Soft bottom macro fauna species composition in Faroese fjords

Botndýr í bleytbotni á føroyskum firðum

Jan Sørensen[1], Jógvan F. Hansen[2] and Regin Joensen[3]
Kaldbak Marine Biological Station, Mjólkargøta, FO-180 Kaldbak, Faroe Islands.
Telephone +298 356111, Fax +298 356110,
Email: [1]Jan@havbotnur.fo, [2]JFH@havbotnur.fo, [3]Regin@havbotnur.fo.

Úrtak

Sjálvt um reiðiliga nógv vísindaligt tilfar er almannakunngjørt um ryggleysu dýrini á botni á føroyskum sjóøki, so hevur djóranøgdin verið rættiliga lítið viðgjørd. Hetta hevur stóran týdning, tá ið metast skal um, um nakrar broytingar fara fram.

Havlívfrøðiliga royndarstøðin hevur tey seinastu fimm til tíggju árini gjørt botnkanningar á føroyskum firðum, og úrslitini í hesi grein byggja á 63 grabbasýni, sum eru tikin úr 10 ymiskum støðum í Føroyum. Sýnini eru øll 0,1 m2, og fevnir tilfarið um sand, silt og leir og blandingar av teimum.

Í greinini verður hvør einstøk støð lýst við knattstøðu, botntilfari, grabbanøgd, dýpi, Shannon-fjølbroytnistali, Pielou-javnleikatali, ES_{100}, býti av størru djórabólkunum í prosentum og einum lista við fimm teimum vanligastu djórasløgunum í sýninum.

Abstract

Although a fair amount of papers are published about benthic invertebrates in Faroese waters surprisingly little is published about the abundance of the animals. Abundance is important information when changes in the benthic environment have to be evaluated.

For the last 5-10 years Kaldbak Marine Biological station has put a lot of effort in shallow water investigations as part of environmental impact assessments and monitoring. Sixty three grab samples are included in the present paper and these were taken from ten different localities in the Faroe Islands. The samples are all grab samples of 0.1 m^2, and the encountered sediments are sand, silt and clay and mixtures of these.

In this paper each station is described with information on position, type of sediment, volume of the sample, depth, Shannon diversity index, Pielou evenness index, ES_{100}, percentage of the major marine invertebrate groups, and a list of the five most frequent species from each sample.

Introduction

The species composition of the benthic macro fauna of Faroe Islands is fairly well known. Large scale benthic surveys from 1926-27 as well as occasional single samples from late 19th century to about 1930 were published in a comprehensive six volumes publication "The Zoology of the Faroes" (Jensen *et al*., 1928-1971) and included samples from the seashore to about 200 meter depth. Species from all major phyla were reported.

I 1988-91 the BIOFAR programme sampled more than 600 different stations

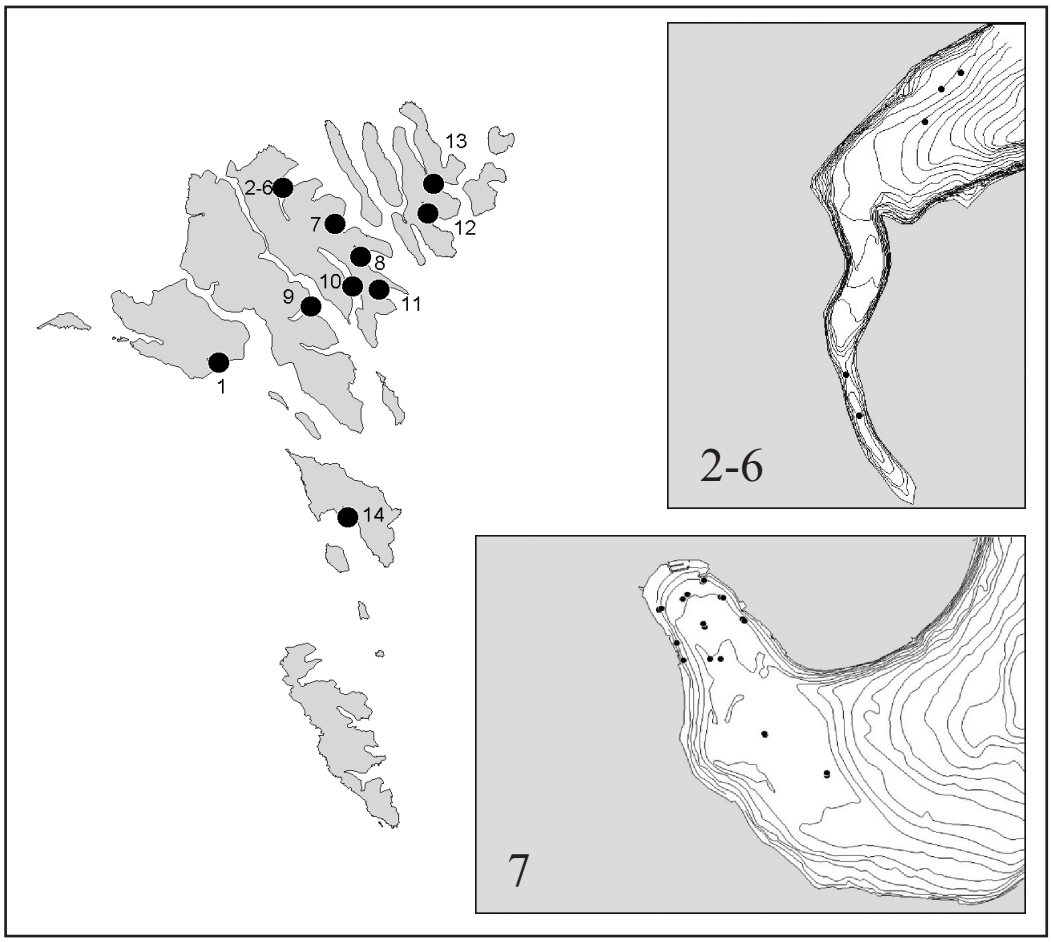


Figure 1. Map showing the location where the samples were taken. 1. Miðvágur, 2-6 Funningsfjørður, 7 Fuglafjørður, 8 Gøtuvík, 9 Kollafjørður, 10 Glyvrar, 11 Lambavík, 12 Árnafjørður, 13 Hvannasund (south) and 14 Sandur. Smaller maps show a more detailed map of the sample sites in Funningsfjørð (2-6) and in Fuglafjørð (7).

from the Faroese region covering depths from 100 to 1500 meters. Hitherto more than 100 papers are published from the BIOFAR programme.

Both "The Zoology of the Faroes" programme and "The BIOFAR" programme were designed mainly to focus on species composition rather than abundance (Tendal *et al*., 2005; Nørrevang *et al*., 1994).

In recent years the growing awareness of manmade impact on the environment has made a natural demand for a better understanding of the marine environment and better methods for monitoring impacts. In-

formation about species composition together with chemical and physical descriptions makes a powerful tool in managing the use of the marine environment.

One of the most frequently used parameter to indicate increased organic enrichment is a change in species composition from a low domination towards a clear domination by one or two species (Pearson, 1978; Pearson *et al*., 1983). In the present paper we will mostly concentrate on the dominant species. We will also give information on generally used values of diversity measures from ten different Faroese fjords and analyze the composition of the fauna with regards to the major taxonomic groups and to different feeding types.

Only limited information on soft sediment species diversity is available for the Faroe Islands. Josefson (1992; 2001) reported from two localities on the Faroe shelf (about 300 meters). Bloch *et al*. (1986), Nørrevang (1990) Jørgensen (1993) and Sakarisson (2000) have reported from the fjords (mainly Skálafjørður).

Materials and methods

The material in this paper consists of 63 grab samples from 10 different fjords in the Faroe Islands sampled in the period 2001-2003. All samples were taken with KC-Denmark 0.1 m^2 van Veen grab. Depth information was obtained from the echo sounder on the vessel while the position for each sample was obtained from GPS. Sediments were visually and tactilely estimated on location.

The sediments were sieved through a set of 4 mm and 1 mm round hole sieves before fixation in 4% formaldehyde seawater solution buffered in borax. Before

Diversity parameters compared to environmental parameters

	S	N	N/S	H	J'
All samples (61)	29 (5-66)	236 (8-620)	7.7 (1.3-20.6)	3,5 (2.0-5.2)	0.74 (0.43-0.90)
Sediment					
Mixed (18)	31 (23-44)	244 (74-527)	7.4 (2.6-12.9)	3.8 (3.0-4.4)	0.76 (0.57-0.90)
Sandy (21)	30 (5-66)	194 (8-485)	5.5 (1.3-13.3)	3.5 (2.0-5.2)	0.78 (0.47-0.90)
Silt/clay (22)	27 (18-39)	269 (112-1655)	9.9 (4.2-20.7)	3.3 (2.1-4.3)	0.69 (0.43-0.89)
Depth					
< 20 m (22)	23 (5-44)	194 (8-527)	6.8 (1.3-14.0)	3.1 (2.0-4.4)	0.73 (0.47-0.90)
20-40 (29)	33 (14-66)	267 (38-620)	8.3 (2.2-20.7)	3.7 (2.1-5.2)	0.74 (0.43-0.89)
> 40 m (10)	32 (18-44)	217 (112-388)	7.1 (4.5-15.5)	3.6 (2.8-4.5)	0.74 (0.61-0.83)
Ignition loss					
< 30 mg/kg (8)	9 (5-16)	38 (8-89)	3.8 (1.3-6.7)	2.5 (2.0-3.0)	0.82 (0.70-0.90)
30-60 mg/kg (32)	35 (17-66)	273 (38-620)	7.7 (2.2-20.7)	3.7 (2.1-5.2)	0.72 (0.43-0.89)
> 60 mg/kg (13)	28 (21-36)	291 (170-407)	10.5 (7.1-16,5)	3.4 (2.5-4.0)	0.70 (0.58-0.78)

Table 1. Average values of species numbers (S), individuals (N), individuals and species ratio (N/S), Shannon diversity index (H) and Pielou evenness index (J') in relation to sediment type, depth and ignition loss. Minimum and maximum values are shown in brackets. Sample 7R and 7S are excluded from the calculations because they are deviant.

preservation in 70% ethanol the formaldehyde was washed out in a KC-Denmark formaldehyde wash out system for at least 24 hours.

Surface sediments for analysis of organic matter were collected from the central top 2 cm in the grab samples. Before combustion in 550°C the sediments were dried in 105°C for at least 30 minutes and sieved through a ½ mm mesh size sieve.

Identification of the species was performed under stereo microscope and ordinary microscope. All specimens were identified to lowest possible taxon.

PRIMER-E from Primer-e ltd was used for statistical analyses.

Percentage of species (Average (Min. - Max.))

	Polychaeta	Mollusca	Crustacea	Echinodermata	Others
All samples	67 (33-97)	17 (0-50)	6 (0-38)	3 (0-12)	5 (0-21)
Sediment					
Mixed	69 (57-79)	18 (9-27)	2 (0-5)	4 (0-12)	7 (0-21)
Sandy	60 (33-97)	19 (0-50)	14 (0-38)	3 (0-12)	3 (0-21)
Silt/clay	74 (62-90)	13 (4-21)	3 (0-13)	3 (0-10)	5 (0-13)
Depth					
< 20 m	68 (33-86)	16 (0-33)	11 (0-38)	2 (0-12)	3 (0-11)
20-40	70 (38-97)	17 (0-50)	3 (0-14)	4 (0-12)	6 (0-21)
> 40 m	66 (57-97)	18 (10-50)	2 (2-14)	5 (0-12)	8 (0-21)
Ignition loss					
< 30 mg/kg	56 (33-80)	23 (0-50)	21 (10-38)	0.3 (0-3)	0.3 (0-3)
30-60 mg/kg	70 (48-97)	17 (0-39)	4 (0-11)	4 (0-12)	5 (0-14)
> 60 mg/kg	73 (58-86)	13 (5-25)	2 (0-12)	3 (0-7)	8 (0-21)

Percentage of individuals (Average (Min. - Max.))

