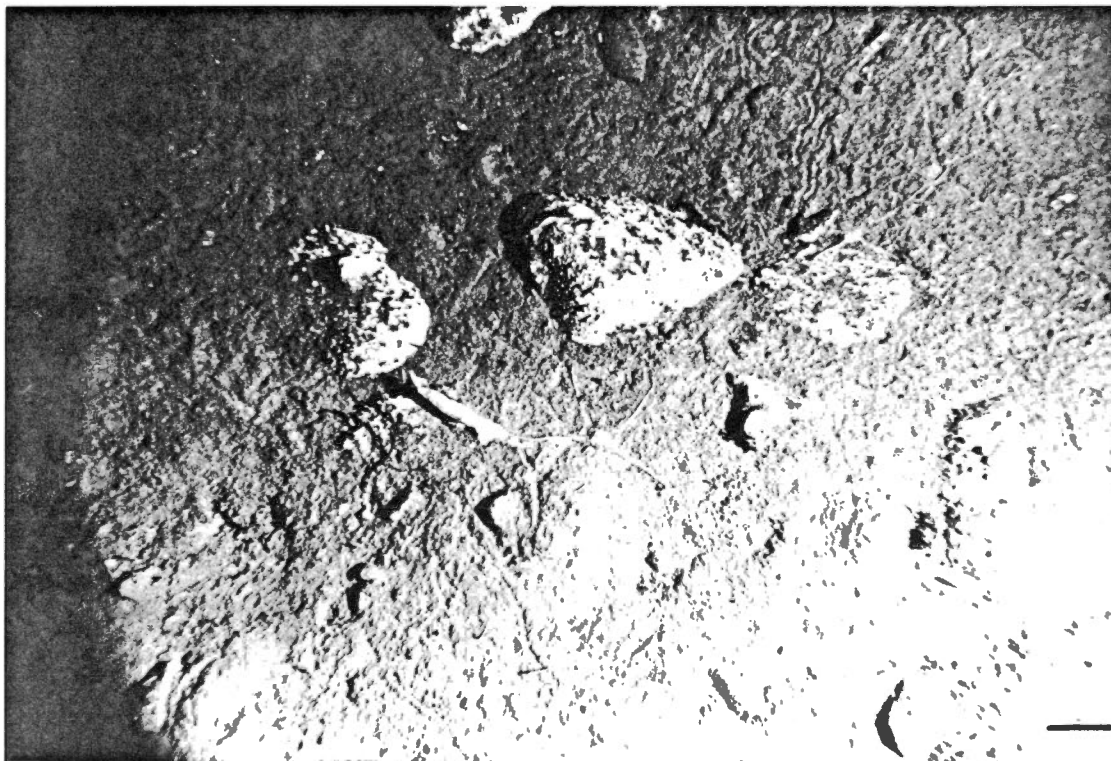
070 Baie Verte 16 m. In this frame, much of the bottom is obscured by fronds of seaweed. Whether or not it is attached is unclear. Subangular gravel, chiefly small cobbles and very coarse pebbles, lies on a fine-grained bottom. One sea urchin is visible.



072 Baie Verte 59 m. In this photograph, rounded and subrounded gravel clasts, up to small boulder size, lie on a fine bottom, which the grab sample suggests is sandy mud. The clasts are partly buried. A small amount of *Lithothamnion* is evident on several. One anemone and one brittlestar can be seen.



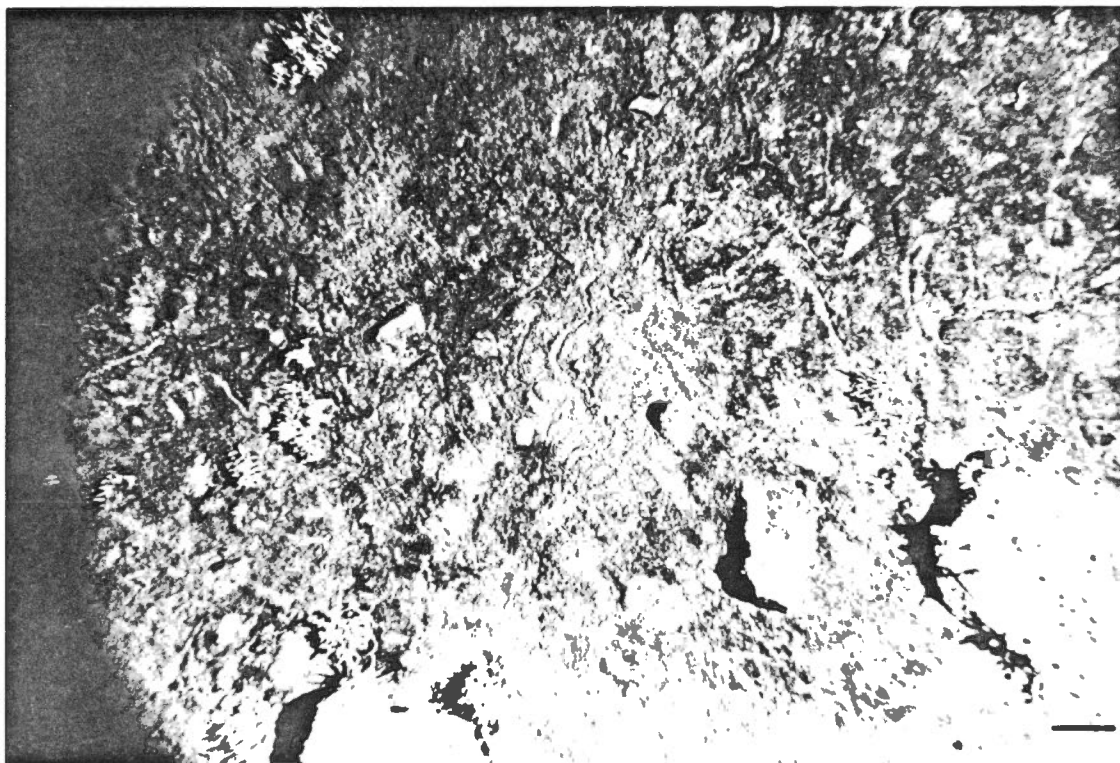
074 Baie Verte 46 m. The bottom here is fine-grained, probably sandy mud according to the grab sample, and appears to have small-scale roughness and a few faint tracks.



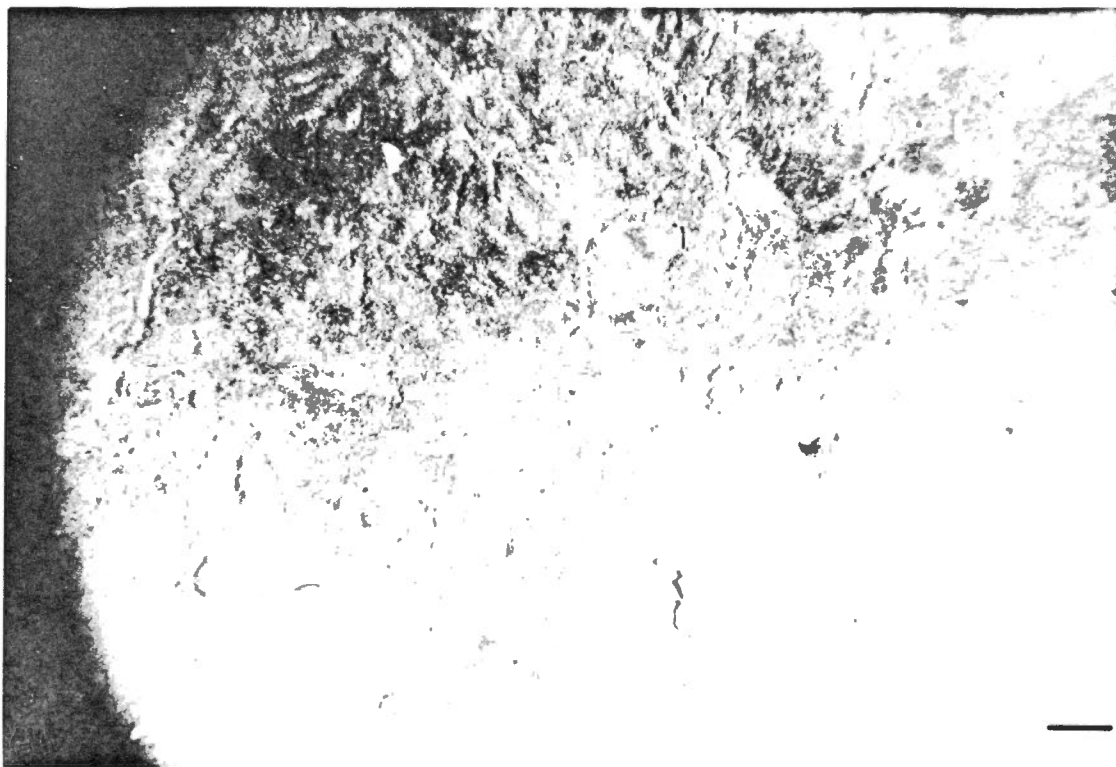
076 Baie Verte 36 m. In this image gravel clasts up to small boulder size lie partly buried on a muddy substrate. Some Lithothamnion is evident on the gravel. Several brittlestars and a dead fish (capelin) lie on the bottom. Faint tracks are evident.



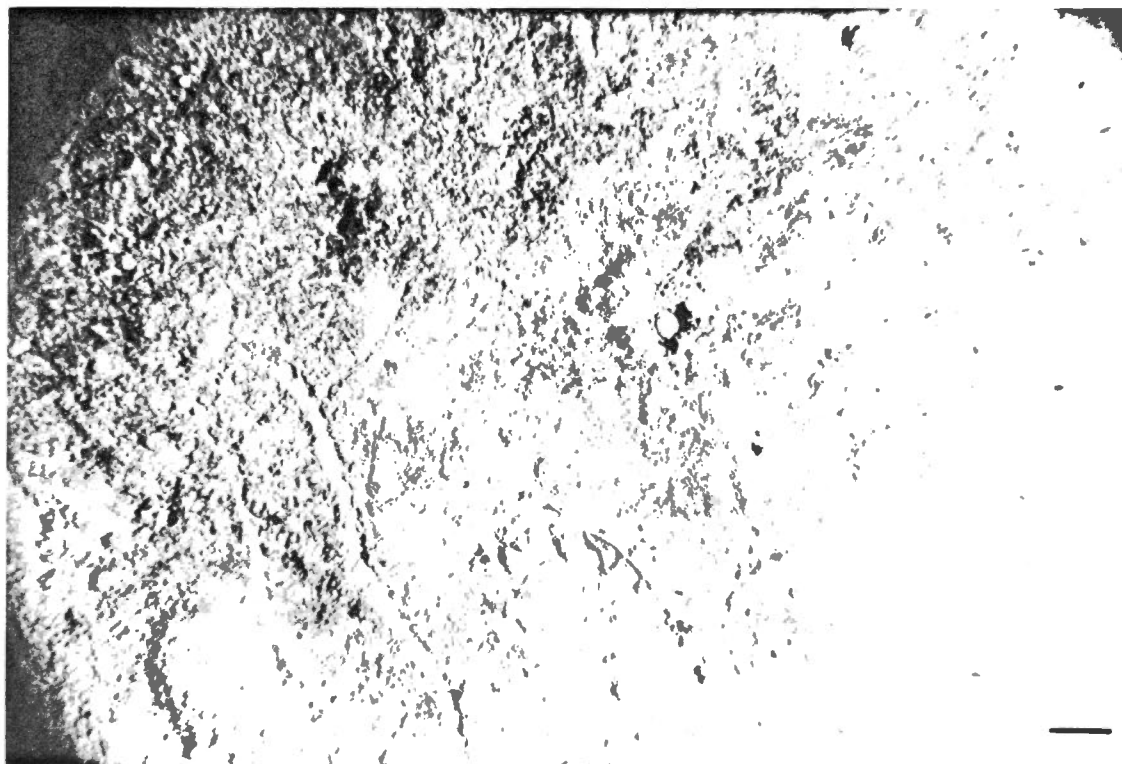
078 Baie Verte 56 m. The muddy bottom in this image has a rough texture, with faint tracks in places. The most conspicuous objects are four anemones, and the siphons of a buried pelecypod.



080 Baie Verte 31 m. Numerous wiggling trails appear on the fine grained (probably sandy) bottom in this photograph. Scattered pebbles and cobbles up to medium boulder size are heavily encrusted with *Lithothamnion*. Some gravel clasts are partly or wholly buried in the fine sediment. One anemone is seen, attached to a clast.



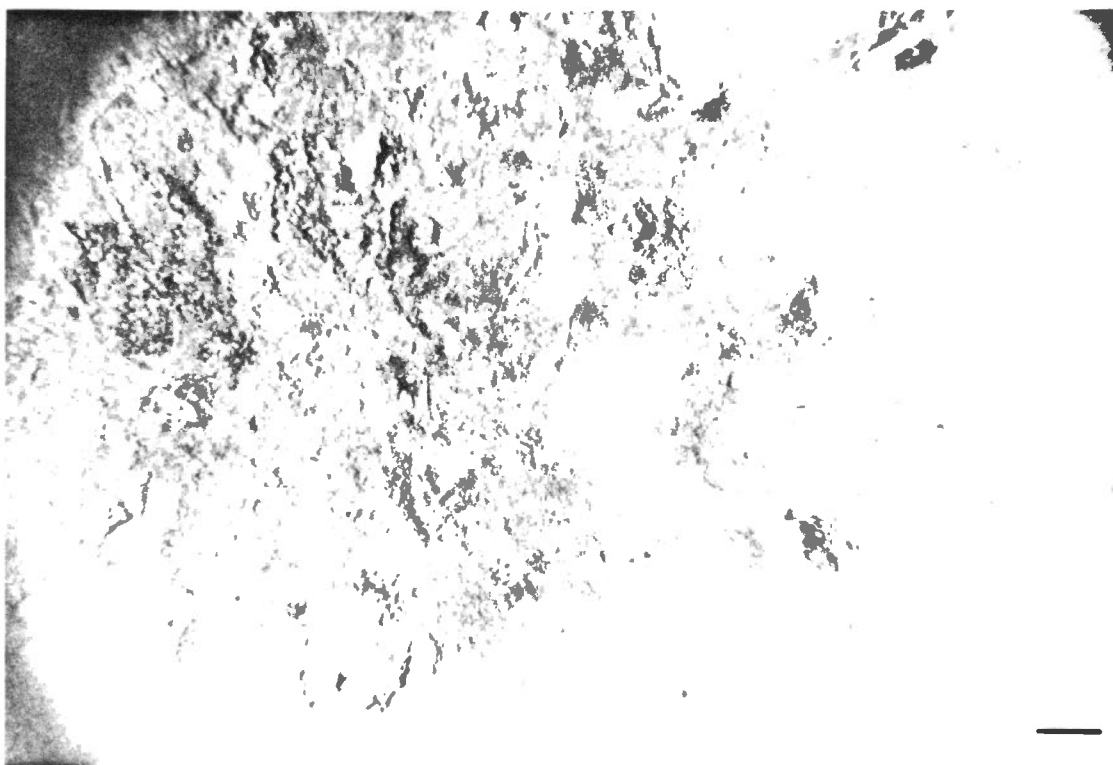
082 Baie Verte 24 m. Here a fine grained (probably muddy) bottom is covered with a network of fine tracks. Several large burrows are evident.



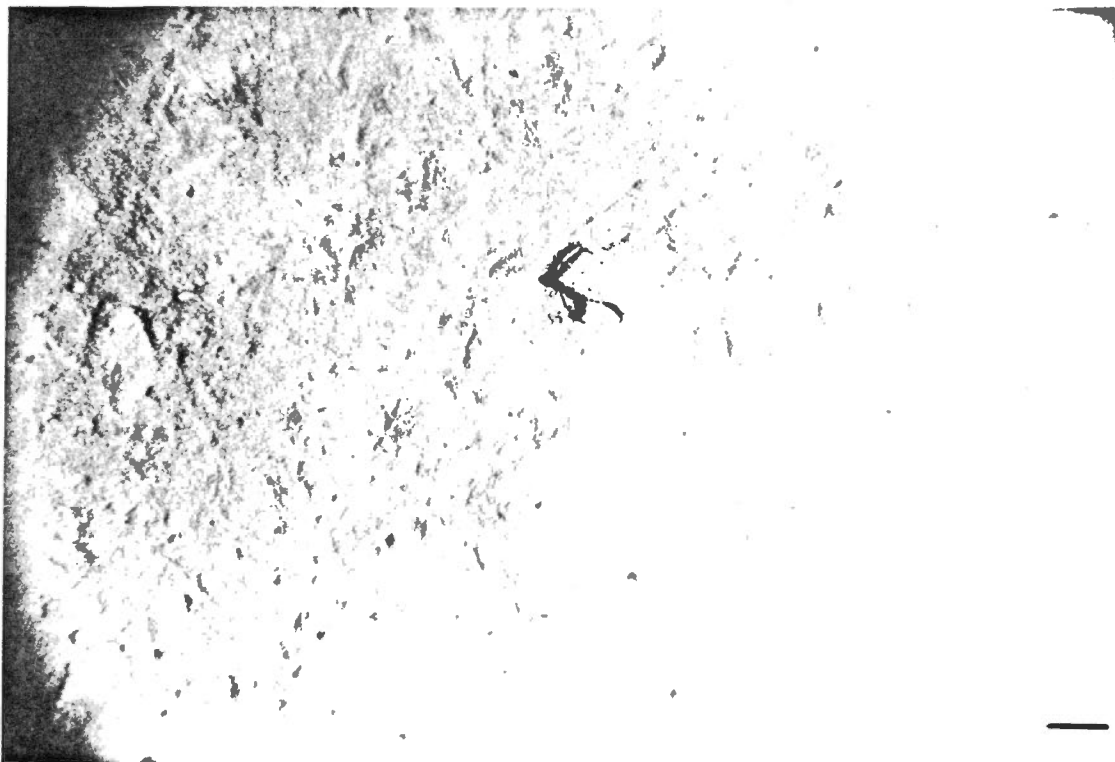
084 Baie Verte 33 m. The rough, muddy bottom here is heavily disturbed by the activity of both infauna and epifauna, resulting in several pits and a number of tracks. Two prominent tracks are parallel to one another. A single brittlestar can be seen.



