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COMPOSITION AND SEASONAL FLUCTUATIONS OF THE NEMATODE COMMUNITY IN A SILTY STATION OFF THE BELGIAN COAST.

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ABSTRACT

The meiofauna of a silty station off the Belgian coast consists mainly of nematodes (96.5%-100% dominance). The nematode community is described from monthly samples, in 1983. Density has decreased in 1983 (mean density: 859 ± 199 ind./10cm²) when compared to 1978 (mean density: 2168 ± 531 ind./10cm²); during the same period, median grain size has decreased as well. There is a significant positive correlation between median grain size and density of the nematodes.

The monthly mean density in 1983 shows a distinct increase from June on, caused by the unusually warm summer that year.

Only four species have a frequency larger than 50%: *Ascolaimus elongatus*, *Daptonema tenuispiculum*, *Metalinhomoeus riemanni* and *Sabatieria breviseta*. *Sabatieria breviseta* is the dominant species of the community with a mean dominance of 82.5%. *Daptonema tenuispiculum* has high dominance in late Summer and Autumn (max.35.7%). This species used to be more dominant in the community (84% in 1978). The content of heavy metals of the sediment is very high in this station. However, on a monthly base, there is no obvious correlation between heavy metal contents and any community parameter of the nematodes.

In a large part of the nematode populations, cristalloid inclusions are present: these inclusions are not found in less polluted sites, nor in the same station in previous years.

INTRODUCTION

The nematodes of the Belgian subtidal coastal area of the North Sea have been investigated from 1977 on in seasonal sampling surveys (interval: three to four months) (Herman et al., in press).

The impact of the Western Scheldt river, entering the North Sea north-east of the Belgian-Dutch border, is reflected in a decrease in diversity on all taxonomic levels from west to east along the coast. The silty sediments east of Ostend have an extremely low diverse meiofauna; Heip et al. (in press) estimated the total meiofauna production in this area at $1.5 - 2.0$ gCm⁻²y⁻¹; this production equals (or even exceeds) macrofauna production in the area, where nematodes are extremely dominant (95-100%). In those sediments, nematode richness is very significantly correlated with the heavy metal content of the sediment (Heip et al., in press) and with sediment granulometry (silt-clay content). In 1983, a monthly sampling survey was executed in three coastal stations: 11860, 11150 and 10080.

In this report, we present the structure of the nematode community of the near-shore station 11860 (east of Zeebrugge, 51°22'38" N - 03°18'41" E).

MATERIAL AND METHODS

Samples were taken every month (except August) in 1983. The meiofauna was collected by subsampling a Van Veen grab (sampling area 0.10 m^2) or a modified Reineck box corer (sampling surface: 170 cm^2). Each sample was subsampled with four plastic cores (surface: 10.2 cm^2): two for faunistic analysis (fixed with 4% hot (70°C) formaldehyd), one for sedimentological analysis and one was kept for the determination of the heavy metal content in the sediment.

Sediment analysis is as described in a previous report in the series (Heip *et al.*, 1979) except for the determination of the silt-clay content. Further grading of the silt-clay fraction, which passes the 62 um sieve, was carried out at the Laboratory of Mineralogy, Petrography and Micropedology (by Dr. S. Geets).

The methods for the determination of heavy metals and the data on heavy metals levels are described in a separate report (Braeckman *et al.*, this volume). Animals were extracted by decanting the sediment a few times (on a 38 um sieve). Afterwards they were centrifuged with 50% Ludox and fresh water for 15 min at $3000g$. Animals were counted under a stereoscopic microscope; the first 200 nematodes were identified to species level with a Leitz diavert (reversed) microscope.

RESULTS AND DISCUSSION

Sediment analysis

The characteristics of the sediment at the different dates are given in Table 1. All data, previous to the monthly samples of 1983, are also included (they were analysed with the same methods as the 1983-samples).

Month/Year	Median Grain Size (mm)	Silt-Clay Fraction (%) ($< 62 \text{ um}$)	Sorting Coefficient (ϕ)
Jun 77	0.183	3.0	0.35
Sep 77	0.165	9.0	0.40
Mar 78	0.095	46.5	3.10
Apr 78	0.165	12.5	0.53
Sep 78	0.159	17.0	1.10
Dec 78	0.183	0.5	0.28
Apr 79	0.129	40.5	2.75
Jun 79	0.096	58.0	2.95
Sep 79	0.094	43.1	2.18
Jan 83	0.022	81.0	3.13
Feb 83	0.044	63.5	2.40
Mar 83	0.032	69.5	2.95
Apr 83	0.025	77.5	3.28
May 83	0.038	63.5	2.85
Jun 83	0.054	53.5	2.45
Jul 83	0.082	45.0	2.45
Sep 83	0.053	53.5	3.65
Oct 83	0.054	53.5	2.60
Nov 83	0.051	56.5	2.80
Dec 83	0.036	71.5	2.65

Table 1: Summary of sediment characteristics of the station 11860.

The mean median grain size decreases strongly from 1977 to 1983 :
(see also Fig.1)

	Md(mm) ± SE	Silt-clay content	±SE	
1977	174 ± 6.4	6.0%	± 2.1	(n=2)
1978	151 ± 16.6	19.0%	± 8.5	(n=4)
1979	106 ± 9.4	47.2%	± 4.5	(n=3)
1983	45 ± 4.8	62.6%	± 3.2	(n=11)

The silt-clay fraction is on the contrary much higher in 1983 and the sediment evolves from more or less well sorted (1977) to badly sorted (1983) (Table 1 and foregoing table).

