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NANNOPLANKTON RECORDS OBTAINED FROM CHESAPEAKE BAY

CRUISES OF R/V PATHFINDER AND R/V OBSERVER

JANUARY 1960 -- JANUARY 1961

VIRGINIA INSTITUTE OF MARINE SCIENCE
WATER RESOURCES LABORATORY

SPECIAL SCIENTIFIC REPORT NO. 21

1961

NANNOPLANKTON RECORDS OBTAINED FROM CHESAPEAKE BAY
CRUISES OF R/V PATHFINDER AND R/V OBSERVER

JANUARY 1960 - JANUARY 1961

Data on nanoplankton populations obtained on 24 cruises in the lower Chesapeake Bay in connection with a 12-month survey conducted by the Planktology Research Section are reported.

Five stations along the salinity gradient were occupied at approximately biweekly intervals. Station locations (Fig. 1) and mean low water depths were:

- 1) York River, opposite VFL ($37^{\circ}14'$, $76^{\circ}30'$); 30 ft.
- 2) York River, mouth ($37^{\circ}15'$, $76^{\circ}21'$); 30 ft.
- 3) Chesapeake Bay, York Spit Light ($37^{\circ}13'$, $76^{\circ}16'$); 12 ft.
- 4) Chesapeake Bay, off York Spit Channel ($37^{\circ}10'$, $79^{\circ}09'$); 25 ft.
- 5) Chesapeake Bay, north of Inner Middle Ground ($37^{\circ}08'$, $76^{\circ}02'$); 20 ft.

The sampling routine consisted of collection of water samples from surface and bottom, hydrographic determinations, and quantitative plankton tows with a Clarke-Bumpus sampler for net phytoplankton (no. 20 net) and net zooplankton (no. 10 net). The plankton collections are in process of analysis, and the results will be detailed elsewhere. Data obtained for surface and bottom salinity, surface and bottom dissolved oxygen, surface and bottom extinction coefficients, surface nitrate nitrogen, surface phosphorus fractions (dissolved and adsorbed orthophosphate, and dissolved and particulate organic phosphorus), surface total

chlorophyll, surface organic and inorganic seston, and counts of taxa and cells of nanoplankton are reported in VFL Special Scientific Report No. 20.

Water samples for study of the nanoplankton were collected at the surface and refrigerated until examined the same day upon return to the laboratory. Sedgwick-Rafter mounts of unconcentrated, living material were made and the organisms identified (insofar as feasible) and counted. Ciliates were excluded from the analyses, only diatoms and phytoflagellates being recorded. Identifications should be regarded as tentative, and free use of the symbol (?) in the lists understood as an attempt to make something of an exceedingly difficult group of organisms whose proper speciation requires more careful and specialized techniques than those employed. More definitive and more extensive lists of the planktonic flora will be prepared when the preserved samples have been analyzed.

Distribution of this report does not constitute publication, and the data are subject to correction and/or revision.

Bernard C. Patten
17 April 1961

CRUISE DATES

Cruise Designation

A	4 January 1960
B	26 January 1960
C	8 February 1960
D	23 February 1960
E	7 March 1960
F	21 March 1960
G	4 April 1960
H	19 April 1960
I	2 May 1960
J	23 May 1960
K	3 June 1960
L	17 June 1960
M	5 July 1960
N	18 July 1960
O	1 August 1960
P	11 August 1960
Q	26 August 1960
R	19 September 1960
S	3 October 1960
T	21 October 1960
U	14 November 1960
V	28 November 1960
W	19 December 1960
X	11 January 1961

Figure 1. Diagram of the lower Chesapeake Bay, showing locations of stations 1-5.