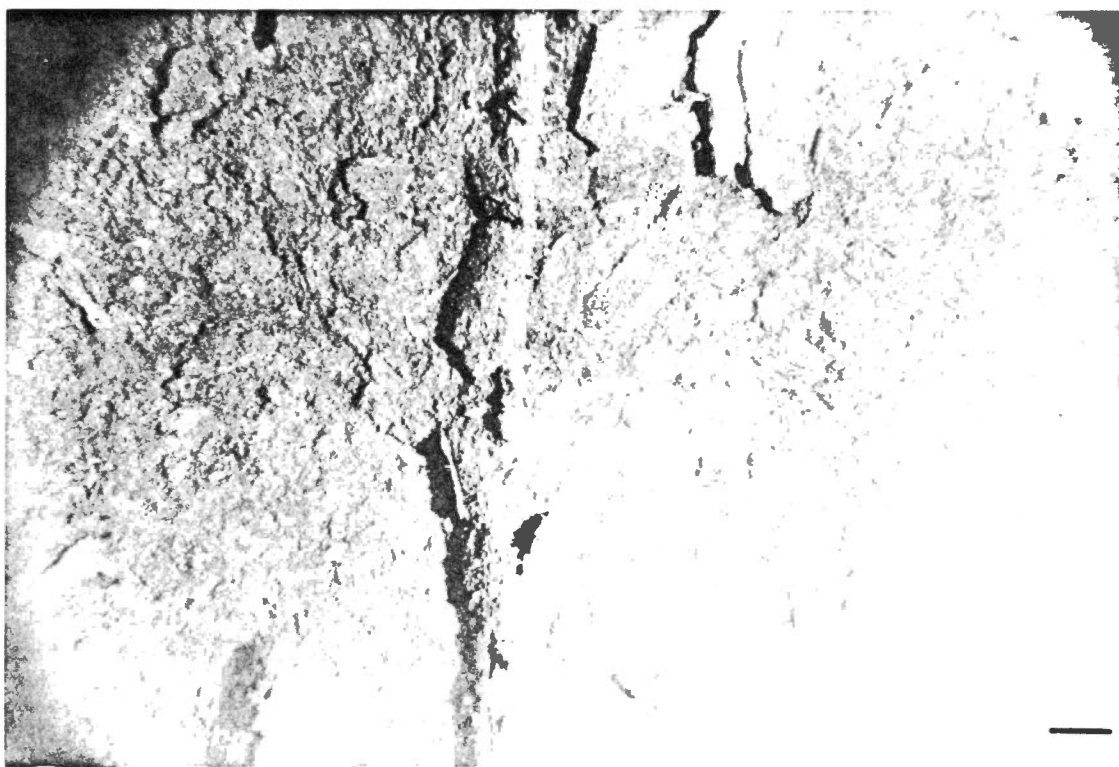
086 Baie Verte 18 m. Subangular to subrounded gravel clasts, mainly coarse pebbles but including a medium boulder, sitting on a fine-grained bottom, possibly sand or muddy sand. The gravel is heavily encrusted with *Lithothamnion*



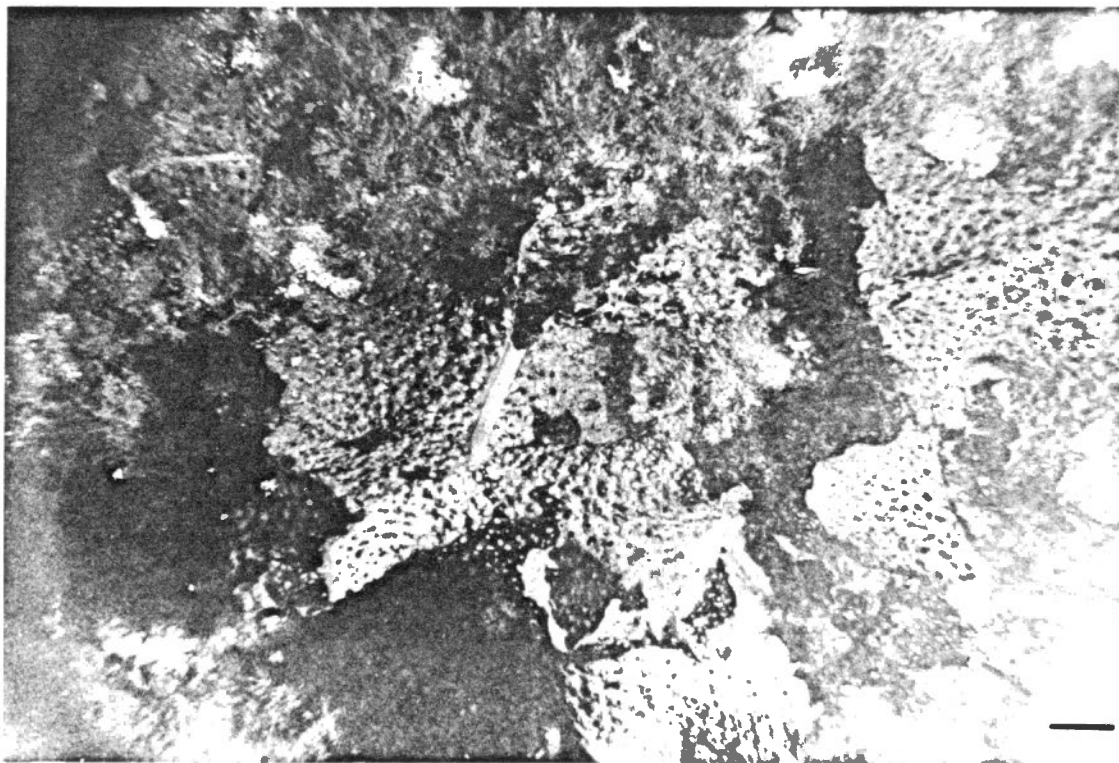
088 Baie Verte 28 m. The muddy bottom here is heavily marked by trails. Several pits are also visible.



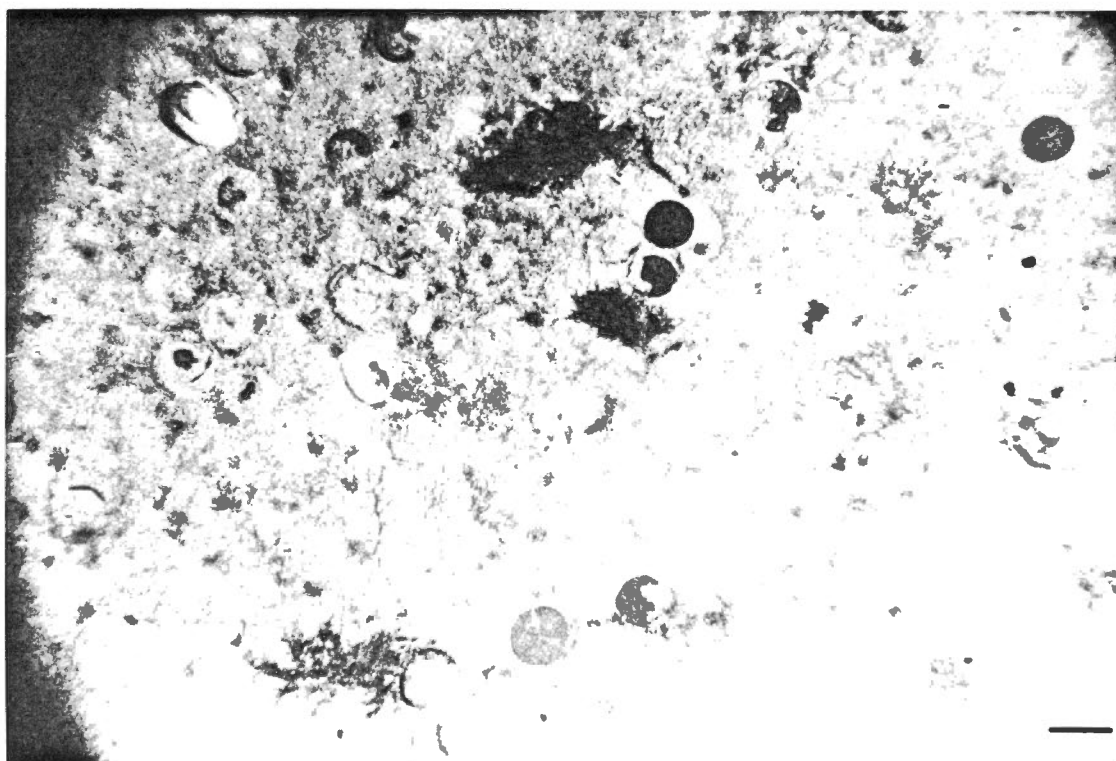
090 Baie Verte 32 m. The grab sample in this area gave black mud. The bottom has numerous small pits and is marked by many fine trails.



092 Baie Verte 12 m. This photograph was taken close to the public wharf in Baie Verte. The grab sample in the vicinity was a foul smelling mixture of black mud and wood fragments. The photograph shows numerous wood fragments and bark on a fine-grained bottom. One small starfish is present.



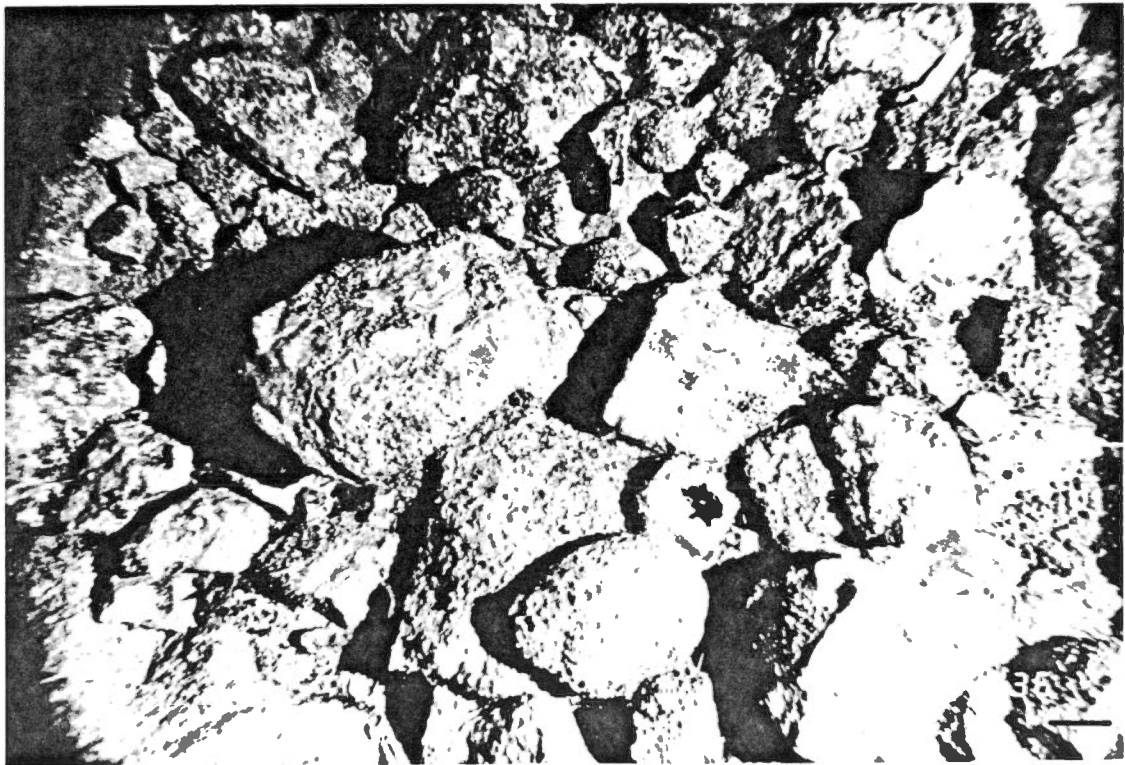
094 Baie Verte 30 m. The bottom in this photograph is obscured by seaweed. The grab sample consisted of medium to fine sand with sand dollars.



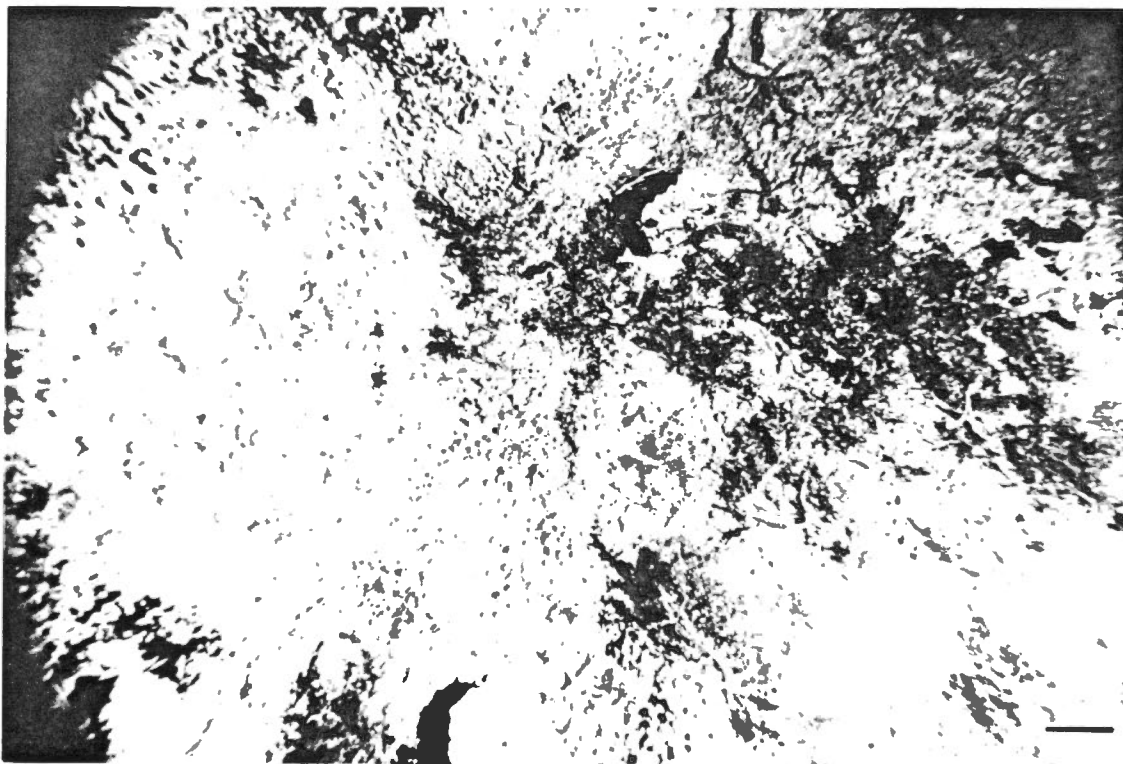
096 Baie Verte 19 m. Numerous sand dollars are located on a sandy bottom in this photograph. Many are partly or completely covered by sand. Half of a bivalve shell (*Mya truncata*) is partly sand-filled. A large living gastropod is visible (*Lunatia* sp.), and faint tracks are apparent in places.



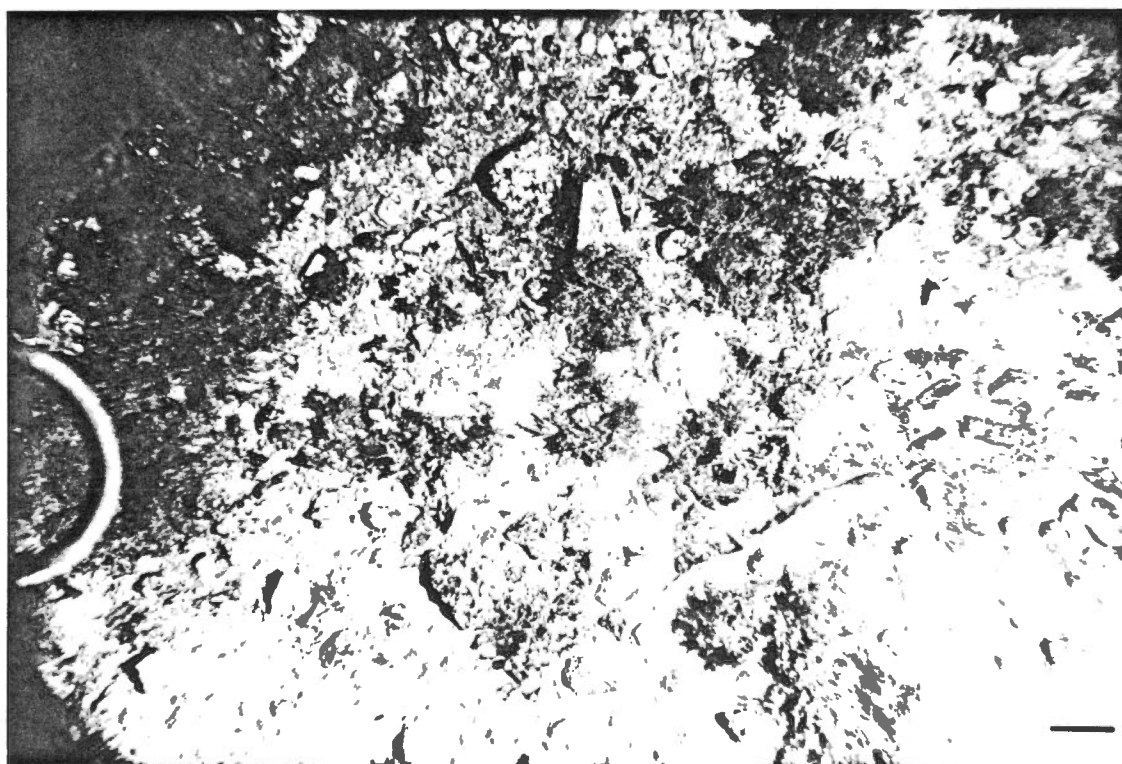
098 Baie Verte 47 m. The seafloor has a cover of poorly sorted, subangular gravel, ranging from fine pebbles to large cobbles, with sand visible in interstices. Some of the gravel has a light encrustation of coralline algae. Also present are shells and shell fragments, a dead fish (capelin), and a small crab.



100 Baie Verte 45 m. This frame is occupied by coarse gravel, much of it boulder-sized. The gravel is encrusted with *Lithothamnion*. The remains of a dead fish (capelin) are visible.



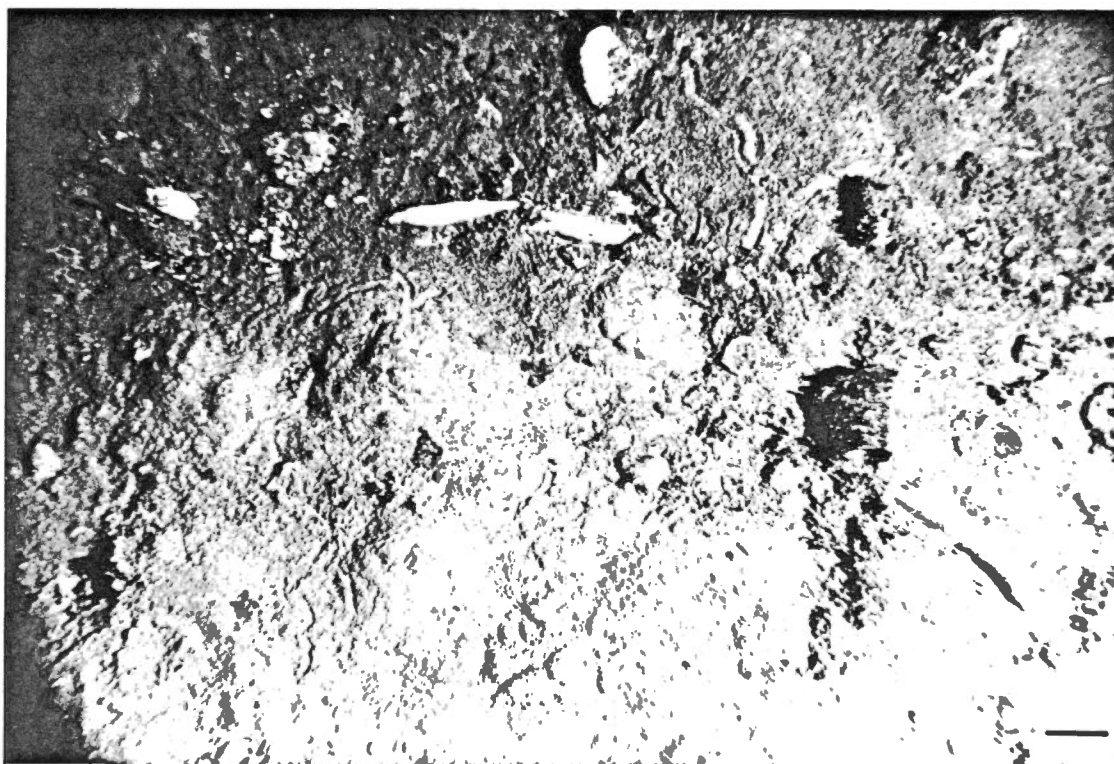
102 Baie Verte 39 m. In this vicinity the van Veen sampler reached the surface several times with the jaws partly or completely open, suggesting a hard bottom. Several very large boulders are evident in this view, heavily encrusted with *Lithothamnion*. Patches of seaweed are present and numerous brittlestars are seen.



104 Baie Verte 43 m. The sandy bottom here is littered with subangular to subrounded gravel, ranging in size from medium pebbles to small cobbles, and numerous shells and shell debris. Seaweed is present, probably attached. A dead fish (capelin) is visible.



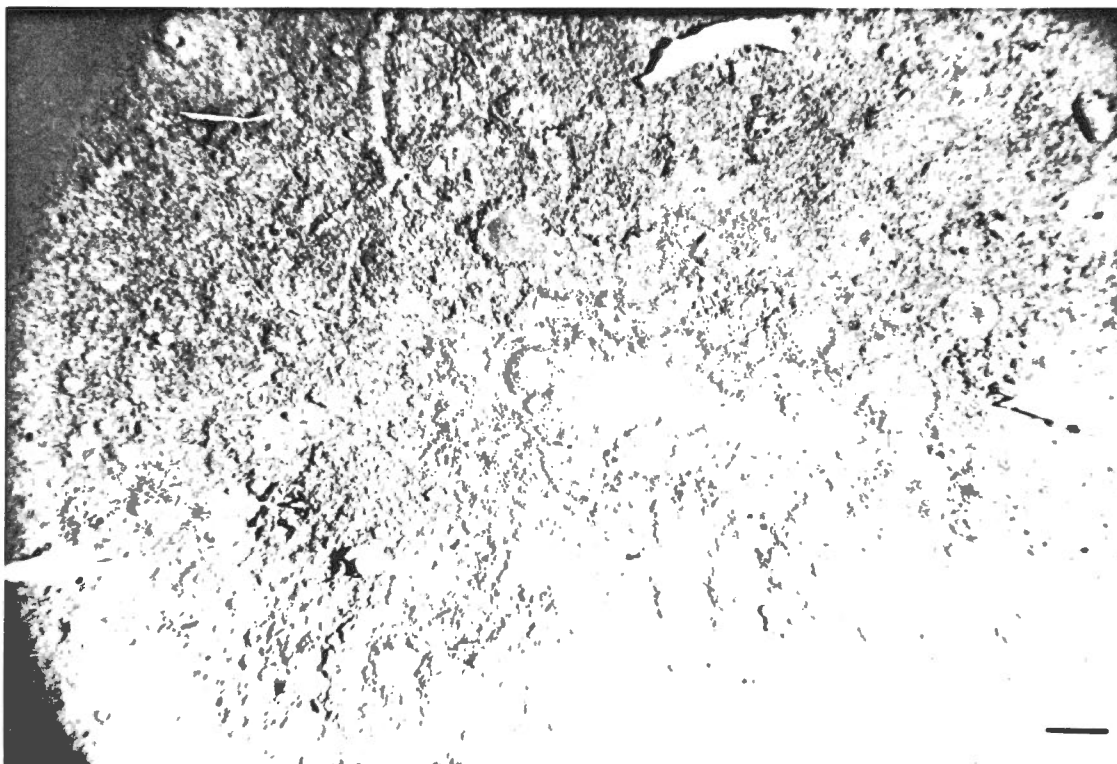
106 Baie Verte 44 m. The bottom consists of sand in this view. Five dead capelin can be seen, and numerous sand dollars, a sea urchin, five anemones, shells and shell fragments, tracks, and a subrounded large cobble.



