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Seasonal fluctuations and production of nematode communities in the Belgian coastal zone of the North Sea

by Magda VINCX

Abstract

The seasonal fluctuations of the nematode community of a heavily polluted silty sand station along the Belgian east coast was examined based on the monthly samples during 1983-1985. The mean density of the total community varied between 55 ind./10 cm² (Feb. 1983) and 5610 ind./10 cm² (Jun. 1985.) 32 species were found in this station; only four species have a frequency higher than 50%. They are all non-selective deposit-feeders. Reproduction appeared to be continuous, although an increase in reproductive activity appeared in spring and autumn.
The seasonal fluctuations of density, age structure and the yearly P/B were determined for *Sabatieria punctata, Daptonema tenuispiculum, Ascolaimus* sp. 1 and for the whole community. The yearly P/B for *S. punctata* varies between 14.1 (1985) and 16.9 (1983); for *D. tenuispiculum* between 28.5 (1985) and 31.9 (1983); for *Ascolaimus* sp. 1 between 11.5 (1985) and 14.8 (1983) and for the whole community between 16.2 (1985) and 18.1 (1983). These are the first estimations of P/B ratios for nematode communities in the Southern Bight of the North Sea.
Key-words : nematodes, North Sea, seasonal fluctuation, production.

Samenvatting

De seizoenale fluctuatie van de nematodengemeenschap van een sterk vervuild gebied langs de Belgische oostkust is onderzocht aan de hand van maandelijkse staalnames tijdens de periode 1983-1985. De gemiddelde densiteit van de totale gemeenschap varieert tussen 55 ind./10 cm² (Feb. 1983) en 5610 ind./10 cm² (Jun. 1985). 32 soorten zijn aangetroffen in dit station, waarvan slechts vier soorten een frequentie hoger dan 50% hebben. Deze soorten zijn alle niet-selectieve deposit-feeders. Reproductie gebeurt continu; wel is er een toename van reproductieve activiteit waargenomen in de lente en in de herfst.
De seizoenale schommeling in densiteit, leeftijdsverdeling en jaarlijkse P/B is bepaald voor *Sabatieria punctata, Daptonema tenuispiculum, Ascolaimus* sp. 1 en voor de totale gemeenschap. De jaarlijkse P/B voor *S. punctata* varieert tussen 14.1 (1985) en 16.9 (1983); voor *D. tenuispiculum* tussen 28.5 (1985) en 31.9 (1983); voor *Ascolaimus* sp. 1 tussen 11.5 (1985) en 14.8 (1983) en voor de totale gemeenschap tussen 16.2 (1985) en 18.1 (1983). Dit zijn de eerste schattngen van P/B ratio's voor nematodengemeenschappen in de Zuidelijke Bocht van de Noordzee.
Trefwoorden : nematoden, Noordzee, seizoenale fluctuatie, productie.

Introduction

The study of the meiobenthos in the Belgian coastal area started in 1976 and is still going on (Heip *et al.*, 1979; VINCX, 1981, HEIP *et al.*, 1983, VINCX, 1983, WILLEMS *et al.*, 1982a, b and VINCX (in press a & b). Seasonal cycles in nematode density and/or species composition have been studied by a number of authors (see HEIP *et al.*, 1985 for a review), but sampling is in most cases with a low temporal resolution and in some cases not really quantitative.
The seasonal fluctuations of the nematode community of a heavily polluted silty sand station along the Belgian east coast is examined based on the monthly samples during 1983-1985. From these data, yearly nematode production is calculated.

MATERIAL AND METHODS

Station 702 (11860) is a silty sand station off the Belgian east coast (51° 22'38" N-03° 18'41"E, 9 m depth. The silt content varies between 35 and 81% and the median grain size ranges between 25 and 138 μm; salinity varies between 29.8 and 33.9 °/oo, O_2 content between 5.5 and 15.5 ppm and temperature between 5.5 and 16.8°C); detailed data tables are available on request to the author.
Sampling design, extraction and sorting techniques are as described in VINCX (in press b). 200 nematodes are identified in two replicates for each month in the period 1983-1985 (some samples are missing due to logistic and weather problems).

Results

DENSITY OF THE NEMATODE COMMUNITY

The mean density of the whole nematode community is presented in Fig. 1. Differences between the two replicates of one sample are examined by means of a one way-anova (numbers are transformed to log 10.) Between sample (=months) variation is significantly higher than within sample variation (F=4.966, df=26 and 27, $p<0.001$).
The mean density of the total community varies between 55 ind./10 cm² (Feb. 1983) and 5610 ind./10 m² (Jun. 1985).
A total of 32 species representing 27 genera were identified and are presented in Table 1; mean density values (ind./10 cm² with a precision of 1 ind./10 cm² for the species and of 5 ind./10 cm² for the community) are