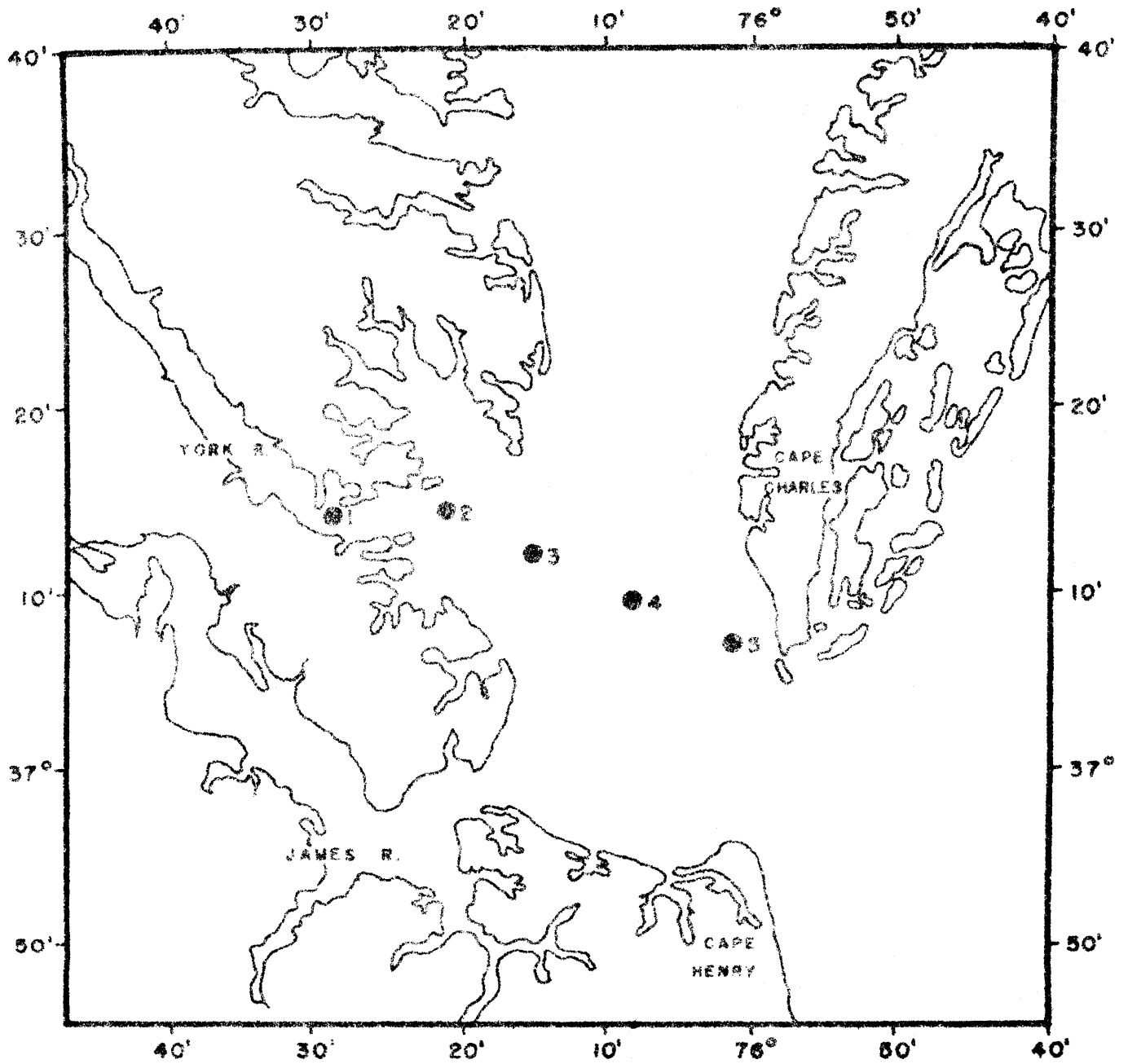


Table 1. List of nanoplankton recorded at station 1, with record of occurrence (x). Dominance is denoted by a, secondary importance by b, and tertiary by c. Codominance is indicated by a_1, a_2, \dots, a_n , and similarly for secondary and tertiary levels. More than one species in a taxon is indicated by coefficients, for example: 2x.