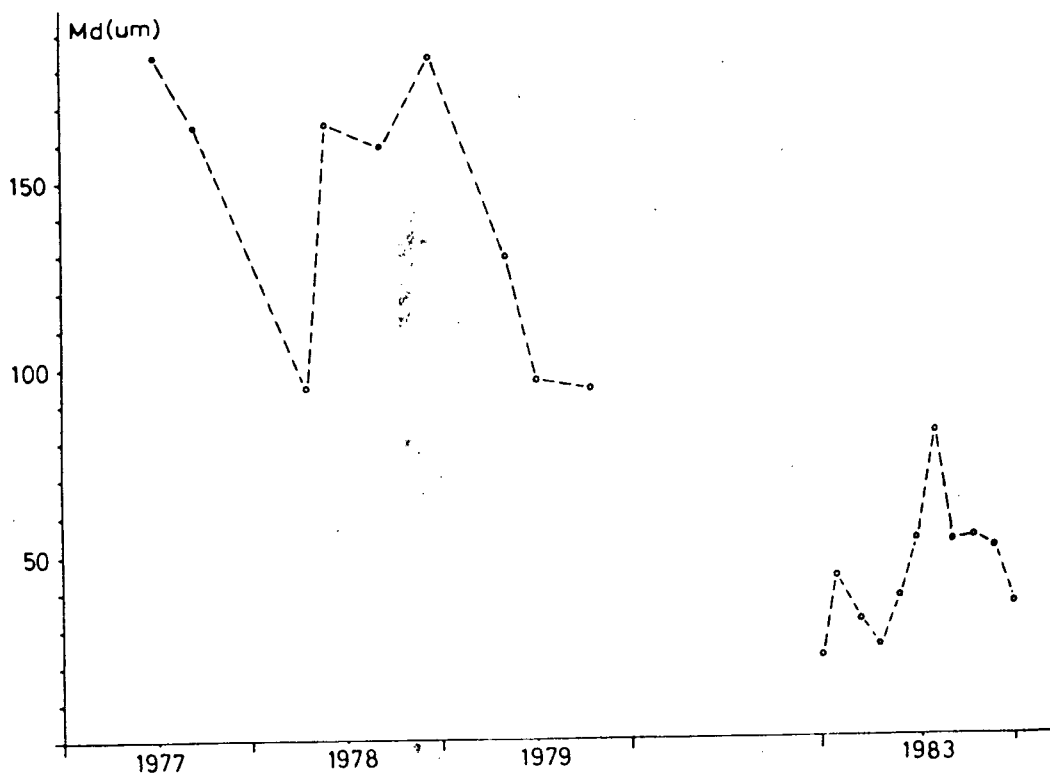


Figure 1: Evolution of the median grain size from 1977 till 1983.

The sediment composition in the monthly samples of 1983 is remarkably constant. We therefore assume that the slight variations observed from month to month are not responsible for large fluctuations in the composition of the meiobenthic groups.

In 1983, station 11860 is comparable, on the base of sediment characteristics, to the muddy stations 11851, 11312, 11315 and 11331 in 1978-1979 (Herman *et al.*, in press).

Other environmental parameters

Temperature, salinity, and suspended matter from the sampling dates are given in Table 2 (data are from the SURV-program of the Management Team of the Mathematical Model of the North Sea and Scheldt-estuary).

Date	Temperature (°C)	Salinity (‰)	Suspended Matter (mg/l)
24Jan83	5.4	29.49	86.2
9Mar83	4.2	29.18	71.6
14Apr83	7.0	28.14	219.6
19May83	11.6	29.74	109.1
8Jun83	14.6	29.51	58.0
13Jul83	19.1	30.23	63.0
10Aug83	19.9	31.21	61.3
88Nov83	11.4	32.67	233.6
9Dec83	6.8	32.08	231.3

Table 2: Environmental characteristics of the station 11860:

Meiofaunal densities

Table 3 presents the numerical abundances of the meiobenthic taxa for 1983. The number of individuals ranged from 30 - 2626 ind./10cm².

Nematodes are by far the most important group making up from 96.5% (Jul83) to 100% (Jan, Feb, Mar) of the total. From Apr 83 till Oct 83, harpacticoid copepods are present, with important values in Jul83. Turbellaria and Polychaetes occur regularly, but in low numbers. Oligochaetes are scarce and Ostracods were found only once (Apr).

The densities in the two replicates may be very different within one month, which reflects the heterogeneous distribution of the meiobenthos (Fig.2). Mean density shows a distinct increase from Jun 83 on. We assume that the increase of temperature in July (Table 2) to 19.1°C, a highly unusual value, and the following warm August month (unfortunately we do not have samples from August) are responsible for this increase, which reaches its maximum in Nov 83. Density at the end of 83 is much higher than density in Jan 83.

		Jan 83	Feb 83	Mar 83	Apr 83	May 83	Jun 83	Jul 83	Aug 83	Sep 83	Oct 83	Nov 83	Dec 83
Nematoda	A	176	30	732	672	48	434	1354	?	2352	1313	1752	1357
	B	57	80	432	366	720	530	64	?	1126	1102	2619	1397
	\bar{x}	116.5	55.0	582.0	519.0	389.0	482.0	709.0	?	1774.0	1207.5	2185.5	1377.0
Harpacticoida	A	-	-	-	2	-	2	45	?	3	-	-	-
	B	-	-	-	-	1	-	5	?	-	1	-	-
	\bar{x}	-	-	-	1.0	0.5	1.0	25.0	?	1.5	0.5	-	-
Turbellaria	A	-	-	-	4	-	-	1	?	5	5	1	-
	B	-	-	-	-	1	-	-	?	-	-	1	3
	\bar{x}	-	-	-	2.0	0.5	-	0.5	?	2.5	2.5	1.0	1.5
Polychaeta	A	-	-	-	3	-	-	2	?	2	3	3	-
	B	-	-	-	1	6	-	-	?	-	1	6	7
	\bar{x}	-	-	-	2.0	3.0	-	1.0	?	1.0	2.0	4.5	3.5
Ostracoda	A	-	-	-	1	-	-	-	?	-	-	-	-
	B	-	-	-	-	-	-	-	?	-	-	-	-
	\bar{x}	-	-	-	0.5	-	-	-	?	-	-	-	-
Oligochaeta	A	-	-	-	-	-	-	-	?	-	-	-	2
	B	-	-	-	1	-	-	-	?	-	-	1	-
	\bar{x}	-	-	-	0.5	-	-	-	?	-	-	0.5	1.0
Total	A	176	30	732	682	48	436	1402	?	2362	1321	1756	1359
	B	57	80	432	368	738	530	69	?	1196	1104	2626	1407
	\bar{x}	116.5	55.0	582.0	525.0	393.0	483.0	735.5	?	1779.0	1212.5	2191.0	1383.0

