THE FAUNA ASSOCIATED WITH THE BANK-FORMING DEEPWATER CORAL *LOPHELIA PERTUSA* (SCLERACTINARIA) ON THE FAROE SHELF

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Twenty five blocks of *Lophelia pertusa* weighing a total of 18.5 kg were studied. Associated with this substrate were 4 626 individuals belonging to 256 species. An additional 42 species were identified from loose coral rubble. Of the 298 species found, 97 are recorded for the first time from the area around the Faroes. Most individuals were found in dead coral blocks from the inner parts of the bank or colony, but a few species were found close to the terminal branches of live coral blocks. The associated fauna of this branching deep-water coral was as rich and diverse as that of hermatypic branching species of coral.

Some physical features of the coral as a substrate were measured. Large blocks of live coral harbour a more diverse fauna than do smaller ones. In contrast, on dead coral blocks the number of species and individuals had no simple correlation to block size, indicating the importance of other factors such as random colonization and length of time the substrate has been inhabited. Of the 20 most abundant species only four showed a correlation between the number of individuals and coral weight. Ecological aspects of the associated fauna are discussed and the results are compared with studies from associations on hermatypic corals. Comparing with studies of *Lophelia* banks from Norway and the Bay of Biscay we find very few overlaps in the associated species. A highly diverse and rich but facultative fauna is associated with the *Lophelia* banks.

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INTRODUCTION

The deep-water ahermatypic (lacking symbiotic algae) coral *Lophelia pertusa* (L.) is widely distributed in the North Atlantic Ocean and adjacent seas (LE DANOIS 1948; TAMBS-LYCHE 1958; STRØMGREN 1971; WILSON 1979a; ZIBROWIUS 1980; CAIRNS 1981).

Lophelia pertusa is a colonial bank-forming coral which builds structures several hundred metres in diameter and rising several metres above the seafloor.

The outer stratum which is up to one metre thick, supports the living polyps of *Lophelia*. The inner portion comprises dead and decaying coral mixed with sediment (TEICHERT 1958; SQUIRES 1964; WILSON 1979b).

The fauna associated with the deep-water coral banks is poorly known compared to that of tropical coral reefs. Early studies on smaller parts of the associated fauna of *Lophelia* have been carried out in Norway (NORDGAARD 1912, 1921; KIÆR & WOLLEBÆK 1913; BROCH 1922; DONS 1932; DONS 1944), on the west coast of Sweden (WAHRBERG & ELIASON 1926; GUSTAVSON 1935; JÄGERSKIOLD 1971), and in the Mediterranean (PRUVOT 1895). Most of the cited authors regard the fauna as obligate associates of *Lophelia* coral. Studies involving the whole fauna associated with *Lophelia* are scarce (LE DANOIS 1948; BURDON-JONES & TAMBS-LYCHE 1960).

The present survey has quantitatively investigated the fauna associated with *Lophelia* in the Faroe Island area and the results are compared with those from Norway (BURDON-JONES & TAMBS-LYCHE 1960), the slope of the European continental shelf (LE DANOIS 1948) and to fauna associated with hermatypic corals from the northwestern Atlantic (MCCLOSKEY 1970; WENDT & al 1985), Thailand (TSUCHIYA & al 1986) and Great Barrier Reef (AUSTIN & al 1980).

Contribution from the BIOFAR project.

MATERIAL AND METHODS

The material was collected by the Faroese fisheries R/V *Magnus Heinason* from two BIOFAR stations situated on the Faroe shelf. Fig. 1 shows the position of site A at 61°43.4′ N, 5°43.4′ W (the BIOFAR Stn 279), and site B at 60°33.3′ N 6°32.1′ W (the BIOFAR Stn 090).

Site A at 260 m depth, was sampled with an equilateral triangular dredge, (80 cm, mesh size 2 cm) in July 1988. This coral bank was 10 m high and 110 m wide and exposed to tidal currents with an average speed of 50.4

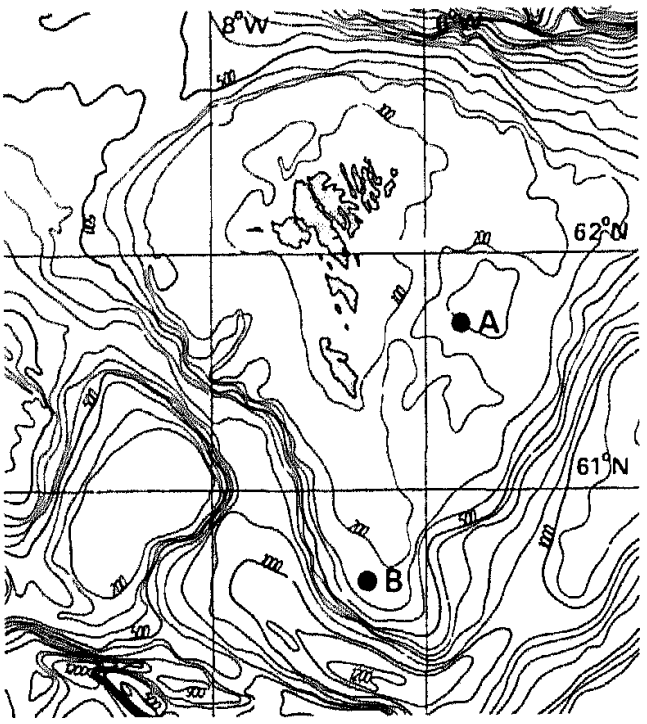

Fig. 1. Map of the area around Faroe Islands showing location of sites for *Lophelia pertusa* used for faunal studies. A and B = BIOFAR stations 279 and 090, respectively.

cm/s. An echogram of this coral bank can be found in JENSEN & FREDERIKSEN (1990).

Site B, at 252 m depth, was sampled with a shell dredge (square opening size 200 × 50 cm, mesh size 5 cm). This bank was exposed to tidal currents with an average speed of 35.0 cm/sek.

The two sites have annual average temperatures of 6–8° C with a standard deviation of 0.5–1.0° C (WESTERBERG 1990).

Eleven blocks from Site A and fourteen blocks from Site B, weighing between 0.2 and 2.0 kg, were used in this analysis (Table 1). It is not known if or how these blocks were connected or whether they were parts of a single colony. Live coral accounted for 11.94 kg and dead coral for 6.52 kg of material. At both sites, deposits of clay and silt were found between the coral branches.

Coral blocks from site A were larger than blocks from site B. Most blocks from site A contained live coral polyps, whereas blocks from site B were mostly dead. Blocks from site A were also more branched, or less degraded, or both, than blocks from site B (see Table 1 for details on each block). It is not known whether this is due to a difference in the state of the coral bank between the two sites, or to the way the dredge landed and worked on the bank.

The coral blocks were labelled, packed in individual plastic bags, and preserved in 4–6 % formaldehyde buffered with borax. After 14 days they were transferred to 80 % ethanol.

Blocks were characterized as living only if living polyps were found. Each block was photographed (Fig. 2), weighed, and measured volumetrically, with and without plastic wrapping, to give a measure of the spaces between the coral branches. The number of unbroken calices was counted.

All epifauna was removed from each block. The individual coral branches were opened by cracking the coral into 1–2 cm chips which were washed and sieved (smallest mesh size 0.5 mm), and examined under a dissecting microscope.

Specimens were identified to species level or as close to this as possible. All individuals of non-colonial species were counted. For colonial species only their presence or absence on each block was noted. Some specimens could not be assigned to a specific block or were found in the loose coral rubble and data were therefore rejected or specificly marked, (Table 3; Appendix 1).

All material is kept at the Zoological Museum, University of Copenhagen.

All coral weight-volume ratios were tested by a Mann-Whitney U-test. The number of individuals of the most common species was correlated to block size using the Pearson Product Moment Correlation Coefficient (CAMPBELL 1974). The Shannon-Wiener diversity index (H') was calculated for non-colonial species (SHANNON & WEAVER 1949; PIELOU 1966).

RESULTS

Observations on the general distribution

We found 4 626 individuals representing 256 species of associated fauna on the 25 blocks. An additional 42 species were identified from loose coral rubble and were included in the species list (marked #). The number of species per coral block varied from 24 to 84, and number of individuals per block from 33 to 611 (Table 1).