	Polychaeta	Mollusca	Crustacea	Echinodermata	Others
All samples	79 (38-98)	14 (0-50)	4 (4-45)	2 (2-16)	2 (2-6)
Sediment					
Mixed	77 (62-97)	16 (2-29)	1 (0-4)	4 (0-16)	2 (0-6)
Sandy	72 (38-98)	14 (0-50)	11 (1-45)	2 (0-9)	1 (0-6)
Silt/clay	84 (61-98)	12 (2-32)	2 (0-11)	1 (0-4)	1 (0-4)
Depth					
< 20 m	83 (38-97)	9 (0-50)	7 (0-45)	1 (0-10)	1 (0-5)
20-40 m	76 (50-98)	17 (0-45)	2 (0-13)	3 (0-16)	2 (0-6)
> 40 m	73 (55-83)	18 (2-35)	2 (0-9)	4 (0-14)	3 (0-10)
Ignition loss					
> 30 mg/kg	67 (38-89)	18 (0-50)	14 (1-30)	0 (0-0)	0 (0-0)
30-60 mg/kg	81 (50-98)	13 (0-32)	2 (0-13)	3 (0-11)	1 (0-6)
< 60 mg/kg	81 (55-97)	13 (1-35)	1 (0-9)	2 (0-14)	4 (0-10)

Table 2. Percentage of all species and all individuals sorted in sediment type, depth and ignition loss. Mixed =mixed material of pebble, sand, silt and clay. Sand = shell sand, sand, and mixed sand/silt. Silt/clay = silt, silt/clay, clay and mud.

Results

In this paper we analyzed the species composition of sixty three 0.1 m^2 grab samples including a total of 285 species and 17254 individuals.

Species richness and abundance

The average number of species per 0.1 m^2 was 29 and minimum and maximum species numbers are 5 and 66 respectively. The average number of individuals per 0.1 m^2 was 236 and varies between 8 and 1655.

When compared with different sediment types there is no clear difference in species number or abundance (Table 1). Compared with depth there seems to be fewer species and slightly fewer individuals in depths from < 20 meters than the other two depth groups. In the group <20 m there are 23 species in average compared to 33 and 32, and 194 individuals in average compared to 267 and 217. The species number and abundance for sediments with low ignition loss (<30 mg/kg) are much lower than the other two groups with higher amounts of organic matter in the sediment.

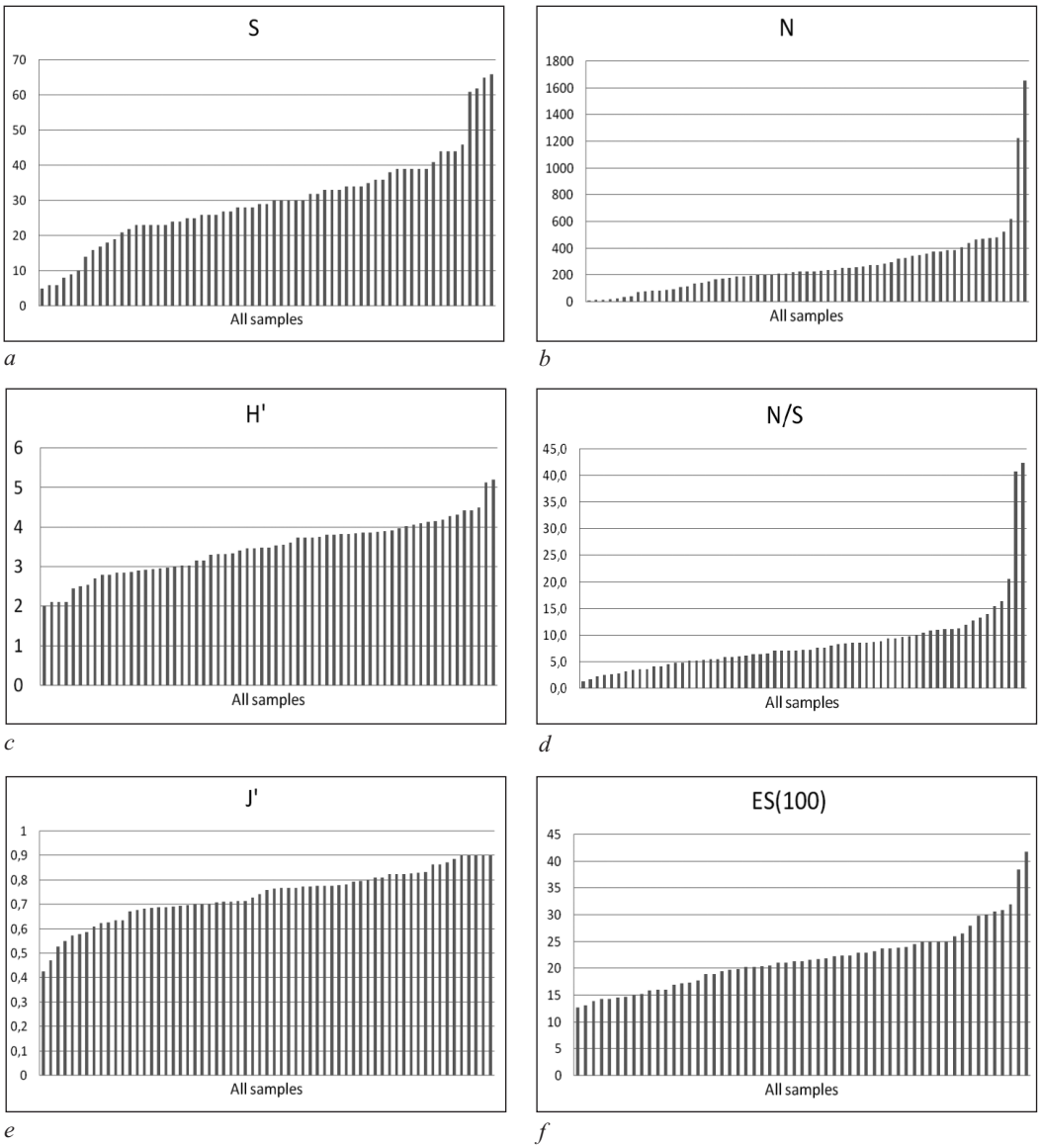
Table 2 shows the percentage of species and individuals for the major taxonomic groups in relation to type of sediment, depth and ignition loss. The general picture shows a clear dominance of polychaetes both in species richness and abundance followed by mollusks, crustaceans, echinoderms and other groups. 67% of all the species are polychaetes and 79% of all the individuals are polychaetes.

Number two are the mollusks with 17% in species richness and 14% in abundance and then comes the crustaceans, echinoderms and others with less than 6% each.

If species richness and abundance are compared with sediment type, depth and content of organic material in the sediment (loss by ignition) all groups are fairly constant except the crustaceans. In sandy sediments on average 14% of the total number of species are crustaceans compared to 2% in mixed sediments and 3% in silt/clay sediments. The same tendency is observed in abundance. In average there are more species of crustaceans above 20 meters compared to the two deeper depth intervals. On average 11% af all species are found above 20 meters compared to 3% and 2% respectively for the deeper groups. The same tendency can be seen in abundance but not so clear. With regard to organic content in the sediment it is very clear that the highest numbers of crustacean species are found in sediments with low organic content. Twenty one percent of the crustacean species are found in the less than 30 mg/kg group compared to 4 and 2% in the two groups with higher ignition loss.

Species composition

In the present paper we investigated sixty three grab samples (0.1 m^2) and identified 285 different species, 170 (59.6%) species of polychaetes, 53 (18.6%) species of mollusks, 29 (10.2%) species of crustaceans, 16 (5.6%) species of echinoderms, 4 (1.4%) species of cnidarians, 2 (0.7%) species of nemerteans, 1 (0.4%) species of priapulids, 2 (0.7%) species of phoronids,



Figur 2. Graphic illustrations of all samples sorted from lowest value to highest value. *a*) Number of species per sample. *b*) Number of individuals per sample. *d*) N/S= proportion of individuals and number of species per sample. *c*) H'= Shannon index per sample e) J'= Pielou evenness index per sample. f) ES(100)= Hurlbert's expected number of species per 100 individuals per sample.

1 (0.4%) species of turbellarians and 7 (2.5%) species of sipunculans (which is probably too high). Nematodes were not included in this study.

It is well known that benthic communities are characterized by a large number of rare species and dominated by only a few species (Gray, 1981). Table 3, 4a and 4b show a ranked list of all the species which are among the five most common species in each sample. There are several ways to look at which species are the most common. In this study three different approaches are shown.

- Rated numbers: each species is rated within each sample (from one to five) and then the total score for each species is calculated by adding all single value ratings.
- Abundance: each species is ranked by the total number of individuals in all samples.
- In top 5: each species is ranked by how often it has been between the five most common species in each sample.

Table 3 shows the five most common species for all three methods.

Feeding types

Table 4a and 4b gives information on feeding types, motility and mouthparts of each species. Table 3 shows the five most common species obtained by the three described methods. *Scoloplos armiger, Mediomastus fragilis, Polydora ciliata* are burrowers, *Chaetozone setosa, Mediomastus fragilis, Polydora ciliata* are surface deposit feeders. Burrowers could also be called "sub surface deposit feeders" and these four species could also be described as deposit feeders. *Pholoe inornata* is a carnivore and *Exogone naidina* is characterized as a herbivore as well as a carnivore. *Thyasira flexuosa* is a filter feeder as well as *Polydora ciliata* also sometime act as a suspension feeder. The dominant species therefore seems to be mainly deposit feeders.

Species diversity measures

Species richness is the simplest measure of biodiversity and is simply a count of the number of different species in a given area. Species richness can with caution be used, along with other factors, as a measure for

	Feeding Type	Rated numbers	%	Abundance	%	In top 5	%
Scoloplos armiger	S	1	16.0	2	8.3	1	14.3
Chaetozone setosa	S	2	10.5	3	8.1	3	7.3
Mediomastus fragilis	S	3	10.4	1	10.2	2	7.9
Pholoe inornata	C	4	4.4	10	2.8	4	4.4
Abra nitida	S	4	4.7	9	3.3	6	3.8
Thyasira flexuosa	F	5	4.6	8	3.9	5	4.4
Polydora ciliata	S	16	1.5	4	6.6	21	1.3
Exogone naidina	H/C	11	1.9	5	5.1	15	1.9

Table 3. Top five species from the three methods of frequency evaluation, ranked, abundance and "in top 5". The species are numbered for each method and percentages are also show. **H:** Herbivore. **C:** Carnivore. **F:** Filter-feeding **S:** Surface deposit feeding.

determining the overall health of ecosystems.

The average species number (shown in table 1) is 29 and the lowest number was 5 and the highest value was 66. There seems not to be any difference related to the sediment type but shallow waters (<20 m) and low ignition loss (<30 mg/kg) have distinctively lower average species numbers in the low values. The shallow-water depth group has an average of 23 species while the deeper groups (20-40m and >40m) have 33 and 32 respectively. The group with the lowest ignition loss shows markedly lower average species numbers than the other two groups, only 9 species compared to 35 and 28 species.

A wide variety of diversity measures are used in literature and by environmental authorities, e.g. Simpson's index and Shannon diversity index. In the present paper we use Shannon diversity index. Compared to species richness which only uses the number of species the Shannon diversity index also includes the evenness of individuals in each species.

Shannon index:

$$H = -\sum_{i=1}^{S} p_i \log p_i$$

S: The number of species.
P_i: The relative abundance of each species, calculated as the proportion of individuals of a given species to the total number of individuals in the community $\frac{n_i}{N}$
n_i: The number of individuals in each species; the abundance of each species.
N: The total number of all individuals

The average Shannon diversity index is 3.5 (Table 1). Maximum and minimum values were 5.2 and 2.0 respectively. There is no clear difference of diversity in the three sediment types. The <20 m depth group seems to have slightly lower diversity than the groups from deeper waters, 3.1 compared to 3.7 and 3.6. The same tendency seems to be with regard to ignition loss. The low value group (<30 mg/kg) has a value of 2.5 compared to 3.7 and 3.4 in the two high-value groups.