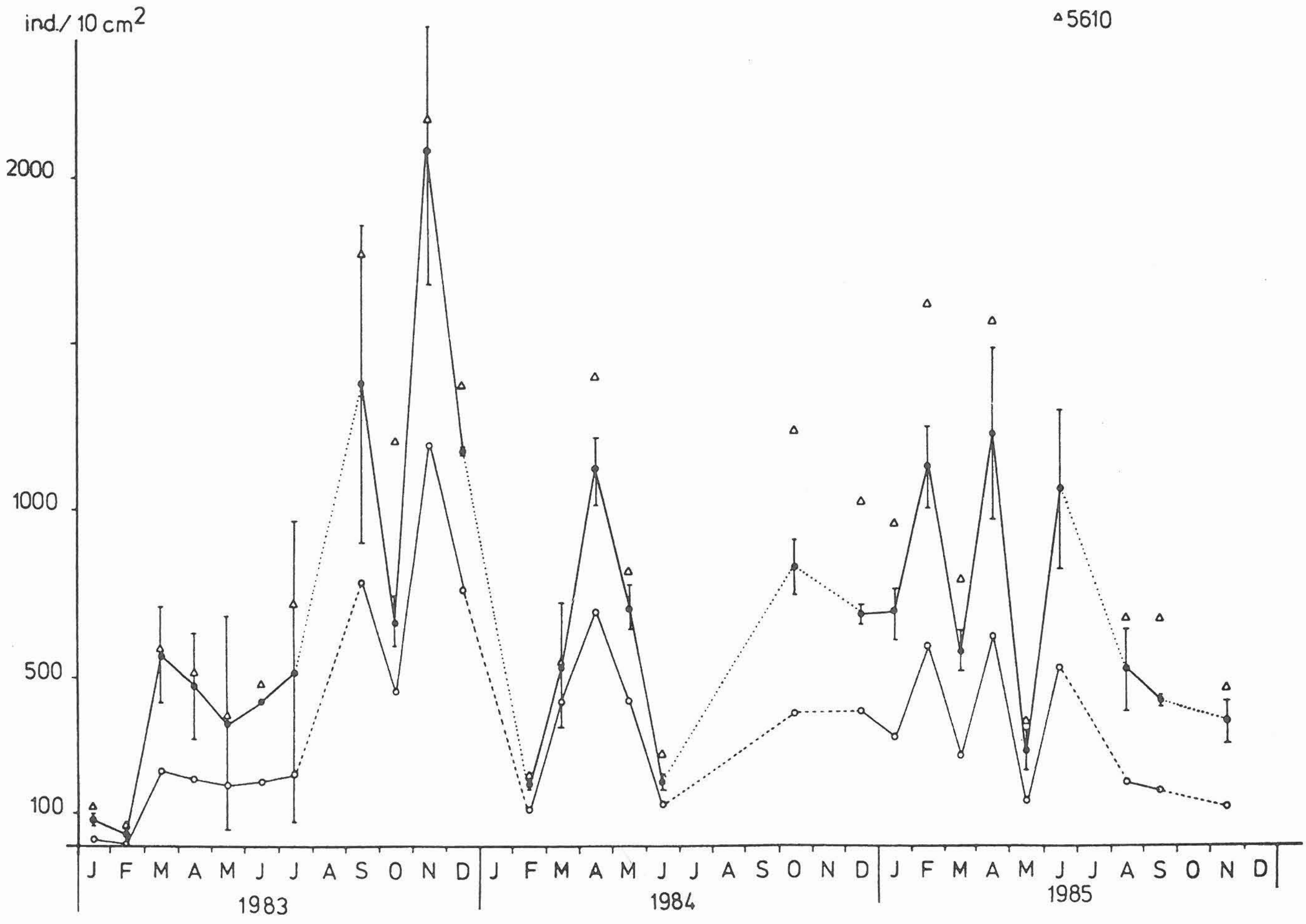


Fig. 1. Density (ind. / 10 cm²) of the nematode community (Δ), of S. punctata *(ad. + juv.) (●; ± SE) and of* S. punctata *(juv. (°)) over three years.*

noted together with the frequency of occurrence and the feeding type of each species. *Sabatieria punctata* (KREISS, 1924) is the only species that is found on every sampling date, and in high numbers. From the 31 other species, only three occur with a frequency of more than 50%. These are in decreasing order of dominance : *Ascolaimus* sp. 1, *Daptonema tenuispiculum* (DITLEVSEN, 1918) and *Metalinhomoeus* n.sp. 1.
The relative abundance of *S. punctata* within the community ranges between 18.8% (Jun. 1985) and 98.6% (Mar. 1983).
The four dominant species are non-selective depostfeeders (type 1B, see WIESER, 1953) ; the other feeding types are presented in low numbers (from 32 species, 3 are selective deposit-feeders (1A), 13 are non-selective deposit-feeders (1B), 8 are epistratum-feeders (2A) and 8 are predators/omnivores (2B)).
Only the distribution of three dominant species will be discussed in more detail. *Metalinhomoeus* n.sp. 1 is not considered in detail because the species never occurs in high numbers (max. value in April 1984 : 133 ind./10 cm²).