Table 2. List of nanoplankton recorded at station 2, with record of occurrence (x). Dominance is denoted by a, secondary importance by b, and tertiary by c. Codominance is indicated by a_1, a_2, \dots, a_n , and similarly for secondary and tertiary levels. More than one species in a taxon is indicated by coefficients, for example: 2x.

TABLE 2

Phylum EUGLENOPHYTA

A B C D E F G H I J K L M N O P Q R S T U V W X

Eutreptia sp. Perty

x x x x x

Phylum CHLOROPHYTA

Carteria (?) sp. Diesing

x

Chlamydomonas sp. Ehrenberg

x

Dunaliella (?) sp. Teodorescox x x x x x x x x x x b₁ x 2x a₁ xPeranema (?) sp. Ehrenberg

x

Pyramimonas sp. Schmarida

x x x x x x x x x x x x x x x

Phylum PYRROPHYTA

Amphidinium fusiforme Martinb₂Cochlodinium vinctum (?) Kofoid and Swezy

x

Dinamoebidium (?) sp.

x

Goniaulax unicornis (?) Lebour

x x x x x x x x x

Gymnodinium nelsoni Martin

x x x

Gymnodinium simplex (?) (Lohmann)

x x

Gymnodinium sp. (Stein) Kofoid and Swezyx x x x x x a₃ b₂ x x x xGyrodinium aureum (?) (Conrad) Schiller

x x

Gyrodinium calyptoglyphe Lebour

x

x

Gyrodinium dominans (?) Hulbert

x

Gyrodinium (?) sp. Kofoid and Swezy

x

Massartia rotundata (Lohmann) Schillera₁ xa₂Oxyrrhis marina Dujardin

x

Peridinium pyriforme (?) Paulsen

x

Peridinium sp. Ehrenberg

x

Pronoctiluca pelagica Fabre-Domergue

x

Prorocentrum micans Ehrenberg

x x x a x x x x x x x

Prorocentrum triangulatum Martinx x x x x a₂ x

Table 3. List of nanoplankton recorded at station 3, with record of occurrence (x). Dominance is denoted by a, secondary importance by b, and tertiary by c. Codominance is indicated by a_1, a_2, \dots, a_n , and similarly for secondary and tertiary levels. More than one species in a taxon is indicated by coefficients, for example: 2x.

TABLE 3

A B C D E F G H I J K L M N O P Q R S T U V W X

Phylum EUGLENOPHYTA

Eutreptia sp. Perty

x

Phylum CHLOROPHYTA

Carteria (?) sp. Diesing

x

Dunaliella (?) sp. Teodoresco

x

x

x

x x x

Halosphaera (?) viridis Schmitz

x

x

Peranema (?) sp. Ehrenberg

x

Pyramimonas sp. Schmarda

x

x x x

x

a

x

x

x

x

x

x

x

x

Phylum PYRROPHYTA

Amphidinium fusiforme Martin

x

x

Ceratium furca (Ehrenberg)

x

x

Ceratium lineatum Ehrenberg

x

Dinamoebidium (?) sp.

x

x

Goniaulax orientalis (?) Lindemann

x

Goniaulax sp. Diesing

x

Goniaulax unicornis (?) Lebour

x x x

Gymnodinium simplex (?) Lohmann

x

Gymnodinium sp. (Stein) Kofoid and Swezy

x

x x

c x x

x x x

x x

Gyrodinium aureum (?) (Conrad) Schiller

x x

Gyrodinium calyptoglyphe Lebour

x

Gyrodinium (?) sp. Kofoid and Swezy

x x x x

x

Massartia rotundata (Lohmann) Schiller

a

x

x

b

x

Peridinium breve Paulsen

x

Peridinium divaricatum Meunier

x

Peridinium trochoideum (Stein) Lemm.

x

x

Prorocentrum micans Ehrenberg

x x

x x x

x

x x

Prorocentrum triangulatum Martin

x x

x x x

x x

Unidentified Pyrrophyte

x

Table 4. List of nanoplankton recorded at station 4, with record of occurrence (x). Dominance is denoted by a, secondary importance by b, and tertiary by c. Codominance is indicated by a_1, a_2, \dots, a_n , and similarly for secondary and tertiary levels. More than one species in a taxon is indicated by coefficients, for example: 2x.