Of the 298 species found, 97 have not previously been recorded from this area by 'The Zoology of the Faroes' (SPÄRCK 1928–1971).

Fauna from the two sites are pooled and listed as a minimum inventory from living and dead *Lophelia* banks in Faroese waters (Appendix 1). The data from the species list are summarized in Table 2 and Fig. 3A–B.

The most species-rich groups were Polychaeta (67 species), Bryozoa (45), and Porifera (29 morphological types). Dominant groups were Polychaeta (1467 individuals), Bivalvia (1162), Echinodermata (663), and Brachiopoda (450) (Table 2).

The different amount of live and dead coral material makes comparisons of the number of species difficult. We found 164 species on live coral blocks somewhat less than the 229 species on dead coral blocks. Some of the species were found on both live and dead coral. Twenty species (represented by more than one individual) were found exclusively on live corals, but only the foraminiferan *Pulvinulina punctulata* is known to live directly on the coral tissue, where it is a parasite (T. Cedhagen pers. commn). Coral polyps are not interconnected, as epithelium does not cover the entire surface of the skeleton and fauna associated with live coral blocks was found between calices rather than on or in the living tissue of *Lophelia*.

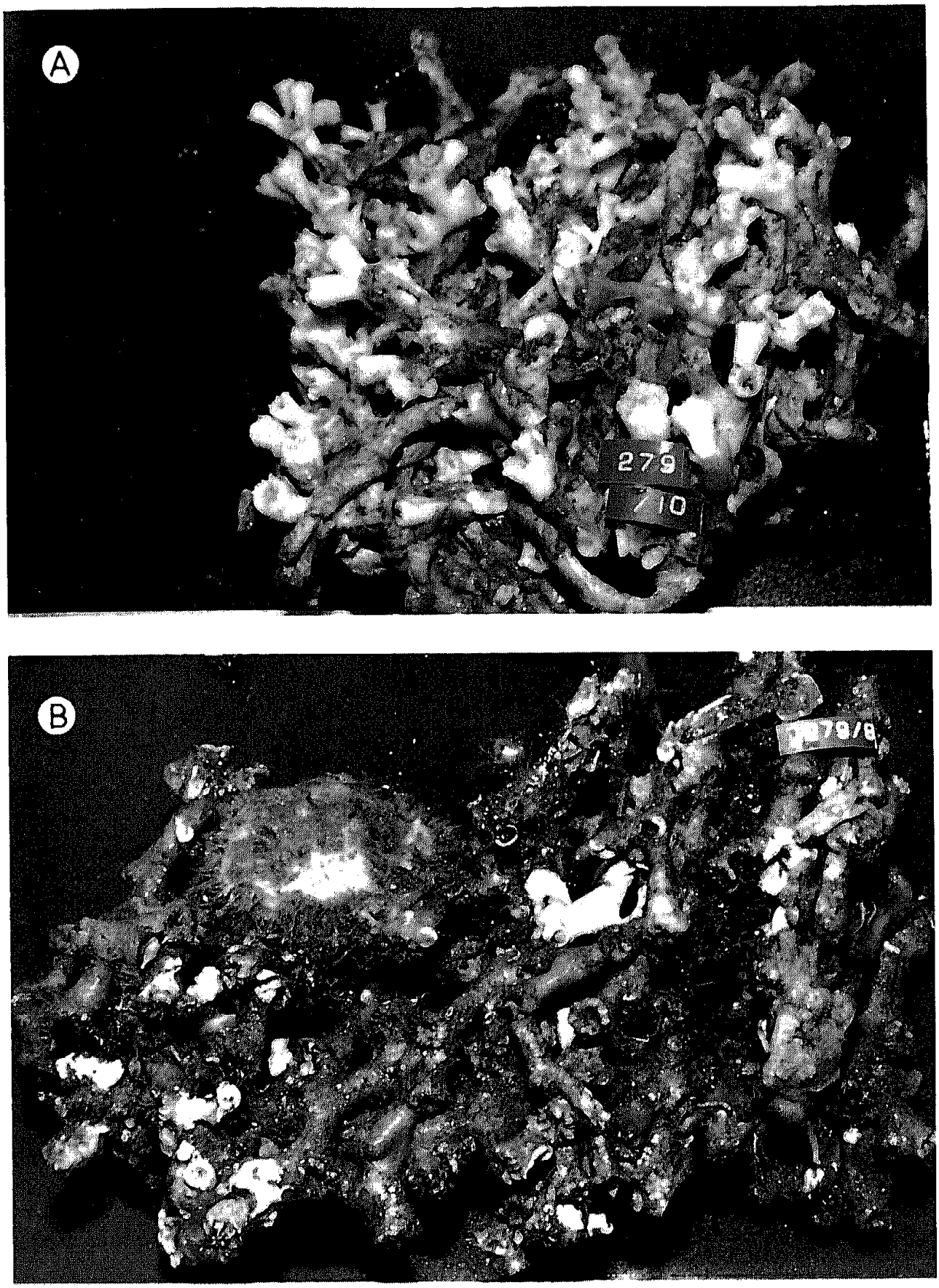

Fig. 2. A. Photo of a live coralblock (site A, block 10). The block is defined 'live' according to the presence of white, living tissue of *Lophelia*. B. Photo of a dead coralblock (Site A, block 8). The block is defined 'dead' since no live parts of coral are present. Darkened dead parts are overgrown with epifauna.

Table 1. Measurements on blocks of *Lophelia pertusa* corals. S = number of species, N = number of individuals, + = data missing, * = $P < 0.05$.

Coral block	Condition	Weight (kg)	Number of calices	Coral displacement Volume (l) unwrapped	wrapped	space	Associated fauna Number S	N
A6	60 % Live	0.46	127	0.27	1.05	0.78	37	98
A7	90 % Live	2.10	486	0.90	2.75	1.85	44	139
A9	+ Live	0.42	+	0.17	0.56	0.39	24	59
A10	95 % Live	1.04	336	0.70	2.00	1.30	41	124
A11	50 % Live	0.93	234	0.30	1.55	1.25	84	273
A12	95 % Live	0.46	169	0.28	1.10	0.82	26	46
A13	80 % Live	0.52	124	0.30	0.83	0.53	32	68
A14	90 % Live	2.27	612	1.17	3.92	2.75	46	259
A16	80 % Live	2.63	634	1.30	2.95	1.65	54	149
B3	60 % Live	0.33	128	0.15	0.68	0.53	31	128
B4	70 % Live	0.37	75	0.14	0.75	0.61	37	53
B5	90 % Live	0.40	104	0.20	0.73	0.53	28	33
A8	Dead	1.40	285	0.85	1.95	1.10	65	246
A15	Dead	0.70	245	0.33	1.03	0.70	46	158
B6	Dead	0.28	79	0.16	0.55	0.39	36	93
B7	Dead	0.30	153	0.12	0.59	0.47	54	242
B8	Dead	0.37	116	0.20	0.68	0.48	52	172
B9	Dead	0.42	322	0.25	0.92	0.67	76	611
B10	Dead	0.30	149	0.15	0.68	0.53	51	212
B12	Dead	0.40	244	0.20	0.77	0.57	67	446
B13	Dead	0.29	69	0.16	0.56	0.40	41	126
B14	Dead	0.85	86	0.41	1.31	0.90	64	268
B15	Dead	0.29	84	0.16	0.56	0.40	38	94
B16	Dead	0.69	205	0.39	1.22	0.83	65	426
B17	Dead	0.23	143	0.08	0.38	0.30	46	190
Number of observations		25	24	25	25	25	25	25
Mean		0.74	214	0.37	1.20	0.83	47	188
Standard deviation		0.67	164	0.34	0.88	0.57	15	139
Minimum		0.23	69	0.08	0.38	0.30	24	33
Maximum		2.63	634	1.30	3.92	2.75	84	611
Pearson Product Moment Correlation Coefficient (r) with weight			0.919*	0.977*	–	0.910*	–	–

The total number of individuals (non-colonial organisms) found on dead coral (3260) is more than twice that on live coral (1366), even though the weight of examined dead coral is only about half (6.52 kg) that of live coral (11.94 kg).