Pielou Evenness Index

$$E = \frac{H}{log_2(S)}$$

The Pielou index is a measure of how evenly distributed individuals are among the species that exist in a community. The Pielou index is defined between 0 and 1, where 1 represents a community with perfect evenness, and decreases to zero as the relative abundances of the species diverge from evenness.

The overall average value for Pielou evenness was 0.74. Lowest value was 0.43 and the highest value was 0.90. When the sediment types are compared it looks like the silt/clay average is lower than sandy and mixed sediments. Silt/clay sediments have average values of 0.69 compared to 0.76 and 0.78 for mixed sediments and sand. With depth there is no difference but low ignition loss clearly shows a more

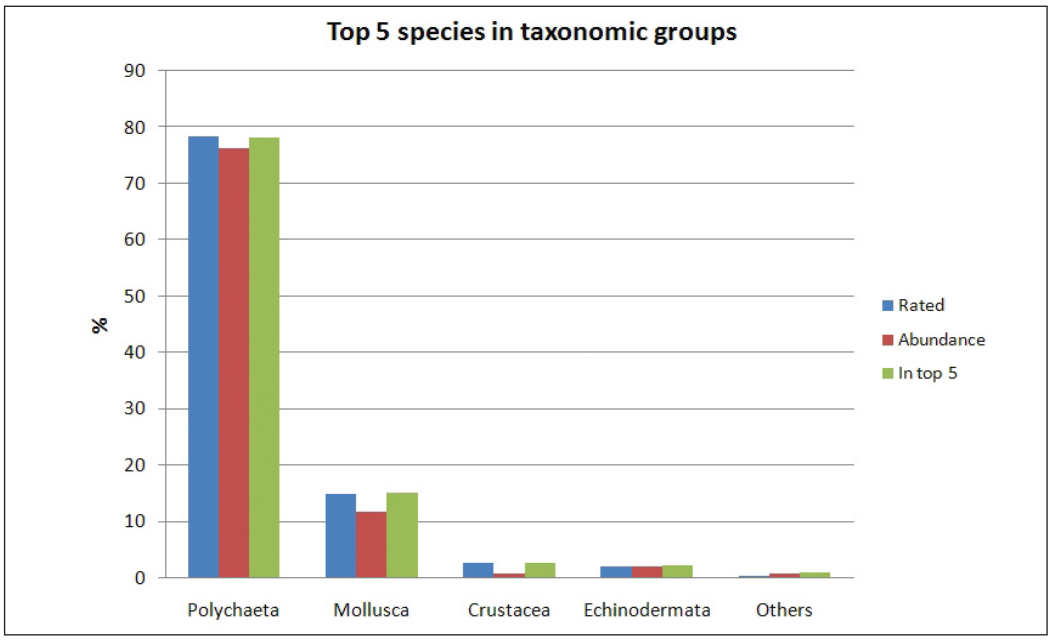


Figure 3. Percentage summation of all species which have been among the five most common species in each sample arranged in major taxonomic groups.

even distribution among individuals than higher average values for ignition loss. The <30 mg/kg group has 0.82 compared to 0.72 and 0.70.

N/S ratio

The average ratio between the number of individuals in a sample and the species number is 7.7. The lowest number was 2.0 and the highest number was 20.6 (Table 1 and Figure 2d). Sandy sediments have the lowest values compared to mixed sediments and silt/clay. Sandy sediments have an average value of 5.5 while mixed sediments and silt/clay have 7.4 and 9.9 respectively. Depth shows no clear difference between the depth groups but the middle depth group (20-40 m) has slightly higher average value. Ignition loss shows a very distinct tendency with increasing average ratio values from low to high. The low value group has a 3.8 ratio while the ratios for the two higher groups have ratio values 7.7 and 10.5 respectively.

Discussion

It is estimated that the samples in the present report are from undisturbed or low human impact habitats. All samples except those from the innermost part of Funningsfjørður (5 and 6) and Fuglafjørður (7) are sampled as undisturbed reference stations as part of monitoring impacts from salmon

Polychaeta

Species	Rated		Total		In top 5		Feeding type	Motility	Mouth-part
		%		%		%			
Scoloplos armiger	151	16,0	1434	8,3	45	14,3	S[1,]	M[1,]	X[1,]
Chaetozone setosa	99	10,5	1406	8,1	23	7,3	S[1,]	D[1,]/M[1,]	T[1,]
Mediomastus fragilis	98	10,4	1753	10,2	25	7,9	S[1,]	M[1,]	X[1,]
Pholoe inornata	43	4,4	480	2,8	14	4,4	C[1,]	M[1,]	J[1,]
Cirratulus cirratus	37	2,9	394	2,3	9	2,9	S[1,]	D[1,]/M[1,]	T[1,]
Praxillella praetermissa	31	3,3	447	2,6	11	3,5	S[1,]	S[1,]	X[1,]
Aricidea suecica	25	2,6	793	4,6	6	1,9	H[1,]/S[1,]	M[1,]	X[1,]
Capitella capitata	22	2,3	285	1,7	11	3,5	S[1,]	M[1,]	X[1,]
Spio filicornis	20	2,1	820	4,8	7	2,2	F[1,]/S[1,]	D[1,]/M[1,]	T[1,]
Scalibregma inflatum	20	2,1	381	2,2	9	2,1	S[1,]	M[1,]	X[1,]
Exogone naidina	19	1,9	876	5,1	6	1,9	H[1,]/C[1,]	M[1,]	J[1,]
Levinsenia gracilis	16	1,7	294	1,7	9	2,9	H[1,]/S[1,,]	M[1,]	X[1,]
Nephtys caeca	15	1,6	35	0,2	5	1,6	C[1,]	M[1,]	J[1,]
Pectinaria koreni	14	1,5	167	1,0	7	2,2	S[1,]	M[1,]	X[1,]
Nephtys hombergi	14	1,5	218	1,3	5	1,6	C[1,]	M[1,]	J[1,]
Polydora ciliata	14	1,5	1131	6,6	4	1,3	F[1,]/S[1,,]	D[1,]/M[1,]	T[1,]
Dipolydora quadrillobata	12	1,3	460	2,7	5	1,6	F[1,]/S[1,,]	D[1,]/M[1,]	T[1,]
Ophelina acuminata	11	1,2	179	1,0	5	1,6	S[1,]	M[1,]	X[1,]
Lanice conchilega	10	1,1	83	0,5	2	0,6	S[1,]	S[1,]	T[1,]
Goniada maculata	9	1,0	140	0,8	4	1,3	C[1,]	M[6,]	J[1,]
Nephtys ciliata	8	0,8	133	0,8	5	1,6	C[1,]	M[1,]	J[1,]
Pseudopolydora pulchra	8	0,8	155	0,9	4	1,3	F[1,]/S[1,,]	D[1,]/M[1,]	T[1,]
Syllidae sp, T187	7	0,7	141	0,8	5	1,6	C[1,]	M[1,]	J[1,]
Eumida sanguinea	7	0,7	60	0,3	2	0,6	S[1,]/C[1,]	M[1,]	X[1,]
Myriochele oculata	6	0,6	159	0,9	3	1,0	S[1,]	D[1,]	T[1,]
Ophryotrocha hartmanni	6	0,6	150	0,9	3	1,0	H[1,]/C[1,]	M[1,]	J[1,]
Anobothrus gracilis	5	0,5	41	0,2	1	0,3	S[1,]	S[1,]	T[1,]
Diplocirrus glaucus	4	0,4	142	0,8	2	0,6	F[1,]/S[1,]	D[1,]/M[1,]	T[1,]
Chone fauveli	4	0,4	10	0,1	1	0,3	F[1,]	S[1,]	T[1,]
Exogone verugera	3	0,3	45	0,3	2	0,6	H[1,]/C[1,]	M[1,]	J[1,]
Pherusa flabellata	3	0,3	32	0,2	1	0,3	F[1,]/S[1,]	D[1,]/M[1,]	T[1,]
Maldanidae sp *a*	3	0,3	23	0,1	1	0,3	S[1,]	S[1,]	X[1,]
Eteone longa	3	0,3	108	0,6	1	0,3	S[2,]/C[2,]	M[2,]	X[2,]
Owenidae sp	2	0,2	9	0,1	1	0,3	F[1,]/S[1,]	D[1,]	T[1,]
Cirratulidae sp	2	0,2	14	0,1	1	0,3	S[1,]	D[1,]/M[1,]	T[1,]
Dipolydora socialis	1	0,1	38	0,2	1	0,3	F[1,]/S[1,]	D[1,]/M[1,]	T[1,]
Travisia forbesii	1	0,1	4	0,0	1	0,3	S[1,]	M[1,]	X[1,]
Kefersteinia cirrata	1	0,1	38	0,2	1	0,3	C[1,]	M[1,]	J[1,]
Rhodine gracilior	1	0,1	45	0,3	1	0,3	S[1,]	S[1,]	X[1,]

Table 4a. Top five polychaetes from all samples showed as a rated value, total abundance and how often the species has been among the top five species. Information on feeding type, motility and mouthpart is also shown.

Feeding type: H: Herbivore. **C:** Carnivore. **F:** Filter-feeding/Suspension feeding **S:** Surface deposit feeding.
Motility: M: Motile. **D:** Discretely motile. **S:** Sessile.
Mouthparts: J: Jawed. **X:** Non-jawed. **T:** Tentaculate. **P:** Pumping.

Species	Rated		Total		In top 5		Feeding type	Motility	Mouth-part
		%		%		%			
Mollusca									
Abra nitida	44	4,7	577	3,3	12	3,8	S[3,]	D	P
Thyasira flexuosa	43	4,6	680	3,9	14	4,4	F[9,]	D	P
Crenella decussata	11	1,2	308	1,8	4	1,3	F[8,]	D	P
Arctica islandica	9	1,0	51	0,3	4	1,3	F	D	P
Leptochiton asellus	8	0,8	75	0,4	2	0,6	C[4,]/H[4,]	D[4,]	J[4,]
Chaetoderma nitidulum	6	0,6	86	0,5	3	1,0	B[4,]	D[4,]	J[4,]
Nucula nucleus	6	0,6	90	0,5	3	1,0	F	D	P
Lucicoma borealis	5	0,5	40	0,2	2	0,6	F[,]	D	P
Macoma calcaria	3	0,3	34	0,2	1	0,3	F[8,]	D	P
Mysella bidentata	3	0,3	30	0,2	1	0,3	F	D	P[5,]
Thracia myopsis	1	0,1	47	0,3	1	0,3	F	D	P
Crustacea									
Eudorellopsis deformis	14	1,5	29	0,2	4	1,3	H[11,]/C[11,]/S[11,]	M[11,]	J[11,]
Janira maculosa	3	0,3	15	0,1	1	0,3	H/C/F	M	J
Philomedes globosus	3	0,3	26	0,2	1	0,3	(C)/F	M	?
Photidae sp	3	0,3	22	0,1	1	0,3	H/C/F	M	J
Pagurus pubescens	2	0,2	19	0,1	1	0,3	C	M	J
Echinodermata									
Leptosynapta inhaerens	16	1,7	240	1,4	5	1,6	S[13,]	D[13,]	T[13,]
Amphipholis squamatus	1	0,1	53	0,3	1	0,3	C[12,]/F[12,]/S[12,]	M[12,]	J[12,]
Ophiura albida	1	0,1	14	0,1	1	0,3	C[12,]/F[12,]/S[12,]	M[12,]	J[12,]
Others									
Phoronida sp	2	0,2	59	0,3	2	0,6	F[10,]	D[10,]/S[10,]	T[10,]
Priapulus caudatus	1	0,1	76	0,4	1	0,3	C[10,]	M[10,]	J[10,]

Table 4b. Top five mollusks, crustaceans, echinoderms and others from all samples.