Table 3: Density of the meiofaunal taxa (N/10 cm²) in the monthly samples of station 11860, during 1983.

\bar{x} is the mean value of the two replicates A and B.

	Jan83	Feb83	Mar83	Apr83	May83	Jun83	Ju183	Sep83	Oct83	Nov83	Dec83
<i>Ascolaimus elongatus</i>	1.5	17.2	0.5	0.8	-	0.8	6.7	2.4	1.0	1.5	1.0
<i>Daptonema flagell.</i>	-	-	-	-	1.3	0.3	-	-	-	-	-
<i>Daptonema riemanni</i>	-	-	-	0.3	-	0.8	0.5	-	4.9	0.3	-
<i>Daptonema tenuispiculum</i>	13.6	-	1.1	0.5	-	2.0	16.5	16.1	35.7	1.6	6.6
<i>Desmolaimus zeelandicus</i>	-	-	-	0.3	-	0.3	-	0.3	-	-	2.0
<i>Metalinhomoeus riemanni</i>	-	-	0.3	0.8	1.6	3.3	1.8	0.7	2.0	-	2.8
<i>Microaimus marinus</i>	-	2.3	-	-	-	-	-	-	-	-	-
<i>Molgolaimus turgofrons</i>	2.6	4.6	-	-	-	-	-	-	-	-	-
<i>Monhystera disjuncta</i>	-	-	-	-	3.8	0.8	-	-	-	0.3	-
<i>Oncholaimus sp.</i>	-	-	-	-	-	-	0.9	-	-	-	-
<i>Richtersia inaequalis</i>	1.1	-	-	-	0.4	0.5	-	-	0.2	-	-
<i>Sabatieria breviseta</i>	74.3	73.7	97.1	92.6	92.4	90.3	73.4	78.8	54.3	95.3	85.1
<i>Sphaerolaimus gracilis</i>	-	-	0.5	1.9	-	-	-	1.3	-	0.5	0.3
<i>Spirinia parasitifera</i>	2.2	2.3	-	0.3	-	-	-	-	0.3	-	0.3
<i>Terschellingia longic.</i>	-	-	0.3	0.5	0.7	-	-	0.7	-	0.5	-
<i>Theristus pertenuis</i>	0.9	-	-	0.3	-	-	-	-	0.3	-	-
<i>Viscosia franzii</i>	1.9	-	-	-	-	0.3	0.3	-	0.3	-	-
N° species	11	5	7	16	5	12	8	7	14	7	10

Table 4: Relative abundance of the nematode species from station 11860, in the monthly samples of 1983. Only species with at least one rel.abund. of 0.5% are noted. (Mean values from replicates A and B).

	1978	1979	1983
<i>Ascolaimus elongatus</i>	3.5 ±1.8	-	3.0 ±1.5
<i>Daptonema tenuispiculum</i>	26.3 ±14.5	48.9 ±21.0	8.4 ±3.2
<i>Metalinhomoeus riemanni</i>	2.3 ±1.4	0.7 ±0.3	2.5 ±0.9
<i>Sabatieria breviseta</i>	61.5 ±16.0	52.2 ±18.6	82.5 ±3.8
Total meiofauna dens. (ind./10 cm ²)	2168 ±530	1137 ±468	887 ±214

Table 5: Mean relative abundance (±SE) of the four dominant species in the station 11860, in 1978, 1979 and 1983 (%) and density of the meiofaunal community in ind./10 cm².

In general, it is probable that grain size is responsible for the relative abundance of the different dominant species, e.g. the abundance of *Daptonema* and *Sabatieria*.

Heip et al. (in press) noted that in a vertical profile of the nematode species from station 11860 (14Oct77) *D. tenuispiculum* was restricted to the first upper centimeters of the sediment (Fig.3). This profile is confirmed in other stations too. We assume that the better oxic conditions of the surface layers are responsible for the presence of *D. tenuispiculum*. It still needs to be examined if the decrease in abundance of *D. tenuispiculum* in 1983 can be explained by more anoxic conditions in the bottom.

