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Plankton Committee.

Preliminary Notes on Zooplankton Investigations from 3 Danish Lightvessels 1962 - 1971.

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Since 1952 primary production measurements have been performed from some Danish lightvessels (Steemann Nielsen 1958, 1960, 1964). In 1962 the planktonprogramme was increased by sampling the smaller plankton simultaneonsly with the primary production measurements. The aim was to compare the primary production with the abundance of herbivorous zooplankters according to a list (table 1.) set up by Dr.Vagn Kr. Hansen, who was then in charge of the project. The positions of the lightvessels are shown in fig.1.

Until June 1, 1971 zooplankton samples have been collected from 3 lightvessels at fixed depths and with additional sampling in the discontinuity layer. An 8-liter waterbottle was used. The reason for using this type of gear has been described earlier (Hansen & Andersen 1962). The samples were filtered through MONODUR 28 and preserved in buffered 4% formaldehyde onboard the lightvessels and the entire samples were identified and counted in the laboratory. The total sampling programme was discontinued June 1, 1971.

The objective of this note is to present some examples of the data obtained in the survey and thereby to provide the necessary background for a discussion by the Plankton Committee of the feasibility of having the collected data published in a non-costly form under the auspices of ICES. At present there are no specialists working on zooplankton in Denmark and it is therefore felt that the material should be made available to all it may interest.

Table 2 gives for each sample the date, temperature, salinity, rate of primary production and the number of specimens in species or taxa. In numerous cases additional remarks have been added during the counting process and these notes are referred to by the number given in brackets. The remarks are listed on separate sheets (cf. Table 3). To some extent calculations of the number of zooplankters in a water column have been carried out; the values were expressed per m^2 in order to facilitate a comparison with the primary production. Likewise the percentage distribution of holoplankters and meroplankters has been calculated in order to estimate the qualitative importance of these two major groups at various

times of the year.

Table 4 gives an overall idea of the samplings and calculations based on the countings.

The entire preserved material is kept at The Danish Institute for Fishery-and Marine Research. Copies of data covering 1 year for 3 light-vessels will be presented at the meeting of the Committee. It is estimated that the entire published material will cover approximately 400 double-pages like table 2.

Hansen,V.Kr. & K.P.Andersen (1962)
Sampling the Smaller Zooplankton.
Rapp.Cons-int.Explor.Mer. 153: 39-47.

Steemann Nielsen,E., (1958)
A Survey of Recent Danish Measurements of the Organic Productivity in the Sea.
Rapp.Cons-int.Explor.Mer. 144: 92-95.

_ (1964)
Investigations of the Rate of Primary Production at two Danish Lightvessels in the Transition Area between the North Sea and the Baltic.
Meddr.Danm.Fisk-og Havunders.N.S.4(3): 31-77.

_ & V.Kr. Hansen (1960)
Undersøgelser over planteplanktonets stofproduktion i de danske farvande.
Skr.Danm.Fisk-og Havunders. 21: 27-38.

Skib **Redskab** 8 l pl. h. **Bearbejdet:** Dato / - / 19

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Kl. GMT. lok.

	Gruppe/art	Antal	Grupper Antal	Grupper %	Bemærkninger
Holoplankton	1. Calanus				
	2. Pseudocalanus				
	3. Temora longicornis				
	4. Acartia longiremis				
	5. Acartia excl. no. 4				
	6. Oithona				
	7. Andre Copepoda				
	8. Microsetella norvegica				
	9. Harpacticoida excl. no. 8				
	10.				
	11.				
	12. Copepoda totalantal				
	13. Copepodnauplier				
	14. Podon				
	15. Evadne				
	16. Ostracoda				
	17.				
	18. Crustacea excl. copepoda				
	19. Crustacea totalantal				
	20. Aglantha				
	21. Planula				
	22. Pleurobrachia pileus				
	23. Vandmider				
	24. Chaetognatha				
	25. Oikopleura				
	26. Fritillaria				
	27. Noctiluca				
	28.				
	29. Non-Crustacea totalantal				
	30. Holoplankton totalantal				
Meroplankton	31. Balannauplier				
	32. Cypris				
	33. Rejelarver				
	34. Zoea				
	35.				
	36. Meroplankton, Crustacea				
	37. Meduser, excl. Aglantha				
	38. Nematoda				
	39. Pilidiumlarver				
	40. Trochophorlarver				
	41. Polychaetlarver				
	42. Actinotrocha				
	43. Cyphonautes				
	44. Sneglelarver				
	45. Muslingelarver				
	46. Bipinnaria				
	47. Ophiopluteus				
	48. Echinopluteus				
	49. Auricularia				
	50. Postlarvale Echinodermer				
	51.				
	52. Branchiostoma				
	53. Fiskeæg				
	54. Fiskelarver				
	55. Meroplankton, non-Crustacea				
	56. Meroplankton total				
Total	57. Totalantal				

Fig. 1.