108 Baie Verte 48 m. More dead capelin litter a sandy bottom in this view. Also present are some small cobbles coated with coralline algae, tracks, shells and shell debris, including a valve of *Astarte* sp., and a piece of seaweed.



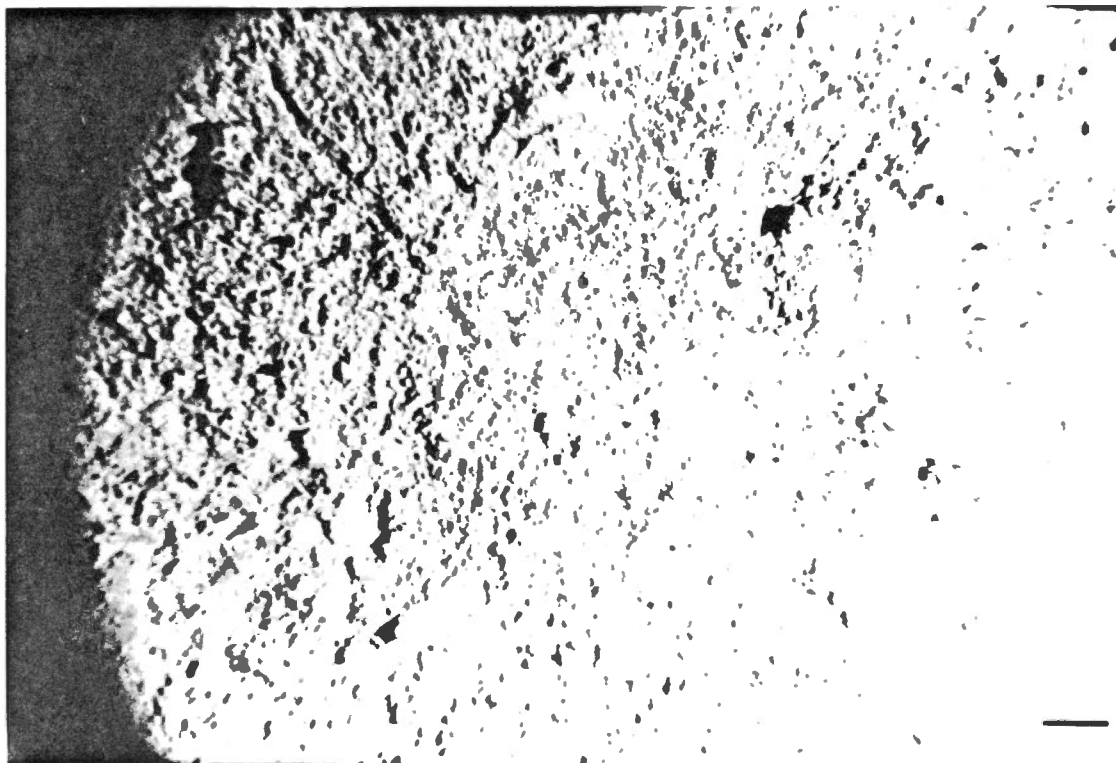
110 Baie Verte 53 m. Four small crabs appear on a rough-textured sandy bottom, close to a dead capelin. Small amounts of fine shell debris may be present. Grab samples gave shelly sand.



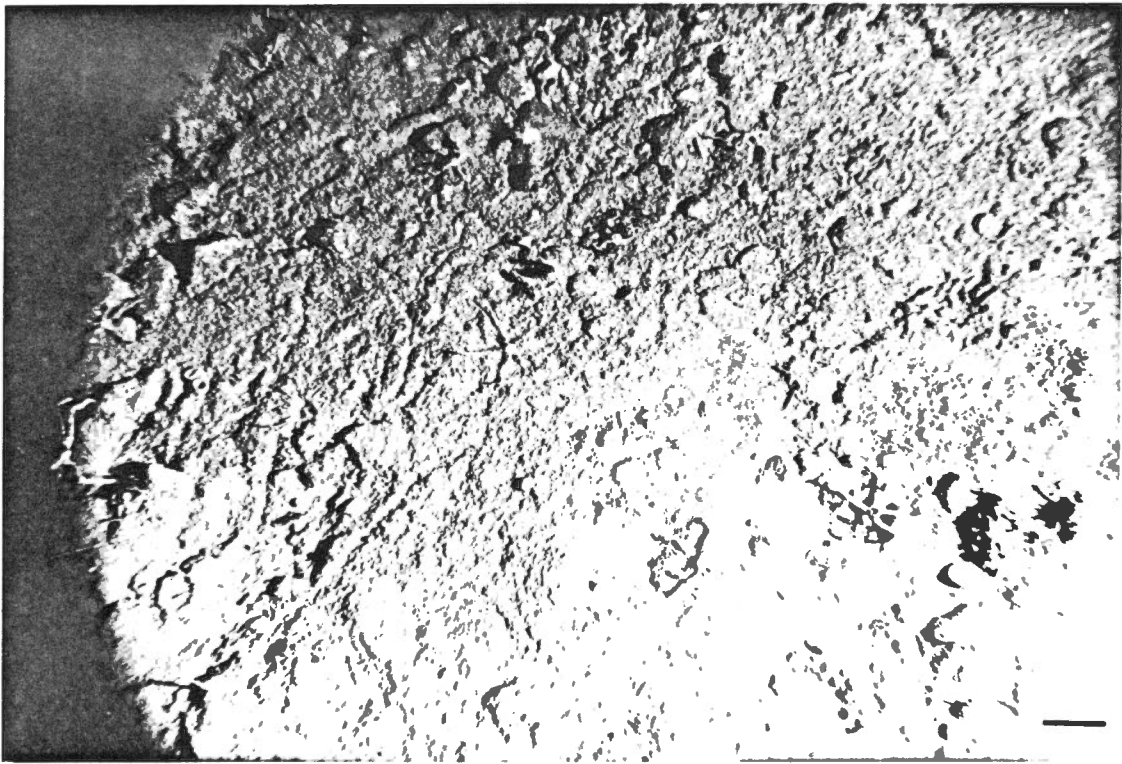
112 Baie Verte 46 m. The sandy bottom in this view is marked by numerous tracks. Several sand dollars, partly or wholly buried, are visible, as are three dead capelin, shells and shell fragments, and a gastropod (*Aporrhais occidentalis*).



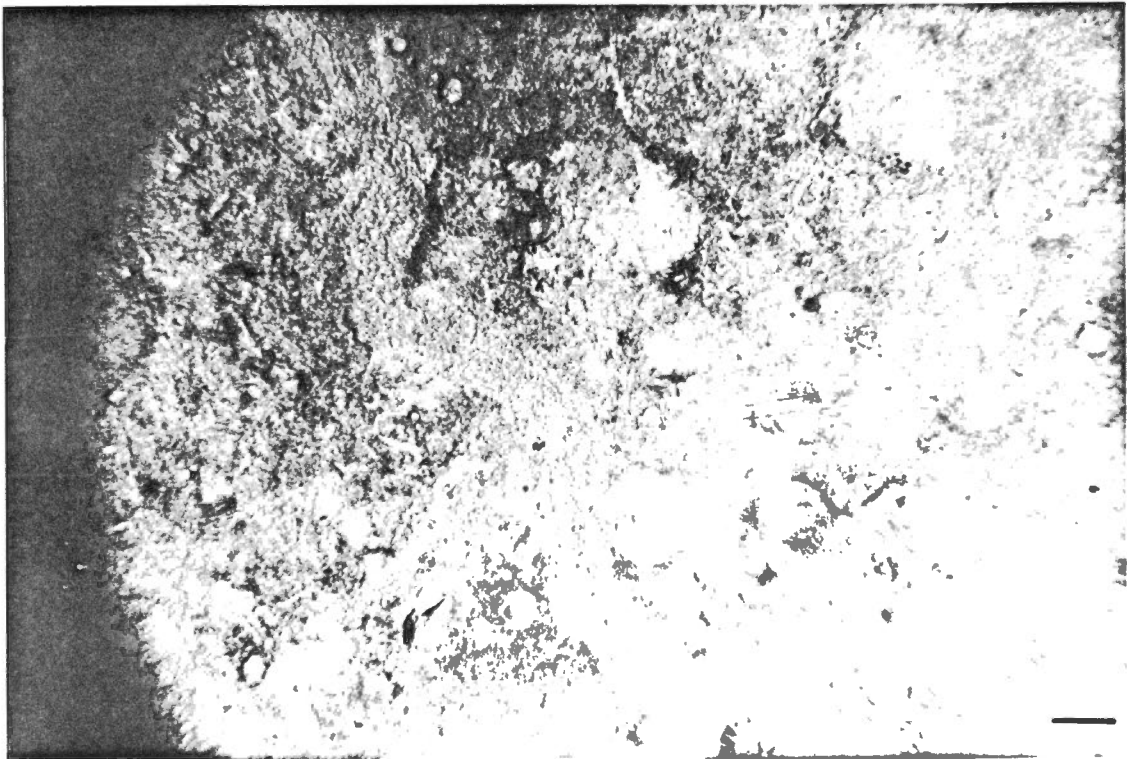
114 Baie Verte 74 m. Seven dead capelin appear in this field of view. The bottom consists largely of very coarse pebbles, many coated with coralline algae. The material in the interstices is probably sand. Some of the gravel is sand-covered.



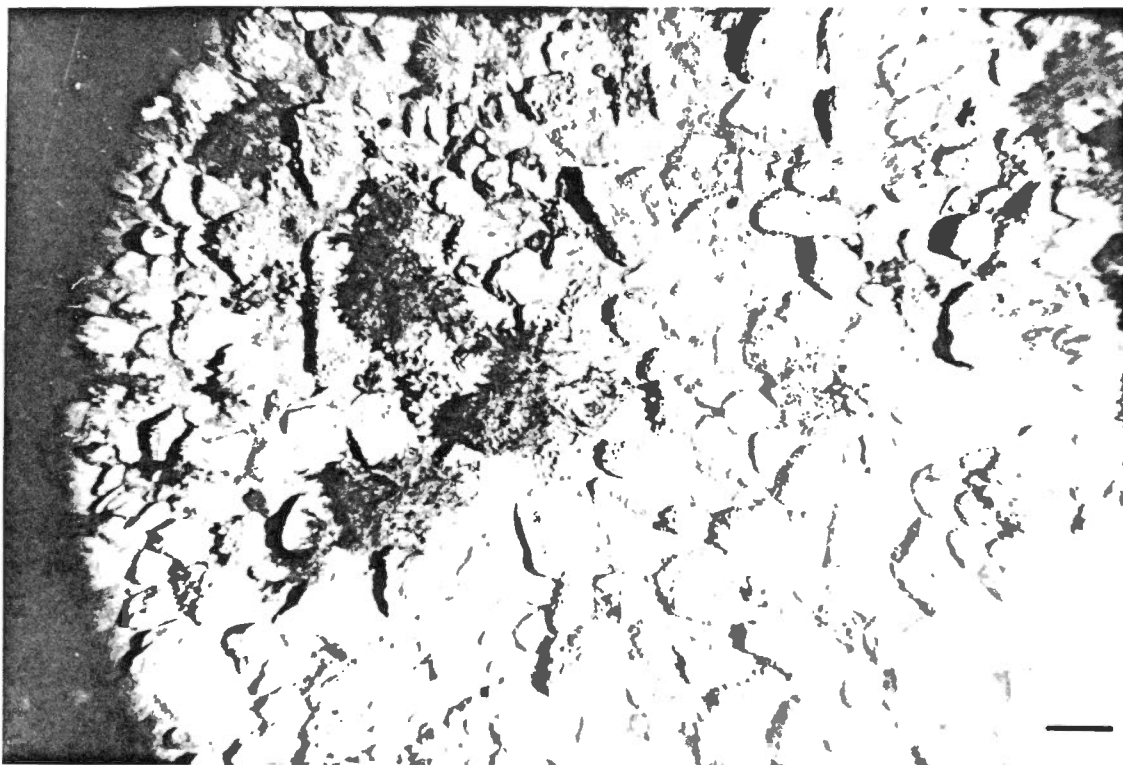
116 Baie Verte 90 m. The bottom sediment here is probably sandy mud. The surface has a rough texture. One partly-buried shell is visible: The grab sample gave gravelly mud.



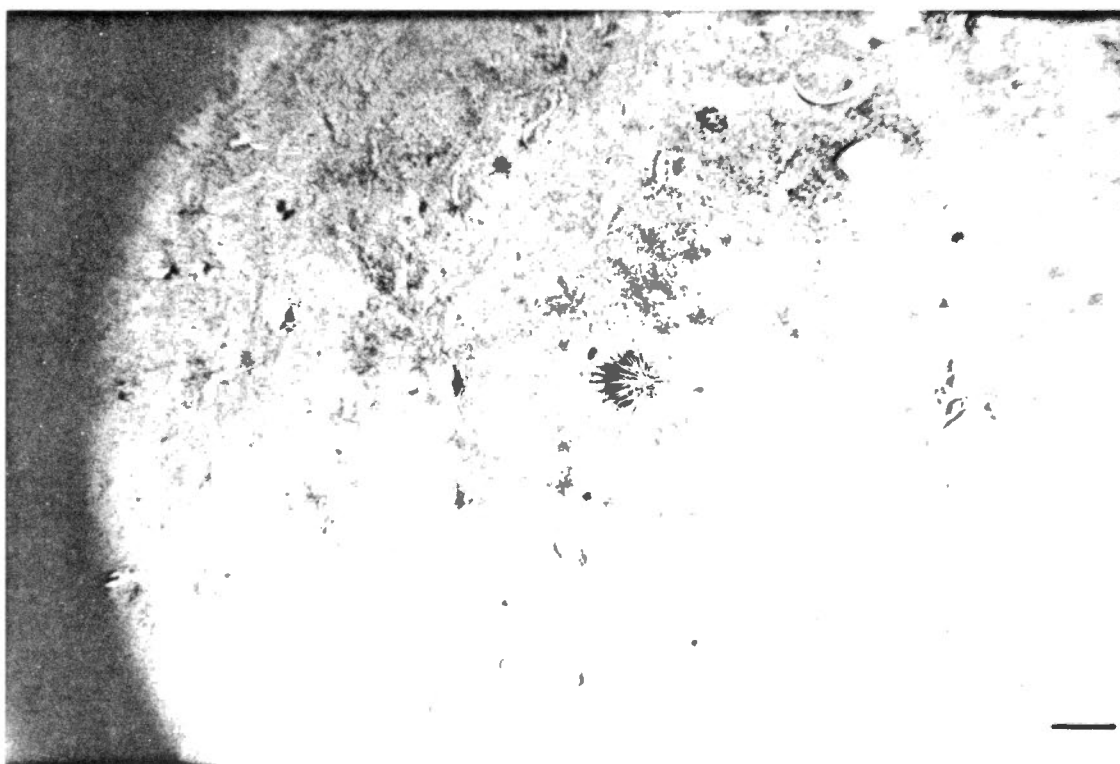
118 Baie Verte 56 m. The fine sediment consists of muddy sand according to the grab sample. The gravel which is visible is mainly in the very coarse pebbles size range. Also seen are numerous brittlestars, shells and shell debris, anemones, and a crab (on the edge of the field of view).



120 Baie Verte 34 m. The sandy bottom here has a mottled appearance. A sea urchin is leaving a wide swathe across the field of view. Other tracks are visible, including that being left by a gastropod (*Aporrhais occidentalis*). Another gastropod is partly buried.



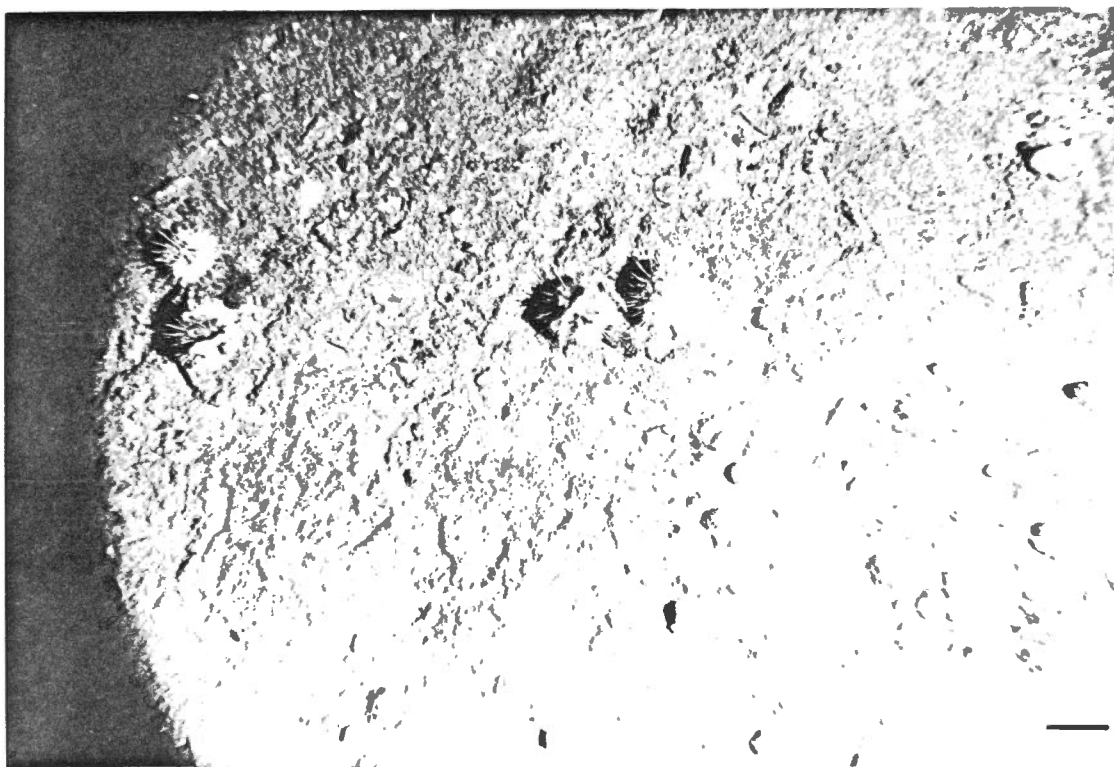
122 Baie Verte 31 m. This photograph reveals a closely-packed pavement of very coarse pebbles and small cobbles, with sand visible between the clasts. The gravel is subangular to subrounded, coated with coralline algae in most cases, and several clasts appear to have seaweed attached.