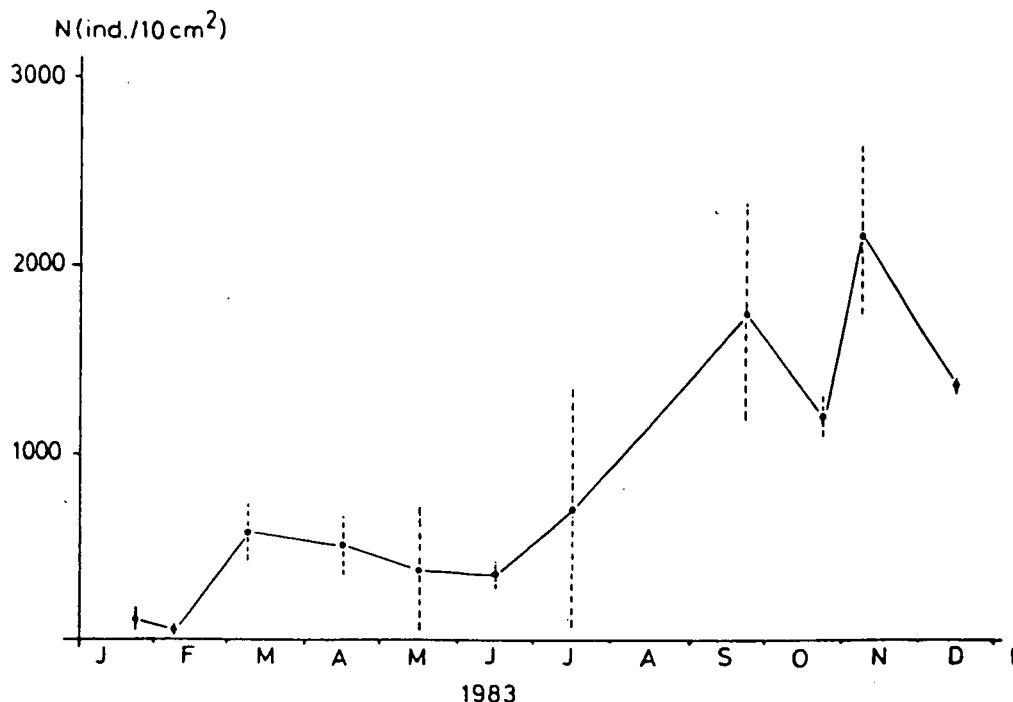


Figure 2 : Mean density of the meiobenthos in 1983.

The mean meiofauna density in 1978 (Mar, Apr, Jun, Dec)² was $2168 \text{ ind./10 cm}^2 \pm 530.6$; in 1979 (Apr, Jun, Sep) it was $1471 \text{ ind./10 cm}^2 \pm 367.0$ (Herman *et al.*, in press). The mean density of the meiofauna in 1983 is $859 \pm 199.0 \text{ ind./10 cm}^2$. The Spearman rank correlation coefficient between median grain size (Table 1) and total density of the meiofauna (18 data points) (Table 3 & data from Herman *et al.*, in press) is significant and positive ($r = 0.6022$; $p < 0.01$); as the sediment has become finer (median grain size decreased) in 1983 (in comparison with 1977-1979), the density of meiofauna decreased also. No significant correlation was present between the silt-clay content and the density of nematodes.

Species composition

Thirty two species were identified over the one year sampling period; for fourteen of them, only one individual was found only once.

Only the 'more abundant' species are retained for further analysis. A list of these species is presented in Table 4 (The number of all the species identified is given in Addendum I).

Only four species have a frequency $> 50\%$: *Ascolaimus elongatus*, *Daptonema tenuispiculum*, *Metalinhomoeus riemanni* and *Sabatieria breviseta*. The dominant species of the community is *Sabatieria breviseta*. Its relative abundance varies between 54.3% and 97.5% with a mean of $82.5\% \pm 3.8\%$. The species is followed by *Daptonema tenuispiculum* ($x = 8.4\% \pm 3.2\%$), by *Ascolaimus elongatus* ($x = 3.0\% \pm 1.5\%$) and by *Metalinhomoeus riemanni* ($x = 2.5\% \pm 0.9\%$).

The considerable variation in monthly abundances for each species is attributable to patchy distribution or to seasonal fluctuations. Both effects are present, as differences between replicates are as important as differences between the different month (see Table 4 and Addendum I).

Ascolaimus elongatus is abundant in Feb (17.2%) and in Jul (6.7%). *Daptonema tenuispiculum* has high abundances in Jul, Sep and Oct (also in one replicate of Jan: 27.2%). *Metalinhomoeus riemanni* has its highest abundance (3.3%) in Jun 83.

Comparing the 1983 community with the communities of 1978 and 1979 (Table 5), we note some remarkable differences. *D. tenuispiculum* attains till 84% dominance in 1978 and 1979; this high dominance (over *S. breviseta*) is never found in 1983, when the maximum dominance is 35.7% in Oct 83. We correlate this with the grain size of the sediment.