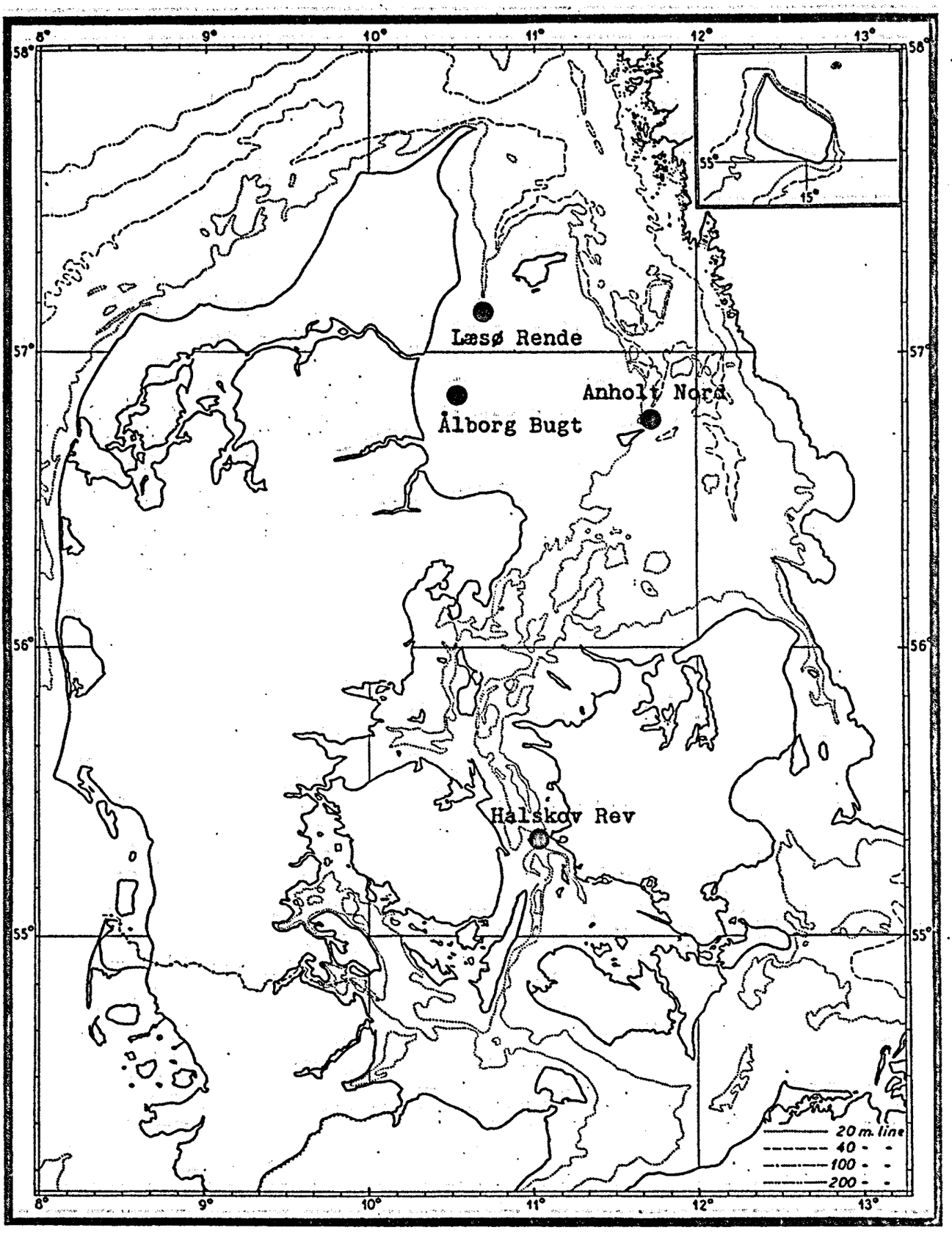
8°
9°
10°
11°
12°
13°
58°
57°
56°
55°
Læsø Rende
Ålborg Bugt
Anholt Nord
Halskov Rev
55°
15°
20 m. line
40 - -
100 - -
200 - -

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Table 2.

Date	Depth	Temperature °C	Salinity °/oo	mg C/m³ per day	Calanus	Pseudocalanus elongatus	Temora longicornis	Acartia longiremis	Acartia sp.	Oithona	Centropages	Paracalanus parvus	Other Copepods	Microsetella norvegica	Other Harpacticoids	Copepod nauplii	Cladocera	Ostracoda, Euphausid, Cumacea
9/3.	0	2,8	24,7	44,10					2							28		
	3	3,1	25,5	35,94				1♂	2							17		
	7	4,6	32,4	33,37		28)	1		1	29)			6	4		48		
	10	4,8	33,1	7,21		1♂	1		1	30.)			7			64		
	12,5	4,9	33,2		32.)					33.)					5	42		
30/3.	0	3,1	29,9	80,02									1			4		
	3	3,2	30,1	72,47			1		1	38.)	39.)					27		
	7	3,1	31,5	23,57	43.)				1	44.)			16			41		
	10	3,1	32,1	15,03	49.)	1♂, 2♀♀	3♀♀, 4juv.		8	50.)			26			73		
	12,5	3,0	32,0		53.)	1♂	1♀, 3juv.		4	54.)			7	2		41		

Table 2.