1. Fauchald, K. and Jumars, P.A. (1979).
2. Pleijel. F. (1993).
3. Josefson, A.B. (1986)
4. Jones, A.M. and Baxter, J.M. (1987).
5. Josefson, A.B. (1985).
6. Bøggemann, M. (2005).
7. Bodin, N. (2005).
8. Holthe, B. *et al*. (2004).
9. Duchene, J-C. and Rosenberg, R. (2001).
10. Barnes, R.D. (1987).
11. Jones, N.S. (1976).
12. Mortensen, T.H. (1927).
13. Madsen, F.J. & Hansen, B. (1994).

Rated %		
57.4	Surface deposit-feeding	B
27.9	Burrowers + Burrowers/Carnivores	B+BC
10.4	Carnivores	C
11.4	Carnivore + Burrowers/Carnivore	C+BC
11.6	Carnivore + Burrowers/Carnivore	C+BC+C/F/S
9.2	Filter feeders/Suspension feeders	F
17.0	Filter feeders/Suspension feeders (total)	F (total)
8.5	Herbivores/Carnivores	H/C+H/C/F+H/S/B

Table 5. Summarized percentages of the different feeding types from table 4a and 4b.

farms. These are usually at least 200 meters upstream from nearest impact source.

Although there are a fair amount of papers about the marine benthic fauna in Faroese waters, there are no published data from the Faroe Islands on species composition and quantity of the fauna. There are although a few reports, mostly from Skálafjørður, and a few from other fjords and a single report comparing two sites on the Faroese shelf.

Skálafjørður is a sillfjord with low oxygen concentrations in the near bottom water in the deeper parts of the fjord in late summer/early autumn. The samples taken at Glyvrar (10) in Skálafjørður are from 45-meters depth and the fauna is therefore not under influence of low oxygen concentrations (Gaard et al. 1990).

Nørrevang (1990) reported from an investigation on Faroese sillfjords. Jørgensen (1993) made a comprehensive investiga-

	Skálafjørður			**Kaldbaks-fjørður**	**Sundini south**		**Funnings fjørður**
	SK01	SK07	SK11	KA05	SU15	SU37	FU07
Phoronis sp	1	2	2	2	3		
Thyasira sp	2	3	4	3	4	1	1
Heteromastes filiformis	3	4					
Abra nitida	4	5	3	1	2	2	
Goniada maculata	5						
Myriochele oculata		1	1	4	1		
Ennucula tenuis			5	5			
Lanice conchilega					5		
Aricidea jeffreysii						3	
Nephtys ciliata						4	
Capitella capitata						5	
Chaetozone setosa							2
Diplocirrus glaucus							3
Ampharete baltica							4
Nephtys hombergi							5

Table 6. A summarized list of the 5 most abundant species from seven stations in (Nørrevang, 1990). All data are 0.1 m^2 average from tree replicate grab samples except SK01 which is from a single sample.

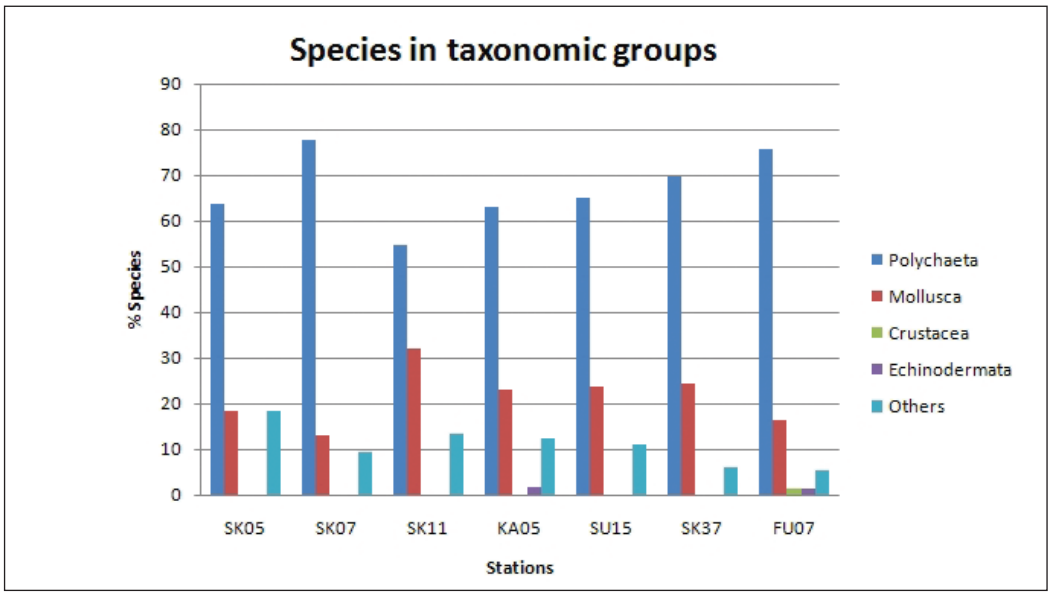


Figure 5.a. Percentage of species arranged into major taxonomic groups from seven different stations. Data from Nørrevang (1990). All data are 0.1 m^2 average from tree replicate grab samples except SK05 which is from a single sample

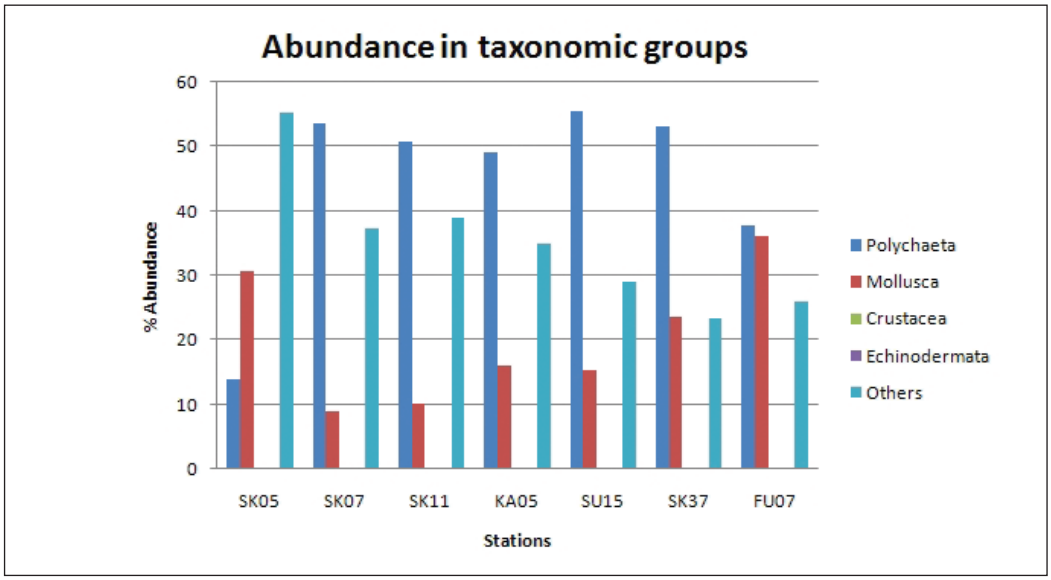


Figure 5.b. Abundance in percent arranged into major taxonomic groups from seven different stations. Data from Nørrevang (1990). All data are 0.1 m^2 average from tree replicate grab samples except SK05 which is from a single sample.

tion in Skálafjørður and compared the results with Nørrevang (1990). Sakarisson (2000) reported on benthic invertebrates in Faroese sillfjords. Josefson (2001) compared two sites on the Faroese shelf.

Species richness and abundance

Species numbers ranged from 5 to 66 but both numbers must be considered extremes. The low number was from sandy sediments with low organic content and the high number was from very mixed sediments. From Figure 2a an estimated normal range for species numbers seems to be about 20 to 45. Stations with species numbers below 20 are mostly from a single locality (Sandur) with sand/pebble sediments and very low organic content (11-14%). Four stations show distinctly higher species numbers than the rest. These are also from sand/pebble sediments but with a slightly higher organic content. The lowest number of individuals was 8 and the highest 1655. The low numbers are from the same stations which also have the lowest species numbers (Sandur). The samples with the highest numbers of individuals are from samples 7R and 7S which are from a depth of only six meters in Fuglafjørður. These two samples have a very distinct domination of *Polydora ciliata* and are clearly deviant from the other samples. This species is highly opportunistic (Gray, 1979) and high numbers of individuals can be produced within a short time.

Diversity measures

The abundance ratio (ratio between number of individuals in a sample and the species number in the same sample) was between 1.3 and 20.6 with an average value 7.7. In organically enriched sediments the abundance ratio increases with moderately higher levels of organic materials in the sediment (Pearson *et al.*, 1986). This is particularly interesting as it can be used as a quick and easy method to decide if sediments are under influence of organic enrichment. From Table 1 it can be seen that the average abundance ratio (3.8) increases from the low ignition loss group (<30 mg/kg) to 7.7 and 10.5 in the higher groups (30-60 mg/kg and >60 mg/kg respectively).

The average Shannon index was 3.5 with little variance between the different sediment types, depth and organic content in sediment. The lowest numbers were 2.0 and the highest 5.2. Shannon diversity is widely used as a measure to evaluate changes to benthic communities due to organic enrichment. In most cases the Shannon diversity is expected to decrease with increasing organic enrichment. From Table 1 it seems like low organic content in the sediment has a low Shannon index (2.5) compared to the groups with higher organic content (3.7 and 3.4). This could be explained as a low energy environment will respond positively with additional species with moderately increased organic enrichment but will fall towards zero with further enrichment. Pearson et al. (1986) showed the same tendency from Firth of Clyde (Scotland). The Shannon index should therefore be used with caution in evaluation of change in benthic communities.

Species composition

A general list of the most common species could be generated from total numbers of individuals from all samples but there is a risk that one or very few samples could disturb the general picture by a heavy domination by one species (e.g. *Polydora ciliata*). Another method is to rate each species in a sample and then add all the values for the total samples. A third and easy method is to count how many times any particular species has been among the top five species in each sample. Table 4 shows the three frequency methods evaluated. The rank frequency method showed that the top five species contain 54.0% of the total value. A simple count of individuals (abundance) showed that 48.3% of all the individuals came from the five most abundant species, and the method of counting how often each species was among the five most abundant species in each sample ("In top 5 frequency method") gave 45.3%. All three methods gave *Scoloplos armiger, Chaetozone setosa and Mediomastus fragilis* as the three most frequent species and eight species are among the top five species when all three methods are considered.

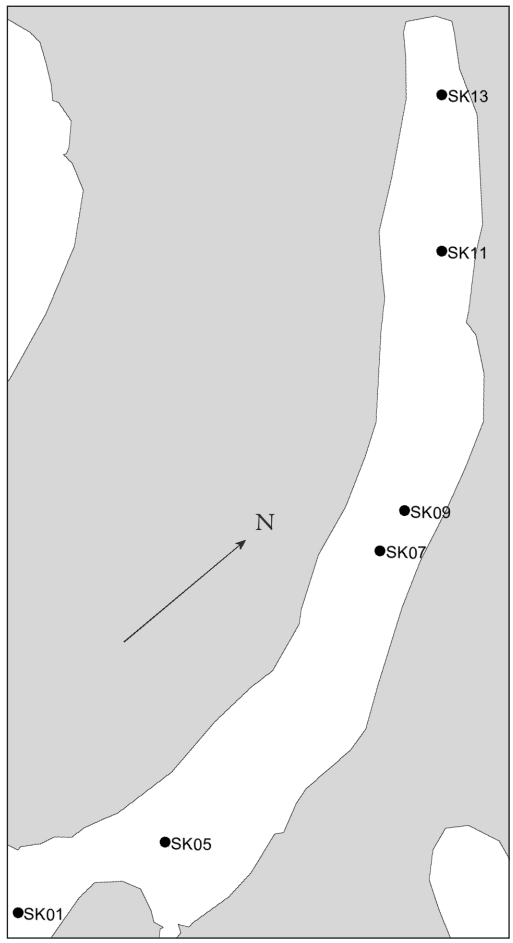


Figure 6. Skálafjørður with stations from Jørgensen (1993), Nørrevang (1990) and Sakarisson (2000)

Feeding types

From Table 3 and 4 it is evident that the most common species (*Scoloplos armiger, Mediomastus fragilis*, *Chaetozone setosa)* are deposit feeders. In soft sediments a majority of the species are expected to be living as deposit feeders compared to a tendency towards a shift to filter feeding in hard substrate habitats (Levinton, 2001).