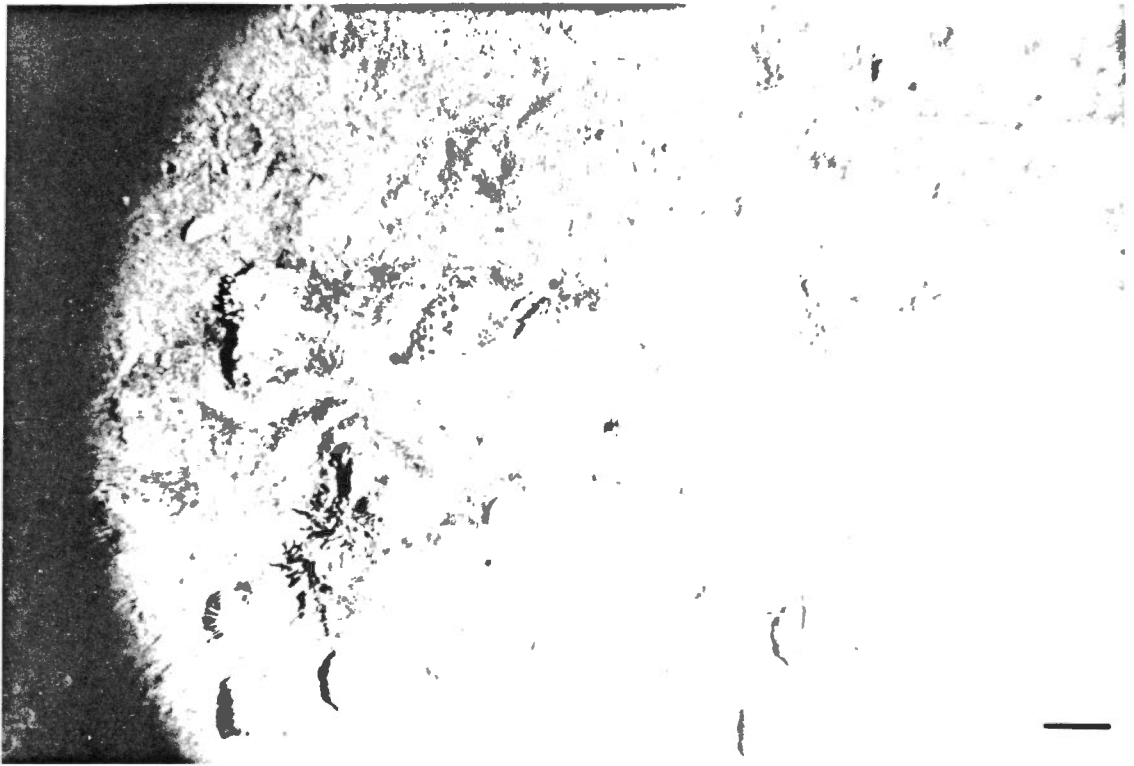
124 Baie Verte 21 m. The sandy bottom here shows much biological activity. Within the field of view are two sea urchins, a sand dollar which is making a well-defined track (with two outer levees), numerous mounds with pits, tracks, several partly buried dead bivalves.



126 Baie Verte 22 m. Seaweed obscures one third of the field of view. Bottom sediment is gravel, subangular to sub rounded, ranging in size from small boulders to fine pebbles. Lithothamnion is attached to some clasts. Sand is visible in the interstices. Several pelecypod valves are encrusted with coralline algae.



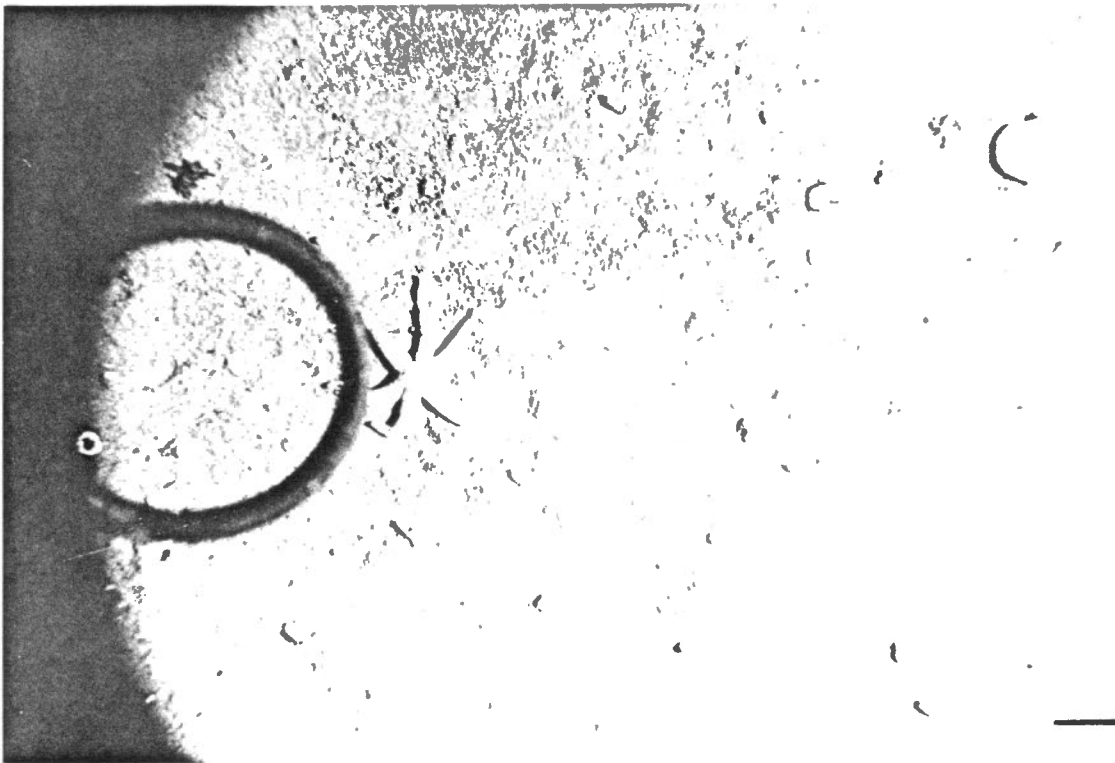
128 Baie Verte 44 m. The bottom sediment in this view consists of sand with a scattering of coarse pebbles. The bottom is littered with shells, shell fragments, and tube-building polychaetes (probably of the family Eunicidae). Faint tracks are evident, and the view includes four sea urchins and one starfish.



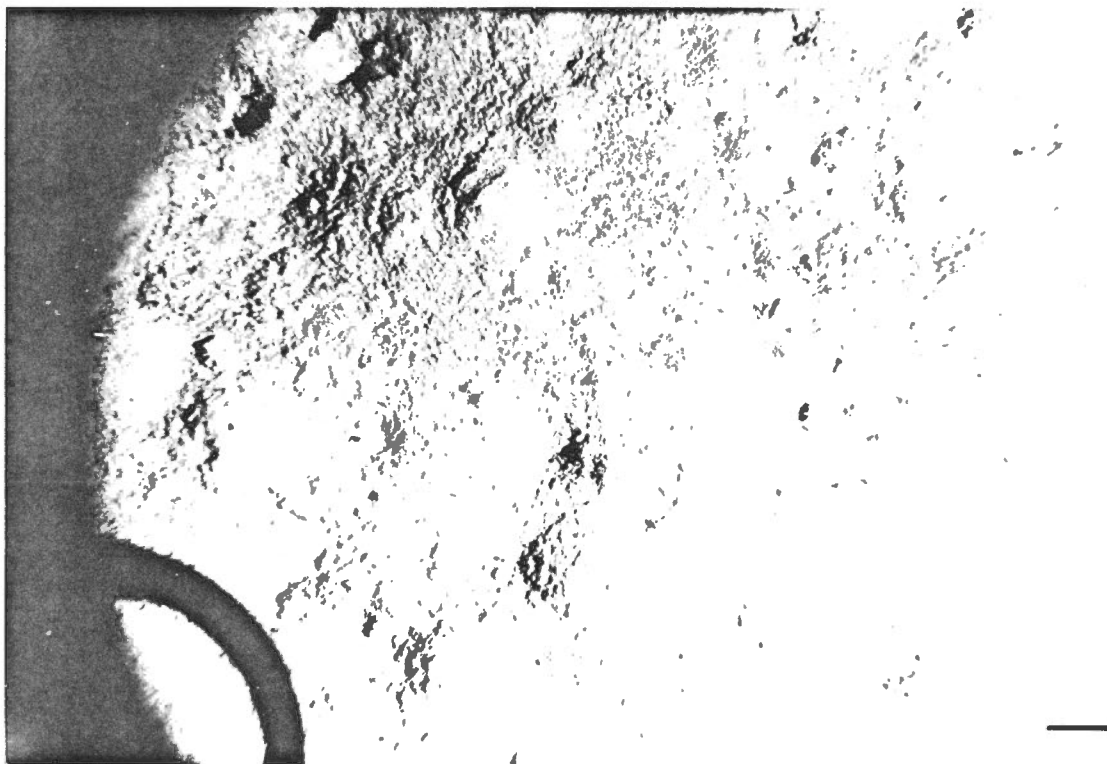
130 Baie Verte 32 m. The bottom is predominantly fine-grained. Grab sampling suggests it consists of muddy fine sand. Gravel clasts, subrounded or rounded, and with sizes in the small to large cobble range, lie partly buried in the sand. Some have an encrustation of *Lithothamnion*. Faint tracks are visible, plus two sea urchins and a partly buried sand dollar.



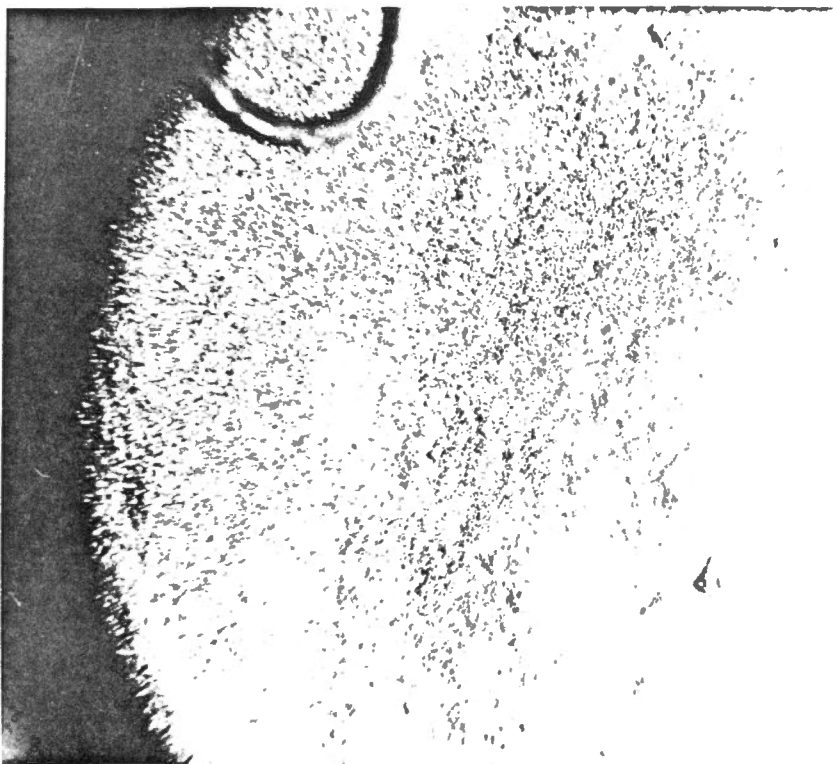
132 Baie Verte 32 m. Gravel clasts in the medium pebble to small cobble size range, rounded to subrounded, lie partly buried on a sandy bottom with faint tracks, an anemone, one gastropod (*Aporrhais occidentalis*), and tube worms.



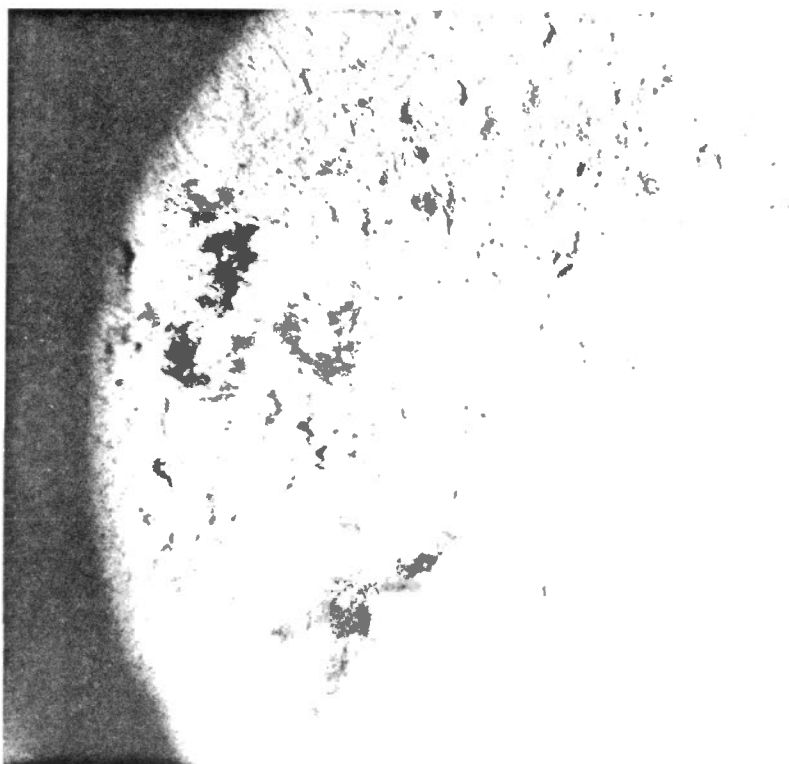
137 La Scie 80 m. This view features a large starfish leaving its trail on a sandy bottom (and moving over a sand dollar). Two other sand dollars, one of which is partly buried, can be seen. Shells and shell fragments litter the seabed.



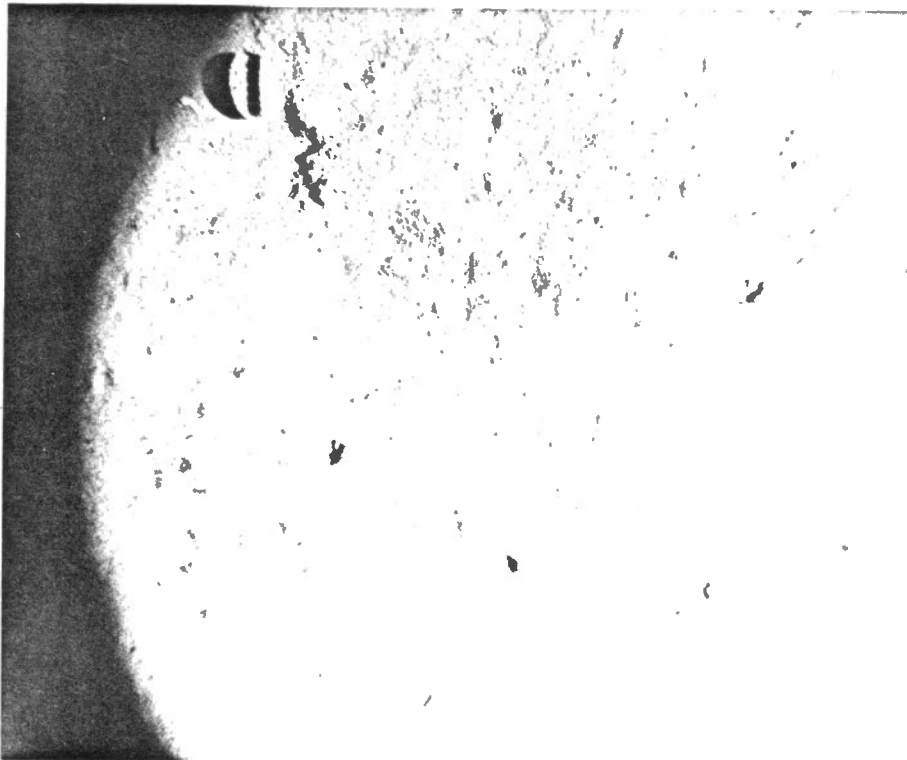
139 La Scie 110 m. Grab samples suggest that the fine sediment in this view consists of fine - medium sand. A number of mounds, approximately 10 cm in diameter, can be seen. Several pits are evident at the edge of the field of view.



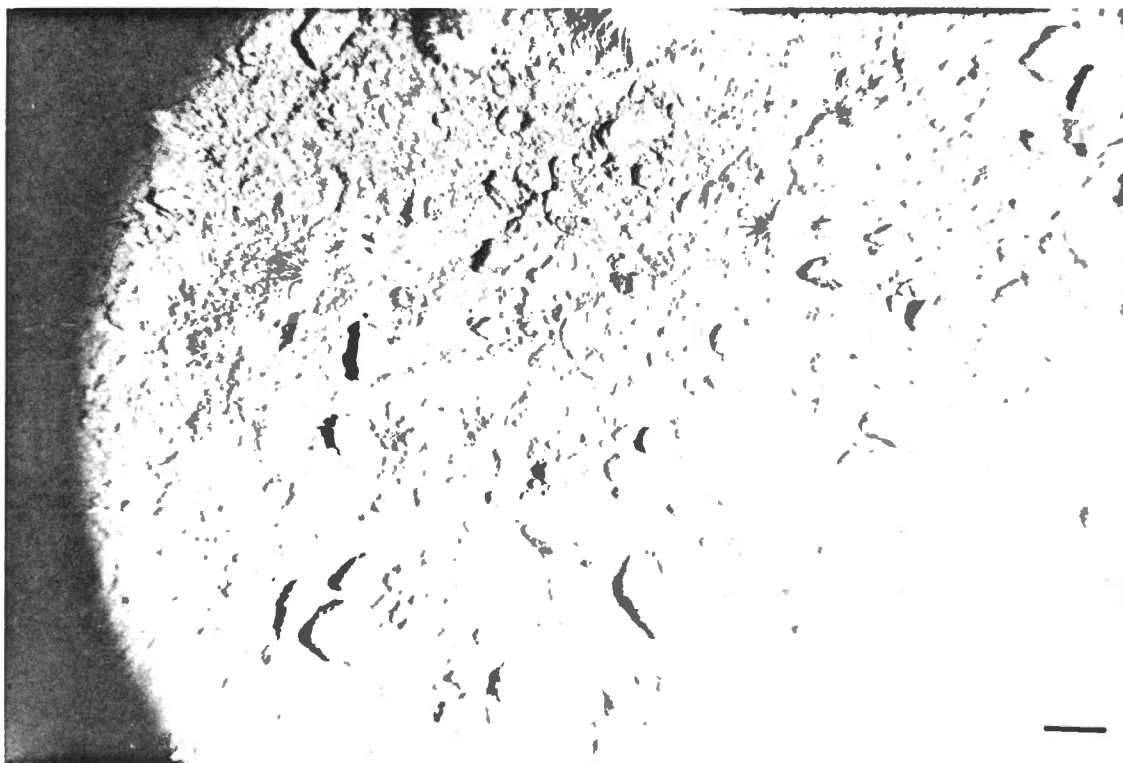
141 La Scie 52 m. The target of this photograph was a field of gravel ripples which appeared on sidescan sonar records. The sediment appears to consist of coarse sand and fine pebbles, including shell debris. The relief on the bottom confirms that ripples are present. A partly buried flounder is visible.



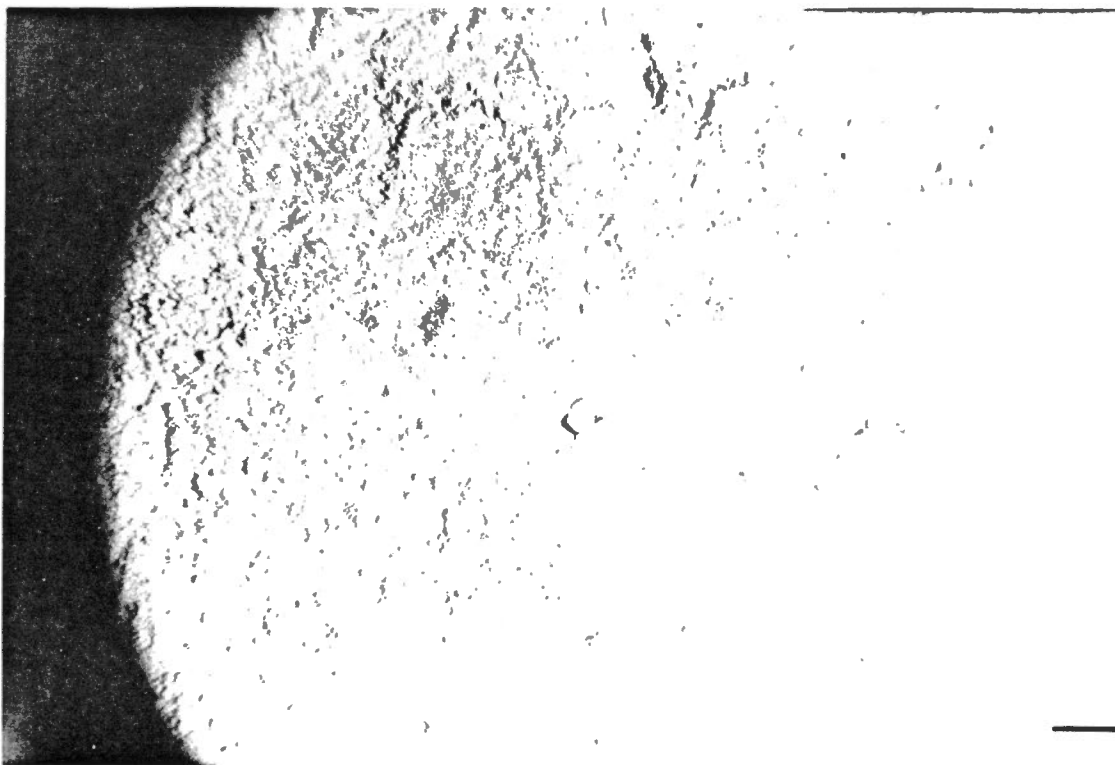
143 Little Bay 57 m. The grab sample in this vicinity consisted of silty mud. The muddy bottom is marked by tracks and shallow pits. The sediment has been disturbed by the action of fish, seen disappearing out of the field of view.