To compare the number of species on live and dead coral we have tried to adjust for the different amount of material by taking number of individuals per kilo coral (N/kg). By doing so we find that the overall number of individuals is more than four times as high on the dead coral than on live ones. Groups like the Polychaeta and the Gastropoda have twice as many individuals on dead as on live coral. The groups Crustacea, Sipuncula, Bivalvia, and Nematoda are found with between 4 and 8 times as many individuals on dead as on live coral. For the groups Ascidiacea, Anthozoa, and Echinodermata we found more than 10 times as many individuals on dead as on live coral, whereas Brachiopoda is found 50 times more frequent on dead coral. The only group with a larger number of individuals on live coral is Nemertea. A qualitative observation on colonial organisms also shows colonies of much larger size on dead or moribund coral.

Fig. 4 shows a dominance-diversity plot of the fauna in the 18.5 kg coral material. Only 13 species are represented by more than 100 individuals per species. One hundred and fifty species are represented by less than 10 individuals each.

Most species were too rare to be tested for the correlation between coral weight and number of individuals. Only three of the most abundant spe-

Table 2. Overview of fauna associated with live and dead *Lophelia pertusa* corals. Species from the loose rubble are not included. S = number of species, N = number of individuals, + = present but not quantified.

Group	Live corals		Dead corals		Total	
	S	N	S	N	S	N
Protozoa	8	+	13	+	15	+
Porifera	22	+	26	+	29	+
Hydrozoa	11	+	10	+	14	+
Anthozoa	2	4	5	34	6	38
Nemertea	6	80	5	36	7	116
Nematoda	5	18	7	83	9	101
Polychaeta	56	710	56	757	67	1467
Gastropoda	10	48	11	54	15	102
Bivalvia	13	252	13	910	16	1162
Arachnida	0	0	1	1	1	1
Crustacea	13	104	12	208	15	312
Sipuncula	2	45	2	109	2	154
Bryozoa	35	+	38	+	45	+
Brachiopoda	3	16	4	434	4	450
Echinodermata	4	53	5	610	6	663
Pterobranchia	1	+	1	+	1	+
Ascidiacea	2	36	3	23	3	59
Pisces	0	0	1	1	1	1
Total	164	1366	229	3260	256	4626

cies were significantly correlated with the weight of live coral blocks ($n = 12$; $P < 0.05$): the polychaete *Eunice norvegica*, the bivalve *Modiolus modiolus*, and Nemertea sp. A. On dead coral only the polychaete family Paraonidae showed a significant correlation with coral weight ($n = 13$; $P < 0.05$).

The Shannon-Wiener index for the fauna associated with the living part of *Lophelia* is 5.59 and 4.96 on the dead coral. Overall diversity is 5.50.

Observations on single taxa

Porifera constitute a major component of the fauna. The coral is often heavily attacked by boring sponges, only few centimetres from the living coral tissue. The dead blocks were most heavily excavated, often found with the inside filled with sponge tissue of either two species of excavating sponges, *Aka labyrinthica* or *Alectona millari*. Both these sponges have been reported by ALANDER (1942) from *Lophelia* from the Swedish west coast, together with the more common species *Cliona vastifica* HANCOCK, 1849. *C. vastifica* was not found in the present study. Twenty seven other morphological types of Demospongiae and a few Calcarea were found in the coral material. Most are thinly encrusting species, and many belong to the genera *Hymedesmia* and *Stylopus*.

Hydrozoa on *Lophelia* are uncommon near the Faroes, with smaller and more poorly developed colonies than those of the same species found on

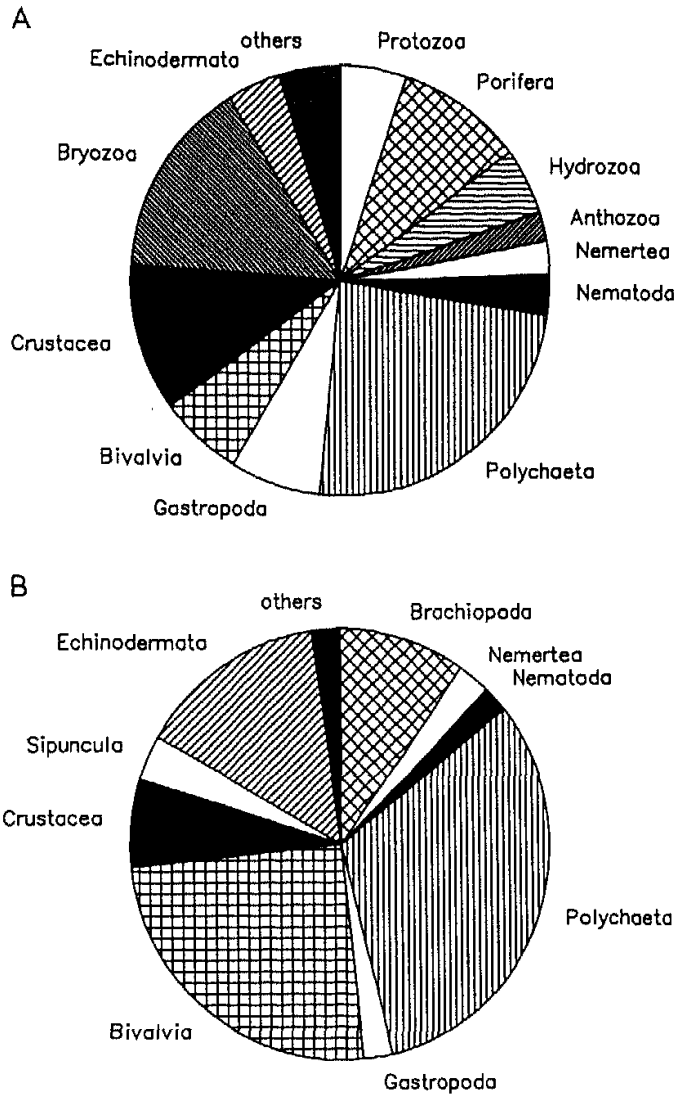

Fig. 3. A. Pie diagram showing the relative number of species in different taxonomic groups associated with 18.46 kg of live and dead *Lophelia pertusa* at the Faroe Shelf. Total of 301 species. B. Pie diagram showing the relative number of individuals of noncolonial species in different taxonomic groups associated with 18.46 kg of live and dead *Lophelia pertusa* at the Faroe Shelf. Total of 4626 individuals.

Lophelia in Norwegian fjords. This observation is general for Hydrozoa in the area around the Faroes (B. Christiansen pers. commn).

Polychaeta is the most dominant group on the coral (Table 2) and is generally found in abundance on dead blocks. Some species were found only in this habitat, such as *Protula tubularia, Serpula vermicularis* and species of Paraonidae. A few species were found only on live blocks, such as *Harmothoe oculinarum, Spinther oniscoides, Cirratulus incertus, Capitomastus* sp., and *Eunice norvegica*. *E. norvegica* is large (up to 160 mm) and abundant, and is one of the few species common to all surveys on fauna associated with *Lophelia pertusa* (PRUVOT 1895; NORDGAARD 1912, 1921; KIÆR & WOLLEBÆK

Table 3. Comparison between fauna associated with *Lophelia pertusa* and similar community studies. N = number of individuals, S = number of species, □ = species from loose rubble included, * = displacement volume in litres, # = recalculated from original data using the Shannon-Wiener diversity index (H'), NA = not available.

Coral host species	Locality	Depth (m)	Amount of material (kg)	Mesh size (mm)	N	S	Diversity (H')	Ref.
Lophelia pertusa	Faroe shelf	260	9.34* 18.46	0.5	4 626	298□ 256	5.50	Present work
Oculina arbuscula	N.C. USA	5–18	18.78	0.2	56 616	309	4.73#	McCloskey 1970
Oculina varicosa	Georgia USA	20	NA	0.5	959	99	4.67	Wendt & al. 1985
Pocillopora damicornis	G. Barrier Reef	1–6	31.49*	3.0	951	101	5.09#	Austin & al. 1980
Pavona frondifera	Gulf of Thailand	shallow	18.55*	NA	1 664	65	2.39#	Tsuchiya & al. 1986

Table 4. Comparison to fauna associated with *Lophelia pertusa* in other areas. 1 = present work, 2 = Burdon-Jones & Tambs-Lyche (1960), 3 = Le Danois (1948).