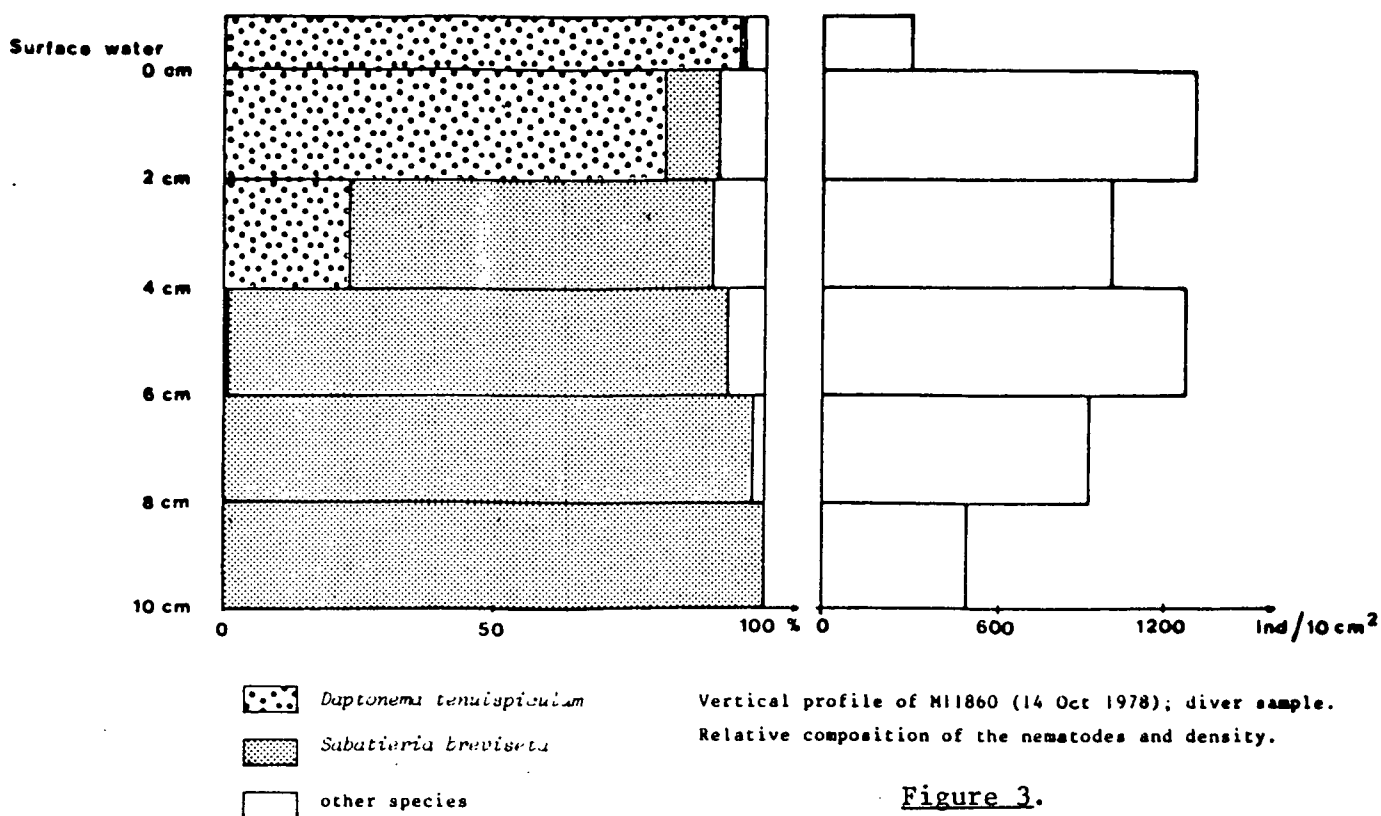


Figure 3.

Age structure of *Sabatieria breviseta*

Sabatieria breviseta is the dominant nematode species in station 11860. In the population, we distinguished between juveniles, females and males. The mean values are given in Table 6. Figure 4 shows the variations in the proportions of these stages throughout the year. The sex-ratio was mostly in favour of females. Juveniles exceeded 50 % of the population in May, and in Sep, Oct, Nov and Dec.

The remarkable high % juveniles from Sep on coincides with the significant increase in total nematode (mainly *Sabatieria*) densities (Fig.2). Under the reversed microscope, it was not always possible to recognize gravid females (these are females with eggs in the uterine part of the genital tract) and it was neither possible to determine the different stages of the juveniles. Therefore, at this stage of the research, it is too early to elucidate the life cycle of *Sabatieria breviseta* in more detail.

Juario (1975) examined the age structure of two *Sabatieria* species, *S. pulchra* and *S. celtica*. *S. pulchra* is very close to *S. breviseta* (they used to be synonymous). For *S. pulchra* he found that, in every month, the juveniles accounted for more than 50 % of the population with a peak value in May of about 75%.

Age structure of *Daptonema tenuispiculum*, *Ascolaimus elongatus* & *Metalinhomoeus riemanni*.

Daptonema tenuispiculum has high abundances from Jul till Oct 83 (densities are too low in the earlier months to analyse). Table 7 presents the age structure of this species. In Jun, the number of juveniles is low (12.5%); in Jul, the population consists for 65% of juveniles and reaches 16.5% dominance. In Sep, there is a little decrease of juveniles, which continues in Oct; in that month the *Daptonema* population reaches its peak value in dominance (35.7%). We therefore assume that reproduction of *D. tenuispiculum* starts in Jun-Jul (when the temperature goes from 14.1°C to 19.1°C). The high value of Jan cannot be explained since information on previous months is lacking.

	Jan83	Feb83	Mar83	Apr83	May83	Jun83	Jul83	Sep83	Oct83	Nov83	Dec83
Juveniles	32.2	33.3	40.3	41.9	58.5	46.4	39.6	57.9	70.0	57.6	64.1
Females	52.2	28.4	30.8	29.4	27.3	32.6	36.0	20.2	19.7	21.1	17.8
Males	15.6	38.3	28.9	28.7	14.2	21.0	24.4	21.9	10.3	21.3	18.1

Table 6: Age structure of the *Sabatieria breviseta* population from station 11860 in 1983. (Z)
(mean values of two replicates)

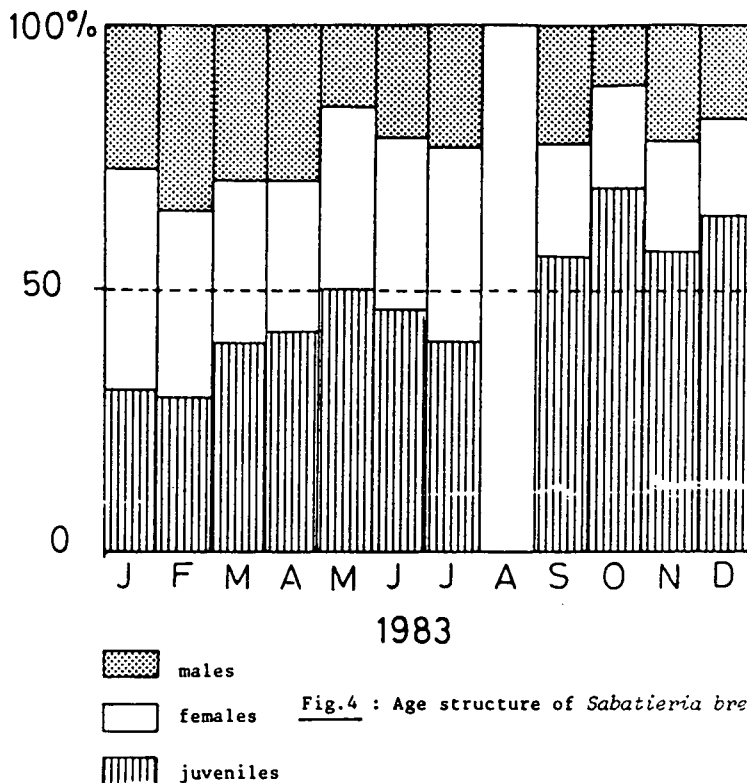


Fig. 4 : Age structure of *Sabatieria breviseta*.