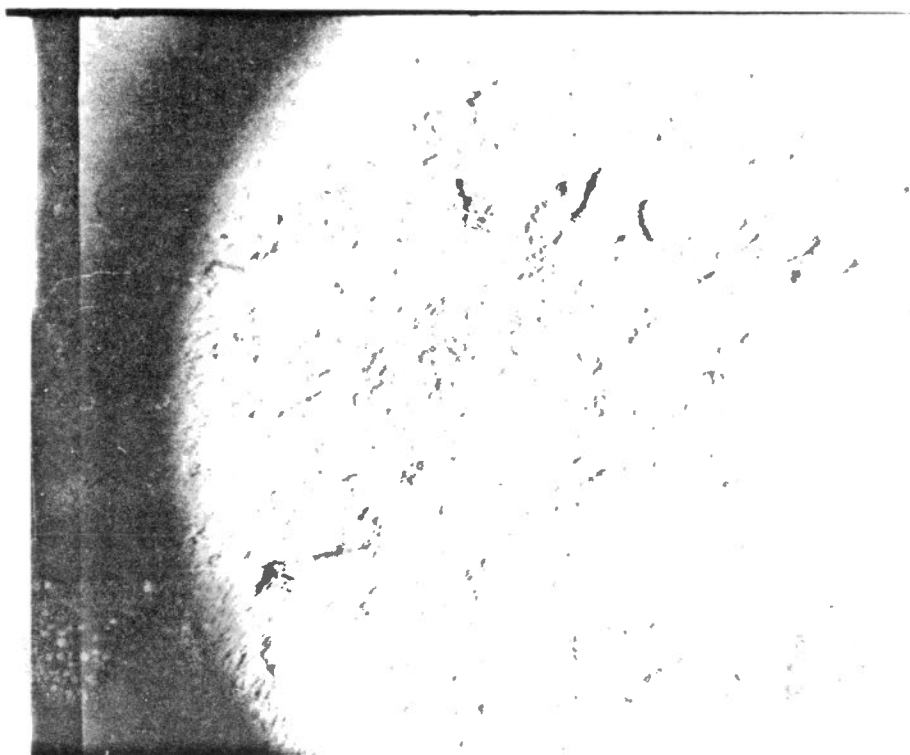
145 Little Bay 56 m. The grab sample in this vicinity yielded silty mud with shell debris and worm tubes. Shallow pits and well defined tracks can be seen. A conspicuous active pit is located on a mound 15 cm in diameter. There appears to be some shell debris and a large dead pelecypod.



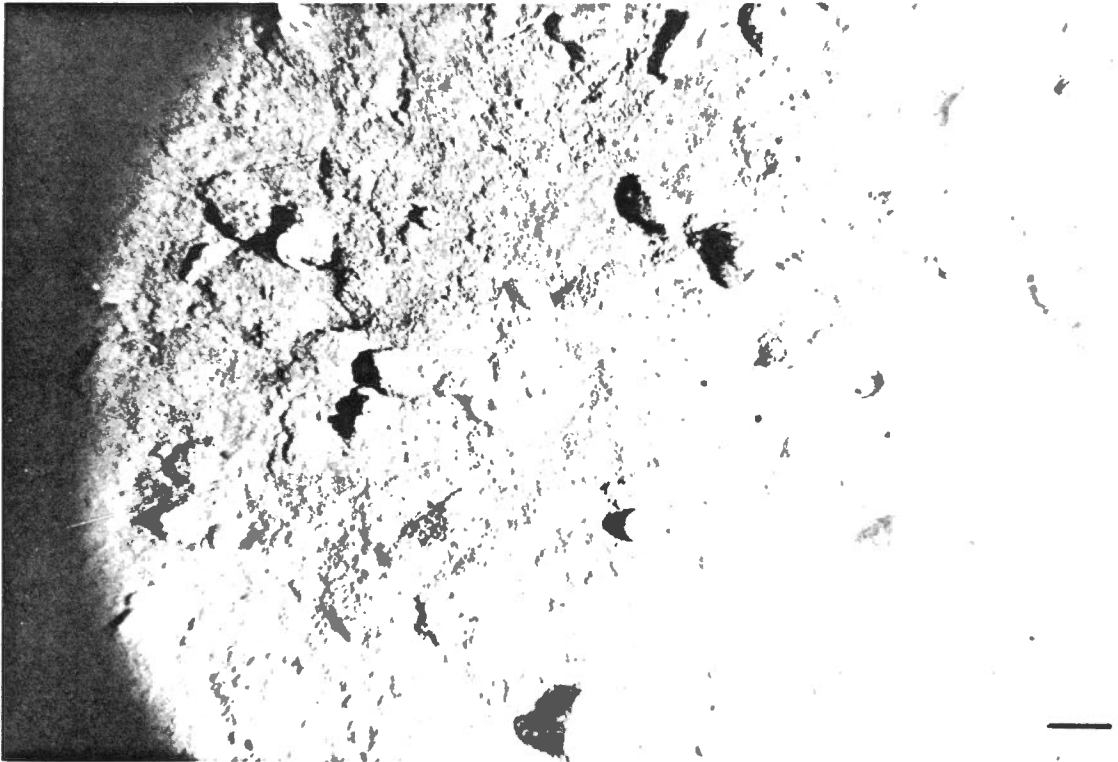
147 Little Bay 48 m. The seabed is littered with subangular gravel, ranging in size from coarse pebbles to large cobbles. The material between the clasts is probably muddy fine sand. Some clasts are partly or wholly buried. At least 10 anemones are in the field of view, and one sea urchin. Worm tubes protrude in several places.



149 Little Bay 59 m. The bottom consists of silty mud, much marked by tracks, with a few shell fragments.



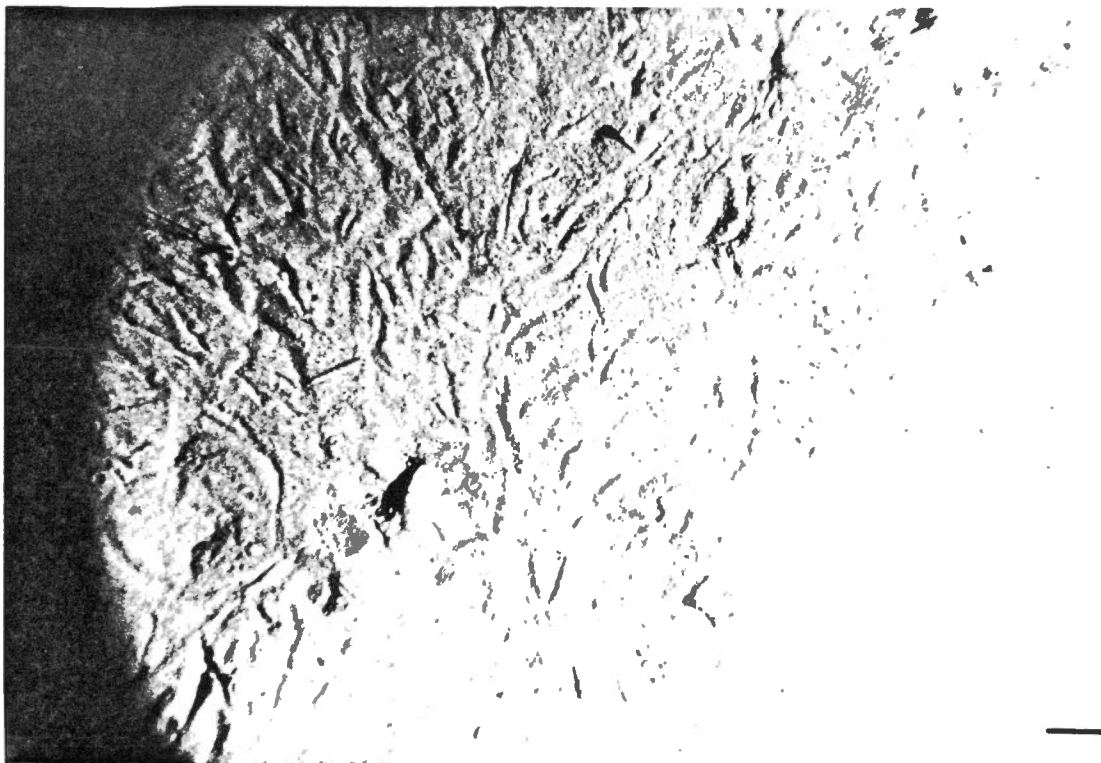
151 Little Bay 52 m. Grab samples from this area gave mud with pebbles and cobbles. If the sediment in this view contains gravel, it is buried. The muddy surface is marked by tracks. Several mollusc valves lie partly buried in sediment.



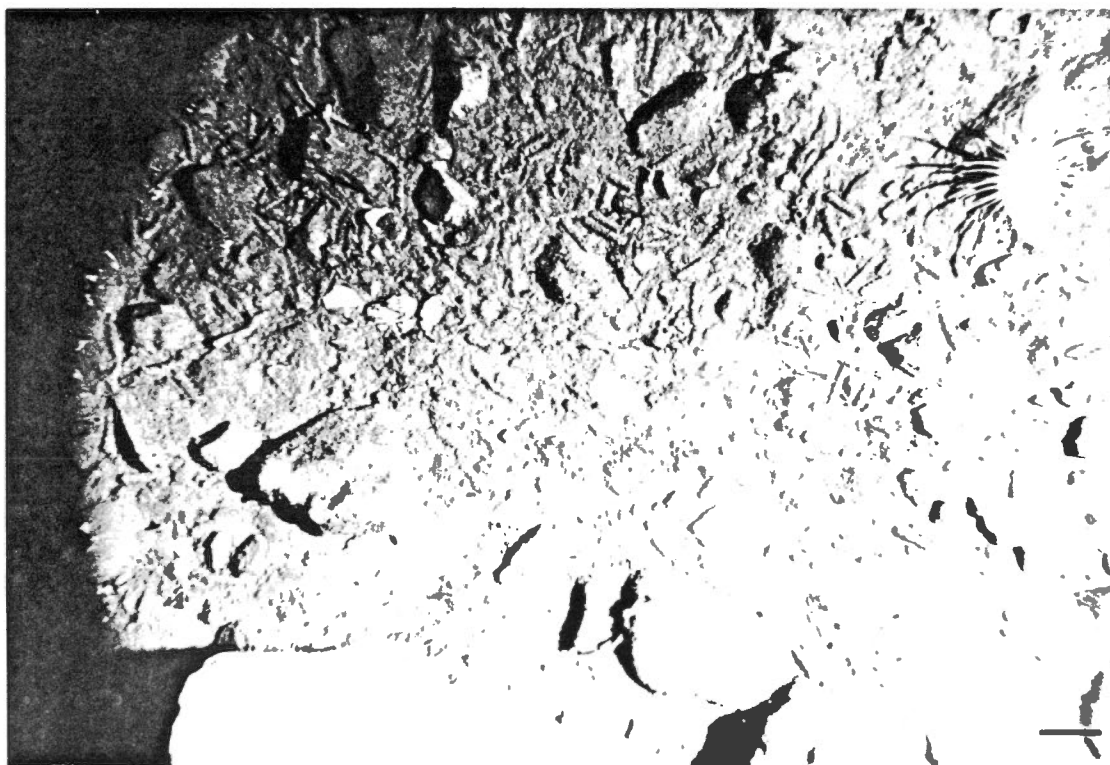
153 East Halls Bay area 39 m. Subangular to subrounded gravel clasts, up to small cobble size, lie partly or wholly buried in sediment, probably sand. The anemones are probably attached to clasts.



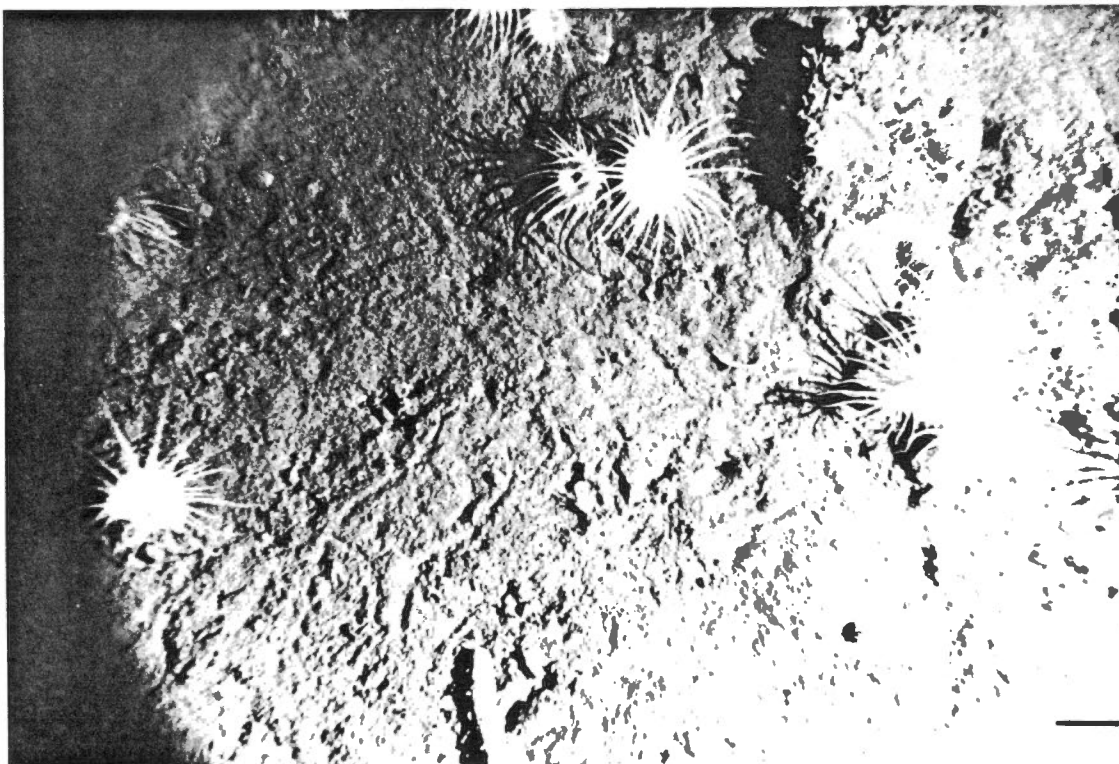
155 East Halls Bay area 47 m. This view is of a muddy sand bottom with numerous tracks and a few shells.



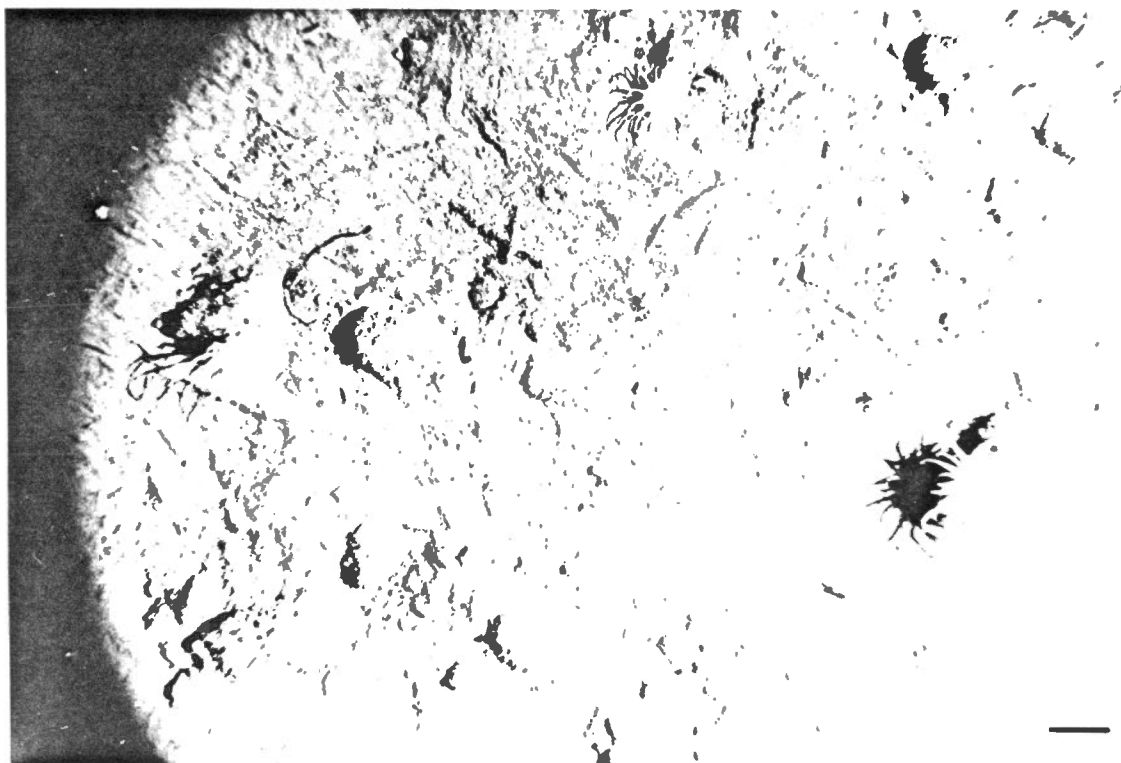
157 East Halls Bay area 53 m. The bottom here consists of sandy mud. It is much disturbed by short, curving tracks. A pelecypod is visible, and a conical, agglutinated polychaete tube. The grab sample gave gravelly mud, and included an anemone attached to a cobble.



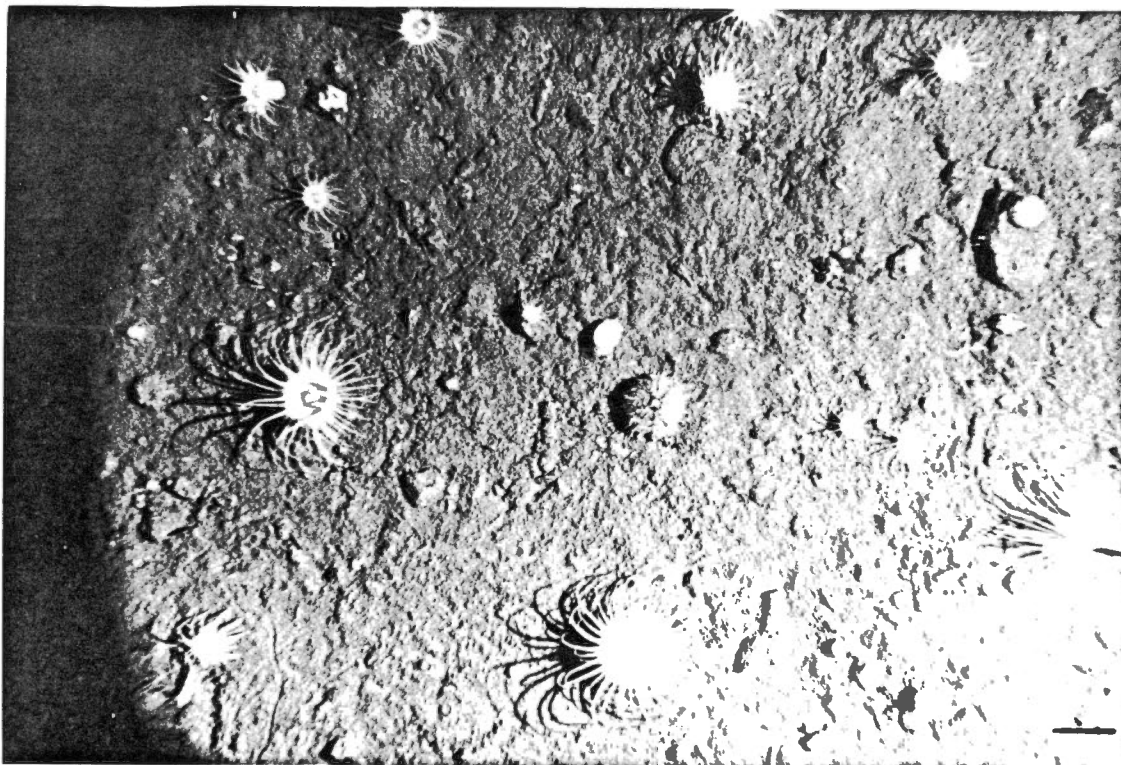
159 East Halls Bay area 66 m. The grab sample in this vicinity gave muddy gravel, from which it is inferred that the anemones are attached to buried gravel clasts. The muddy bottom is disturbed by tracks.