Group	Number of species			Number of overlapping species		
	1	2	3	Faroes/ Norway	Faroes/ Biscay	Norway/ Biscay
Protozoa	15	19	–	2	–	–
Porifera	29	22	101	?	?	–
Hydrozoa	15	32	38	4	4	10
Anthozoa	7	10	40	2	1	–
Platyhelminthes	–	1	–	–	–	–
Nemertea	7	–	–	–	–	–
Nematoda	9	1	–	–	–	–
Polychaeta	72	28	7	9	5	6
Gastropoda	21	20	–	1	–	–
Bivalvia	19	24	2	7	1	2
Cephalopoda	–	1	–	–	–	–
Arachnida	2	2	–	–	–	–
Crustacea	32	32	9	7	–	1
Sipuncula	2	1	–	–	–	–
Tardigrada	1	–	–	–	–	–
Bryozoa	45	32	53	16	11	9
Brachiopoda	4	3	3	3	2	2
Echinodermata	12	44	45	8	5	5
Pterobranchia	1	1	1	1	1	1
Ascidiacea	4	13	–	1	–	–
Pisces	1	6	8	–	–	–
Total	298	304	307	61	32	27

1913; Broch 1922; Wahrberg & Eliason 1926; Dons 1932; Gustavson 1935; Dons 1944; Le Danois 1948; Burdon-Jones & Tambs-Lyche 1960; Jägerskiold 1971). In our study, *E. norvegica* was found on the upper reaches of the living coral, where its presence induces parts of the coral to grow into a calcareous skeletal covering for the polychaete tube. Perforations seem to go across and through old calices, but it is not known if this is the result of active excavation. Tubes of this species also housed a commensal polychaete *Neopolynoe paradoxa*, or numerous other cryptobionts. *Eunice pennata* have a lower position on the coral and was found on both living and dead coral. The sabellid *Perkinsiana socialis* was found in large numbers boring into the coral skeleton.

Gastropods were few, small, and scattered on live and dead coral. The most numerous species, *Alvania jeffreysi*, was mainly found on live corals. It is known to prey on foraminiferans (J. Knudsen pers. commn).

Bivalves are mainly represented by cavity dwellers, especially *Hiatella arctica* and *Acar nodulosa*, which are often found in calices on dead coral. The bivalves are numerous, and were most often found attached between branches of dead coral. One exception is *Delectopecten vitreus*, which was found only on live blocks.

Crustaceans were three times as abundant on dead coral as on live. The isopod *Gnathia* was found on dead coral and represented by 217 individuals, half of which were larvae or juveniles. Adult females of *G. abyssorum* were more than five times as frequent as adult males. This common species is also known to be closely associated with sponges (Klitgaard 1991). Only the tanaid *Apseudes spinosus* seemed to prefer live coral. Seventeen of the 32 crustacean species were only found in the loose coral rubble.

Sipunculans are numerous but small (1–4 mm long). They were mainly found excavating dead coral.

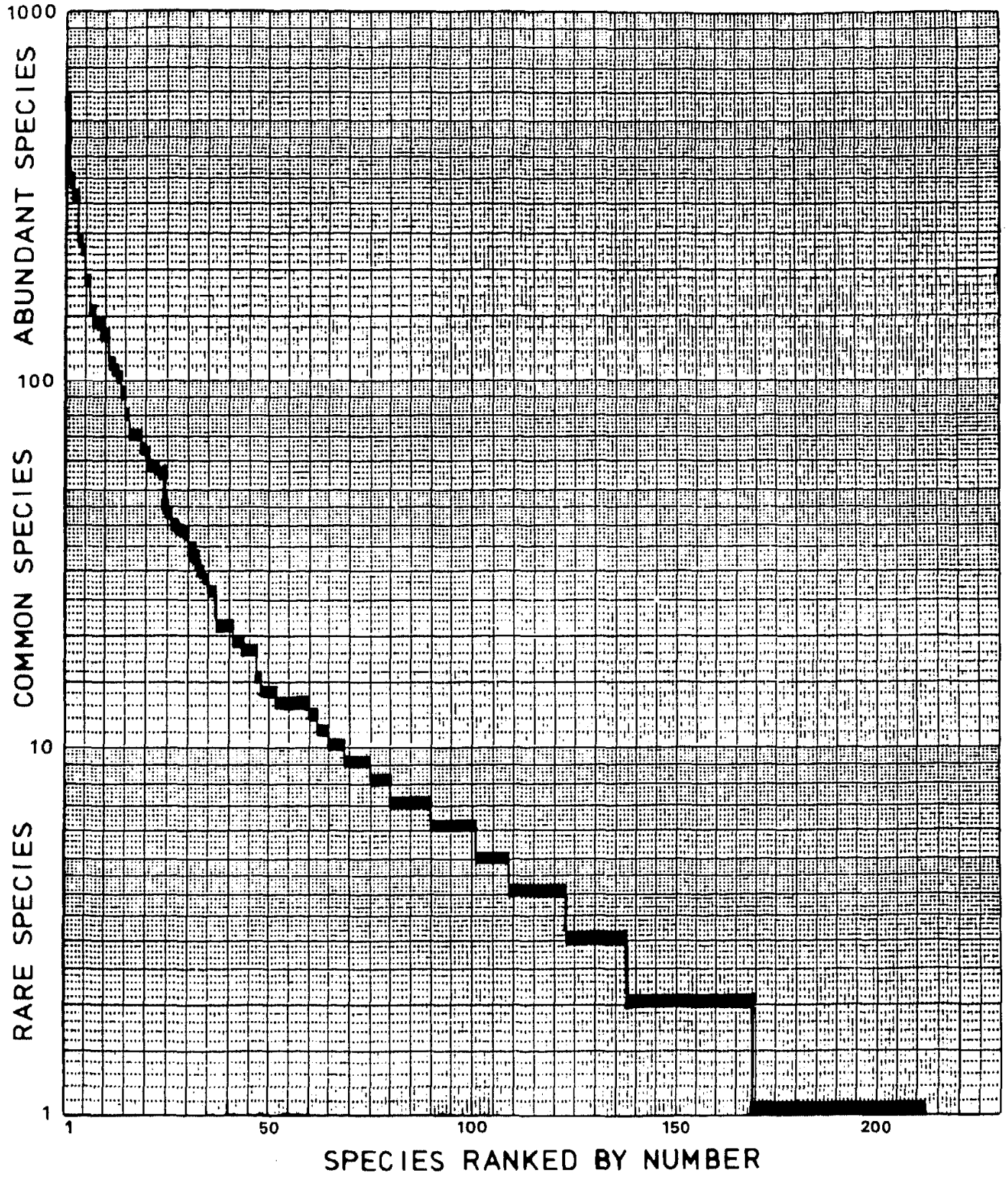

Fig. 4. Dominance-diversity plot of the species associated with *Lophelia pertusa*. Total number of individuals per species for 212 noncolonial ranked after decreasing number of individuals. Species from loose rubble not included. Y-axis is logarithmic.

Bryozoans are numerous on the coral. With 45 species present, this is the second most species-rich group. Of these, 18 have previously been recorded from *Lophelia* at the same depths on the Norwegian shelf (PULPEIRO & al. 1988). Bryozoans cover large parts of the coral surface area.

Brachiopods resembled bivalves in distribution, however, with more than 96 % of the individuals found on dead coral.

Ophiuroids (in particular *Ophiactis balli*) were found in large numbers in calices on dead coral, with their arms protruding several centimetres. By

contrast *Amphipholis squamata* was exclusively found on live blocks.

A small specimen (80 mm) of the fish *Sebastes viviparus* was trapped in one of the coral blocks. This species is well known from coral banks in Norway.