From Table 4 it can be seen that the less common species are a mixture of different feeding types.

Comparison with other Faroese investigations

Bloch *et al*. (1986) took samples from all the major fjords in the Faroe Islands and analyzed for different physical and chemical parameters as well as grab samples for faunal analyses were taken. Due to incomplete identification (polychaetes are not included) it is not possible to say anything about any diversity measure. It is although possible to recognize the most abundant of species from the other taxonomic groups. *Abra nitida*, *Thyasira* sp. and *Ennucula tenuis* are clearly among the most abundant.

Nørrevang (1990) took samples from seven different localities in Faroese fjords, three stations from Skálafjørður, one station from Kaldbaksfjørður, two from Sundini and one in Funningsfjørður. All stations were sampled with three replicates except one station from Skálafjørður (only one sample) and all samples were 0.1 m^2 grab samples. He found 97 species in total. 69.1% of the total species number were polychaetes, 19.6% molluscs, 1.0 % crustaceans, 2.1% echinoderms and 8.2 % of the species were from other groups. Compared to the total findings in the present investigation (Table 2) it is a very good match. This is not the case when we look at the number of individuals. 45.5% of the total number of individuals (7199) were polychaetes, 25.9% molluscs, 0.01% crustaceans, 0.04% echinoderms and 28.6% from other groups. Compared to the data in Table 2 it can be seen that the polychaet group has a much smaller number while the molluscs and especially the other groups have much higher numbers than in the present paper. The average abundance/species ratio was 19.7 (2.2 - 55.6) compared to 7.7 (1.3 - 20.6) in the present paper (Table 1). A closer look at each separate sample shows comparable values to the values found in this investigation except those from Skálafjørður and Kaldbaksfjørður which are much higher than

	Fjord entrance	**Deepest part of fjord**			**Innermost part**
	SK01	SK05	SK07	SK11	SK13
Myriochele oculata	1	1	1	1	3
Paraonis. gracilis	2		5	5	
Leptosynapta inhaerens	3				
Ophiothrix fragilis	4				
Rhodine gracilor	5				
Heteromastes filiformis		2	4	2	4
Phoronis cf. psammophila		3			
Thyasira flexuosa/gouldii		4	2	3	2
Goniada maculata		5			
Abra nitida			3	4	1
Diplocirrus glaucus					5

Table 7. List of the 5 most abundant species from five stations in Skálafjord (Jørgensen, 1993)

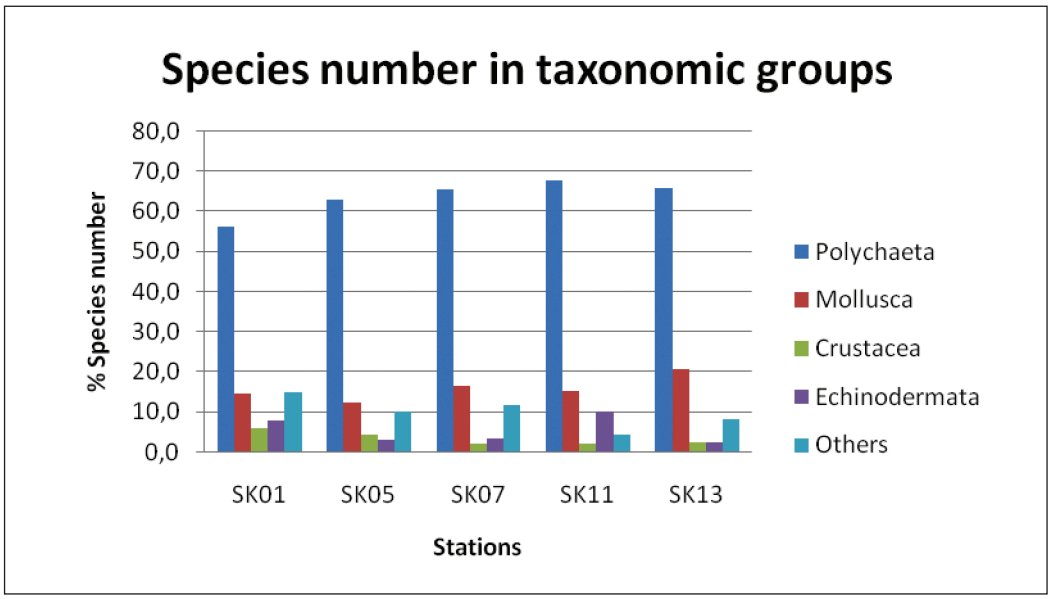


Figure 7a. Average species numbers in percent arranged in major taxonomic groups. Five replicate grab samples (0.1 m^2). Data from Jørgensen (1993).

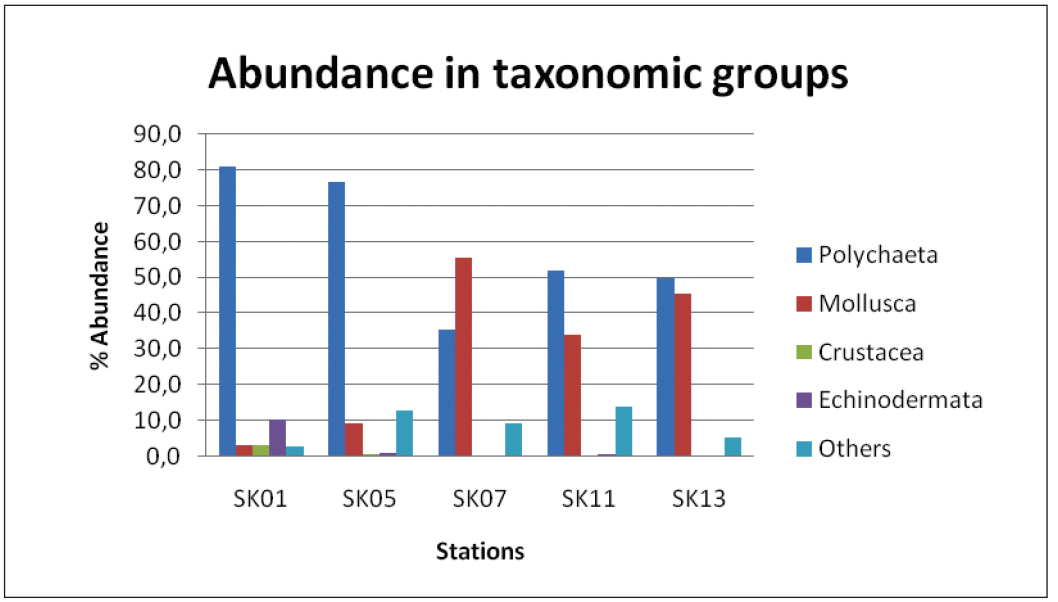


Figure 7b. Average abundance in percent arranged in major taxonomic groups. Five replicate grab samples (0.1 m^2). Data from Jørgensen (1993).

the others. After a scrutiny of the individuals from these samples it is obvious that two species are the major contributors to the high N/S ratio, *Myriochele* sp. and *Phoronis* sp. These two species are sometimes found in very large numbers and have a patchy distribution on the seabed (Oug, 2000). The most abundant species were *Myriochele* sp.*, Phoronis sp, Abra nitida, Thyasira* spp.*, Ennucula (Nuculoma) tenuis, Heteromastes filiformis (*probably misidentified with *Mediomastes fragilis), Chaetozone setosa* and *Diplocirrus glaucus.* Compared to the present paper *Myriochele* sp.*, Phoronis* sp. *and Ennucula (Nuculoma) tenuis* are not among the five most frequent species. The Shannon indices for each separate sample were between 1.67 and 3.81 with an average of 2.51 which is clearly lower than the average of 3.5 in this paper. The Pielou evenness index is also quite low (0.62) compared to 0.74 in this paper.

A general comparison between the results from Nørrevang (1990) and the present paper shows lower diversity indices and a higher dominance by a few species. Also the composition of species is a little different. A likely explanation for this difference could be that the sample stations in Nørrevang (1990) were placed in the deepest parts of the fjords where the organic content of the sediments are high and the oxygen conditions at least in late summer are unfavorable.

Jørgensen (1993) sampled five localities in Skálafjørður and analyzed for macrofauna and physical/chemical parameters. From the data she concluded that the benthic fauna could be separated into three different community types. One shallow water community type on the sill at the fjord entrance, another community type in the deepest part of the fjord and a third community type at the innermost part of the fjord. A total of about 107 different species from 12 different phyla were identified from all stations. Eleven different species were among the five most common species from each station (Table 7). Compared with the present paper there are a few species with a common high frequency, they are *Heteromastes filiformis* (probably identical with *Mediomastus fragilis), Thyasira flexuosa/gouldii* and *Abra nitida.* The average species number per 0.1 m^2 was 34 (22-49) and this is a little higher compared to the present paper (Table 1) which was 29 (5-66). The average abundance per 0.1 m^2 was 814 (361-2293) which is about three times higher compared to the present paper (Table 1). The average ratio between number of individuals and the number of species per sample was 23.8 (9.5-46.8) which also is about three times the value found in this paper (Table 1). If we look at the distribution of the species number in major taxonomic groups we get the usual picture with a heavy domination of polychaetes, followed by a distinctly lower number of molluscs. This is comparable with our findings.

Sakarisson (2000) investigated two stations from Skálafjord sampled in 1998 and one station from Kaldbaksfjørður sampled in 1999. All samples were sampled with 0.1 m^2 grab and stations SK05 and SK09

had three replicates while KA05 had two replicates. The diversity measures are internally very different and a summation of all samples must be taken with caution. Average species number for all samples was 16 (1 - 38) and average abundance was 240 (13 - 707). The average ratio between number of individuals and number of species was 8.2 (2 -20.6). Species numbers are a little less compared with the present investigation (Table 1) but both abundance and N/S ratio were about the same. The average Shannon diversity index was 2.86 (0.28 - 3.65) and the average Pielou evenness index was 0.68 (0.46 - 0.84) which is a little below the values found in this paper (table 1). The most common species were *Abra nitida, Thyasira* sp.*, Mediomastus fragilis, Ampharete baltica* and *Scalibregma inflatum*.

Nørrevang (1988) analyzed samples from Tórshavn harbour for macro fauna. These samples are not fully comparable to the other data mentioned in this paper because of a different sample size. The samples are also heavily impacted from harbor activity and sewer outlets. From the reference station (about 20 m) Nørrevang identified *Thyasira flexuosa, Ennucula tenuis, Thyasira gouldii*, *Praxillella praetermissa,* and *Cirratulis cirrata* as the most common species.

Josefson (2001) collected samples from two soft bottom localities on the Faroese shelf. Thirty-one grab samples were sampled on Skeivibanki (south west of Suðuroy) and 15 grab samples were sampled from a locality east of Suðuroy. All samples were 0.1 m^2. It is not possible to see exact numbers from the report but from the figures it is clear that the abundance is about 25-30% lower than the other data in mentioned in this paper. The total species number was above 200 which is a little less compared to the present investigation. The distribution among the major taxonomic groups seems to be a little different from shallow water samples. The usual heavy dominance by polychaetes is less pronounced, about 40-50%. Molluscs and others are about equal in total abundance.The most abundant species on Skeivibanki were *Onchnesoma steenstrupi, Thyasira ferruginea, Thysasira obsoleta, Caudofoveata* sp. and *Paramphinome jeffreysii* and the most abundant species east of Suðuroy were *Onchnesoma steenstrupi, Golfingia* sp.*, Lumbrineris* sp.*, Paradiopatra quadricuspis* and *Paramphinome jeffreysii.* Compared to the species from shallow waters none of the species are the same.