Table 5. List of nanoplankton recorded at station 5, with record of occurrence (x). Dominance is denoted by a, secondary importance by b, and tertiary by c. Codominance is indicated by a_1, a_2, \dots, a_n , and similarly for secondary and tertiary levels. More than one species in a taxon is indicated by coefficients, for example: 2x.

TABLE 5

A B C D E F G H I J K L M N O P Q R S T U V W X

Phylum EUGLENOPHYTA

Phacus sp. x

Phylum CHLOROPHYTA

Carteria (?) sp. Diesing xDunaliella (?) sp. Teodoresco x x xPyramimonas sp. Schmarada x x x x x x xStichococcus (?) sp. Butcher x

Unidentified Chlorophyte x x x

Phylum PYRROPHYTA

Amphidinium fusiforme Martin x xAmphidinium sphenoides Wulff xCeratium furca (Ehrenberg) xDinamoebidium (?) sp. xDinophysis acuminata Claparede and Lachmann xGoniaulax unicornis (?) Lebour x xGymnodinium sp. (Stein) Kofoid and Swezy x a₁ x x x x 2xGyrodinium dominans (?) Hulbert xGyrodinium (?) sp. Kofoid and Swezy xGyrodinium spirale Bergh xMassartia rotundata (Lohmann) Schiller x x x x xPeridiniopsis (?) rotunda Lebour x xPeridinium sp. Ehrenberg x xPeridinium trochoideum (Stein) Lemm. xProrocentrum micans Ehrenberg x xProrocentrum triangulatum Martin x x x x x

Table 6. Total cell counts, in units (cells, chains or colonies)
per ml.

TABLE 6

Cruise	Station 1	Station 2	Station 3	Station 4	Station 5
A	3154	4524	3284	3828	-
B	3001	2737	5026	2374	2026
C	2305	3507	6380	2001	4368
D	1812	3447	2769	2220	2283
E	1025	1427	2165	1387	823
F	2996	1530	1198	1209	1043
G	1512	2128	1141	1197	1287
H	2461	3741	3585	3246	1948
I	509	4519	5336	3267	1669
J	1656	2050	2168	3003	4518
K	3812	3750	986	1251	640
L	363	1809	2502	711	1394
M	2384	2454	1765	655	1043
N	3434	720	1837	244	412
O	1968	273	1210	910	565
P	723	677	828	572	680
Q	161	808	1008	1026	446
R	926	2254	1213	1218	1907
S	-	-	-	-	-
T	375	488	231	300	399
U	802	982	2233	2277	1309
V	1345	1643	2760	5700	3503
W	787	1839	1231	1058	168
X	1293	946	1294	1627	1308
- x	1687	2098	2267	1795	1534

Table 7. Number of taxa recorded, exclusive of ciliates.

TABLE 7

Cruise	Station 1	Station 2	Station 3	Station 4	Station 5
A	7	4	6	3	-
B	6	9	9	5	6
C	11	12	5	6	6
D	15	14	16	10	14
E	16	14	24	20	14
F	14	9	11	11	6
G	20	15	10	10	13
H	14	11	10	11	7
I	7	10	7	8	8
J	16	8	7	10	7
K	13	11	3	5	7
L	6	10	7	8	11
M	13	13	10	10	5
N	14	11	15	5	3
O	7	8	11	6	7
P	9	13	13	8	14
Q	5	12	11	18	8
R	10	17	16	15	15
S	-	-	-	-	-
T	5	5	6	6	12
U	11	9	17	20	17
V	11	15	14	17	17
W	11	13	13	10	6
X	11	12	14	13	16
\bar{x}	11.0	11.1	11.1	10.2	9.5