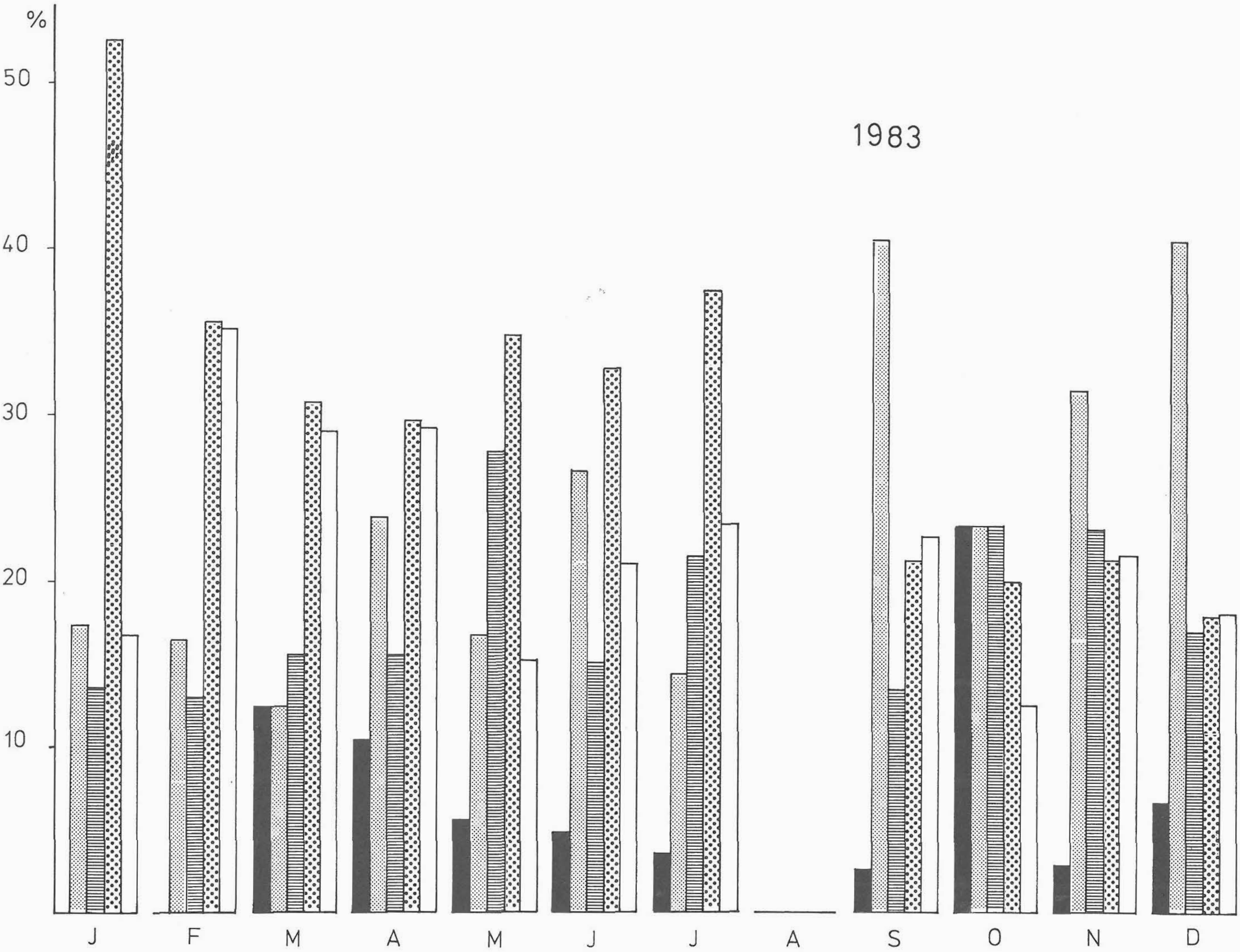
DOMINANT SPECIES

Sabatieria punctata

Density

Fig. 1 shows the fluctuation of the total density over the three years. Because *S. punctata* is the dominant species of the community, the pattern is similar to the density pattern of the whole community.
Between sample variance (mean of two replicates) of the population density (adults + juveniles) is significantly higher than within sample variance (between replica's) ($F=4.237$, $df=26$ and $27, p<0.001$).
A maximum density peak is present in Mar. 1983, Sep. 1983, Nov. 1983, Apr. 1984, Oct. 1984, Feb. 1985, Apr. 1985 and Jun. 1985. An absolute maximum is found in Nov. 1983 (2083 ind./10 cm²). Lowest density value occurs in Feb. 1983 (45 ind./10 cm²) ; in Oct. 1983, Feb. 1984, Jun. 1984, Jan. 1985, Mar. 1985, May 1985 and Aug. to Nov. 1985 only about 100 ind./10 cm² were present.
Neither the maximum, nor the minimum values are preceded by a distinct change in temperature.

Fig. 2. Age structure of Sabatieria punctata *over three years. Five age classes were distinguished; from the left to the right in each month : Juv I, Juv II, Juv III, females and males.*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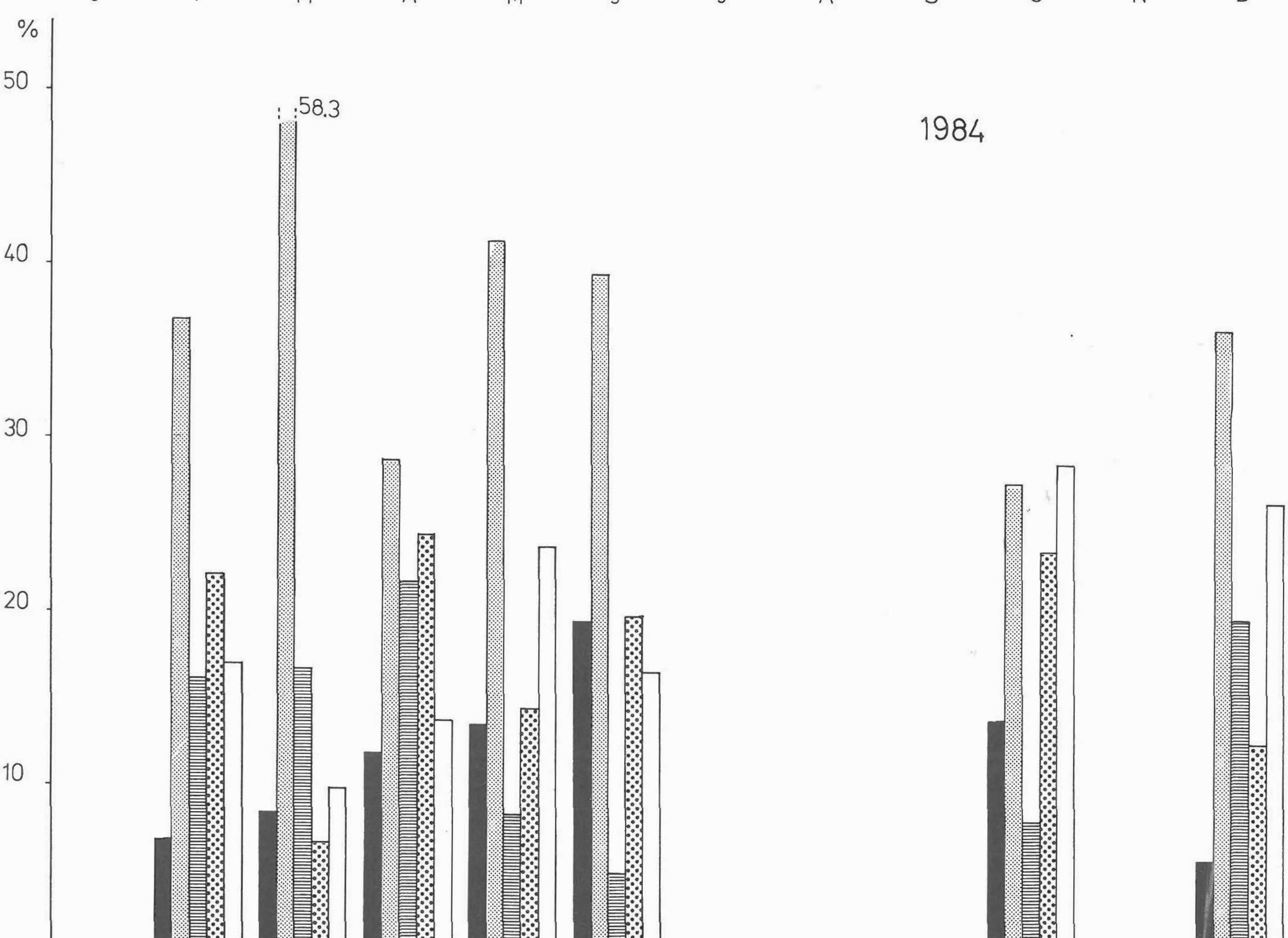
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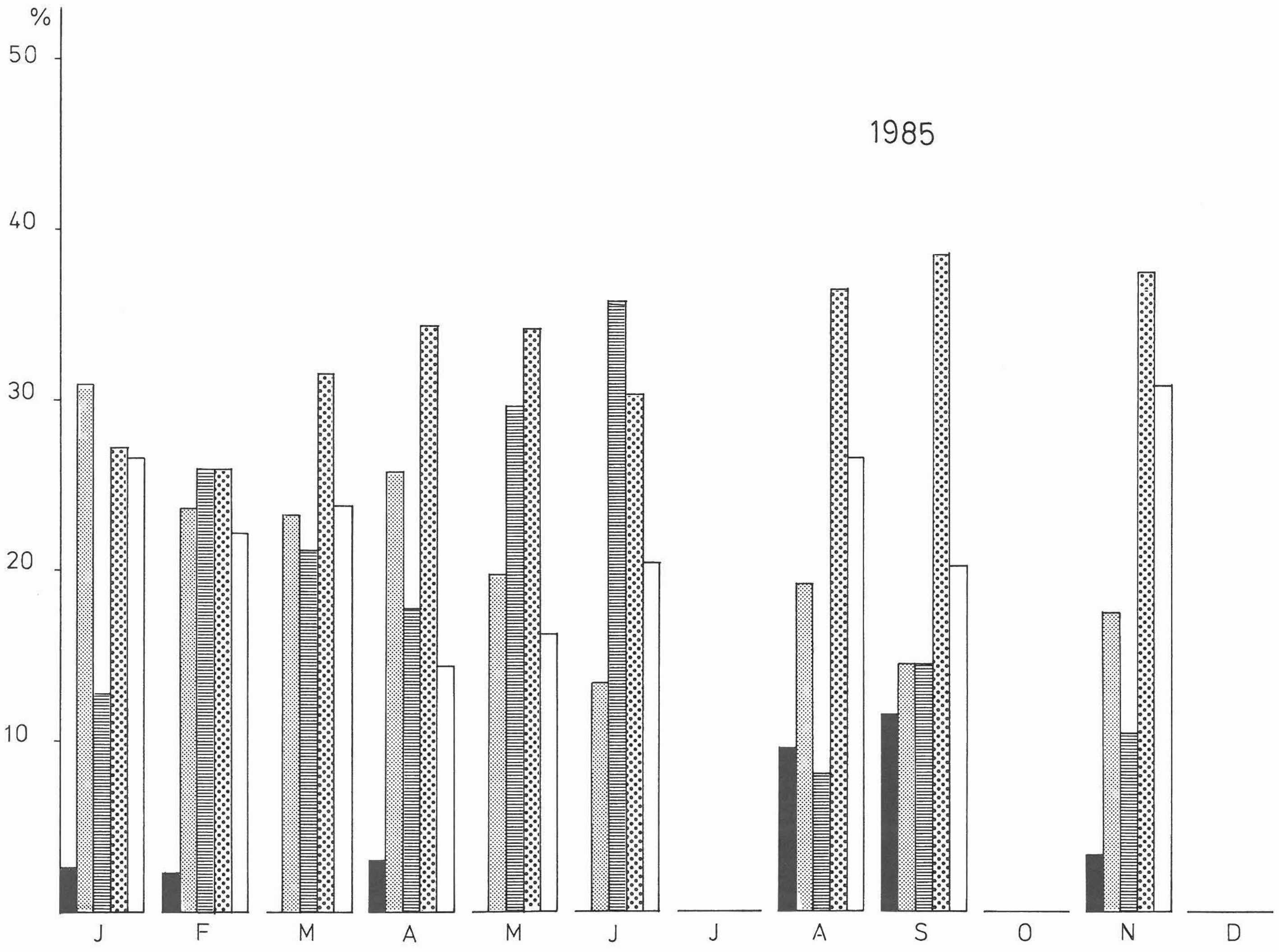