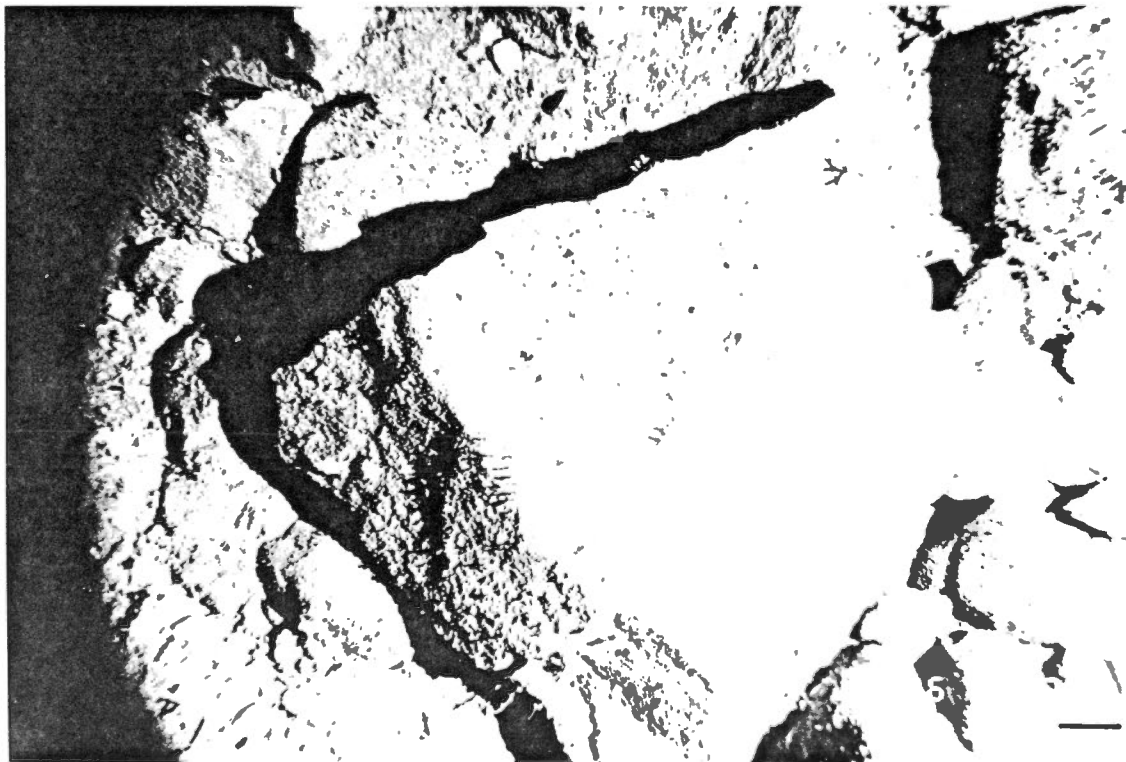
161 East Halls Bay area (Sunday Cove) 74 m. Poorly sorted subrounded gravel, in the very coarse pebbles to medium boulders size range, lies on a muddy bottom. Much of the gravel is wholly or partly buried in the fine sediment. The seabed is littered with tube-building polychaetes (family Eunicidae), shells and shell debris, including a valve of *Pecten* sp. Also seen are the two siphons of a pelecypod and an active burrow. The anemone is probably attached to a clast.



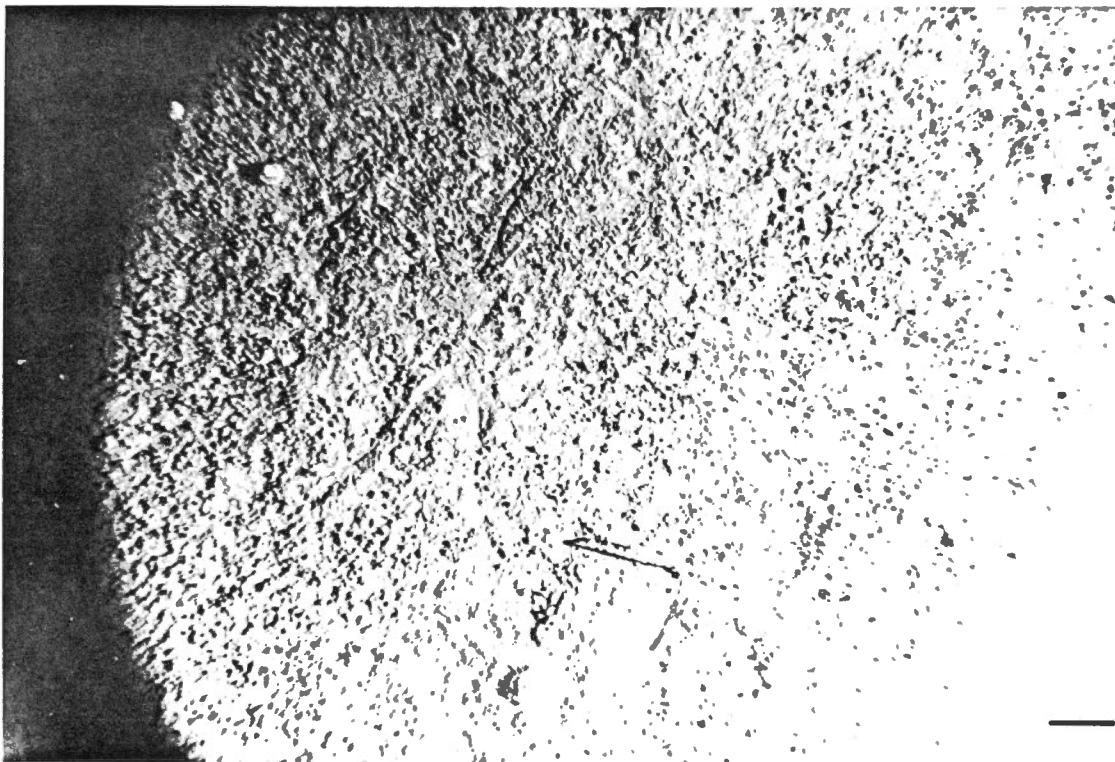
163 East Halls Bay area (Sunday Cove) 73 m. Some gravel clasts lie under a veneer of mud in this view; others are completely buried, and probably act as support for the anemones. Short, curving tracks are apparent. There are some shells and shell debris, tube-building polychaetes, and a dead fish (capelin).



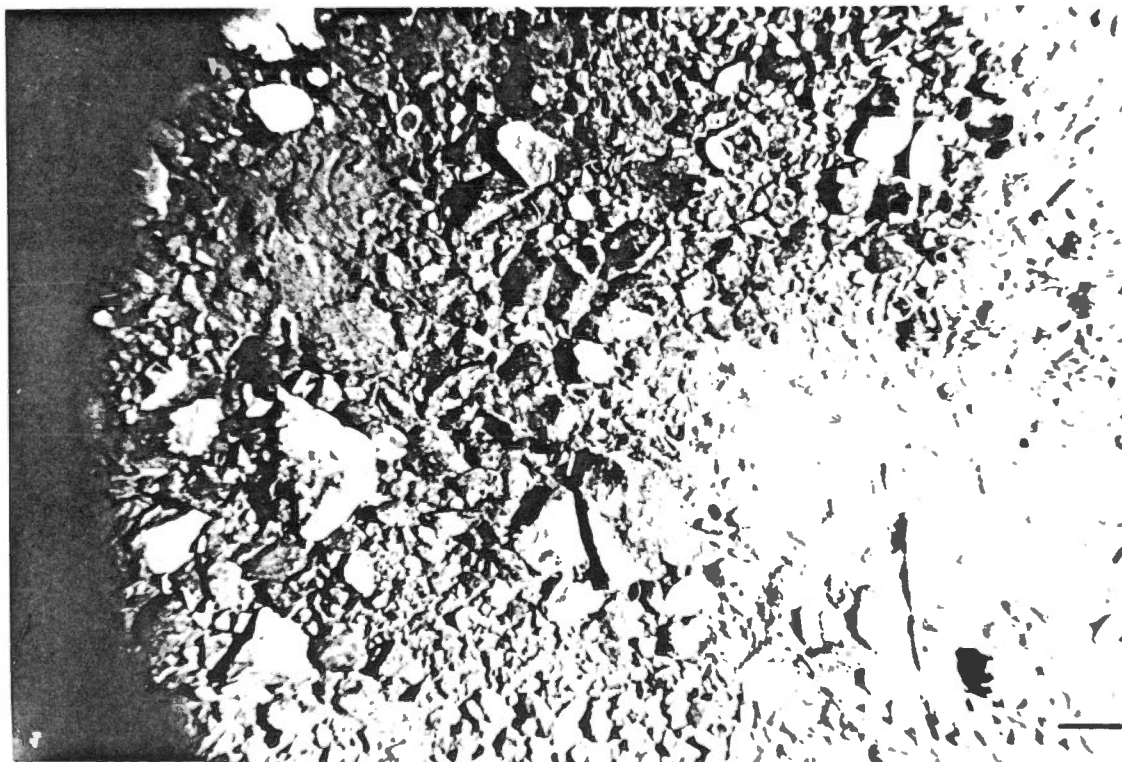
165 East Halls Bay area (Sunday Cove) 52 m. Subangular to subrounded gravel lies wholly or partly buried on a muddy seabed. Sea anemones are numerous, and are probably attached to clasts. Also visible are the two siphons of a pelecypod, some tube-building polychaetes, a gastropod (*Aporrhais occidentalis*), and a sea urchin.



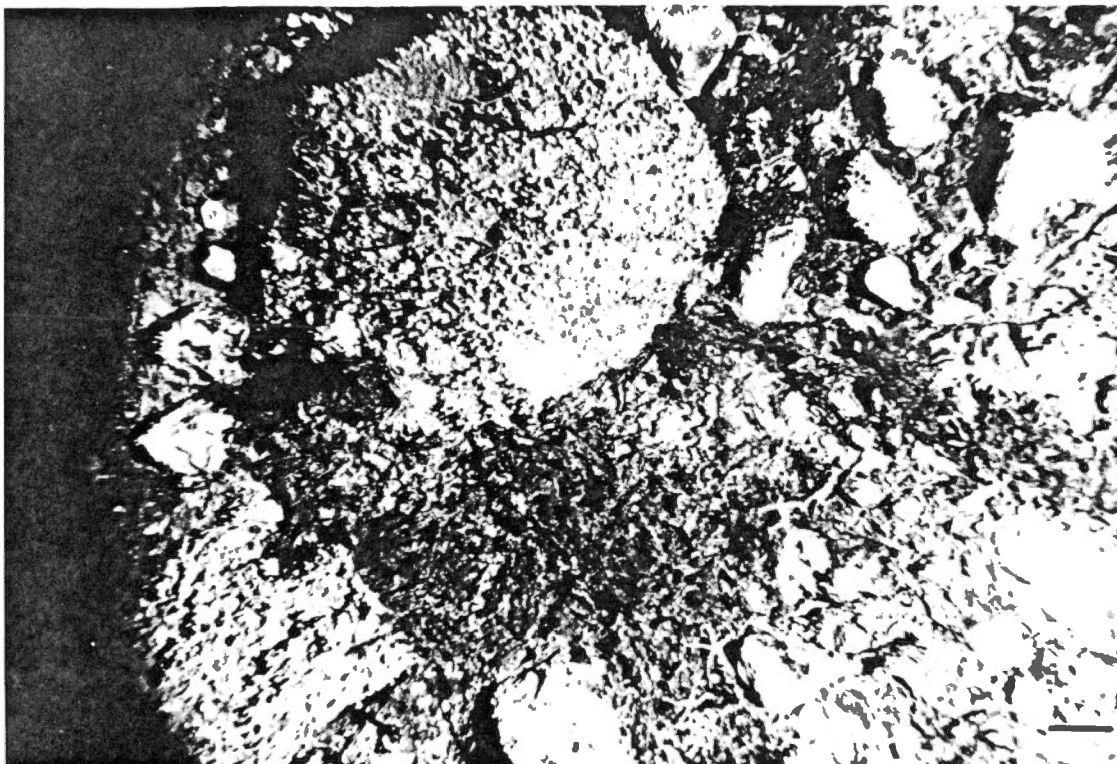
167 East Halls Bay area 80 m. The field of view is dominated by a large angular boulder, 1.1 m in length. Boulders and cobbles appear in the background, possibly with some finer sediment also, perhaps muddy sand. There is a small amount of coralline algae growth on the clasts, and several small gastropods are visible.



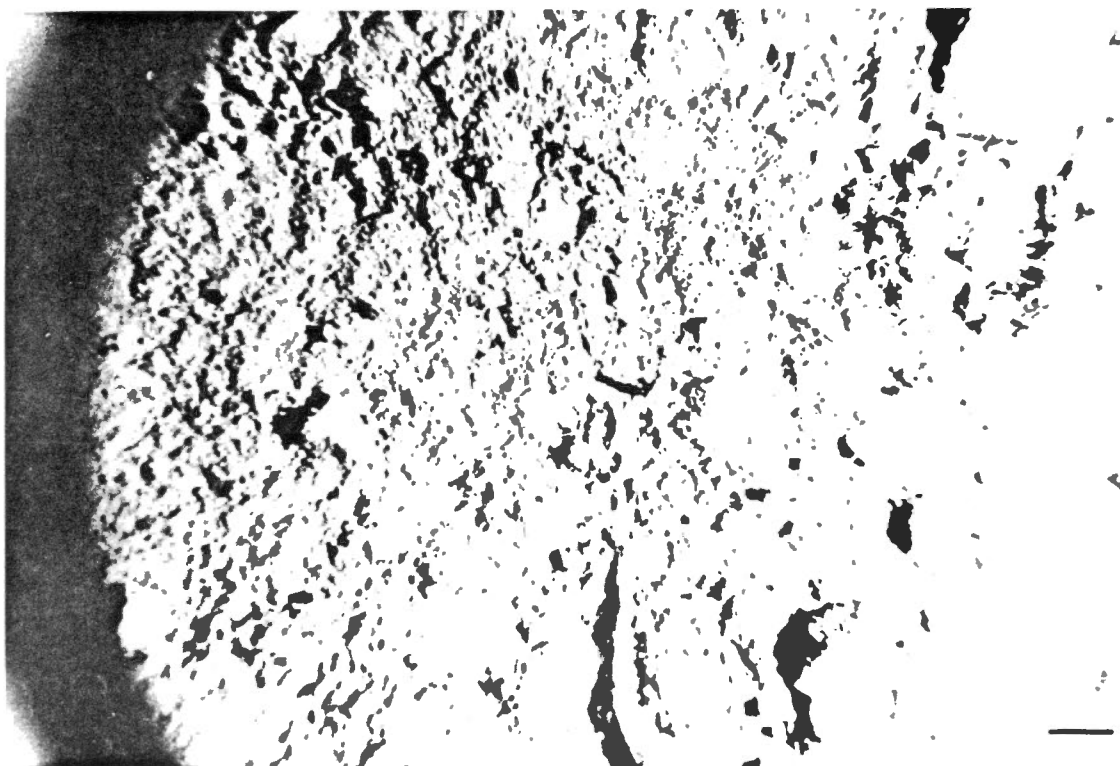
169 East Halls Bay area 148 m. Numerous worm tubes protrude above a muddy bottom with tracks in places. The grab sample gave angular gravel in a matrix of mud.



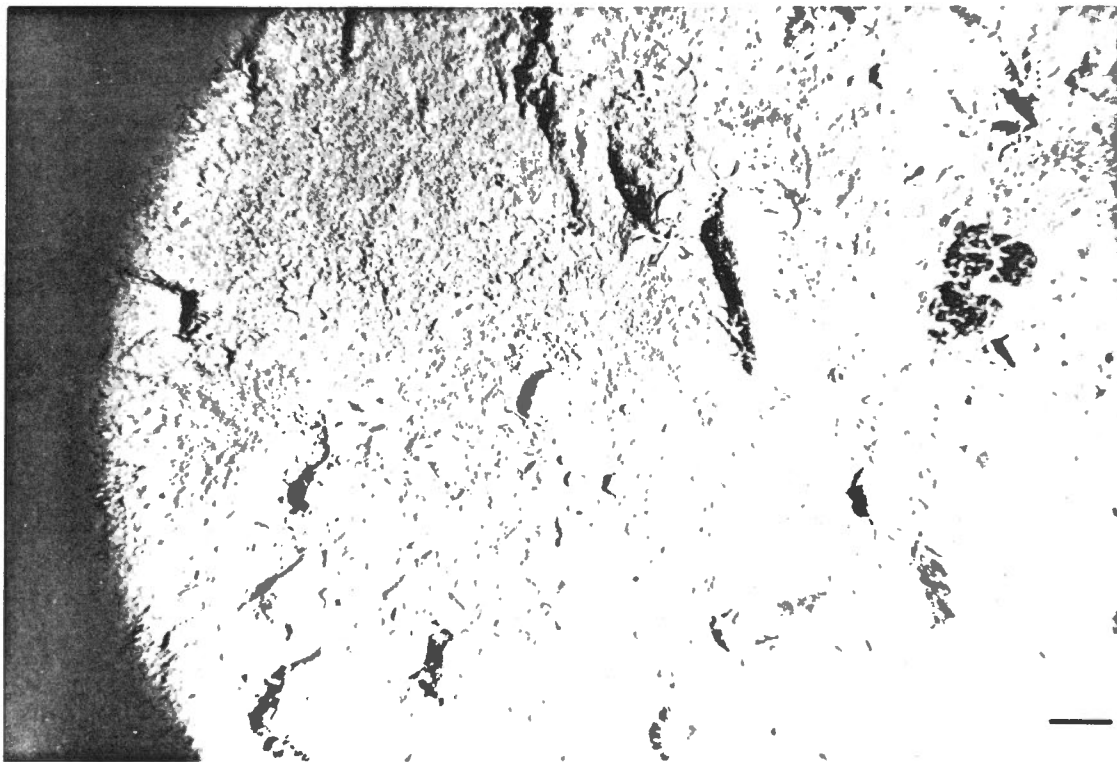
171 East Halls Bay area 45 m. The seabed is a pavement of subangular gravel, ranging from fine pebbles up to large cobbles. Sandy patches are visible in places. The bottom is littered with shells and shell debris.



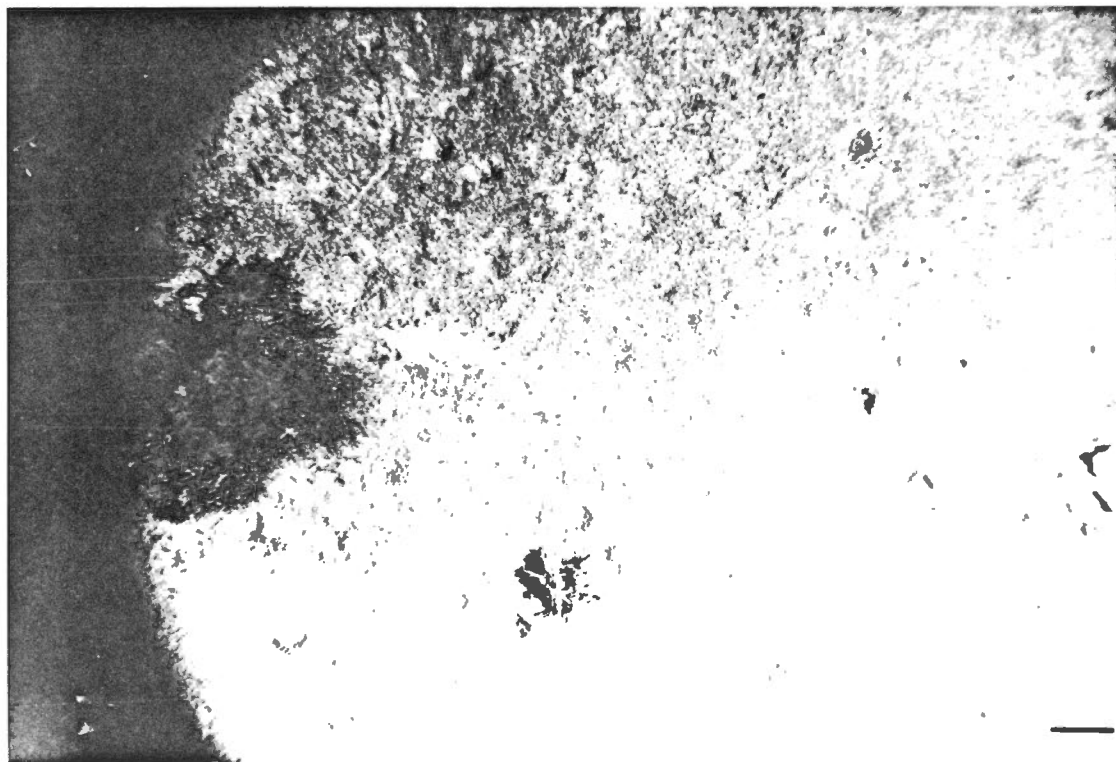
173 East Halls Bay area 42 m. The large boulder in this view has a length of 0.7 m. It, and other boulders, are encrusted with coralline algae and support a growth of seaweed. In the background, pebbles and cobbles lie on a sandy substrate. A sea urchin is visible, and numerous brittlestars.