30/5.	5/6.	
(45)		Aglantha, Planula, Pleurobrachia pil.
		Halacaridae
1 2	1	Chaetognatha
	1	Oikopleura
1 6 4 (40) 5	3 5 3	Fritillaria
		Noctiluca, Radiolaria
		Tunicata, Nemertini, Turbellaria
(51) (46) (44) (34)	(26) (23)	Cirripedia nauplii, Cypris
		Shrimplarvaes, Amphipoda, Isopoda
		Mysis, Eupagurus, Zoea, Anomura larvae
(53) (47)		Medusae
		Nematoda
(56) (52) (48) (42) (36) (35) (31)	(22) (24)	Pilidium larvae Trochophore larvae
5 1 3 4		Polychaete larvae
(37)		Cyphonautes, Actinotrocha
1 5 1 1		Gastropod larvae
4 48 63 2 17 113 21 7		Lamellibranch larvae
		Echinodermata
		Foraminifera, Tardigrada, Arachnactis
	(25)	Branchiostoma, Fishegga-and larvae

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Table 3.

1.) 42 Noctiluca.
2.) 1 Fishegg.
3.) 12 Noctiluca.
4.) 8 Noctiluca.
5.) 1 Trochophore larvae.
6.) 2 Cyphonautes.
7.) 2 Noctiluca.
8.) 1 Cirripedia nauplii.
9.) 7 Trochophore larvae.
10.) 5 Cyphonautes.
11.) 6 Trochophore larvae.
12.) 1 Trochophore larvae.
13.) 1 Trochophore larvae.
14.) 1 Cirripedia nauplii.
15.) 1 Trochophore larvae.
16.) 6 Cyphonautes.
17.) 2 Noctiluca.
18.) 31 Trochophore larvae.
19.) 7 Cyphonautes.
20.) 1 Podon.
21.) 3 Noctiluca.
22.) 24 Trochophore larvae.
23.) 1 Cirripedia nauplii.
24.) 3 Trochophore larvae
25.) 1 Fishegg.
26.) 2 Cirripedia nauplii.
27.) 4 Trochophore larvae.
28.) 5 Pseudocal. elong. (3♂).
29.) 12 Oithona helgolandica.
30.) 3 Oithona helgolandica.
31.) 2 Trochophore larvae.
32.) 1 Calanus sp., copepodit III, in tube.
33.) 4 Oithona helgolandica.
34.) 1 Cirripedia nauplii.
35.) 1 Trochophore larvae.
36.) 2 Trochophore larvae.
37.) 1 Cyphonautes.
38.) 5 Oithona helgolandica (1♀ with eggs).
39.) 1 Centropages hamatus, ♀.
40.) 17 Fritillaria (1 with eggs in tube)
41.) 2 Cirripedia nauplii + 2 Cypris.
42.) 19 Trochophore larvae.
43.) 4 Calanus sp. (copepodits, 2/III + 2/IV, in tube).
44.) 5 Oithona helgolandica.
45.) 1 Planula.
46.) 2 Cirripedia nauplii.
47.) 4 Meduses in tube.
48.) 24 Trochophore larvae
49.) 3 Calanus sp. (copepodits, 2/III + 1/IV in tube)
50.) 10 Oithona helgolandica.
51.) 1 Cirripedia nauplii + 4 Cypris.
52.) 12 Trochophore larvae.
53.) 1/IV Cal. helgolandicus + 4 Cal. sp. (3/III + 1/IV), in tube.
54.) 8 Oithona helgolandica (1♂ and 1♀ with eggs).
55.) 1 Rathkea octopunctata, in tube.
56.) 3 Trochophore larvae.

Table 4

Completed samplings and calculations

	Primary production salinity, temperature				Zooplankton samplings				Identification & counting				Calculations specimens per m^2				specimens per m^3				% distrib. of Holo- & Meroplankters			
	H. R.	A. N.	Å. B.	L. R.	H. R.	A. N.	Å. B.	L. R.	H. R.	A. N.	Å. B.	L. R.	H. R.	A. N.	Å. B.	L. R.	H. R.	A. N.	Å. B.	L. R.	H. R.	A. N.	Å. B.	L. R.
1962		x				x				x				x				x				x		
- 63		x		x		x		x		x		x		x		x		x		x		x		x
- 64		x		x		x		x		x		x		x		x		x		x		x		x
- 65		x		x		x		x		x		x		x		x		x		x		x		x
- 66	x	x	x		x	x	x		x	x	x		x	x	x		x	x	x		x	x	x	
- 67	x	x	x		x	x	x		x	x	x		x	x	x			x			x	x	x	
- 68	x	x	x		x	x	x		x	x	x		x	x	x		x	x			x	x	x	
- 69	x	x	x		x	x	x		x	x	x		x	x	x				x		x	x	x	
- 70	x	x	x		x	x	x		x	x	x		x	x	x						x	x	x	
- 71	x	x	x		x	x	x																	

Abbreviations: H.R. = Halsskov Rev L/V, A.N. = Anholt Nord L/V, Å.B. = Ålborg Bugt L/V, L.R. = Læsø Rev L/V, (replaced 1966 by an unmanned lighttower).