Conclusion

The main purpose with this paper has been to get a general picture of the macro fauna composition in Faroese fjords and their connected diversity measures. We investigated species composition and found a clear dominance of a few species (*Scoloplos armiger, Mediomastus fragilis, Thyasira flexuosa* and *Abra nitida*) which is only partly comparable with other investigations, Nørrevang (1990), Jørgensen (1993), Sakarisson (2000). We gave an overview of species numbers, abundance, abundance ratio, Shannon index, Pielou

index and ES_{100} index and compared these with previous investigations and found a broad variation mostly due to the differences in physical environment. Organized into major taxonomic groups the data showed a very clear dominance of polychaetes both in species numbers and in abundance.

References

Barnes, R.D. 1987. *Invertebrate Zoology.* 5th Edition. Saunders College Publishing.

Bloch, D., Hansen, B., Joensen, H.P. and Poulsen M. 1986. *Fjarðakanningar 1985*.

Bodin, N. 2005. *Contamination des crustacés décapodes par les composés organohalogénés. Etude détaillée de la bioaccumulation des PCB chez l'araignée de mer Maja brachydactyla*. Docteur de l'Universite de Bretagne Occidentale Specialite Oceanologie biologique.

Bøggemann, M. 2005. *Revision of the Goniadidae (Annelida, Polychaeta).* Abhandlung des Naturwissenschaftlichen Vereins in Hamburg (NF) 39 Goecke & Evers Keltern-Weiler.

Duchene, J-C. and Rosenberg, R. 2001. Marine benthic faunal activity patterns on a sediment surface assessed by video numerical tracking. *Marine Ecology Progress Series* 223: 113-119.

Fauchald, K. and Jumars, P.A. 1979. The Diet of Worms: A Study of Polychaete Feeding Guilds. *Oceanogr. Mar. Biol. Ann. Rev.* 17: 193-284.

Gaard et al. 1990. Dálking og oxygentrot í føroyskum gáttarfirðum. *Fiskirannsóknir 6.*

Gray, J.S. 1979. Pollution-induced changes in populations. *Philosophical transactions of the Royal Society.* 286: 545-561.

Gray, J.S. 1981. *The ecology of marine sediments*. Cambridge university press.

Holthe, B., Oug, E. and Cochrane, S. 2004. Depth-related benthic macrofaunal biodiversity patterns in three undisturbed north Norwegian fjords. *Sarsia* 89: 91-101

Jensen, Ad.S., Lundbeck, W. †, Mortensen, Th., Spärck, R. † and Tuxen, S.L. (eds.) 1928-1971. *The Zoology of the Faroes* I-III.

Jones, A.M. and Baxter, J.M. 1987. Molluscs: Caudofoveata Solenogastres Polyplacophora and Scaphopoda. *Synopses of the British Fauna No.37.* The Linnean Society of London and The Estuarine and Brackish-Water Sciences Association.

Josefson, A.B. 1985. Distribution of Diversity and Functional Groups of Marine Benthic Infauna in the Skagerrak (Eastern North Sea) – Can larval availability affect diversity?. *Sarsia* 70: 229-249

Josefson, A.B. 1986. Temporal Heterogeneity in Deepwater Soft-sediment Benthos – an Attempt to Reveal Temporal Structure. Estuarine, Coastal and Shelf Science 23: 147-169

Josefson, A.B. 1992. Benthic macrofaunal structure - A comparison between the Faroe shelf and some North Sea areas. In: *Árbok 1990-91*. Norðurlandahúsið í Føroyum. Tórshavn: 53-100.

Josefson, A. 2001. Macrofauna in soft sediments on the Faroe shelf. In: Bruntse G. and Tendal O.S. (eds). *Marine biological investigations and assemblages of benthic invertebrates from the Faroe Islands.* Report. Kaldbak Marine Biological Laboratory.

Jørgensen, L.L. 1993. *Kvantitativ kortlægning af macrobenthos i en tærskelfjord på Færøerne*. Master thesis. Bergen University.

Levinton, J.S., 2001. Benthic life habits. In: *Marine biology - Function, biodiversity and ecology*. Oxford university press.

Madsen, F.J and Hansen, B. 1994. Echinodermata Holothurioidea Scandinavian University Press *MIOS nr.9*

Mortensen, T.H. 1927. *Handbook of the Echinoderms of the British Isles*. Humphrey Milford Oxford University Press 471pp.

Nørrevang A. 1988. *Kanning av dálkingarstøðuni á vágni og teimum størru áunum í Tórshavn*. Býarverkfrøðingurin.

Nørrevang, A. 1990. Botndýralívið á føroyskum gáttarfirðum. *Fiskirannsóknir* 6: 259-286.

Nørrevang, A., Brattegard, T., Josefson, A.B., Sneli J.-A. and Tendal, O.S. 1994. List of BIOFAR stations. *Sarsia* 79: 165-180.

Oug, E. 2000. Soft -bottom macrofauna in the high-latitude ecosystem of Balsfjord, northern Norway: Species composition, community structure and temporal variability. *Sarsia* 85: 1-13.

Pearson, T.H. 1978. Macrobenthic succession in relation to organic enrichment and pollution of the marine environment. *Oceanogr. Mar. Biol. Rev.*16: 229-311.

Pearson, T.H. 1983. Objective selection of sensitive species indicative of pollution-induced change in benthic communities. 2. Data analyses. *Marine ecology* 12: 237-255.

Pearson, T.H., Ansell, A.D. and Robb, L. 1986. The benthos of the deeper sediments of Firth of Clyde, with particular reference to organic enrichment. *Proceed-*

ings of the Royal Society of Edinburg 90B: 329-350.

Pleijel, F. 1993. Polychaeta Phyllodocidae Scandinavian University Press *MIOS nr.8*.

Sakarisson, S.J. 2000. *Bunddyr i færøske tærskelfjorde.* Thesis. The University of the Faroe Islands.

Tendal, O.S., Brattegaard, T.,Nørrevang, A. and Sneli, J-A. 2005. The BIOFAR 1 programme: Background,accomplishment and some outcome from inter-Nordic benthos investigations around the Faroe Islands (NE Atlantic). *BIOFAR proceedings* 2005: 9-32.

Station		1A	1B	2A	2B	3A	3B
Lat. N		62,02518	62,02518	62,18275	62,18275	62,18121	62,18121
Long. W		7,09698	7,09698	6,54695	6,54695	6,55129	6,55129
Depth		20 m	20 m	51m	51m	50m	50m
Sed. type		Sand/Pebble	Sand/Pebble	Sand/Silt	Sand/Silt	Sand/Silt	Sand/Silt
Ign. loss		26,0	26,0	37,0	37,0	40,0	40,0
Grab vol.		46%	46%	52%	46%	46%	52%
Location		Miðvágur	Miðvágur	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður
Year		2003	2003	2002	2002	2002	2002
				Index			
N		89	85	200	229	204	140
S		16	14	44	44	39	26
N/S		5,6	6,1	4,5	5,2	5,2	5,4
H'(log2)		2,85	2,97	4,43	4,50	4,19	3,91
J'		0,71	0,78	0,81	0,82	0,79	0,83
ES_{100}		-	-	30,97	30,65	28,07	23,20
Polychaeta		38% S, 52% N	43% S, 67% N	71% S, 74% N	68% S, 72% N	74% S, 83% N	65% S, 68% N
Mollusca		50% S, 45% N	43% S, 27% N	14% S, 17% N	14% S, 18% N	10% S, 8% N	19% S, 22% N
Crustacea		13% S, 3% N	14% S, 6% N	2% S, 2% N	7%S, 3% N	5% S, 5% N	4% S, 1% N
Echin.		-	-	7% S, 6% N	2% S, 4% N	5% S, 2% N	4% S, 8% N
Others		-	-	7% S, 2% N	9% S, 3% N	5% S, 1% N	8% S, 1% N
				Top 10			
	1	***S. armiger(33.7%)***	***S. armiger(38,8%)***	***C. cirratus(17.0%)***	***P.inornata(14.0%)***	***C. cirratus(21.6%)***	***C. cirratus(20.0%)***
	2	***C. decussata(30.3%)***	***C. decussata(12.9%)***	***P. inornata(12.5%)***	***C. cirratus(11.8%)***	***(2) P. inornata(11.8%)***	***P. inornata(12.9%)***
	3	***P. pulchra(6.7%)***	***(3)C. capitata(9.4%)***	***Maldanidae* sp. *A(9.0%)***	***T. flexuosa(11.4%)***	***(2) P. praetermissa(11.8%)***	***T. flexuosa(12.1%)***
	4	***(4) Oweniidae* sp.*(4.5%)***	***(3) P. pulchra(9.4%)***	***T. flexuosa(8.5%)***	***P. praetermissa(7.9%)***	***P. koreni(6.4%)***	***P. praetermissa(9.3%)***
	5	***(4)A. nitida(4.5%)***	***T. myopsis(5.9%)***	***P. koreni(6.0%)***	***M. oculata(7.0%)***	***C. nitidulum(5.4%)***	***L. inhaerens(7.9%)***

Table 8.a. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	4A	4B	5A	5B	5C	5D
Lat. N	62,17808	62,17808	62,15394	62,15394	62,15394	62,15394
Long. W	6,55483	6,55483	6,57290	6,57290	6,57290	6,57290
Depth	62m	62m	17m	17m	17m	17m
Sed. type	Silt	Silt	Mixed	Mixed	Mixed	Mixed
Ign. loss	49,0	49,0	31,4	31,4	31,4	50,5
Grab vol.	72%	65%	80%	70%	90%	72%
Location	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður
Year	2002	2002	2001	2001	2001	2002
			Index			
N	112	155	206	527	442	74
S	23	18	27	41	44	23
N/S	4,9	8,6	7,6	12,9	10,0	3,2
H'(log2)	3,15	2,92	3,32	3,41	3,84	3,48
J'	0,70	0,70	0,70	0,64	0,70	0,77
ES_{100}	21,90	15,22	20,44	19,77	24,02	-
Polychaeta	57% S, 81% N	61% S, 78% N	74% S, 87% N	76% S, 97% N	77% S, 94% N	70% S, 88% N
Mollusca	22% S, 12% N	39% S, 22% N	22% S, 10% N	17% S, 2% N	9% S, 3% N	26% S, 11% N
Crustacea	-	-	4% S, 2% N	2% S, 0% N	5% S, 2% N	4% S, 1% N
Echin.	9% S, 4% N	-	-	-	2% S, 0% N	-
Others	13% S, 3% N	-	-	5% S, 1% N	7% S, 1% N	-
			Top 10			
1	***C. cirratus(47.3%)***	***C. cirratus(57.4%)***	***M. fragilis(37.4%)***	***M. fragilis(34.7%)***	***M. fragilis(28.1%)***	***M. fragilis(25.7%)***
2	***(2)P. koreni(6.3%)***	***P. inornata(11.6%)***	***S. armiger(19.0%)***	***S. armiger(15.2%)***	***S. armiger(18.3%)***	***(2)S. armiger(18.9%)***
3	***(2)P. inornata(6.3%)***	***D. exuleta(10.3%)***	***L. assellus(6.3%)***	***E. longa(13.3%)***	***(3) C. capitata(7.2%)***	***(2)N. hombergi(18.9%)***
4	***(4) Limopsis borealis (5.4%)***	***L. gracilis(7.7%)***	***N. hombergi(4.9%)***	***C. capitata(6.6%)***	***(3) L. gracilis(7.2%)***	***O. acuminata(4.1%)***
5	***(4) P. praetermissa(5.4%)***	***P. koreni(6.5%)***	***C. capitata(3.9%)***	***L. gracilis(6.3%)***	***N. ciliata(5.0%)***	***(5)N. caeca(2.7%)***