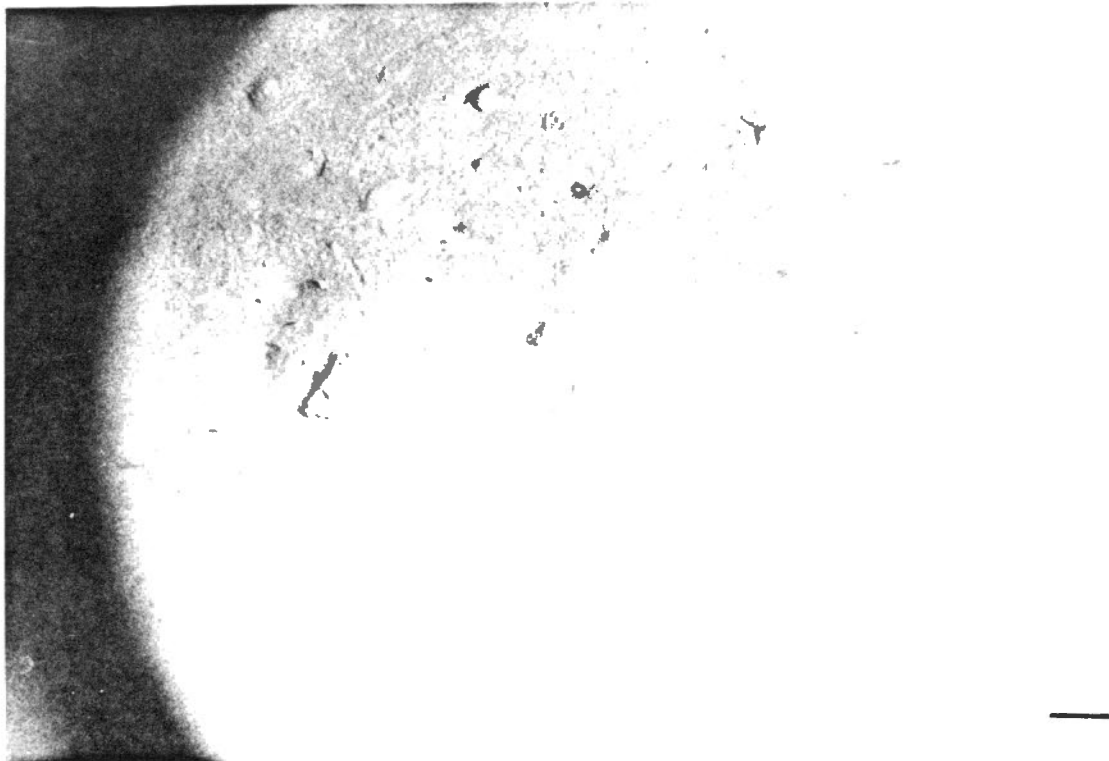
175 East Halls Bay area 116 m. Gravel lies wholly or partly buried on a muddy bottom. One large rounded cobble which is not covered appears at the edge of the field of view. A dead fish (capelin ?) is visible and worm tubes protrude in places.



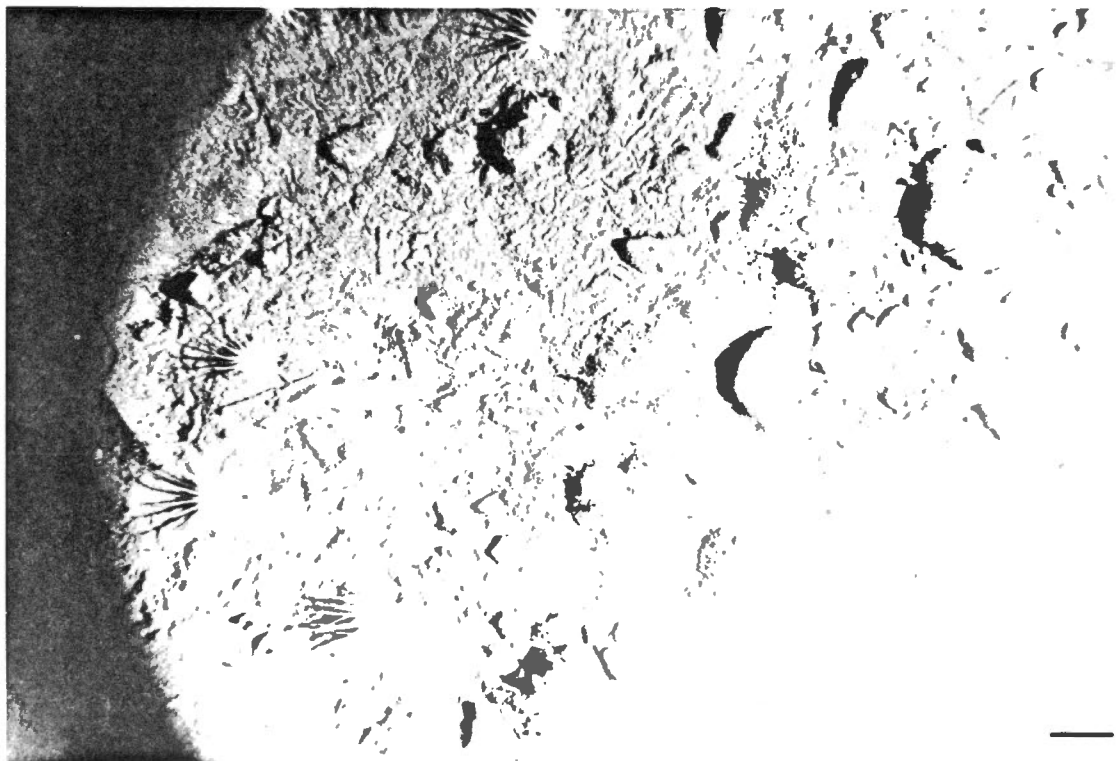
177 East Halls Bay area 62 m. The bottom here is muddy according to the grab sample. Gravel clasts, up to small boulder-size, lie partly or wholly buried in the mud. Shells and shell debris litter the bottom, brittlestars are numerous, and one sea urchin lies in the field of view.



179 East Halls Bay area 40 m. The bottom here consists of medium sand and has a mottled appearance. Large pits are common, tracks are evident in places, as are shells and shell debris. Several patches of seaweed are visible, possibly not attached.



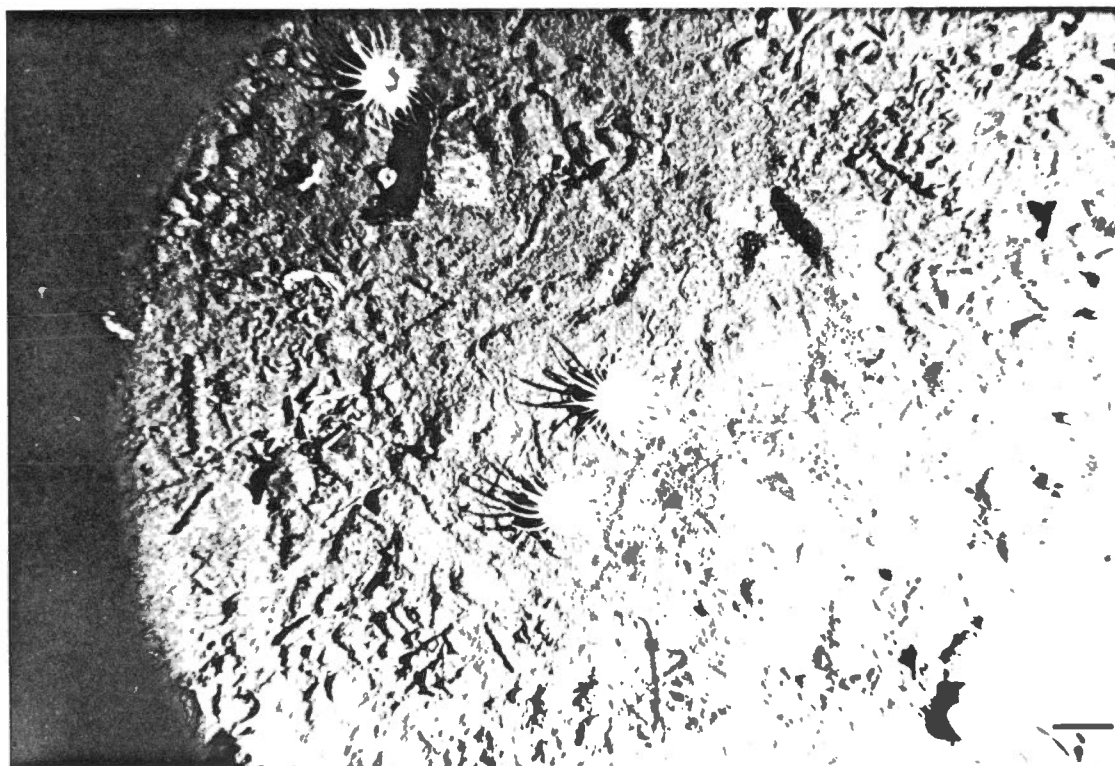
187 Halls Bay 31 m. This is a poor photograph, but appears to show a fine-grained bottom which, according to the grab sample, consists of sand. The light coloured objects may be dead fish. Several gastropods are visible (*Aporrhais occidentalis*), and may be responsible for some of the tracks.



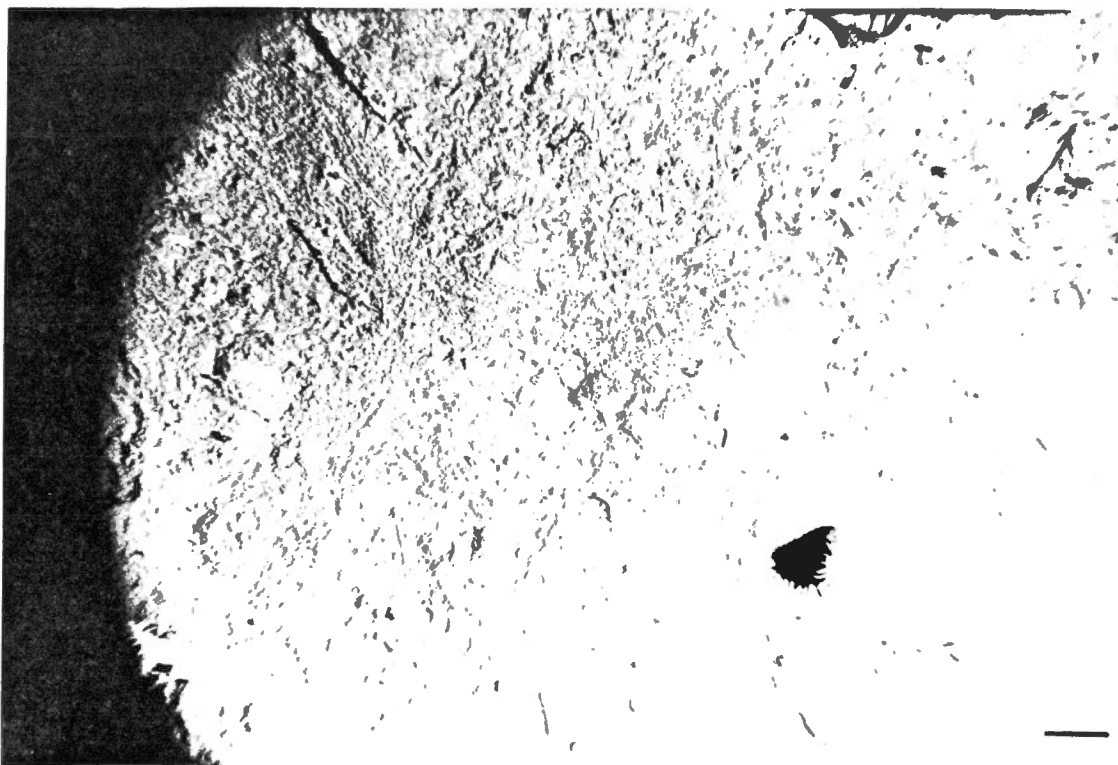
189 Halls Bay 51 m. Subrounded gravel clasts, up to large cobble-size, are wholly or partly buried in muddy fine sand. Some of the gravel is encrusted with coralline algae. A dead gastropod (*Aporrhais occidentalis*) is visible, plus tube-building polychaetes (family Eunicides) which litter the bottom. The numerous anemones are probably attached to gravel clasts. A dead fish is in the field of view.



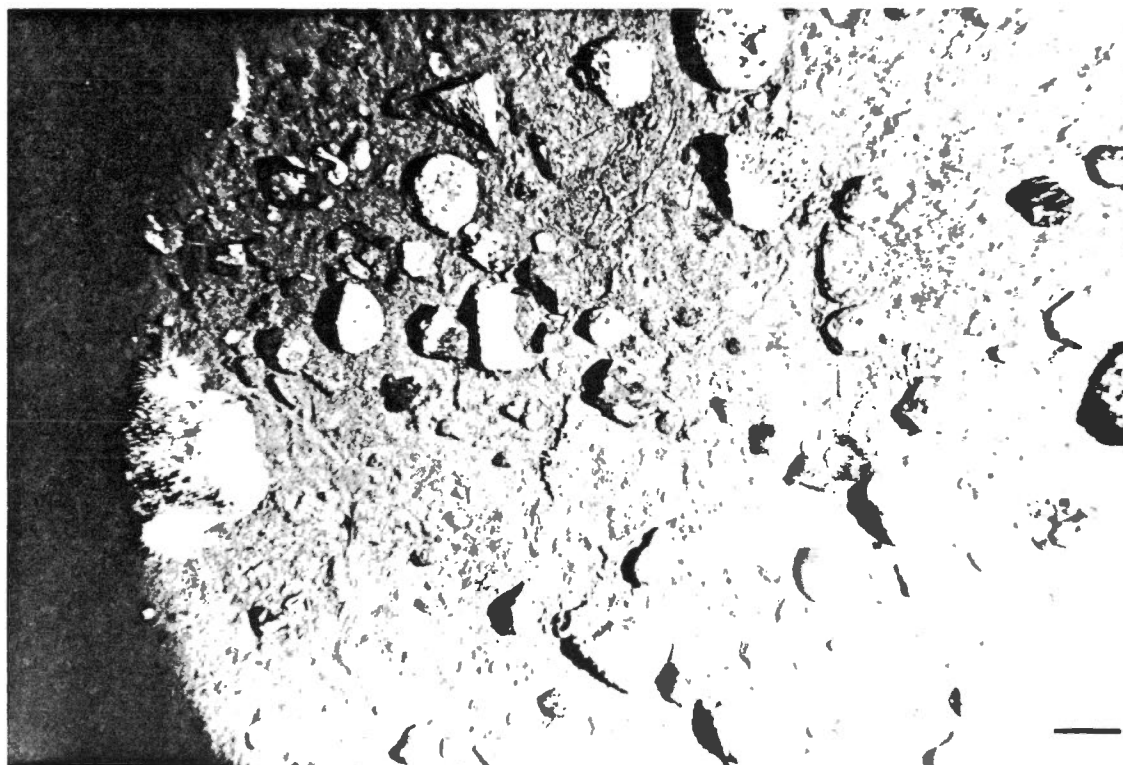
191 Halls Bay 66 m. The most conspicuous aspect here is the dense population of tube-building polychaetes (family Eunicides). Subrounded and rounded gravel, up to small boulder size, lies partly or wholly buried in sandy mud. Grab sample evidence shows that the anemones are attached to clasts. Brittlestars and sea urchins are also visible.



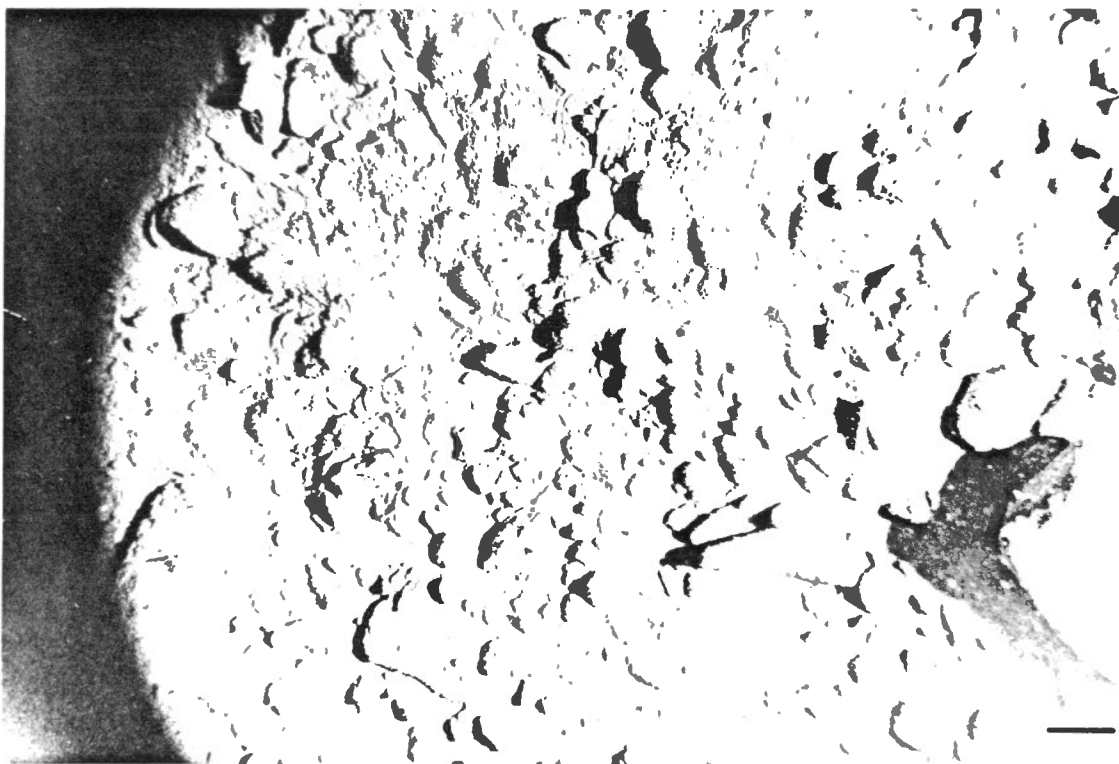
193 Halls Bay 81 m. The bottom consists of mud, strewn with gravel, up to large cobble-size, and shells and shell fragments. Some at least, of the anemones are attached to gravel clasts, according to grab sample evidence. Within the field of view are brittlestars, a gastropod, and numerous tube-building polychaetes. Tracks are also visible in places.



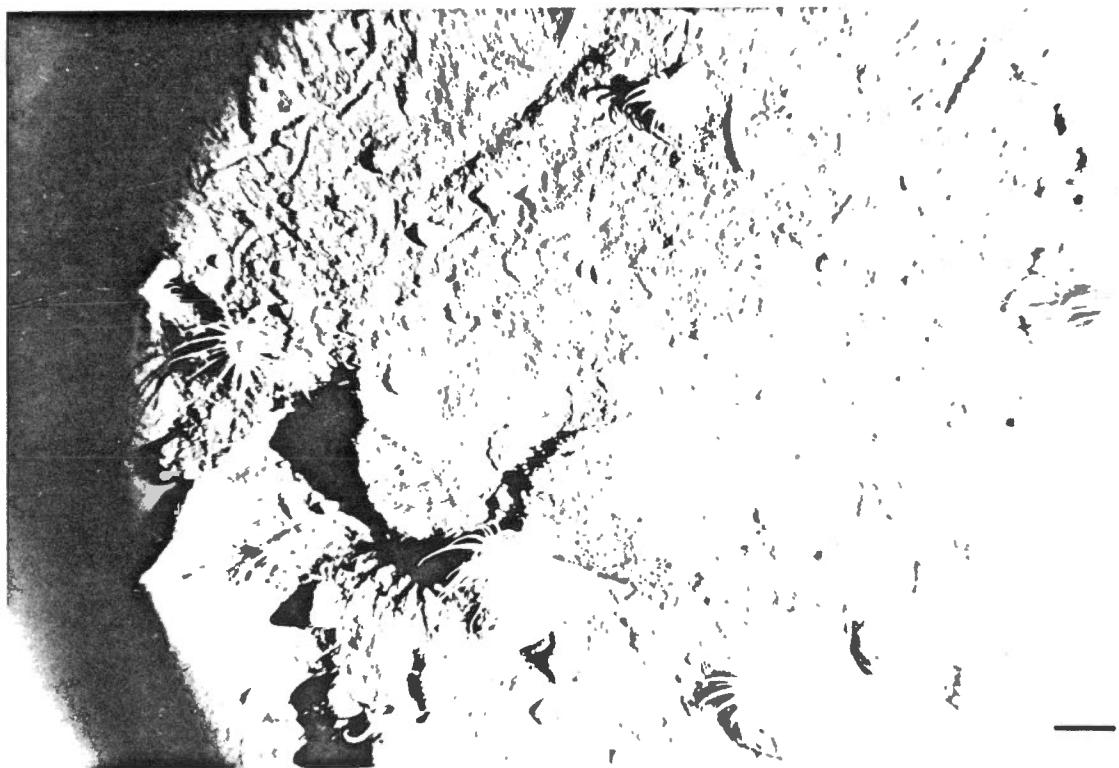
195 Halls Bay 192 m. The muddy bottom here is marked with numerous track and projecting worm tubes, and several anemones are visible.