Although not present in the material from these two sites, some larger invertebrates such as the anomurans *Galathea* sp. and *Lithodes maja* (L., 1758), the gorgonian *Primnoa resedaeformis* (GUNNERUS, 1763) and the ophiuroid *Gorgonocephalus* sp. are known from BIOFAR trawl hauls on *Lophelia* banks in the Faroes.

DISCUSSION

The conclusions based on the two samples are somewhat obscured by the different amounts of material dredged and the statistical significance of data is limited. The use of the division into the groups live and dead coral blocks is complicated because one site is dominated by live coral blocks (site A) and the other by dead ones (site B).

Substrate and fauna relationships

The Pearson Product Moment Correlation Coefficient between number of individuals and weight of coral block is only significant for three common species associated with *Lophelia*. This was found for live coral. Dead coral showed no correlation when the number of individual species are correlated with coral size. AUSTIN & al. (1980) also found only three of the 20 most common species to show significant association. This low number indicates a highly patchy distribution of the species. At attractive areas a great number of individuals of a species may be found. Some areas seem to be of general interest with many species positioned close together, and we assume that some other factors determine the community structure. The surface area and shape of the blocks were probably important factors, but such calculations are outside the scope of this study. Also dead coral blocks may contain several different habitats, depending on the degree of decomposition. The dead parts show that the coral structure itself as substratum gives rise to considerable number of individuals. No species are found exclusively on *Lophelia pertusa* and obligate associated to it.

The data for live coral yield the same correlation between coral weight and number of species and number of individuals as found by AUSTIN & al. (1980) for *Pocillopora damicornis* (L., 1758) a hermatypic coral from the Great Barrier Reef.

Observations of decapod communities on *Pocillopora meandrina* DANA, 1846 in the Pacific show a highly predictable community in live coral heads. In contrast, decapod fauna on dead corals is determined by random colonization, which fills the habitat space to capacity (COLES 1980). We suggest that for *Lophelia pertusa* such a random colonization process combined with a possible large difference in age of dead coral blocks may be the main reasons for the uneven distribution observed here.

Diversity

The overall diversity index has a value of 5.50, which is about the same as diversity indices found for the associated fauna of hermatypic corals (MCCLOSKEY 1970; AUSTIN & al. 1980; WENDT & al. 1985; TSUCHIYA 1986). These authors include the whole associated macrofauna and their methods are similar to those of our study. Table 3 shows a recalculation of their results. Some authors find a higher number of species in single phylum studies: REED & MIKKELSEN (1987) report 230 species of molluscs, and REED & MIKKELSEN (1982) report 50 species of crustaceans, both on *Oculina varicosa* LESUEUR, 1820.

On *Lophelia*, the 91 colonial species are a dominant part of the fauna and cover major parts of the surface area, especially on dead coral where all surface is covered. These species are not included in the Shannon-Wiener diversity index (H'), since the number of individuals is part of the index definition. The absence of colonial species contribute to a higher index for live coral than that for dead coral, despite the more differentiated habitats of dead coral. Although our dead coral have 65 more species than live coral, the species are represented by a much higher number of individuals, resulting in the observed lower diversity index, concurring with the results by COLES (1980). It is to some extent surprising that the fauna on the ahermatypic *Lophelia* is as diverse as that of a hermatypic branching species of coral. A tropical coral reef consists of numerous species of corals of different sizes and shapes, which provide living space for a wide variety of associated fauna, and the reef fauna overall may be more diverse. The deep-water coral banks in the Atlantic are built by *Lophelia* alone or with two or three other species of branching corals such as *Madrepora oculata* (L., 1758), *Dendrophyllia cornigera* (LAMARCK, 1816), and *Solenosmilia variabilis* DUNCAN, 1873.

Ecological aspects

The associated fauna consists mainly of suspension feeders like the coral itself. The numerical importance of bivalves, brachiopods, and echinoderms as

well as the many species of bryozoans and poriferans support the view that the *Lophelia* banks are build in areas of considerable water movement and abundant suspended material. This suggests that the presence of *Lophelia* banks indicate high energy areas. The high abundance of suspension feeding brittle stars may be compared to the high number of a suspension feeding deep-water crinoid observed from a submersible on *Lophelia* banks off Florida (NEUMANN & al. 1977; MESSING 1984).

Different feeding methods may explain the distribution of some of the brittle stars in the upper and lower parts of the coral colony. *Ophiactis balli* utilizes tube-feet feeding in the lower levels where multidirectional currents are present, whereas *Amphipholis squamata* in the upper level has stiffer arms with mucus feeding between spines in faster unidirectional currents (WARNER 1982).

Classifying the species according to the four coral fauna lifeforms defined by SHIRAYAMA & HORIKOSHI (1982) shows a predominance of sessile epibionts and secondary cryptobionts in our species list. Crustaceans are the dominant free-living epibionts and their importance on *Lophelia* thickets on Porcupine Bank in the northeastern Atlantic has been noted by SCOFFIN & BOWES (1988). However, crustaceans constituted only 7 % of the total number of individuals in our study, probably having escaped during dredging.

Many species in our material are only represented by juveniles. These juveniles do not necessarily survive to adulthood, since the availability of suitable habitats is limited, and protection from predators difficult to find. The diversity of microhabitats found on coral banks may be likened to those found in the holdfasts of the large brown alga *Laminaria*, where juveniles of soft bottom species like *Arenicola marina* L. may find protection until they reach a certain size (M.E. Petersen pers. commn).

Important factors influencing the number of individuals are the percentage of dead coral and the history of the block (MCCLOSKEY 1970; COLES 1980; REED & al. 1982).

Some of the associated fauna (in particular bryozoans and to a smaller extent molluscs and sedentary polychaetes) contribute to the amount of calcium carbonate deposited by *Lophelia*.

The degradation of coral banks is carried out by a few very abundant species that actively bore in the coral. They are mainly boring sponges, but boring polychaetes such as the sabellid *Perkinsiana socialis* and species of Paraonidae are important excavators. Degradation of the inner parts affects terminal branches of *Lophelia*, which break off (WILSON 1979b).

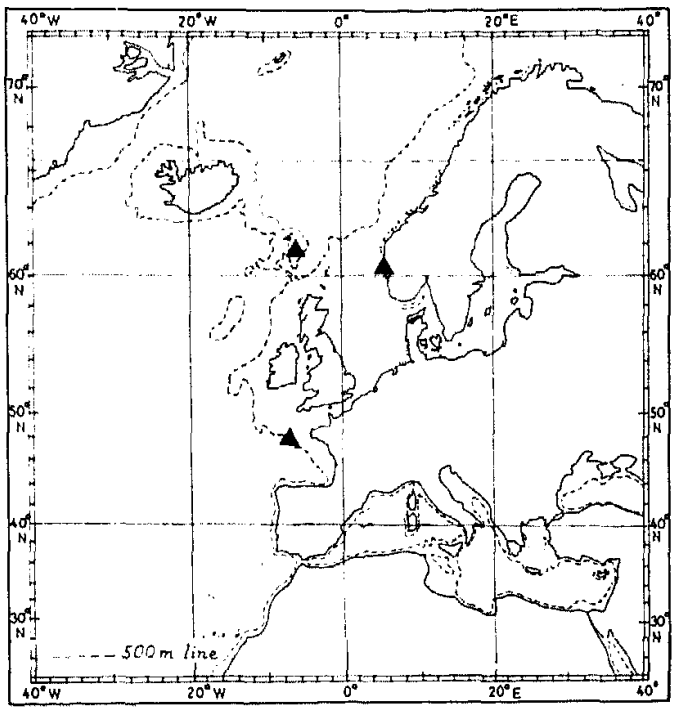

Fig. 5. Map of the three investigations (marked with ▲) of the fauna associated with *Lophelia pertusa* in the Northeast Atlantic Ocean. A comparison of the investigations is made in Table 4.

The sponges *Cliona vastifica* and *Entobia* spp. have been reported to be the boring species on *Lophelia* at Rockall Bank in the Atlantic (WILSON 1979b) and in the Mediterranean (BROMLEY & D'ALESSANDRO 1990) but not as heavily as *Aka labyrinthica* and *Alectona millari*.