Table 8.b. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	5E	5F	5G	5H	5I	6A
Lat. N	62,15394	62,15394	62,15394	62,15394	62,15394	62,15000
Long. W	6,57290	6,57290	6,57290	6,57290	6,57290	6,57055
Depth	17m	17m	17m	17m	17m	23m
Sed. type	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed
Ign. loss	50,5	50,5	-	-	-	62,1
Grab vol.	52%	46%	62%	46%	46%	60%
Location	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður
Year	2002	2002	2003	2003	2003	2001
			Index			
N	386	227	79	85	93	170
S	39	35	30	23	26	24
H'(log2)	3,04	3,81	4,42	3,73	3,87	3,56
N/S	9,9	6,5	2,6	3,7	3,6	7,1
J'	0,57	0,74	0,90	0,82	0,82	0,78
ES_{100}	20,33	25,05	-	-	-	20,34
Polychaeta	67% S, 88% N	63% S, 87% N	57% S, 67% ind	74% S, 88% N	65% S, 72% N	58% S, 64% N
Mollusca	23% S, 9% N	23% S, 9% N	27% S, 19% N	9% S, 5% N	19% S, 15% N	17% S, 29% N
Crustacea	3% S, 1% N	3% S, 0% N	3%, S 4% N	4% S, 4% N	4% S, 3% N	-
Echin.	3% S, 0% N	-	7% S, 8% N	9% S, 2% N	12% S, 10% N	4% S, 1% N
Others	5% S, 2% N	11% S, 3% N	7% S, 3% N	4% S, 1% N	-	21% S, 6% N
			Top 10			
1	***M. fragilis(46,9%)***	***M. fragilis(28,2%)***	***S. armiger(20,3%)***	***M. fragilis(22,4%)***	***S. armiger(29,0%)***	***A. nitida(24,7%)***
2	***S. armiger(18,4%)***	***S. armiger(15,4%)***	***(2)C. fauveli(6,3%)***	***S. armiger(18,8%)***	***N. nitida(9,7%)***	***N. hombergi(17,6%)***
3	***L. gracilis(6,5%)***	***L. gracilis(9,3%)***	***(2)M. calcaria(6,3%)***	***E. naidina(11,8%)***	***G. maculata(6,5%)***	***S. armiger(13,5%)***
4	***N. nucleus(3,1%)***	***G. maculata(7,5%)***	***(4)G. maculata(5,1%)***	***G. maculata(8,2%)***	***(4)M. fragilis(5,4%)***	***N. ciliata(10,0%)***
5	***(5)E. naidina(2,6%)***	***T187 Syllidae sp(6,6%)***	***(4)O. albida(5,1%)***	***(5)L. gracilis(3,5%)***	***(4)N. ciliata(5,4%)***	***L. gracilis(4,7%)***

Table 8. c. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	6B	6C	6D	6E	6F	6G
Lat. N	62,15000	62,15000	62,15000	62,15000	62,15000	62,15000
Long. W	6,57055	6,57055	6,57055	6,57055	6,57055	6,57055
Depth	23m	23m	23m	23m	23m	23m
Sed. type	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed
Ign. loss	62,1	62,1	35,1	35,1	35,1	-
Grab vol.	80%	80%	65%	52%	52%	44%
Location	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður	Funningsfjørður
Year	2001	2001	2002	2002	2002	2003
			Index			
N	234	256	191	240	226	274
S	28	36	32	33	28	29
N/S	8,4	7,1	6,0	7,3	8,1	9,4
H'(log2)	3,74	3,97	4,13	4,02	3,73	3,80
J'	0,78	0,77	0,83	0,80	0,78	0,78
ES_{100}	21,61	25,04	25,09	23,76	21,14	20,61
Polychaeta	64% S, 68% N	72% S, 64% N	66% S, 69% N	70% S, 77% N	79% S, 79% N	76% S, 70% N
Mollusca	25% S, 29% N	14% S, 29% N	19% S, 18% N	21% S, 10% N	11% S, 17% N	14% S, 24% N
Crustacea	-	-	-	-	-	3% S, 0% N
Echin.	4% S, 0% N	3% S, 2% N	3% S, 10% N	3% S, 11% N	4% S, 1% N	3% S, 3% N
Others	7% S, 2% N	11% S, 5% N	13% S, 3% N	6% S, 2% N	7% S, 3% N	3% S, 2% N
			Top 10			
1	*A. nitida(24,4%)*	*A. nitida(26,2%)*	*P. praetermissa(17,3%)*	*S. armiger(19,2%)*	*S. armiger(23,5%)*	*A. nitida(20,1%)*
2	*S. armiger(17,9%)*	*S. armiger(13,3%)*	*L. inhaerens(10,5%)*	*P. praetermissa(12,9%)*	*P. koreni(13,7%)*	*M. fragilis(17,9%)*
3	*N. hombergi(11,1%)*	*N. ciliata(8,6%)*	*S. inflatum(9,9%)*	*L. inhaerens(10,8%)*	*P. praetermissa(12,8%)*	*(3)D. glaucus(9,1%)*
4	*(4)S. inflatum(5,6%)*	*N. hombergi(8,2%)*	*S. armiger(8,9%)*	*S. inflatum(10,0%)*	*A. nitida(8,4%)*	*(3)P. praetermissa(9,1%)*
5	*(4)L. gracilis(5,6%)*	*P. koreni(5,5%)*	*(5)P. inornata(7,9%)*	*T187 Syllidae sp(6,3%)*	*T. flexuosa(8,0%)*	*S. armiger(8,0%)*

Table 8.d Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	6H	6I	7A	7B	7C	7D
Lat. N	62,15000	62,15000	62,13788	62,13788	62,14334	62,14195
Long. W	6,57055	6,57055	6,48097	6,48097	6,48988	6,48859
Depth	23m	23m	27m	27m	13m	11m
Sed. type	Mixed	Mixed	Sand	Sand	Silt	Silt
Ign. loss	-	-	41,6	41,6	66,6	60,4
Grab vol.	46%	46%	65%	59%	65%	52%
Location	Funningsfjørður	Funningsfjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður
Year	2003	2003	2003	2003	2003	2003
			Index			
N	348	345	485	328	225	407
S	32	39	46	34	26	34
N/S	10,9	8,8	10,5	9,6	8,7	12,0
H'(log2)	3,87	4,05	3,46	3,48	3,33	2,99
J'	0,77	0,77	0,63	0,68	0,71	0,59
ES_{100}	21,32	23,87	22,39	22,35	19,02	17,44
Polychaeta	66% S, 62% N	77% S, 65% N	63% S, 78% N	68% S, 74% N	65% S, 92% N	65% S, 96% N
Mollusca	16% S, 29% N	13% S, 17% N	20% S, 20% N	21% S, 23% N	15% S, 4% N	18% S, 2% N
Crustacea	-	-	7% S, 1% N	6% S, 2% N	8% S, 1% N	12% S, 2% N
Echin.	6% S, 1% N	5% S, 16% N	2% S, 0% N	3% S, 0% N	4% S, 0% N	6% S, 0% N
Others	13% S, 3% N	5% S, 3% N	9% S, 1% N	3% S, 0% N	8% S, 3% N	-
			Top 10			
1	***A. nitida(24,4%)***	***P. praetermissa(16,8%)***	***S. filicornis(41,9%)***	***S. filicornis(38,1%)***	***A. suecica(29,8%)***	***C. setosa(45,4%)***
2	***M. fragilis(12,6%)***	***L. inhaerens(15,4%)***	***T. flexuosa(11,5%)***	***T. flexuosa(14,6%)***	***S. armiger(15,1%)***	***A. suecica(12,3%)***
3	***(3)P. praetermissa(8,0%)***	***A. nitida(12,5%)***	***C. cirratus(8,2%)***	***C. cirratus(9,5%)***	***(3)M. fragilis(14,2%)***	***(3)M. fragilis(9,3%)***
4	***(3)S. armiger(8,0%)***	***S. armiger(9,0%)***	***A. nitida(5,4%)***	***A. nitida(4,3%)***	***(3)C. setosa(14,2%)***	***(3)P. quadrilobata(9,3%)***
5	***D. glaucus(7,8%)***	***M. fragilis(8,1%)***	***R. gracilior(4,5%)***	***P. inornata(3,4%)***	***P. quadrilobata(4,0%)***	***S. armiger(5,7%)***

Table 8. e. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	7E	7F	7G	7H	7I	7J
Lat. N	62,14111	62,14449	62,14449	62,14372	62,14384	62,14274
Long. W	6,48797	6,48600	6,48600	6,48433	6,48391	6,48246
Depth	10m	17m	17m	21m	19m	19m
Sed. type	Shell sand	Clay/Silt	Clay/Silt	Clay/Silt	Clay/Silt	Silt
Ign. loss	34,3	81,2	81,2	-	-	58,5
Grab vol.	46%	100%	100%	100%	100%	79%
Location	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður
Year	2003	2003	2003	2003	2003	2003
			Index			
N	480	268	325	192	141	377
S	36	24	29	25	23	27
N/S	13,3	11,2	11,2	7,7	6,1	14,0
H'(log2)	2,44	3,16	3,46	3,32	3,76	2,96
J'	0,47	0,69	0,71	0,71	0,83	0,62
ES_{100}	17,76	16,03	19,02	19,53	21,09	15,88
Polychaeta	75% S, 96% N	83% S, 97% N	86% S, 93% N	88% S, 94% N	83% S, 94% N	74% S, 97% N
Mollusca	6% S, 1% N	13% S, 1% N	10% S, 2% N	8% S, 5% N	4% S, 2% N	15% S, 3% N
Crustacea	11% S, 1% N	-	-	-	4% S, 1% N	4% S, 0% N
Echin.	6% S, 0% N	-	-	-	-	-
Others	3% S, 2% N	4% S, 1% N	3% S, 5% N	4% S, 1% N	9% S, 2% N	7% S, 1% N
			Top 10			
1	*P. quadrilobata(64,4%)*	*C. setosa(28,4%)*	*M. fragilis(26,8%)*	*C. setosa(36,5%)*	*(1)C. setosa(19,1%)*	*A. suecica(40,8%)*
2	*M. fragilis(6,0%)*	*M. fragilis(24,3%)*	*C. setosa(21,5%)*	*S. armiger(16,1%)*	*(1)S. armiger(19,1%)*	*M. fragilis(18,0%)*
3	*C. setosa(5,6%)*	*A. suecica(10,1%)*	*A. suecica(11,4%)*	*M. fragilis(8,9%)*	*M. fragilis(11,3%)*	*S. armiger(10,1%)*
4	*S. armiger(4,0%)*	*P. quadrilobata(9,7%)*	*P. quadrilobata(7,7%)*	*S. inflatum(6,8%)*	*(4)C. capitata(6,4%)*	*C. setosa(8,8%)*
5	*K. cirrata(2,9%)*	*S. armiger(7,5%)*	*P. caudatus(5,2%)*	*C. capitata(4,2%)*	*(4)O. hartmanni(6,4%)*	*C. capitata(3,7%)*