	Jan83	Feb83	Mar83	Apr83	May83	Jun83	Jul83	Sep83	Oct83	Nov83	Dec83
Juveniles	40.5	-	50.0	100.0	-	12.5	65.0	51.5	38.2	50.0	26.9
Females	29.7	-	50.0	-	-	12.5	17.5	26.5	27.6	-	23.1
Males	29.7	-	-	-	-	75.0	17.5	22.0	34.2	50.0	50.0

Table 7: Age structure of the *Daptonema tenuispiculum* population from station 11860 in 1983 (Z).
(mean values of two replicates)

	Jan83	Feb83	Mar83	Apr83	May83	Jun83	Jul83	Sep83	Oct83	Nov83	Dec83
Juveniles	50.0	42.8	50.0	66.7	-	33.3	83.3	90.0	50.0	-	50.0
Females	-	28.6	-	-	-	-	-	-	25.0	100.0	25.0
Males	50.0	28.6	50.0	33.3	-	66.7	16.7	10.0	25.0	-	25.0

Table 8: Age structure of the *Ascolaimus elongatus* population from station 11860 in 1983 (Z).
(mean values of two replicates)

	Jan83	Feb83	Mar83	Apr83	May83	Jun83	Jul83	Sep83	Oct83	Nov83	Dec83
Juveniles	-	-	100.0	100.0	80.0	46.2	100.0	100.0	79.3	-	45.6
Females	-	-	-	-	-	23.1	-	-	13.8	-	27.2
Males	-	-	-	-	20.0	30.7	-	-	6.9	-	27.2

Table 9: Age structure of the *Metalinhomoeus riemanni* population from station 11860 in 1983 (Z).
(mean values of two replicates)

The age structure of *Ascolaimus dongatus* and *Metalinhomoeus riemanni* is given in Table 8 and 9. Abundances are too low to get an idea about the reproduction cycle of these animals.

Distribution of the feeding-types.

In 1983, 98.1 % of the nematodes are non-selective deposit-feeders (1B); 1.3% are epistratum-feeders (2A) and 0.6% are omnivores-predators (2B). The trophic diversity index ($\Sigma\theta^2$) (see Heip et al., in press) is 0.96. In 1978-1979, the trophic diversity index of the community in station 11860 was 0.93 (Heip et al., in press).

In the literature, nematode communities of three similar silty sediments have been described, i.e. the Northumberland coast (Warwick & Buchanan, 1970); the east coast of the US (Tietjen, 1977) and silty sediments near Helgoland (Lorenzen, 1974). The trophic diversity index in these three sites is respectively : 0.47, 0.59 and 0.74. The distribution of feeding-types in those communities is more even. Heip et al. (in press) showed the relationship between trophic diversity and the degree of pollution.

Impact of heavy metals

The distribution of heavy metals in the monthly samples is described in Braeckman et al. (this volume).

It does not seem that heavy metal concentration over a yearly cycle is correlated with nematode density (no significant rank correlations can be detected).

Contamination of the nematodes by cristalloid inclusions.

A large part of the nematode community of station 11860 (also in station 11880 & 11315, see Vincx et al., this report), is contaminated with inclusions as shown in plate I and II.

The following table gives the proportion (%) of juveniles, females and males which are contaminated:

	J	P	M	A	M	J	J	A	S	O	N	D
Juv.	13	26	49	31	70	23	52		21	34	35	23
Fem.	30	34	63	28	58	25	68		38	73	44	26
Mal.	25	39	56	25	67	31	56		28	55	62	31

This contamination occurs in all species; only very young juveniles do not have these cristalloid structures. On transverse sections (Fig.3, plate I), it is obvious that the cristalloid structures are present as well in muscle-cells, as in intestine cells and hypodermal cells. They are outspread irregularly over the whole body length, from the head end till the tail tip (Fig.2, plate I; Figs 1-3, plate II).

The examination of the nature of these inclusions is started.

The similarity of the inclusions to metal-containing granules in invertebrate tissues is striking. The ability to store metals in this way appears to be common to all major invertebrate phyla, with the prime sites for metal storage and detoxification in crustacea, molluscs and insects, being organs with digestive, storage and excretory functions (e.g. hepatopancreas, midgut, digestive gland, Malpighian tubules and kidney) (Review: Brown, 1983).

Howell (1983) measured Cu- and Zn- concentrations in nematodes. Most of the metal uptake was found to be associated with the cuticle and with a group of tissues including the hypodermis.

Recently, some authors (Doyle et al., 1978) have suggested that metal containing granules in certain species may be used as biological indicators of polluted habitats. This is reinforced by observations that the shape and abundance of the granules may be positively correlated with the level of metal in the environment (Icely & Nott, 1980).

According to Brown (1983), the values of these granules as a biological indicator is limited because of the variations observed in granules shape and abundance with natural biological cycles (reproductive and feeding cycles) and possibly acquired tolerance.

The nematodes of the polluted silty stations show an obvious contamination; this has never been found in less polluted sites of the Belgian coast, nor in earlier samples of the same polluted sediments (1978-1979).