Age structure

Adults. The population consists for 30.4% to 70.7% of adults ; mean value over the three years is 49.4. The sex-ratio (♂♂/♀♀) equals 1 in most periods. Females are more abundant in Jan, May, Jun 1983, Sep 1983, Jun 1984, May-Nov 1985. Males outnumber females in may 1984, Oct 1984 and Dec 1984. The relative abundance of the males and females is shown in Fig. 2.

Juveniles. On the average, 50.1% of the total population is presented by juveniles (cf. Fig. 1 & 2) ; values vary between 29.3% and 69.9%.

Three size classes of juveniles (Juv I : less than 700 μm ; Juv II : between 700-1100 μm and Juv III : more than 1100 μm) are distinguished (Fig. 2).

The numbers (and relative abundance) of the smallest size class of juveniles increase twice a year : in spring (Mar, Apr, May) and in autumn (Oct 1983, Aug and Sep 1985) ; only in spring 1984 is the increase in small juveniles not limited to one or two months but seems to continue to a maximum value of the smallest juveniles in Jun 1984 ; no summer data of 1984 are available but October 1984 has a fairly large amount of small juveniles too.

The increase of the relative abundance of the smallest juveniles coincides with a decrease in total numbers of the population ; i.e. the increase of the relative abundance of the juvenile classes may be partly due to mortality of adults too. This probably occurs in Oct 1983, Feb and Jun 1984, Aug and Sep 1985. These periods may be considered as periods where a more distinct change of generations takes place. However, it is not possible from these data to estimate the exact number of generations per year.

Production estimates

Production of *S. punctata* is calculated by a method developed by VRANKEN *et al.* (1986). This method is based on a regression equation relating egg-to-egg development time Tmin to temperature (t) and adult female body wet weight (W in ug) :

$$\log \text{Tmin} = 2.202 - 0.0461\text{t} + 0.627 \log\text{W} \quad (1)$$

The P/B was calculated for each month as 1/TminxDx3 (D=number of days per month). Biomass structure (males, females and juveniles) is determined for each month and so the monthly production for the species is calculated. Total production for one year divided by the average biomass (wet weight=ww) gives the annual