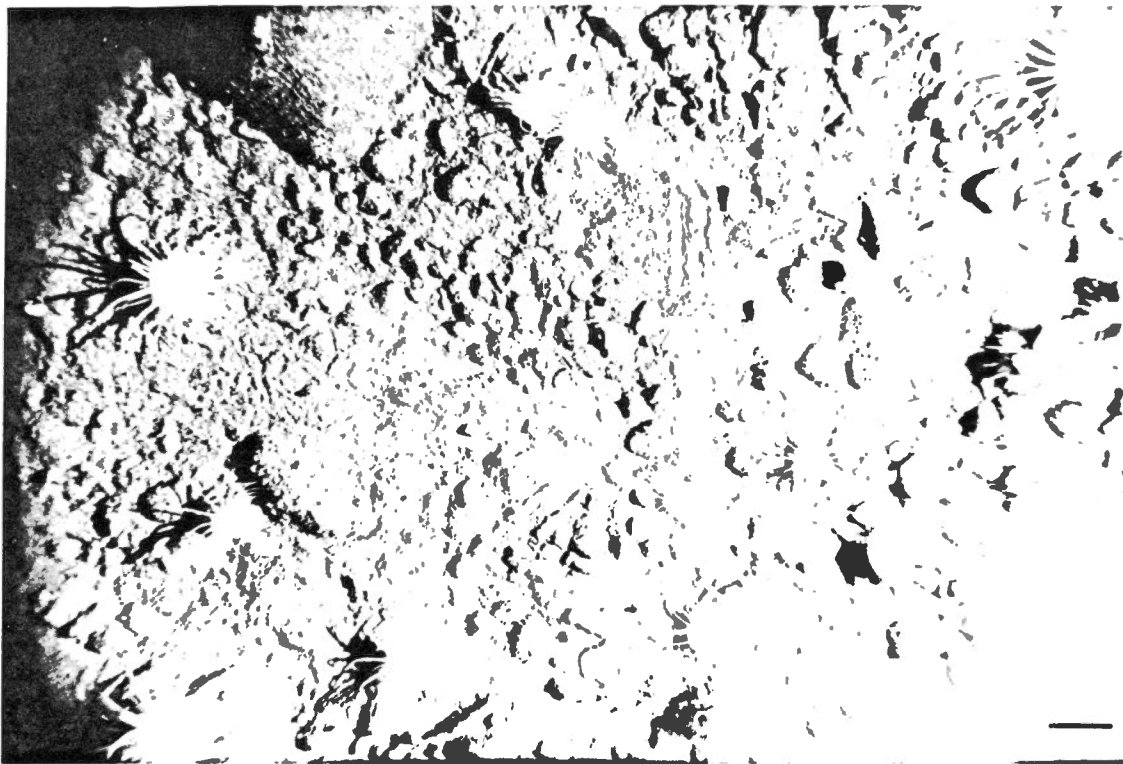
197 Halls Bay 38 m. Gravel clasts, mostly rounded or subrounded, up to small boulder-size, lie on a sandy bottom, strewn with bivalve and gastropod shells and shell fragments. Some of the gravel is partly buried. There is a light coating of coralline algae on some clasts. Two sea urchins can be seen.



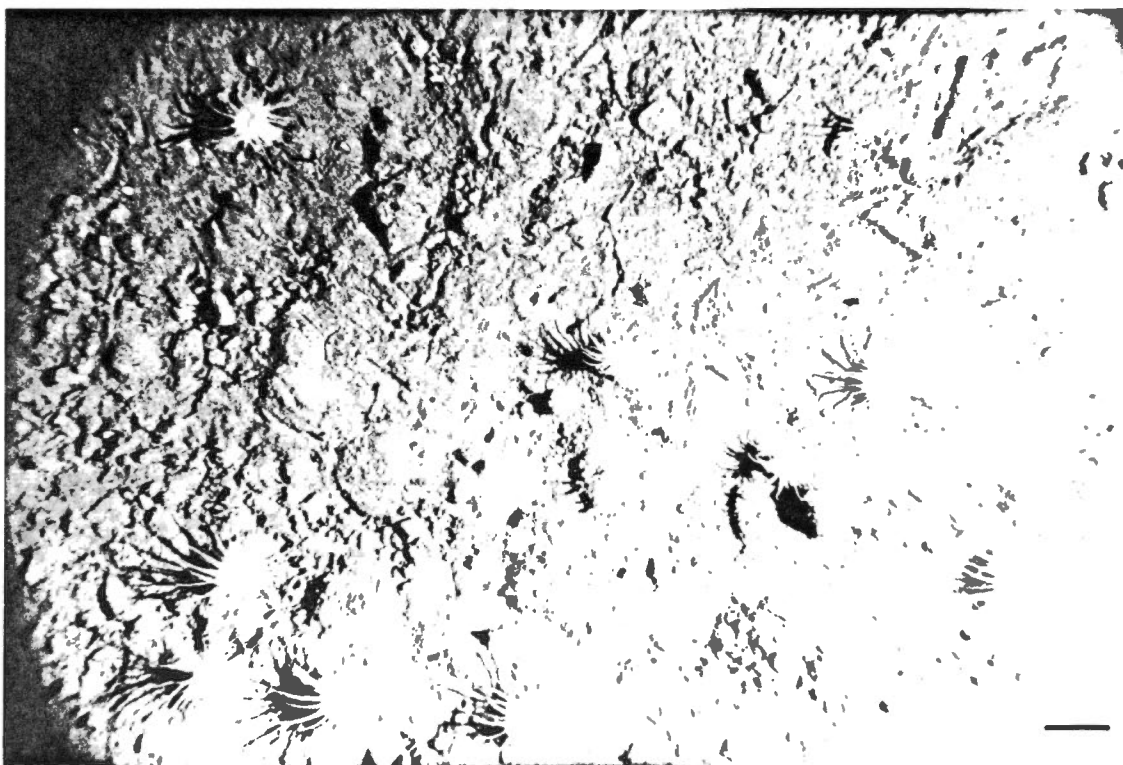
199 Halls Bay 128 m. In this photograph subrounded - rounded gravel, mostly cobble-size but with some boulders, rests on a muddy substrate. A veneer of mud appears to cover most clasts. Numerous brittlestars are visible.



201 Halls Bay 72 m. Gravel, mainly small boulders, rests partly buried on a muddy bottom. Anemones are attached to clasts. The view also shows tube-building polychaetes, brittlestars, shells and shell fragments, and tracks.



203 Halls Bay 61 m. Poorly sorted gravel, sub rounded - rounded, mostly in the very coarse pebble size range but with some small boulders, sits on a muddy bottom. Much of the gravel has a muddy veneer. Anemones are numerous, tracks are evident in places, a sea urchin is festooned with pebbles.



205 Halls Bay 67 m. There is a lot of gravel on the bottom in this view but most of it appears to be covered with a muddy veneer. Siphons of a bivalve appear at the surface in one location. A few tube-building polychaetes are strewn across the seabed. Many pits are visible, together with their associated debris spreads.

Appendix 3

Core locations

C.S.S. Navicula, Cruise 90-035

Note: Horizontal lines are 0.01 msec apart (approx. 7.5 m)

SE
25.1
3.30

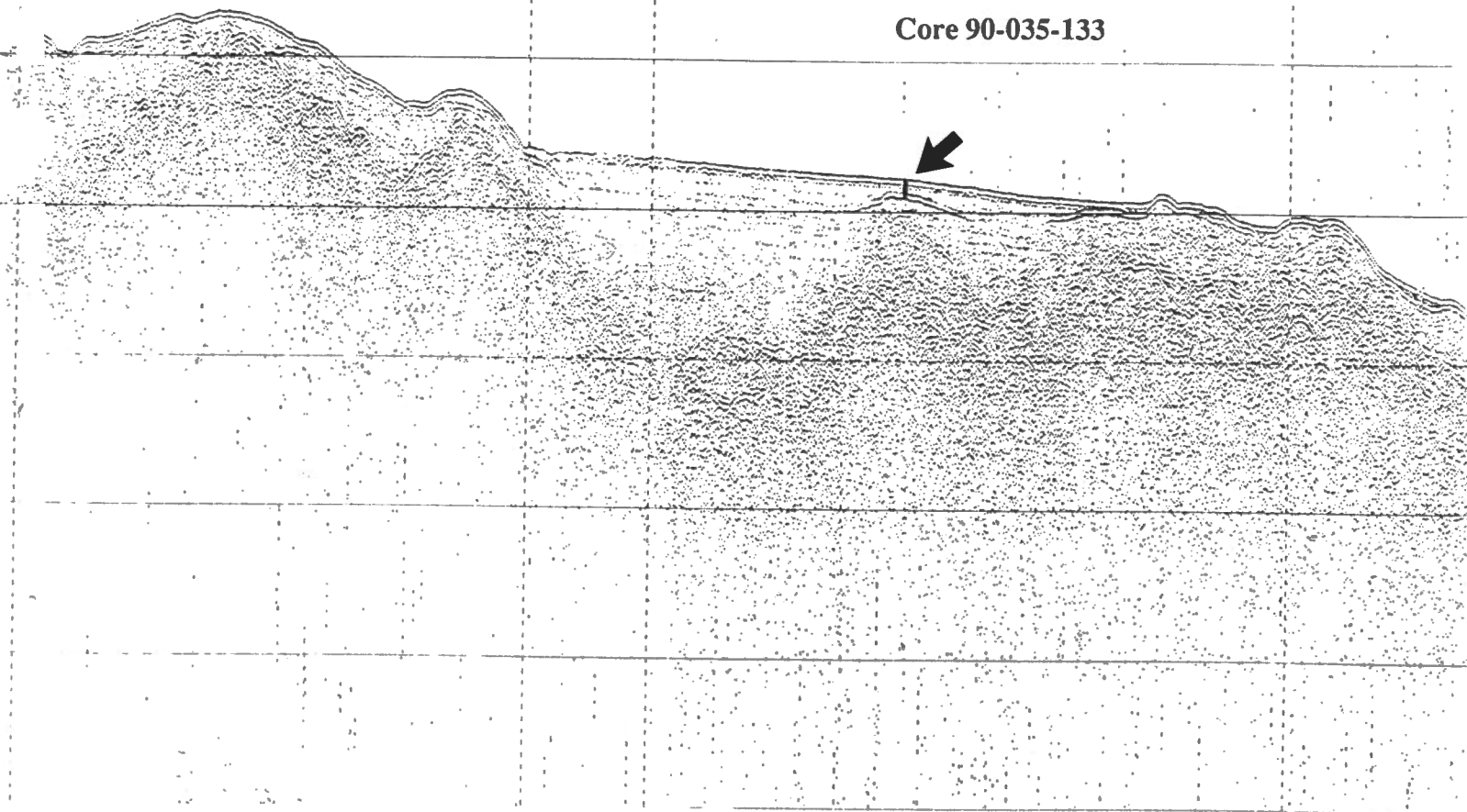
EC985-112.15.D.17.9.30

EC985-112.15.D.17.9.30

FILTER = 700 - 2000 HZ

EC985-112.15.D.17.9.30

BAIE VERTE
Core 90-035-133



ESSR-12.30.D.77.9.30

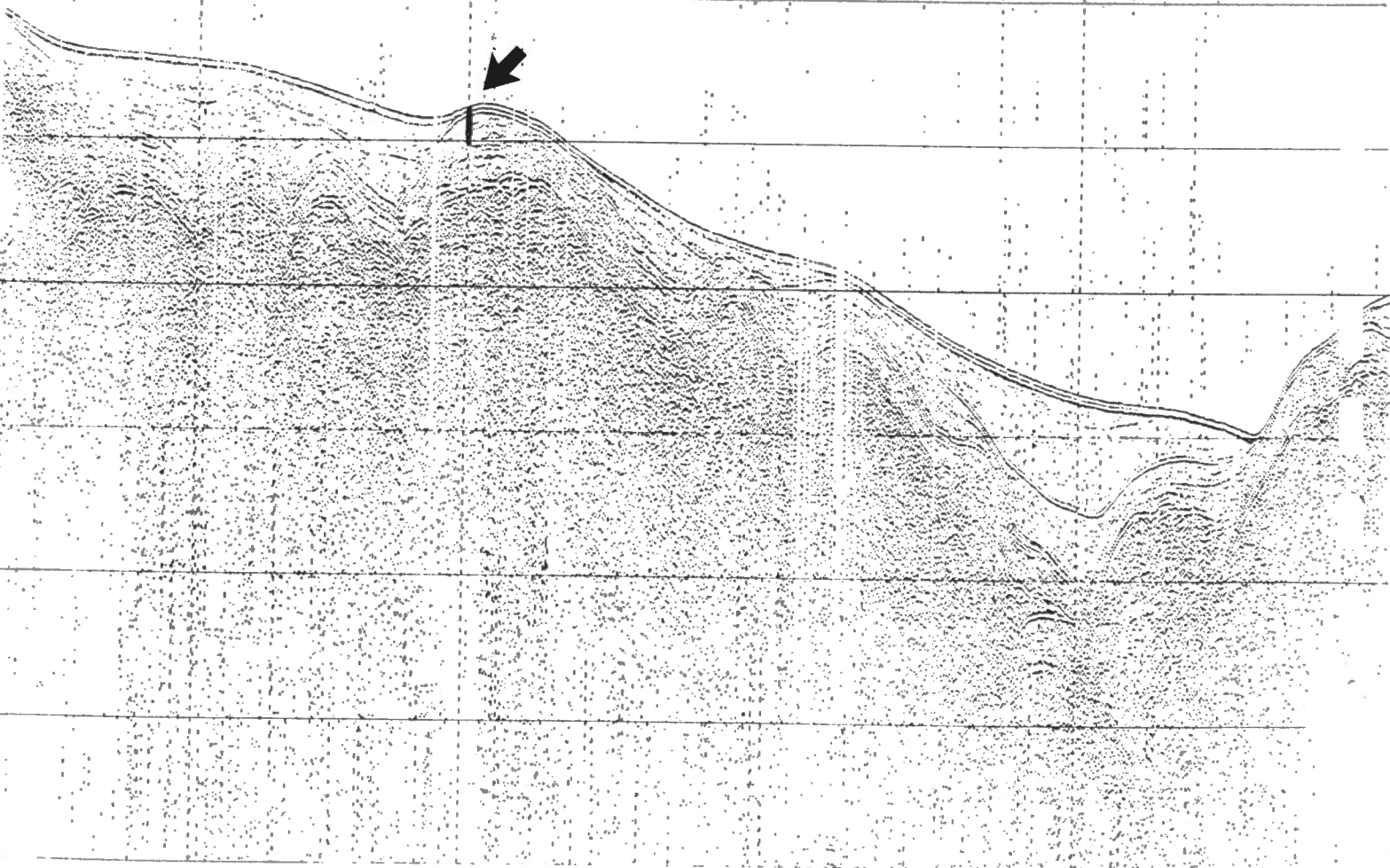
SCREEN = 0.1 SEC

ESSR-12.35.D.77.8.30

ESSR-12.35.D.77.8.30

40 MSEC DELTA

BAIE VERTE
Core 90-035-134



EC594-12.30.D.77.8.30

EC594-12.35.D.77.8.30

EC594-12.40.D.77.8.30

BAIE VERTE

Core 90-035-135



SUNDAY COVE ISLAND AREA

Core 90-035-180



EC27: T:4.15 D:15/ 3/30

EC157: T:4.15 D:15/ 3/30

EC157: T:4.15 D:15/ 3/30

EC 154.504.158

EC 265.154.05.D157.87.90

EC 265.154.00.D157.87.90

SUNDAY COVE ISLAND AREA

Core 90-035-181



249

250

SUNDAY COVE ISLAND AREA

Core 90-035-182

DIS. 8/90



220

210

SUNDAY COVE ISLAND AREA

Core 90-035-183



4.36 DIS/8.30

4.36 DIS/8.30

4.36

4.36

4.36

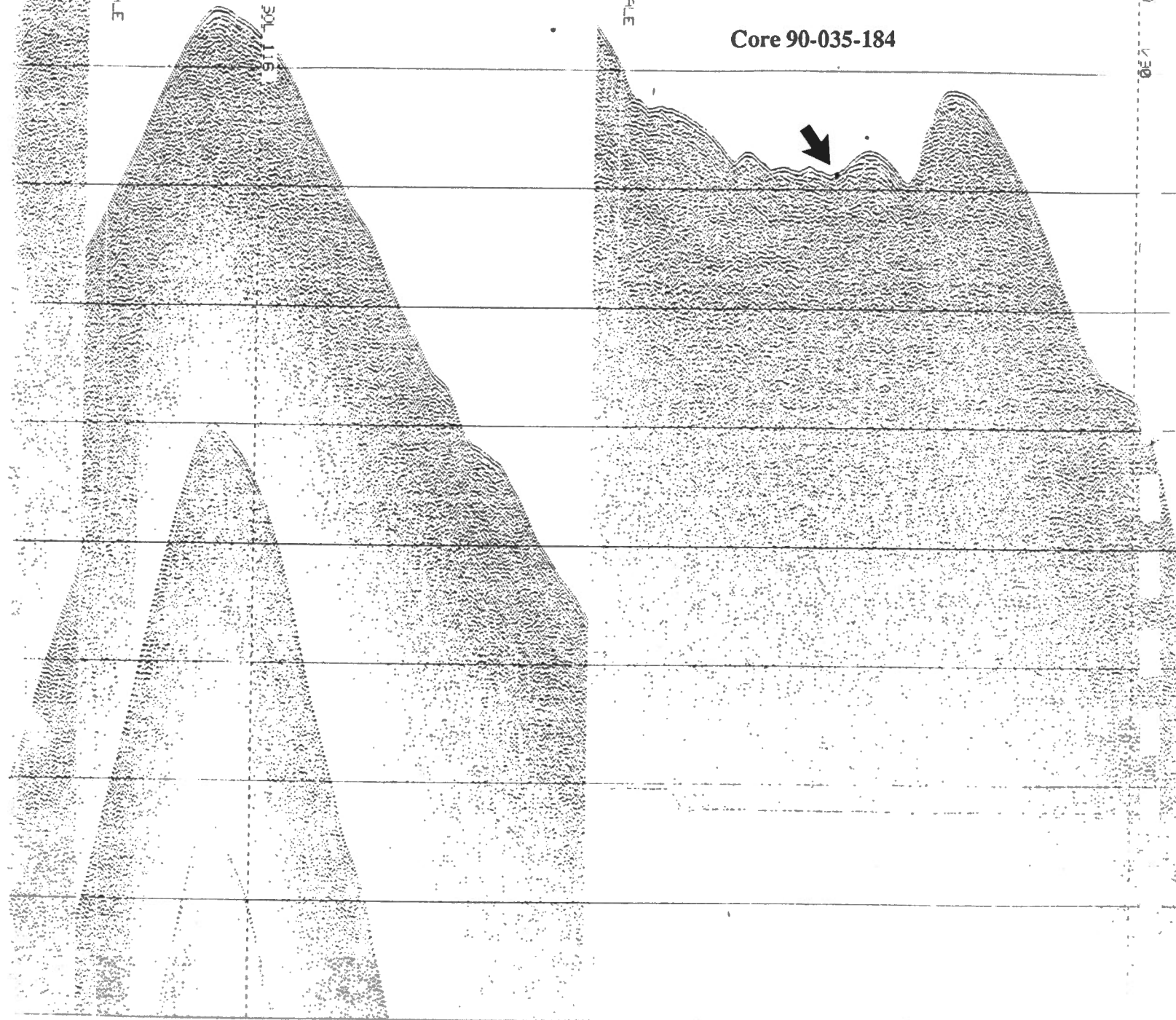
HALLS BAY

Core 90-035-184

70-170 SEC PROFILE

70-050 SEC. 1.5.30. 1.15

20-120 SEC PROFILE



00:00:00.00 01:00:00.00 02:00:00.00

03:00:00.00 04:00:00.00 05:00:00.00

HALLS BAY

Core 90-035-185