Comparing the species list of our study with lists of those of other authors is problematical, as different methods have been used and authors have given unequal attention to different taxonomic groups. The fauna associated with banks of *Lophelia* in Faroese waters is compared with that found in Norwegian fjords (BURDON-JONES & TAMBS-LYCHE 1960), and with that from the Bay of Biscay (LE DANOIS 1948) (Fig. 5, Table 4). These studies were based on material collected on revisited localities for several years. Only few species overlap in the three studies like the polychaete *Eunice norvegica* and the pterobranch *Rhabdopleura normani*. DONS (1944) postulated the presence of a specific (obligate) *Lophelia*-fauna. Our results, however, support the view of BURDON JONES & TAMBS-LYCHE (1960) that such a fauna does not exist. Most species associated with *Lophelia* are facultative inhabitants representing the fauna present in the local geographical area.

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Appendix. 1. List of species associated with *Lophelia pertusa* on the Faroe Shelf.
The species are listed in phylogenetical order according to the following authors: Protozoa: (LOEBLICH & TAPPAN 1964), Hydrozoa: (KRAMP 1935), Anthozoa: (MANUEL 1981), Nematoda: (PLATT & WARWICK 1988), Polychaeta: (GEORGE & HARTMANN-SCHRÖDER 1985), Mollusca: (HØISÆTER 1986), Crustacea: (ENCKELL 1980), Bryozoa: (RYLAND & HAYWARD 1977; HAYWARD & RYLAND 1979; HAYWARD & RYLAND 1985), Brachiopoda: (BRUNTON & CURRY 1979), Echinodermata: (MORTENSEN 1927), Ascidiacea: (MILLAR 1966). + = present but not counted, # = found only in loose coral rubble, NA = Information not available, * = probable pelagic contamination.

	Frequency Number of coral blocks with species		Abundance Total number of individuals		Site A/B
	All coral blocks (N = 25)	Live coral blocks (N = 12)	All coral blocks (N = 25)	Live coral blocks (N = 12)	
PROTOZOA					
Allogromia cf. crystallifera DAHLGREN, 1962	+	NA	+	NA	B
Thurammina sp.	+	NA	+	NA	B
Saccodendron cf. heronalleni RHUMBLER, 1935	+	NA	+	NA	A+B
Ammodiscus cf. intermedius (HÖGLUND, 1947)	+	NA	+	NA	A+B
A. cf. incertus (D'ORBIGNY, 1839)	+	NA	+	NA	A
Textularia sp.	+	NA	+	NA	A+B
Quinqueloculina seminulum (L., 1758)	+	NA	+	NA	A
Polymorphina sp.	+	NA	+	NA	A+B
Sigmomorphina cf. semitecta terquemiana (FORNASINI, 1902)	+	NA	+	NA	B
Glandulina sp.	+	NA	+	NA	A+B
* Orbulina universa (D'ORBIGNY, 1839)	+	NA	+	NA	A+B
Pulvinulina punctulata (D'ORBIGNY, 1826)	+	+	+	+	A+B
Cibicides refulgens MONTFORT, 1808	+	NA	+	NA	A+B
Planorbulina ariminensis (D'ORBIGNY, 1826)	+	NA	+	NA	B
Paromalina coronata (PARKER & Jones, 1857)	+	NA	+	NA	A+B
PORIFERA					
Aka labyrinthica (HANCOCK, 1849)	11	0	+	NA	A+B
Alectona millari CARTER, 1879	10	0	+	NA	A+B
Plus 27 other unidentified morphological types.					
HYDROZOA					
Corydendrium dispar KRAMP, 1935	2	2	+	+	A
Eudendrium sp.	2	1	+	+	A+B
Halecium beani JOHNSTON, 1838	3	1	+	+	B
H. labrosum ALDER, 1859	2	1	+	+	B
H. muricatum (ELLIS & SOLANDER, 1786)	2	1	+	+	B
H. tenellum HINCKS, 1861	1	0	+	0	B
Calicella syringa L., 1767	1	1	+	+	B
Campanularia integra MACGILLIWAY, 1842	1	0	+	+	B
Laomedea gracilis M. SARS, 1851	2	2	+	+	A+B
Lafoea gracillima (ALDER, 1856)	3	1	+	+	B
Nemertesia norvegica (G.O. SARS, 1873)	1	1	+	+	A
Polyplumaria elegantula (G.O. SARS, 1873)	#	NA	NA	NA	A
Kirchenpaueria pinnata (L., 1758)	4	3	+	+	A+B
Sertularella gayi (LAMOUROUX, 1821)	1	0	+	+	A+B
S. tenella (ALDER, 1857)	6	3	+	+	A+B
ANTHOZOA					
Cf. Sarcodictyon sp.	1	1	4	4	A
Botrucnidifer norvegicus CARLGREN, 1912	3	0	12	0	A+B
Sideractis glacialis DANIELSSEN, 1890	2	0	2	0	B
Protanthea simplex CARLGREN, 1891	2	0	3	0	A+B
Kadosactis abyssicola (DANIELSSEN & KOREN, 1879)	2	0	2	0	B
Epizoanthus cf. macintoshi HADDON & SHACKLETON, 1891	2	0	15	0	B
Paragorgia arborea L., 1758	#	NA	NA 38	NA 4	A
NEMERTEA					
Nemertine sp. A	12	5	78	69	A+B
Nemertine sp. B	9	4	21	4	A+B

	Frequency Number of coral blocks with species		Abundance Total number of individuals		Site A/B
	All coral blocks (N = 25)	Live coral blocks (N = 12)	All coral blocks (N = 25)	Live coral blocks (N = 12)	
Nemertine sp. C	2	0	3	0	B
Nemertine sp. D	1	1	1	1	A+B
Nemertine sp. E	2	1	3	1	A+B
Nemertine sp. F	4	2	7	2	A+B
Nemertine sp. G	2	2	3	3	A
			116	80	
NEMATODA					
Enoplus sp.	2	0	3	0	B
Crenopharynx sp.	1	0	1	0	A
Phanoderma sp.	2	2	2	2	A
Leptosomatum sp.	5	2	6	4	A+B
Deontostoma sp.	14	4	69	7	A+B
Synonchus sp.	7	0	13	0	A+B
Eurystomina sp.	1	0	1	0	A
Halichoanolaimus sp.	5	4	5	4	A+B
Daptonema sp.	1	1	1	1	A
			101	18	
POLYCHAETA					
Acanthicolepis asperrima (M. SARS, 1861)	3	2	3	2	A+B
Harmothoe fragilis MOORE, 1910	#	NA	NA	NA	B
H. oculinarum (STORM, 1879)	4	4	8	8	A
H. viridus LOSHAMN, 1980	2	0	2	0	A+B
Neopolynoe paradoxa (STORM, 1888)	8	7	33	31	A
Pholoe assimilis ØRSTED, 1845	4	3	4	3	A+B
Eulalia sp. juvenile	5	3	5	3	A+B
E. viridis (L., 1767)	6	3	11	6	A+B
Eumida sp. juvenile	5	3	5	3	A+B
E. sanguinea (ØRSTED, 1843)	3	0	3	0	B
Notophyllum foliosum (M. SARS,1835)	8	5	8	5	A+B
Phyllodoce groenlandica ØRSTED, 1843	5	0	6	0	B
Sphaerodoridium balticum (REIMERS, 1933)	7	0	9	0	A+B
Sphaerodorum cf. flavum ØRSTED, 1843	3	0	3	0	B
Glycera capitata ØRSTED, 1843	3	1	3	1	A+B
Nereimyra punctata (O.F. MÜLLER, 1788)	8	5	14	8	A+B
Amblyosyllis formosa (CLAPARÉDE, 1863)	1	0	1	0	B
Autolytus inermis SAINT-JOSEPH, 1887	6	1	7	1	A+B
Eusyllis blomstrandi MALMGREN, 1867	13	4	38	16	A+B
Sphaerosyllis spp.	17	7	152	100	A+B
Syllis gracilis (GRUBE, 1840)	8	3	26	13	A+B
Typosyllis sp.	12	4	21	8	A+B
T. armillaris (O.F. MÜLLER, 1776)	19	10	128	74	A+B
T. hyalina (GRUBE, 1863)	10	1	21	2	A+B
Nereis sp. juvenile	8	2	19	17	B
N. pelagica L., 1758	3	3	5	5	B
N. zonata MALMGREN, 1867	2	2	2	2	B
Euphrosine armadillo M. SARS, 1851	#	NA	NA	NA	A
Spinther arcticus (M. SARS, 1851)	#	NA	NA	NA	A
S. oniscoides JOHNSTON, 1845	4	4	7	7	A
Eunice norvegica (L., 1767)	12	10	89	87	A+B
E. pennata (O.F. MÜLLER, 1776)	11	7	42	19	A+B
Lumbrineris cf. tetraura (SCHMARDA, 1861)	3	2	4	2	A+B
Dorvillea erucaeformis (MALMGREN, 1865)	1	1	1	1	A
Ophryotrocha lobifera OUG, 1978	1	1	1	1	A
Scoloplos armiger (O.F. MÜLLER, 1776)	1	0	1	0	B
Paraonidae indet.	14	6	182	11	A+B
Polydora cf. caulleryi MESNIL, 1897	9	1	18	2	A+B
P. cf. quadrilobata JAKOBI, 1883	1	1	1	1	A