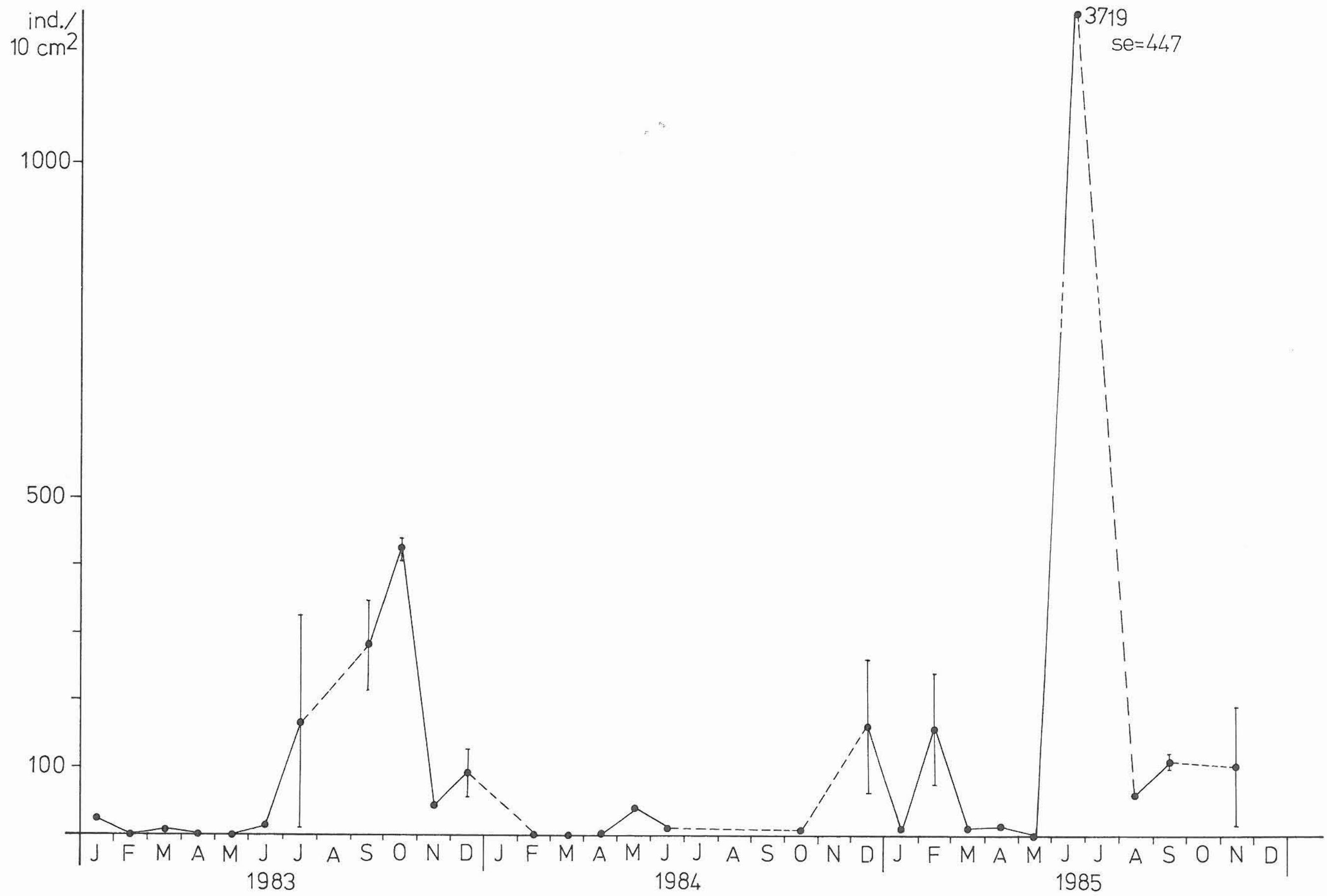
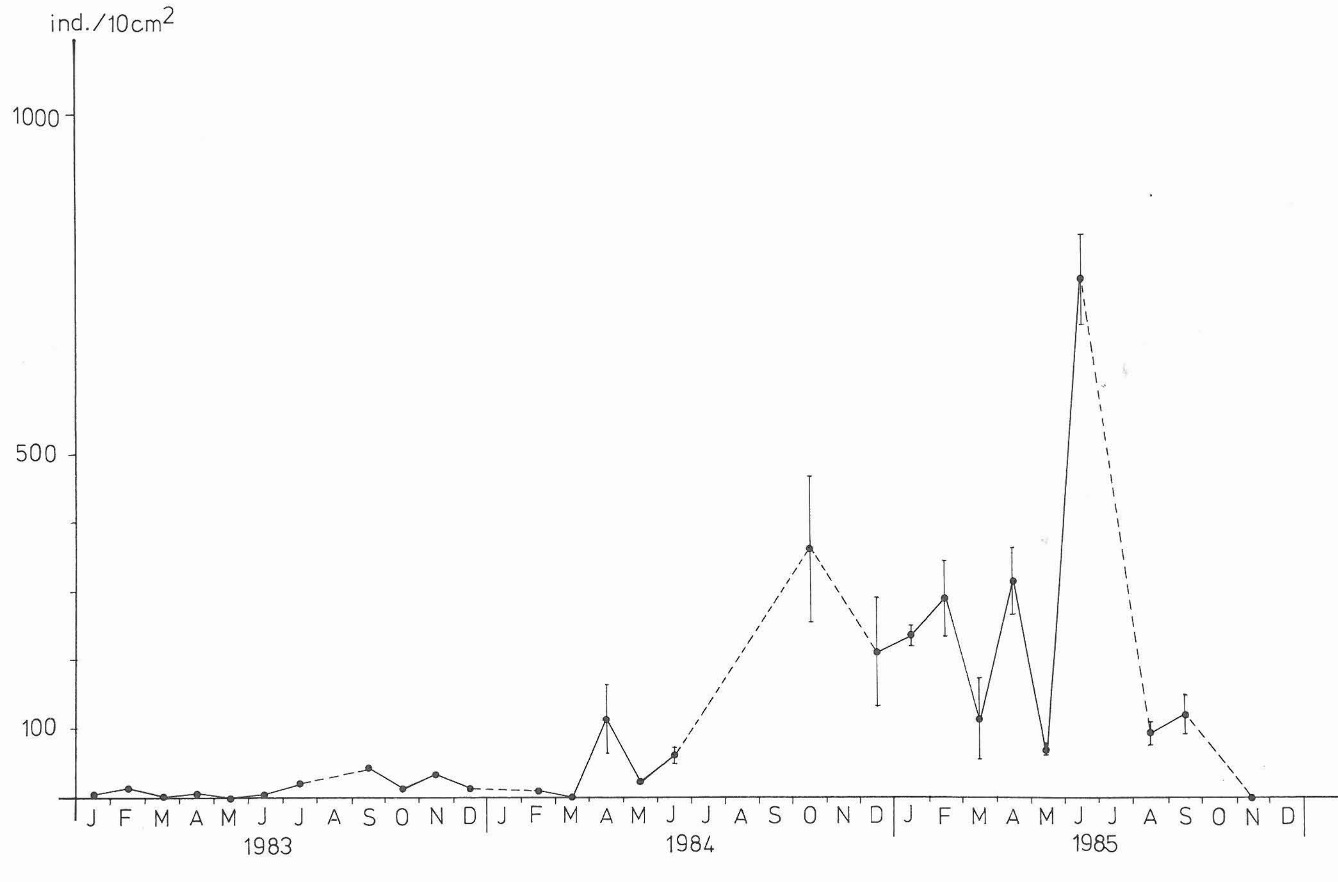