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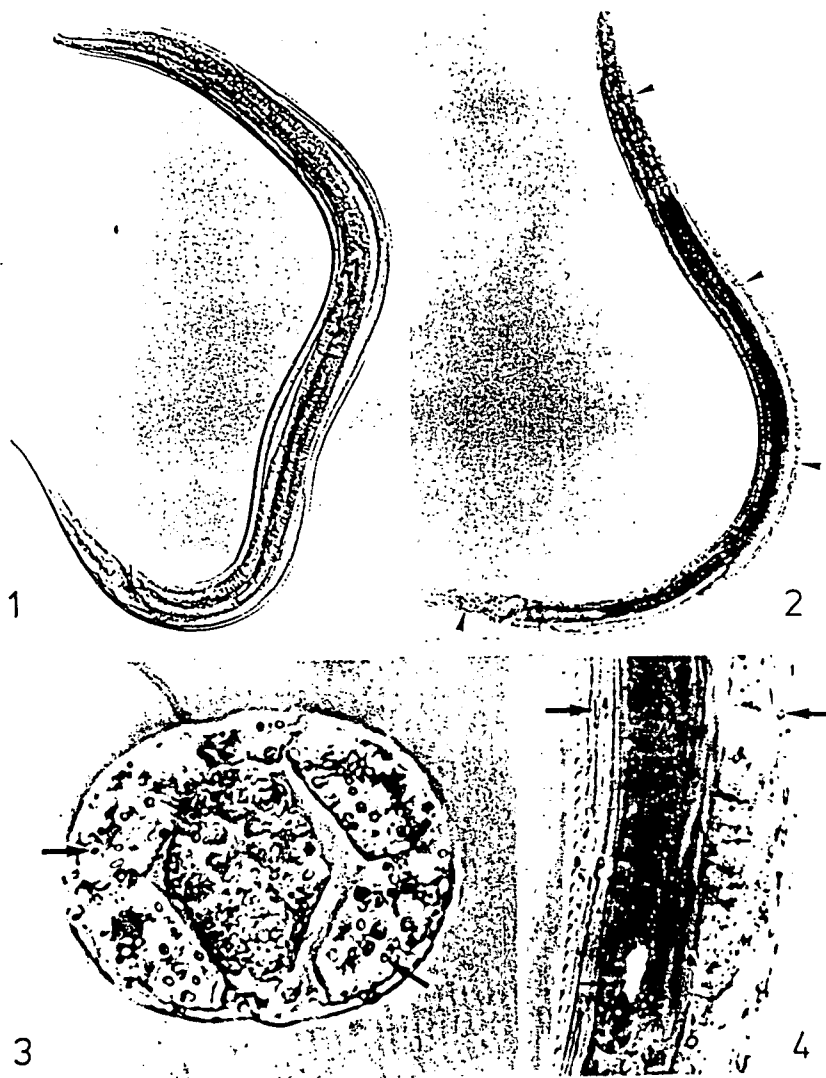


Plate I. *Daptonema tenuispiculum*. (arrows indicate the cristalloid structures). 1. Male without contamination; 2. Male with contamination of cristalloid structures; 3. Cross section of male at the level of the intestine; 4. Lateral view of the testis-region.



Plate II. *Sabatieria breviseta*. (arrows indicate the cristalloid structures). 1. Head end of male (lateral surface view); 2. Head end of male (internal structures); 3. Tail of male.

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	1	-	-	-	1	-
<i>Daptonema tenuispiculum</i>	15	-	11	-	11	-
<i>Molgolaimus turgofrons</i>	7	-	-	-	-	-
<i>Paracyatholaimus pentodon</i>	-	-	1	-	-	-
<i>Paracanthonchus thausmasius</i>	1	-	2	-	1	-
<i>Richtersia inaequalis</i>	2	-	1	-	-	-
<i>Sabatieria breviseta</i>	27	10	33	27	6	12
<i>Spirinia parasitifera</i>	2	-	1	-	3	-
<i>Theristus pertenuis</i>	2	-	-	-	2	-
<i>Viscosia franzii</i>	5	-	-	-	-	-
<i>Viscosia glabra</i>	1	-	-	-	-	-
Total number	63	10	49	27	24	12

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	2	4	2	2	1	-
<i>Microlaimus marinus</i>	1	-	-	-	-	-
<i>Molgolaimus turgofrons</i>	-	-	2	-	-	-
<i>Sabatieria breviseta</i>	3	24	6	17	4	2
<i>Sprinia parasitifera</i>	-	-	-	-	1	-
Total number	6	28	10	19	6	3

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	1	-	-	-	-	1
<i>Daptonema maxweberi</i>	-	-	-	-	-	1
<i>Daptonema tenuispiculum</i>	1	1	-	2	-	-
<i>Metalinhomoeus riemanni</i>	1	-	-	-	-	-
<i>Sabatieria breviseta</i>	72	77	66	48	53	54
<i>Sphaerolaimus gracilis</i>	-	-	1	-	-	1
<i>Terschellingia longicaudata</i>	1	-	-	-	-	-
Total number	76	78	67	50	53	57

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	-	2	-	-	1	-
<i>Chromaspirinia pellita</i>	-	-	-	-	-	1
<i>Daptonema riemanni</i>	-	-	-	-	1	-
<i>Daptonema tenuispiculum</i>	1	1	-	-	-	-
<i>Desmolaimus zeelandicus</i>	-	-	-	-	-	1
<i>Metalinhomoeus riemanni</i>	-	3	-	-	-	-
<i>Onyx perfectus</i>	-	-	1	-	-	-
<i>Paracanthonchus thausmasius</i>	-	-	-	1	-	-
<i>Rhadinema flexile</i>	-	-	-	-	-	1
<i>Sabatieria breviseta</i>	103	61	56	59	49	63
<i>Sabatieria celtica</i>	-	-	-	-	-	2
<i>Sphaerolaimus gracilis</i>	1	1	-	5	-	1
<i>Spirinia parasitifera</i>	-	-	1	-	-	-
<i>Terschellingia longic.</i>	-	-	-	1	-	1
<i>Theristus pertenuis</i>	-	-	-	-	1	-
<i>Chromadoride sp.</i>	-	-	1	-	1	-
Total number	105	68	59	66	53	70