Continued on next page

	Frequency Number of coral blocks with species		Abundance Total number of individuals		Site A/B
	All coral blocks (N = 25)	Live coral blocks (N = 12)	All coral blocks (N = 25)	Live coral blocks (N = 12)	
Prionospio ockelmanni PLEIJEL, 1985	9	2	18	9	A+B
Chaetopterus norvegicus M. SARS 1835	1	0	2	0	B
Aphelochaeta sp.	3	1	6	1	A+B
A. marioni (SAINT-JOSEPH, 1894)	4	1	9	1	A+B
Caulleriella serrata ELIASON, 1962	4	3	5	4	A
Chaetozone sp. 1	7	2	8	2	A+B
Chaetozone sp. 2	7	3	7	3	A+B
C. setosa MALMGREN, 1867	1	0	1	0	B
Cirratulus incertus MCINTOSH, 1923	6	4	13	9	A+B
Dodecaceria sp.	3	2	3	2	A
D. concharum ØRSTED, 1843	8	6	19	17	A+B
Cirratulidae indet.	8	3	10	4	A+B
Capitomastus sp.	5	4	13	11	A
Notomastus latericeus M. SARS, 1851	2	2	4	4	A
Euclymene sp.	#	NA	NA	NA	A
E. robusta ARWIDSSON, 1906	2	2	2	2	A+B
Asclerocheilus cf. intermedius SAINT-JOSEPH, 1894	4	0	5	0	A+B
Lipobranchus jeffreysii (MCINTOSH, 1869)	#	NA	NA	NA	A+B
Scalibregmidae indet.	1	1	1	1	A
Melinna cf. cristata (M. SARS, 1851)	5	2	7	4	A+B
Lanassa cf. venusta (MALM, 1874)	14	7	55	35	A+B
Phisidia cf. aurea SOUTHWARD, 1956	9	2	12	5	A+B
Polycirrus cf. medusa GRUBE, 1850	8	4	14	7	A+B
P. cf. norvegicus WOLLEBÆK, 1912	16	9	69	49	A+B
P. cf. plumosus (WOLLEBÆK, 1912)	4	2	6	3	A+B
Branchiomma bombyx (DALYELL, 1853)	4	2	7	3	A+B
Perkinsiana socialis (LANGERHANS, 1884)	14	4	61	9	A+B
Sabella cf. penicillus L. 1767	2	0	2	0	A+B
Apomatus similis MARION & BOBRETSKY, 1875	3	3	4	4	A
Filograna dysteri (HUXLEY, 1855)	12	6	30	10	A+B
Placostegus tridentata (FABRICIUS, 1779	19	8	139	67	A+B
Protula tubularia (MONTAGU, 1903)	14	3	39	4	A+B
Serpula vermicularis L., 1767	8	1	13	1	A+B
			1467	710	
MOLLUSCA, Gastropoda					
Anatoma crispata (FLEMMING, 1832)	2	2	4	4	A+B
Emarginula fissura (L., 1767)	#	NA	NA	NA	A+B
Puncturella noachina (L., 1771)	1	0	1	0	A+B
Iothia fulva (O.F. MÜLLER, 1776)	2	0	3	0	A+B
Skenea sp.	1	1	1	1	B
S. basistriata (JEFFREY, 1877)	1	0	1	0	B
S. peterseni (FRIELE, 1877)	7	4	8	4	A+B
Alvania jeffreysi (WALLER, 1864)	12	7	38	31	A+B
Capulus ungaricus (L., 1858)	2	1	2	1	A+B
Lamellaria latens (O.F. MÜLLER,1776)	#	NA	NA	NA	A
L. perspicua (L., 1758)	1	1	1	1	A
Eumetula arctica (MØRCH, 1857)	#	NA	NA	NA	B
Laeocochlis macandreae (H. ADAMS, 1858)	1	0	1	0	B
Trophonopsis clathratus (L., 1767)	4	2	4	2	A+B
Anachis haliaeeti (JEFFREY, 1867)	1	1	1	1	A+B
Turridae indet.	#	NA	NA	NA	B
Odostomia sp.	#	NA	NA	NA	B
* Limacina retroversa (FLEMING, 1823)	5	1	29	2	A+B
Aldisa zetlandica (ALDER & HANCOCK, 1854)	#	NA	NA	NA	B
			94	47	
MOLLUSCA, Polyplacophora					
Leptochiton sp.	6	1	6	1	A+B
Hanleya hanleyi BEAN, 1844	2	0	2	0	A+B
			8	1	

	Frequency Number of coral blocks with species		Abundance Total number of individuals		Site A/B
	All coral blocks (N = 25)	Live coral blocks (N = 12)	All coral blocks (N = 25)	Live coral blocks (N = 12)	
MOLLUSCA, Bivalvia					
Modiolus modiolus (L., 1758)	19	8	235	87	A+B
Mytilus edulis L. 1758	1	1	4	4	A
Acar nodulosa O.F. MÜLLER, 1776	12	2	340	4	A+B
Arca tetragona POLI, 1795	#	NA	NA	NA	A
Bathyarca frielei (FRIELE, 1877)	#	NA	NA	NA	A
B. pectunculoides (SCACCHI, 1834)	1	1	1	1	A
Acesta excavata (FABRICIUS, 1779)	2	1	2	1	A
Limatula subauriculata (MONTAGU, 1808)	1	0	1	0	B
Notolimea sarsii (LOVÉN, 1846)	2	0	3	0	B
Chlamys sulcata (O.F. MÜLLER, 1776)	3	2	6	3	A
Delectopecten vitreus (GMELIN, 1791)	7	7	10	10	A
Palliolum striatum (O.F. MÜLLER, 1776)	3	2	3	2	A+B
Heteranomia squamula (smooth) (L., 1758)	17	8	103	67	A+B
H. squamula (scaly) (L., 1758)	16	8	63	36	A+B
Pododesmus patelliformis (L., 1761)	3	0	7	0	B
P. cf. squama (GMELIN, 1791)	#	NA	NA	NA	A
Kellia suborbicularis (MONTAGU, 1803)	12	1	69	1	A+B
Astarte sulcata (DACOSTA, 1778)	4	1	6	1	B
Hiatella arctica (L., 1767)	20	8	309	35	A+B
			1162	252	
ARACHNIDA					
Halacaridae indet.	1	0	1	0	A
PYCOGONIDA					
Pycnogonum crassirostre G.O. SARS, 1888	#	NA	NA	NA	B
CRUSTACEA					
* Calanus finmarchicus (GUNNERUS, 1765)	4	2	6	3	A+B
Notodelphys cf. allmani THORELL, 1859	2	1	2	1	A+B
Dyspontius striatus THORELL, 1859	#	NA	NA	NA	A
Verruca stroemia O.F. MÜLLER, 1789	12	2	28	2	A+B
Apseudes spinosus M. SARS, 1858	5	5	21	21	A
Typhlotanais aequiremis LILLJEBORG, 1864	1	1	2	2	A+B
Gnathia sp. juvenile	19	10	107	48	A+B
G. abyssorum, G.O. SARS, 1872 females	13	3	54	7	A+B
G. abyssorum, G.O. SARS, 1872 males	6	1	10	1	A+B
G. dentata G.O. SARS, 1871	14	3	56	5	A+B
Aega ventrosa M. SARS, 1848	1	1	1	1	A
Echinozone coronata G.O. SARS, 1869	#	NA	NA	NA	A
Eurycope furcata G.O. SARS, 1869	#	NA	NA	NA	A
Munna boecki KRØYER, 1838–39	4	2	11	8	A+B
Nannoniscus oblongus G.O. SARS, 1869	4	3	9	4	A
Janira maculosa LEACH, 1813	#	NA	NA	NA	A+B
Janiropsis breviremis G.O. SARS, 1882	2	0	2	0	A+B
Aeginella spinosa BOECK, 1870	#	NA	NA	NA	A
Lysianella petalocera G.O. SARS, 1882	#	NA	NA	NA	A
Tryphosa hoeringi BOECK, 1870	#	NA	NA	NA	B
Orchomenella cf. obtusa G.O. SARS, 1895	#	NA	NA	NA	A
Orchomene amblyops G.O. SARS, 1895	#	NA	NA	NA	A
O. crispata GÖES, 1865	#	NA	NA	NA	A
Leucothoe spinicarpa ABILDGAARD, 1789	1	1	1	1	A
Parajassa pelagica LEACH, 1813–14	#	NA	NA	NA	A
Lilljeborgia kinahani BATE, 1862	1	0	1	0	A+B
Pardalisca abyssi BOECK, 1870	#	NA	NA	NA	A
Stenopleustes cf. nodifer G.O. SARS, 1882	#	NA	NA	NA	A
Sabinea sarsi SMITH, 1879	#	NA	NA	NA	B
Pontophilus spinosus (LEACH, 1815)	#	NA	NA	NA	B