Fig. 3. Total density (ind./10 cm²) fluctuation of Daptonema tenuispiculum *over three years.*

Fig. 4. Total density (ind./10 cm²) fluctuation of Ascolaimus *sp. 1 over three years.*



P/B for the species.
Dry weight of *S. punctata* is determined directly (method in HEIP *et al.*, 1985) for 150 males, females and juveniles ; dry weight is 15% of the wet weight and individual ww are : males : 2.297 μg, females : 2.424 μg and juveniles : 0.699 μg.
From equation (1) it is shown that the calculated Tmin for *S. punctata* varies between 263.0 days at 0.5°C and 43.3 days at 17.5°C. The annual P/B is not determined for 1984 due to the scarcity of samples from that year.

	1983 (Jan-Dec)	1985 (Dec 84-Nov 85)
Total production (g ww/m^2.y)	16.612	14.172
Average biomass (g ww/m^2)	0.983	1.004
P/B	16.92	14.12

Daptonema tenuispiculum
Density
Fig. 3 shows the fluctuation of the total density over the three years. Because density values mostly are low and the species is often present only in one of the two replica's, I do not represent the SE in the figure for values less than 50 ind./10 cm^2.
Density peaks (>200 ind./10 cm^2) are found in Sep-Oct 1983, and in Jun 1985 (3719 ind./10 cm^2). In autumn 1983, about 45% of the population are juveniles ; in June 1985 the population consisted for about 98% of very small juveniles. In aug 1985, about 75% are juveniles but the total density of the species decreased almost ten times.
Mean density of *D. tenuispiculum* over three is 201 ind./10 cm^2 (SE=97). KRUSKAL-WALLIS test showed that the between sample variance of *D. tenuispiculum* population density (adults+juveniles) is significantly higher than within sample variance (between replica's) ($N=54$, $\chi^2=43.414$; $p<0.05$).

Production estimates
Individual wet weights are calculated from measurements (ANDRASSY, 1956) ; males : 1.12 μg ; females : 1.24 μg ; juveniles : 0.59 μg (juveniles are on the average 50% of the adult body weight).
The calculated Tmin varies between 173.0 days at 0.5°C and 28.5 days at 17.5°C.

	1983 (Jan-Dec)	1985 (Dec 48-Nov 85)
Total production (g ww/m^2.y)	3.026	9.283
Average biomass (g ww/m^2)	0.095	0.326
P/B	31.9	28.5

Ascolaimus sp.1
Density
Fig. 4 shows the fluctuation of the total density over three years. Because many density values are very low and because the species is often absent in one of the two replicates, the SE in the figure for values less than 50 ind./10 cm^2 is not given. A KRUSKAL-WALLIS test shows that the density of the *Ascolaimus* sp.1 population (adults+juveniles) is significantly different between months ($N=54$, $\chi^2=50.141$, $p<0.05$).
Ascolaimus sp.1 occurs in low numbers in 1983 till Jun 1984 (mean value 21 ind./10 cm^2). From autumn 1984 on, the species reaches high density values (mean value for 1985 is 221 ind./10 cm^2 with a maximum value of 763 ind./10 cm^2 in Jun 1985).
Ascolaimus sp. 1 makes up for more than 10% of the nematode community in Feb 1983, Oct and Dec 1984, Jan till Jun 1985, Aug and Sep 1985.
The increase in importance in 1985 cannot be explained by differences in sediment characteristics or other parameters known for the moment.

Age structure
A detailed figure of the age distribution is presented for 1985 because only during this year the density values are high enough in most months. (Fig. 5).
The population consists for 27.1% to 72.4% of adults ; mean value for 1985 is 56.2%. The sex-ratio (♂♂/♀♀) ranges between 0.51 and 3.51. A very high number of juveniles is found in Mar 1985, followed by a peak value of adults in May. Both months have rather low density values. The very high density in Jun 1985 is not caused by a large number of juveniles, neither is the abrupt decrease in August accompanied by a change in age structure of the population (Jun and Aug are comparable). The constant high number of juveniles suggested that reproduction of *Ascolaimus* sp.1 is continuous throughout the year with perhaps a more active reproductive period in spring (?).

Production estimates
Individual wet weights are calculated from measurements (ANDRASSY, 1956) ; males : 1.83 μg ; females 3.48 μg ; juveniles : 1.33 μg. The calculated Tmin varies between 330.3 days at 0.5°C and 54.4 days at 1.75°C.