Table 8.f. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	7K	7L	7M	7N	7O	7P
Lat. N	62,14274	62,14117	62,14117	62,13596	62,13596	62,14258
Long. W	6,48246	6,48450	6,48450	6,47547	6,47547	6,48614
Depth	20m	26m	26m	27m	27m	24m
Sed. type	Silt	Silt	Silt	Silt	Silt	Clay
Ign. loss	58,5	77,1	77,1	45,3	45,3	74,8
Grab vol.	72%	100%	100%	46%	39%	100%
Location	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður	Fuglafjørður
Year	2003	2003	2003	2003	2003	2003
			Index			
N	620	376	287	213	117	239
S	30	34	33	33	28	21
N/S	20,7	11,1	8,7	6,5	4,2	11,4
H'(log2)	2,10	3,90	3,83	4,09	4,27	2,54
J'	0,43	0,77	0,76	0,81	0,89	0,58
ES_{100}	14,61	21,75	21,40	24,59	26,57	14,39
Polychaeta	90% S, 98% N	82% S, 78% N	79% S, 81% N	64 S, 61% N	68 S, 63% N	76% S, 95% N
Mollusca	7% S, 2% N	9% S, 17% ind	9% S, 15% N	24% S, 32% N	14% S, 23% N	10S, 3% N
Crustacea	3% S, 0% N	-	3% S, 0% N	6% S, 4% N	11 S, 11% N	-
Echin.	-	3% S, 0% N	3% S, 2% N	6% S, 2% N	7% S, 3% N	5 S, 1% N
Others	-	6% S, 4% N	6% S, 1% N	-	-	10S, 3% N
			Top 10			
1	*A. suecica(69,4%)*	*C. setosa(20,2%)*	*C. setosa(17,4%)*	*L. conchilega(19,7%)*	*L. conchilega(12,8%)*	*C. setosa(54,0%)*
2	*C. setosa(5,5%)*	*T. flexuosa(15,7%)*	*T. flexuosa(13,9%)*	*C. nitidulum(11,7%)*	*T. flexuosa(11,1%)*	*S. inflatum(13,8%)*
3	*S. armiger(4,8%)*	*O. hartmanni(9,8%)*	*S. armiger(12,9%)*	*T. flexuosa(9,4%)*	*Photidae sp(9,4%)*	*C. capitata(5,9%)*
4	*E. naidina(3,4%)*	*C. capitata(9,6%)*	*O. hartmanni(11,1%)*	*(4)P. inornata(7,0%)*	*P. inornata(7,7%)*	*S. armiger(5,4%)*
5	*M. fragilis(2,4%)*	*S. inflatum(7,7%)*	*S. inflatum(10,8%)*	*(4)P. pulchra(7,0%)*	*C. nitidulum(6,8%)*	*T187Syllidae sp(4,2%)*

Table 8.g. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	7Q	7R	7S	8A	8B
Lat. N	62,14258	62,14474	62,14474	62,10940	62,10940
Long. W	6,48614	6,48934	6,48934	6,43030	6,43030
Depth	24m	6m	6m	39m	39m
Sed. type	Clay	Silt/Sand	Silt/Sand	Clay	Clay
Ign. loss	74,8	29,0	29,0	54,0	54,0
Grab vol.	100%	79%	52%	46%	39%
Location	Fuglafjørður	Fuglafjørður	Fuglafjørður	Gøtuvík	Gøtuvík
Year	2003	2003	2003	2002	2002
			Index		
N	362	1655	1226	198	179
S	22	39	30	23	19
N/S	16,5	42,4	40,9	8,6	9,4
H'(log2)	3,02	2,79	2,71	2,87	2,94
J'	0,68	0,53	0,55	0,64	0,69
ES_{100}	14,34	13,14	12,74	17,28	14,69
Polychaeta	86% S, 93% N	69% S, 79% N	63% S, 89% N	78% S, 95% N	90% S, 97% N
Mollusca	5% S, 3% N	18 S, 19% N	20% S, 7% N	13% S, 3% N	11% S, 3% N
Crustacea	-	10% S, 1% N	13% S, 3% N	-	-
Echin.	-	-	0% S, 0% N	4% S, 1% N	-
Others	9% S, 4% N	3% S, 0% N	-	4% S, 1% N	-
			Top 10		
1	***C. setosa(34,5%)***	***P. ciliata(40,2%)***	***P. ciliata(35,9%)***	***C. setosa(46,0%)***	***C. setosa(33,0%)***
2	***S. inflatum(20,7%)***	***E. naidina(18,4%)***	***E. naidina(27,5%)***	***S. armiger(15,2%)***	***S. armiger(20,0%)***
3	***C. capitata(10,2%)***	***C. decussata(13,4%)***	***S. filicornis(14,4%)***	***O. acuminata(10,1%)***	***O. acuminata(15,6%)***
4	***(4)O. acuminata(7,2%)***	***S. filicornis(11,4%)***	***P. pulchra(6,4%)***	***T187Syllidae sp(5,6%)***	***T187Syllidae sp(11,2%)***
5	***(4)S. armiger(7,2%)***	***T. flexuosa(4,5%)***	***S. armiger(2,9%)***	***S. inflatum(5,1%)***	***C. capitata(3,9%)***

Table 8.h. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	9A	9B	10A	10B	11A	11B
Lat. N	62,07041	62,07041	62,07645	62,07645	62,08411	62,08411
Long. W	6,51956	6,51956	6,44290	6,44290	6,41409	6,41409
Depth	27m	27m	45m	45m	40m	40m
Sed. type	Sand/Pebble	Sand/Pebble	Mud	Mud	Clay	Clay
Ign. loss	43,1	43,1	72,0	72,0	40,3	40,3
Grab vol.	17%	22%	100%	59%	59%	28%
Location	Kollafjørður	Kollafjørður	Nes	Nes	Lambavík	Lambavík
Year	2002	2002	2002	2002	2002	2002
			Index			
N	474	467	388	255	215	274
S	66	65	25	30	39	38
Ind/No. sp	7,2	7,2	15,5	8,5	5,5	7,2
H'(log2)	4,31	4,16	2,84	3,30	3,86	3,60
J'	0,71	0,69	0,61	0,67	0,73	0,69
ES_{100}	31,97	29,92	14,99	19,89	24,91	22,43
Polychaeta	59% S, 77% N	48% S, 78% N	68% S, 55% N	67% S, 71% N	62% S, 71% N	71% S, 79% N
Mollusca	20% S, 11% N	25% S, 7% N	16% S, 35% N	10% S, 2% N	18% S, 25% N	21% S, 20% N
Crustacea	2% S, 3% N	6% S, 2% N	-	3% S, 9% N	3% S, 0% N	-
Echin.	6% S, 2% N	11% S, 9% N	4% S, 1% N	7% S, 14% N	10% S, 2% N	5% S, 1% N
Others	14% S, 6% N	11% S, 5% N	12% S, 10% N	13% S, 4% N	8% S, 2% N	3% S, 0% N
			Top 10			
1	***M. fragilis(34,0%)***	***M. fragilis(25,7%)***	***M. fragilis(39,7%)***	***M. fragilis(39,2%)***	***C. setosa(22,8%)***	***E. naidina(28,5%)***
2	***C. setosa(7,6%)***	***M. oculata(20,3%)***	***A. nitida(20,6%)***	***L. inhaerens(13,7%)***	***T. flexuosa(15,3%)***	***C. setosa(15,7%)***
3	***M. bidentata(4,6%)***	***C. setosa(8,6%)***	***T. flexuosa(13,4%)***	***P. globosus(8,6%)***	***(3)S. armiger(12,1%)***	***T. flexuosa(13,1%)***
4	***(4)S. armiger(3,8%)***	***E. verugera(5,8%)***	***Phoronida sp(7,7%)***	***S. armiger(7,1%)***	***(3)S. filicornis(12,1%)***	***S. armiger(11,3%)***
5	***(4)E. verugera(3,8%)***	***A. squamatus(4,9%)***	***P. koreni(4,4%)***	***M. oculata(5,5%)***	***P. praetermissa(5,6%)***	***P. inornata(5,8%)***

Table 8.h. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	12A	12B	13A	13B	14A	14B
Lat. N	62,07041	62,07041	62,16751	62,16751	61,49946	61,49946
Long. W	6,51956	6,51956	6,27885	6,27885	6,48006	6,48006
Depth	27m	27m	36m	36m	16m	16m
Sed. type	Sand/Pebble	Sand/Pebble	Sand/Pebble	Sand/Pebble	Sand/Pebble	Sand/Pebble
Ign. loss	51,0	51,0	43,0	43,0	11,0	11,0
Grab vol.	17%	22%	28%	22%	17%	39%
Location	Árnafjørður	Árnafjørður	Hvannasund	Hvannasund	Sandsvág	Sandsvág
Year	2002	2002	2002	2002	2002	2002
			Index			
N	38	177	299	258	40	28
S	17	30	61	62	6	8
N/S	2,2	5,9	3,4	4,2	6,7	3,5
H'(log2)	3,53	3,82	5,12	5,20	2,01	2,14
J'	0,86	0,78	0,86	0,87	0,78	0,71
ES_{100}	-	23,75	38,48	41,83	-	-
Polychaeta	71% S, 87% N	97% S, 98% N	57% S, 66% N	60% S, 50% N	50% S, 50% N	50% S, 75% N
Mollusca	12% S, 5% N	-	23% S, 25% N	18% S, 25% N	17% S, 5% N	13% S, 14% ind
Crustacea	6% S, 3% N	3% S, 2% N	8% S, 3% N	10% S, 13% N	33% S, 45% N	38% S, 11% ind
Echin.	12% S, 5% N	-	7% S, 5% N	7% S, 6% N	-	-
Others	-	-	5% S, 1% N	7% S, 3% N	-	-
			Top 10			
1	*C. setosa(23,7%)*	*C. setosa(26,0%)*	*A. gracilis(9,7%)*	*L. asellus(14,7%)*	*E. deformis(42,5%)*	*S. armiger(53,6%)*
2	*S. armiger(21,1%)*	*S. armiger(17,5%)*	*P. inornata(8,7%)*	*P. inornata(8,1%)*	*S. armiger(32,5%)*	*(2)N. caeca(14,3%)*
3	*P. flabellata(7,9%)*	*P. inornata(7,3%)*	*N. nucleus(6,4%)*	*J. maculosa(5,0%)*	*E. sanguinea(10,0%)*	*(2)A. islandica(14,3%)*
4	*(4)Cirratulidae sp(5,3%)*	*(4)M. fragilis(5,6%)*	*(4)L. gracilis(6,0%)*	*P. pubescens(4,7%)*	*N. caeca(7,5%)*	*(4)P. ciliata(3,6%)*
5	*(4)N. ciliata(5,3%)*	*(4)O. acuminata(5,6%)*	*(4)D. socialis(6,0%)*	*N. nucleus(4,3%)*	*A. islandica(5,0%)*	*(4)S. filicornis(3,6%)*

Table 8.i. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.

Station	14C	14D	14E	14F
Lat. N	61,49990	61,49990	61,50027	61,50027
Long. W	6,47906	6,47906	6,47787	6,47787
Depth	16m	16m	17m	17m
Sed. type	Sand/Pebble	Sand/Pebble	Sand/Pebble	Sand/Pebble
Ign. loss	14,0	14,0	13,0	13,0
Grab vol.	39%	17%	46%	39%
Location	Sandsvág	Sandsvág	Sandsvág	Sandsvág
Year	2002	2002	2002	2002
			Index	
N	23	8	18	14
S	9	6	10	5
N/S	2,6	1,3	1,8	2,8
H'(log2)	2,78	2,5	2,86	2,12
J'	0,88	0,97	0,86	0,91
ES_{100}	-	-	-	-
Polychaeta	33% S, 52% ind	50% S, 38% N	80% S, 83% N	80% S, 86% N
Mollusca	33% S, 17% N	33% S, 50% N	-	-
Crustacea	33% S, 30% N	17% S, 13% N	20% S, 17% N	20% S, 14% N
Echin.	-	-	-	-
Others	-	-	-	-
			Top 10	
1	***S. armiger(30,4%)***	***(1)A. nitida(25%)***	***C. setosa(38,9%)***	***N. caeca(35,7%)***
2	***E. deformis(21,7%)***	***(1)A. islandica(25%)***	***(2)E. sanguinea(11,1%)***	***S. armiger(28,6%)***
3	***N caeca(13%)***	***(3)S. armiger(12,5%)***	***(2)E. deformis(11,1%)***	***(3)C. setosa(14,3%)***
4	***(4)S. filicornis(8,7%)***	***(3)P. ciliata(12,5%)***	***(4)C. cirratus(5,6%)***	***(3)E. deformis(14,3%)***
5	***(4)A. islandica(8,7%)***	***(3)S. bombyx(12,5%)***	***(4)T. forbesii(5,6%)***	***S. filicornis(7,1%)***

Table 8.j. Long. N: Longitude, Lat. V: Latitude, Sed. Type: Sediment type, Grab vol.: Grab volume, N: Individuals, S: Number of species, H'(log2): Shannon (log2) index, J': Pielou index, ES_{100}: Expected number of species. Echin.: Echinodermata.