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	Frequency Number of coral blocks with species		Abundance Total number of individuals		Site A/B
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Pandalina cf. profunda HOLTHUIS, 1946	#	NA	NA	NA	A
Pandalus propinquus G.O. SARS, 1870	#	NA	NA	NA	A
Galathea nexa EMBLETON, 1835	1	1	1	1	B
			312	104	
SIPUNCULA					
Golfingia improvisum THEEL, 1905	5	3	14	8	A+B
G. minuta (KEFERSTEIN, 1862)	19	6	140	37	A+B
			154	45	
TARDIGRADA					
Styraconyx qivitoq HIGGINS & KRISTENSEN, 1984	#	NA	NA	NA	A
BROYOZOA					
Filicrisia geniculata MILNE EDWARDS, 1838	2	2	+	+	A
Bicrisia abyssicola KLUGE, 1962	1	1	+	+	B
Crisia eburnea (L., 1758)	18	7	+	+	A+B
C. aculeata HASSALL, 1841	13	3	+	+	A+B
C. calyptostoma HAYWARD & RYLAND, 1978	1	0	+	0	B
Oncousoecia diastoporides (NORMAN, 1869)	2	0	+	0	B
O. dilatans (JOHNSTON, 1847)	1	0	+	0	B
Idmidronea atlantica (FORBES in JOHNSTON, 1847)	18	8	+	+	A+B
Plagioecia patina (LAMARCK, 1816)	5	2	+	+	A+B
Diplosolen obelia (JOHNSTON, 1838)	1	1	+	+	B
Annectocyma major (JOHNSTON, 1847)	4	2	+	+	A+B
Entalophoroecia deflexa (COUCH, 1842)	1	0	+	0	B
Hornera lichenoides (L., 1758)	7	3	+	+	A+B
Stigmatoechos violacea (M. SARS, 1863)	8	3	+	+	A+B
Lichenopora verrucaria (FABRICIUS, 1780)	1	1	+	+	B
Disporella hispida (FLEMING, 1828)	7	4	+	+	A+B
Chartella barleei (BUSK, 1860)	2	1	+	+	B
Amphiblestrum flemingii (BUSK, 1854)	2	1	+	+	B
A. solidum (PACKARD, 1860)	1	0	+	0	B
A. minax (BUSK, 1860)	1	0	+	0	B
Larnacicus corniger (BUSK, 1859)	4	2	+	+	A+B
Cabarea ellisii (FLEMING, 1814)	13	5	+	+	A+B
Notoplites harmeri RYLAND, 1963	4	0	+	0	A+B
Bicellariella ciliata (L., 1758)	1	1	+	+	B
Bicellarina alderi (BUSK, 1859)	4	1	+	+	A+B
Smittina crystallina (NORMAN, 1867)	1	1	+	+	B
Smittoidea reticulata (MACGILLIVRAY, 1842)	10	7	+	+	A+B
S. glaciata (WATERS, 1900)	2	1	+	+	B
Porelloides laevis (FLEMING, 1828)	13	2	+	+	A+B
Palmicellaria skenei (ELLIS & SOLANDER, 1786)	2	1	+	+	A+B
Escharella abyssicola (NORMAN, 1869)	11	3	+	+	A+B
E. laqueata (NORMAN, 1864)	2	1	+	+	A+B
E. octodentata (HINCKS, 1880)	1	0	+	0	B
E. ventricosa (HASSALL, 1842)	9	2	+	+	A+B
Hemicyclopora emucronata (SMITT, 1872)	1	1	+	+	A
H. polita (NORMAN, 1864)	9	3	+	+	A+B
H. polita mucronata RYLAND, 1962	5	0	+	0	A+B
Hemicylostomata microstomata (NORMAN, 1864)	2	1	+	+	A+B
Phylactellipora eximia (HINKS, 1860)	1	0	+	0	B
Schizomavella linearis (HASSALL, 1841)	4	1	+	+	B
Haplopoma planum RYLAND, 1963	0	0	+	0	B
Tessaradoma boreale (BUSK, 1860)	2	1	+	+	B
Sertella beaniana (KING, 1846)	14	6	+	+	A+B
S. couchii (HINCKS, 1878)	6	1	+	+	B
Turbicellepora smitti (KLUGE, 1962)	2	1	+	+	B

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BRACHIOPODA					
Crania anomala (O.F. MÜLLER, 1776)	14	0	98	0	A+B
Terebratulina retusa (L., 1758)	15	5	222	9	A+B
T. septentrionalis (COUTHOUY, 1838)	2	1	2	1	A+B
Macandrevia cranium (O.F. MÜLLER, 1776)	15	3	128	6	A+B
			1530	16	
ECHINODERMATA					
Henricia lisa ingolfi MADSEN, 1987	#	NA	NA	NA	A
Poraniomorpha hispida (M. SARS, 1872)	1	0	1	0	B
Ophiactis abyssicola M. SARS, 1861	17	7	44	15	A+B
O. balli (THOMPSON, 1840)	14	3	578	22	A+B
Ophiopholis aculeata (L., 1758)	12	4	32	9	A+B
Ophiacantha abyssicola (G.O. SARS, 1871)	#	NA	NA	NA	A
O aristata KOEHLER, 1896	#	NA	NA	NA	A
O. bairdi LYMAN, 1883	#	NA	NA	NA	B
Ophiotrix fragilis ABILDGAARD, 1789	#	NA	NA	NA	B
Amphipholis squamata DELLECHIAJE, 1828	4	4	7	7	A+B
Echinocyamus pusillus (O.F. MÜLLER, 1776)	1	0	1	0	B
Spatangus purpureus (O.F. MÜLLER, 1776)	#	NA	NA	NA	B
			663	53	
PTEROBRANCHIA					
Rhabdopleura normani ALLMAN, 1869	7	2	+	+	A+B
ASCIDIACEA					
Ascidia sp.	#	NA	NA	NA	A
Styela coriacea (ALDER & HANCOCK, 1848)	5	3	37	34	A+B
S. theeli (ÄRNBÄCK, 1921)	4	0	9	0	B
Pyura tessellata (FORBES, 1848)	8	1	13	2	A+B
			66	36	
PISCES					
Sebastes viviparus KRØYER, 1844	1	0	1	0	A
TOTAL			4626	1366	