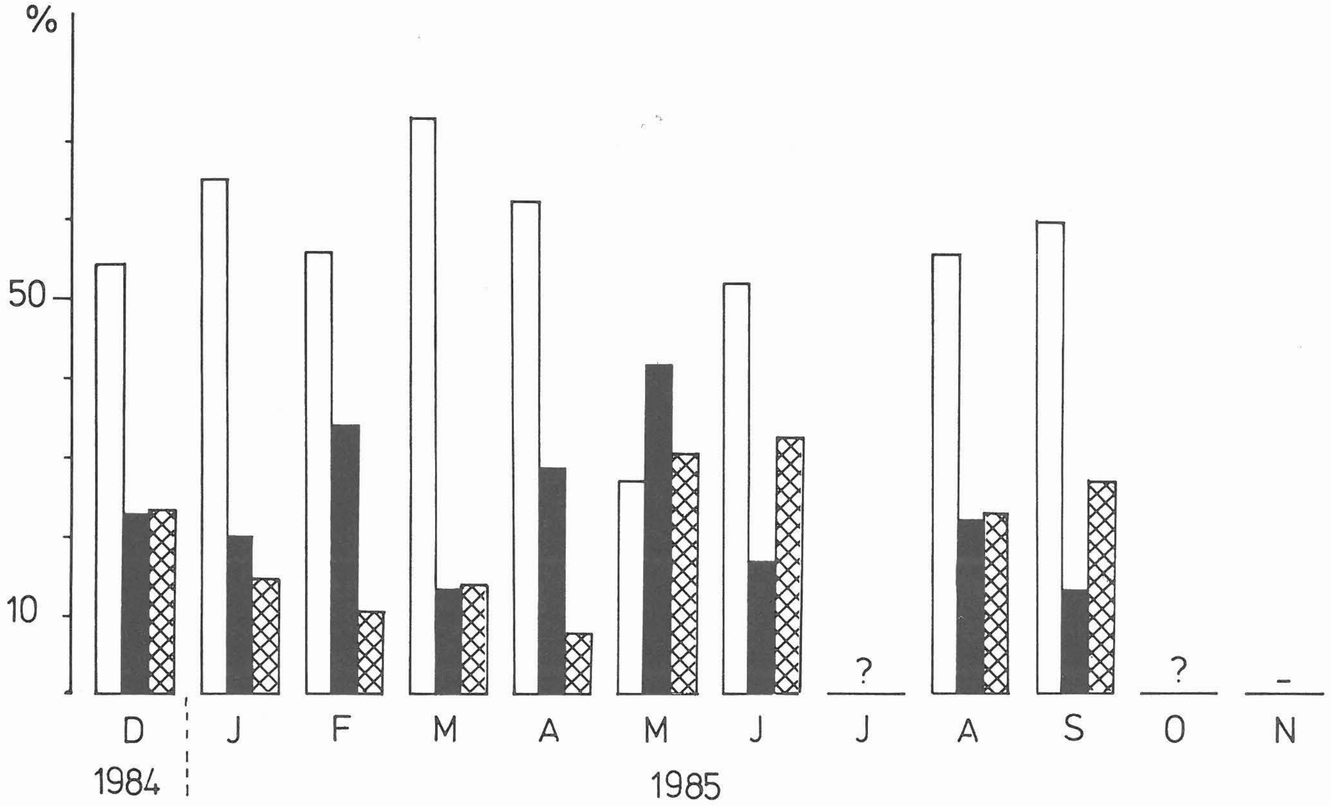


Fig. 5. Age structure of Ascolaimus *sp. 1 over one year (1985) ; from the left to the right in each month : Juv, females and males.*

	1983 (Jan-Dec)	1985 (Dec 84-Nov 85)
Total production (g ww/m^2.y)	20.569	28.936
Average biomass (g ww/m^2)	1.136	1.792
P/B	18.11	16.15

The contribution of the three dominant species of the community in the total yearly production is :

	1983	1985
Sabatieria punctata	80.0%	48.9%
Daptonema tenuispiculum	14.7%	32.1%
Ascolaimus sp.1	1.8%	17.0%

The three dominant species contributed together for more than 95% of the yearly production of the whole community.

Discussion

The life cycle of *Sabatieria punctata* can be summarized as follows : juveniles occur throughout the year and reproduction is considered to be almost continuous. Analysis of growth or mortality of cohorts in the field has not been possible for this population. A more active reproductive period occurs in spring from March till May. Juveniles from this period probably reach adulthood two to three months later. These adults probably produce juveniles in autumn (Sep-Oct) and adults of the older generation die at this moment (?) (there is always a clear decrease in total density at that time and the decrease in adults is more pronounced than in the juveniles). Differences between male and female development have not been found.

From regression equation (1) it is shown that the reproductive cycle is obviously influenced by temperature. Equation (1) is mainly determined by values for opportunistic species. The nematodes from sublittoral areas are probably more conservative species and the obtained result for the annual P/B may overestimate the productivity of these species (VRANKEN *et al.*, 1986). VRANKEN & HEIP (1985) found a relationship between egg weight and embryonic development at 20°C. This relationship predicted the embryonic development time of *S. punctata* from the Sluice Dock of Ostend precisely (prediction : 9.87 d ; experimental : 9.92d). Generation time is about 3.5 times longer than embryonic development (VRANKEN, unpublished results) and from this a generation time of about 35 days is predicted for 20°C. A similar value is obtained calculating Tmin from equation (1) for 20°C, i.e. 33.2 d. Neither for *D. tenuispiculum*, nor for *Ascolaimus* sp.1, comparable experimental developmental data are available.

For the period 1977-1979, HEIP *et al.* (1984) calculated the production of the nematode communities for several coastal stations. The average biomass of the nematode community in station 702 for this period equals 0.15 g C/m^2 which is 4 tot 4.5 times lower than for 1985 and 1983 respectively. For the period 1977-1979, only the high density months were sampled, and no information was available on the fluctuation of the biomass over the year. P/B=9 (GERLACH, 1971) was used to calculate the annual production and a value of 1.37 g C/m^2.y was obtained. When we use the annual P/B=17, which is the mean value of 1983 and 1985, for the nematode community in station 702, an annual value of 2.55 g C/m^2.y is obtained for the period 1977-1979, which is twice as high as the value estimated by HEIP *et al.* (1984).

Temperature and food are the most obvious factors explaining the density changes in marine nematodes. Deposit-feeders (as *S. punctata, D. tenuispiculum* and *Ascolaimus* sp.1) tend to reach maximum number in autumn, winter and early spring, due to the incorporation of primary production into the sediment.

Comparing overall community densities throughout the year, no significant differences in winter and summer values can be found in the sublittoral nematode communities studied so far (*e.g.* LORENZEN, 1974 ; JUARIO, 1975 ; BOUCHER, 1980). Only a few species which show significant differences between summer and winter, are those from which sufficient material (specimens) is examined.

Several authors examined the reproduction of *S. punctata* in the field.

SKOOLMUN & GERLACH (1971) found a density peak in winter or spring for *S. vulgaris* (=syn. with *S. punctata* in VINCX, 1986) in an intertidal sand-flat in the Weser estuary in Germany. JUARIO (1975) discussed the life cycle of *S. pulchra* (=close to *S. punctata*) in the German Bight. The three juvenile size classes were encountered every month ; egg deposition occurs regardless of season. The mean abundance as well as the number of juveniles in summer and winter do not differ significantly. Throughout the year, the population consists for more than 50% of juveniles in Sep (45-50%). BOUWMAN *et al.* (1983) found that the juveniles of *S. pulchra* accounted for about 75% of the population ; in this case, however, samples were taken only 3 cm deep into the sediment. As we found in the vertical distribution in station 702 (Feb and Mar 85) the juveniles are more concentrated in the upper layers ; hence the high % of juveniles in the Ems Dollard estuary. From the distribution of age, BOUWMAN *et al.* (1983) suggest that there was no particular period for reproduction and that the species reproduces throughout the year. However, the summer peak in density suggests particularly high reproductive activity in the preceding period.