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Daptonema flagellicaudatum</i>	1	-	-	-	-	-
<i>Metalinhomoeus riemanni</i>	-	4	-	-	-	1
<i>Monhystera disjuncta</i>	2	-	1	-	-	-
<i>Richtersia inaequalis</i>	-	1	-	-	-	-
<i>Sabatieria breviseta</i>	13	94	17	33	6	20
<i>Terschellingia longicaudata</i>	-	1	-	1	-	-
Total number	16	100	18	34	6	21

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	-	1	-	-	-	-
<i>Daptonema flagellicaudatum</i>	1	-	-	-	-	-
<i>Daptonema riemanni</i>	1	2	-	-	-	-
<i>Daptonema tenuispiculum</i>	1	-	-	1	-	3
<i>Desmodora sp.</i>	-	-	-	-	-	1
<i>Desmolaimus zeelandicus</i>	-	-	-	-	-	-
<i>Metalinhomoeus riemanni</i>	1	5	2	1	1	1
<i>Monhystera disjuncta</i>	-	1	-	1	1	-
<i>Rhadinema flexile</i>	-	-	-	-	1	-
<i>Richtersia inaequalis</i>	2	-	-	-	-	-
<i>Sabatieria breviseta</i>	89	79	48	70	43	33
<i>Viscosia franzii</i>	1	-	-	-	-	-
?	-	-	-	-	-	1
Total number	96	88	51	73	50	43

Station 11860 - 13 Jul 83

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	5	5	-	1	1	-
<i>Daptonema riemanni</i>	-	-	-	-	2	-
<i>Daptonema tenuispiculum</i>	33	4	9	1	10	-
<i>Metalinhomoeus riemanni</i>	-	2	-	-	-	-
<i>Oncholaimus sp.</i>	-	-	-	1	-	-
<i>Paralongicyatholaimus macr.</i>	-	-	1	-	-	-
<i>Sabatieria breviseta</i>	61	17	54	17	39	9
<i>Viscosia franzii</i>	-	-	1	-	-	-
Total number	99	28	65	20	52	9

Station 11860 - 22 Sep 83

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	5	4	-	-	1	-
<i>Daptonema tenuispiculum</i>	18	17	8	10	8	7
<i>Desmolaimus zeelandicus</i>	-	1	-	-	-	-
<i>Metalinhomoeus riemanni</i>	3	-	-	-	-	-
<i>Sabatieria breviseta</i>	130	65	25	43	33	41
<i>Sphaerolaimus gracilis</i>	-	2	-	-	1	2
<i>Terschellingia longicaudata</i>	3	-	-	-	-	-
Total number	159	89	33	53	43	50

Station 11860 - 26 Oct 83

	Juveniles		Females		Males
	A	B	A	B	A
<i>Ascolaimus elongatus</i>	1	1	1	-	-
<i>Chromaspirinia pellita</i>	-	1	-	-	-
<i>Daptonema normandicum</i>	-	-	-	-	-
<i>Daptonema riemanni</i>	-	1	-	-	-
<i>Daptonema tenuispiculum</i>	30	28	19	23	26
<i>Metalinhomoeus riemanni</i>	17	6	2	2	2
<i>Odontophora sp.</i>	-	1	-	-	-
<i>Paracanthochus thumasius</i>	-	1	-	-	-
<i>Prochromadorella sp.</i>	-	-	-	-	1
<i>Richtersia inaequalis</i>	-	-	-	-	-
<i>Sabatieria breviseta</i>	93	70	24	22	10
<i>Spirinia parasitifera</i>	-	-	-	-	-
<i>Theristus pertenuis</i>	-	-	-	-	-
<i>Viscosia franzii</i>	-	-	-	1	-
Total number	141	109	46	48	40

Station 11860 - 8 Nov 83

	Juveniles		Females		Males	
	A	B	A	B	A	B
<i>Ascolaimus elongatus</i>	4	-	-	2	-	-
<i>Daptonema riemanni</i>	-	-	-	-	1	-
<i>Daptonema tenuispiculum</i>	-	3	-	-	-	3
<i>Sabatieria breviseta</i>	114	99	37	41	39	40
<i>Sphaerolaimus gracilis</i>	-	1	-	1	-	-
<i>Terschellingia longicaudata</i>	1	-	-	-	1	-
<i>Monhysterá disjuncta</i>	-	1	-	-	-	-
Total number	119	104	37	44	41	43

Station 11860 - 13 Dec 83

	Juveniles		Females		Males
	A	B	A	B	A
<i>Anoplostoma sp.</i>	-	1	-	-	-
<i>Ascolaimus elongatus</i>	1	1	1	-	-
<i>Calyptronema maxweberi</i>	4	-	1	-	1
<i>Daptonema tenuispiculum</i>	2	5	3	3	3
<i>Desmolaimus zeelandicus</i>	2	-	2	-	4
<i>Metalinhomoeus riemanni</i>	-	5	-	3	-
<i>Odontophora sp.</i>	1	-	-	-	-
<i>Sabatieria breviseta</i>	112	104	24	36	37
<i>Sphaerolaimus gracilis</i>	-	-	1	-	-
<i>Spirinia parasitifera</i>	1	-	-	-	-
Total number	123	116	32	42	45

Addendum Ib.