Laboratory experiments (VRANKEN & VANDERHAEGHEN, pers. comm.) showed that *S. punctata* feeds on bacteria.

JENSEN (1981) noted that in sublittoral muddy sediments in the Sound (Baltic Sea), *S. punctata* is most abundantly found in the transition zone between aerobic and anaerobic sites.

The metabolic requirements for a nematode having its permanent life in the RPD layer are presently unknown. WARWICK & PRICE (1979) presented a respiratory value for *S. pulchra* (log a=0.197 at 20°C) which supports the adaptation to life in oxygen deficient habitats as a facultative anaerobic animal. The value of a (in the formula R = aVb wiht R=respiration and V unit body weight or volume and b=0.79 (ZEUTHEN, 1953) is considered to be an indication of metabolic activity (SCHIEMER & DUNCAN, 1974) ; it represents the respiration of a weight or volume unit nematode.

Table 2. Mean wet weights (µg) fo the nematode species from station 702 (for complete species names, cf. Table 1).

	Juv.	Fem.	Mal.
Anoplostoma sp.	1.11	3.27	1.15
Ascolaimus sp. 1	1.33	3.48	1.83
C. maxweberi	3.96	10.19	5.63
C. pellita	0.54	1.07	1.07
D. flagellicaudatum	0.13	0.25	0.27
D. normandicum	1.48	4.35	1.58
D. riemanni	0.18	0.36	0.34
D. tenuispiculum	0.59	1.24	1.12
D. zeelandicus	0.27	0.59	0.50
E. vulgaris	3.99	10.22	5.74
M. diplechma	11.88	35.53	12.02
Metalinhomoeus n.sp. 1	0.46	1.13	0.69
M. marinus	0.51	1.25	0.80
M. turgofrons	0.20	0.30	0.64
M. disjuncta	0.15	0.21	0.40
N. trichophora	0.19	0.45	0.31
Oncholaimus sp.	4.54	11.26	6.90
O. perfectus	1.78	3.33	3.78
P. thaumasius	0.86	2.33	1.11
P. pentodon	1.67	4.16	2.54
P. macramphis	0.21	0.54	0.29
P. ditlevseni	0.58	1.06	1.29
R. flexile	0.20	0.39	0.39
R. inaequalis	0.69	1.89	0.86
S. celtica	1.84	4.37	3.00
S. punctata	0.70	2.42	2.30
S. gracilis	0.40	1.08	0.52
S. parasitifera	2.10	5.97	2.43
T. longicaudata	0.50	1.32	0.68
T. pertenuis	0.42	1.08	0.63
V. franzii	2.08	3.59	4.75
V. glabra	1.37	3.64	1.85

	1983											1984							1985										
	Jan	Feb	Mar	Apr	May	Jun	Jul	Sep	Oct	Nov	Dec	Feb	Mar	Apr	May	Jun	Oct	Dec	Jan	Feb	Mar	Apr	May	Jun	Aug	Sep	Nov	f	f.t.
Anoplostoma sp.	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1B
Ascolaimus sp. 1	1	8	3	4	-	4	23	43	11	29	14	4	-	117	19	60	365	213	231	296	110	318	66	763	90	116	-	14	1B
Calyptronema maxweberi	-	-	1	-	-	-	-	-	-	-	20	3	2	23	7	-	-	-	-	3	-	6	-	-	-	-	-	8	2B
Chromaspirina pellita	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2B
Daptonema flagellicaudatum	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1B
Daptonema normandicum	-	-	-	-	-	-	-	-	3	-	-	-	-	5	-	-	6	-	5	-	24	10	-	-	-	17	-	7	1B
Daptonema riemanni	-	-	-	2	-	4	6	-	3	4	-	-	-	-	-	-	6	-	-	32	2	-	6	22	-	-	5	11	1B
Daptonema tenuispiculum	24	-	6	3	-	11	167	278	427	41	91	-	-	-	34	8	6	156	8	155	5	10	-	3719	65	109	105	21	1B
Desmolaimus zeelandicus	-	-	-	1	-	2	-	3	-	-	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1B
Euchromadora vulgaris	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	2A
Mesacanthion diplechma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	1	2B
Metalinhomoeus n.sp. 1	-	-	2	3	12	16	1	15	84	-	38	2	-	133	-	15	-	4	-	3	1	10	-	44	-	7	-	17	1B
Microlaimus marinus	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2A
Molgolaimus turgofrons	5	2	-	-	-	-	-	-	-	-	-		-	-	-	-	12	6	-	-	-	-	-	-	-	-	-	4	1A
Monhystera disjuncta	-	-	-	-	2	4	-	-	-	7	-	2	-	-	-	-	-	-	5	-	1	6	-	-	-	-	-	7	1B
Neochromadora trichophora	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	2A
Oncholaimus sp.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2B
Onyx perfectus	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2B
Paracanthonchus thaumasius	3	-	-	1	-	-	-	-	5	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	2A
Paracyatholaimus pentodon	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	2A
Paralongicaud. macramphis	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2A
Prochromadorella ditlevseni	-	-	-	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2A
Rhadinema flexile	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1A
Richtersia inaequalis	2	-	-	-	3	2	-	-	3	-	-	8	5	-	-	3	-	10	-	-	-	-	-	-	-	-	-	8	1B
Sabatieria celtica	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	6	-	8	8	2	-	3	-	10	-	-	8	1B
Sabatieria punctata	89	41	563	482	360	433	517	1395	654	2082	1174	179	522	1124	701	194	822	650	695	1136	585	1231	285	1067	526	437	365	27	1B
Sphaerolaimus gracilis	-	-	3	8	-	-	-	17	-	14	4	2	7	-	-	-	-	-	5	2	1	-	-	-	-	-	-	10	2B
Spirinia parasitifera	4	1	-	2	-	-	-	-	3	-	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	2A
Terschellingia longicaudata	-	-	1	2	5	-	-	15	-	9	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	6	1A
Theristus pertenuis	3	-	-	2	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1B
Viscosia franzii	4	-	-	-	-	1	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	2B
Viscosia glabra	1	-	-	-	-	-	-	-	-	-	-	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	3	2B
Mean total density	140	55	580	520	385	480	725	1770	1205	2190	1380	205	538	1405	765	280	1225	1040	950	1640	435	1591	365	5615	695	690	475		

Table 1. Mean density (ind./10 cm²) per month of the nematode species in station 702 during 1983-1985 (f=frequency on the 27 sampling dates ; f.t.=feeding type).

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