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Measurement of Photosynthetic Pigment in Baltic Waters, August 1970 - March 1972.

by

Östig R. Carlberg

August 1972

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Stig R. Carlberg
Fishery Board of Sweden, Hydrographic Department,
Gothenburg

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Area and period of measurement

Samples have been collected during the regular hydrographic cruises arranged by the Fishery Board of Sweden during the period August 1970 - March 1972. Most of the samples were collected in the Baltic Proper, but some samples were taken in the Gulf of Bothnia and the Kattegatt.

Gears used

The samples were collected with serial samplers either metal or plastic. After filtration the samples were stored in an ordinary deep freezer.

Method applied

The SCOR/UNESCO procedure for determination of the chlorophylls a, b and c was used as described in the New Baltic Manual (Carlberg 1972) or by Strickland and Parsons(1968).

In short this means filtration of the sample (in this investigation 1 litre) through a membrane filter of nitrocellulose (Sartorius SM 11 603) with a pore size of about 0.5 µm. Before the last part of the sample is strained through, 1 ml of a magnesium carbonate suspension (1 gram to 100 ml distilled water) is added. This basic substance will protect the pigment from deterioration by acids during the storage.

After filtration the filter is folded twice with the sample inside and put into a small paper envelope. The filter is then dried over silica gel in a refrigerator to the next day and thereafter stored over silica gel in a deep freezer.
The filter is then extracted with a suitable volume (14 ml) of a mixture of freshly distilled acetone (90 %) and distilled water (10 %) for about 18 hours in darkness at room temperature. After this the solution is centrifuged (in a fixed head centrifuge) at about 4 000 g.

The absorption of light of the extract is measured at 750 nm (turbidity), 663 nm (chlorophyll a), 645 nm (chlorophyll b) and 630 nm (chlorophyll c). In this investigation was used a Hitachi-Perkin Elmer Model 139 spectrophotometer with 5 cm cells.

Calculation

The absorption value at 750 nm is substracted from the other three. (Correction has also been made for the absorption of the filter which has dissolved in the acetone-water solution). The corrected values thus obtained: e_{663} e_{645} and e_{630} are used for calculation according to the SCOR/UNESCO formulas:

$$\text{Chl. a} = 11.64e_{663} - 2.16e_{645} - 0.10e_{630}$$

$$\text{Chl. b} = -3.94e_{663} + 20.97e_{645} - 3.66e_{630}$$

$$\text{Chl. c} = -5.53e_{663} - 14.81e_{645} + 54.22e_{630}$$

The quantity thus obtained is µg chlorophyll per ml extract.

$$\frac{\text{Chl. a} \cdot v}{V \cdot 1} = \mu g/\text{litre } (mg/m^3) \text{ of chlorophyll a}$$

v = volume of the acetone extract in ml
V = volume of the sea water filtered in l
l = cell length in cm

Finally, the total amount of the three chlorophylls from the surface down to a fixed depth has been estimated by integration.

In most cases the samples were collected from surface, 5 m, 10 m, 20 m and 50 m. If V_{50} is the total chlorophyll at 50 m, the integrated amount in mg/m^2 down to this depth is found from the formula:

$$\frac{V_{50} + V_{20}}{2} \cdot 30 + \frac{V_{20} + V_{10}}{2} \cdot 10 + \frac{V_{10} + V_5}{2} \cdot 5 + \frac{V_5 + V_0}{2} \cdot 5 =$$

$$15V_{50} + 20V_{20} + 7.5V_{10} + 5V_5 + 2.5V_0$$

NOTE! When the sampling was not extended down to 50 m no integration was carried out unless the sampling station was more shallow than 50 m. In these cases the deepest sample in fact was collected in the vicinity of the bottom.

General remarks

A great number of the measurements have been carried out in connection to the photosynthetic production measurements presented by Sen Gupta (1972), subsequent to this paper in the MHL Series. Those sampling stations are marked in the list with a (x), e.g. BY 15 (x). The corresponding physical and chemical data are also published in the MHL Series.

Financial support

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Acknowledgements

Assistance with analyses and calculation by Mrs Anita Taglind, Miss Eva-Gun Thelén and Miss Katarina Littorin is greatfully acknowledged. Thanks are also due to the officers and crew of the research vessels Skagerak and Thetis of the Fishery Board.

Literature

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Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
700826	F 8 (x)	0	2.2	0.4	0.6	3.2		7
0830	N64°40.5′ E22°44′	5	--	--	--	--		
		7	2.1	1.3	0.1	3.5		
700826	F 10	0	2.8	0.6	1.7	5.1		
1315	N64°43.5′ E21°35′	5	--	--	--	--		
		10	2.9	0.7	1.4	5.0		
		20	--	--	--	--		
		30	1.3	0.9	1.5	3.7		
700827	F 12 (x)	0	3.2	0.8	2.0	6.0		
0620	N64°13′ E22°04′	4	--	--	--	--		
		6	3.2	0.8	2.8	6.8		
700829	MS 6 (x)							
0515	N61°59′ E19°10′	0	1.4	0.5	1.8	3.7		
		5	--	--	--	--		
		7	1.4	0.3	1.1	2.8		
700829	MS 9	0	1.7	0.5	1.2	3.4		
1345	N61°45.5′ E20°32′	5	--	--	--	--		
		10	--	--	--	--		
		20	--	--	--	--		
		50	0.9	0.4	1.0	2.3		
700830	F 31a (x)	0	1.3	0.3	1.2	2.8		6.5
0630	N61°04.5′ E18°37′	4	1.2	0.1	0.4	1.7		
		6	1.2	0.3	1.4	2.9		
700830	F 64	0	1.8	0.2	1.0	3.0	115	
1330	N60°13′ E19°04′	5	2.1	0.2	2.6	4.9		
		10	1.8	0.3	1.7	3.8		
		20	0.9	0.2	0.5	1.6		
		50	0.2	0.3	1.0	1.5		
700831	BY 25	0	2.5	0.4	0.6	3.5		6.5
0510	N59°35′ E23°18′	4	2.3	0.4	0.9	3.6		
		6	2.5	0.4	1.2	4.1		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
700831	BY 24	0	4.8	0.7	1.5	7.0	171	5
0800	N59°41′ E24°00′	5	4.9	0.5	1.3	6.7		
		10	4.3	0.5	0.8	5.6		
		20	1.9	0.2	0.6	2.7		
		50	0.4	0.3	0.9	1.6		
700831	BY 23 (x)	0	2.3	0.5	0.9	3.7	126	6
1145	N59°51′ E24°50′	4	4.7	0.7	1.2	6.6		
		6	3.5	0.4	1.5	5.4		
		10	2.9	0.8	2.4	6.1		
		20	0.1	0.1	0.3	0.5		
		50	1.0	0.2	0.8	2.0		
700901	BY 27 (x)	0	2.1	0.5	1.3	3.9	96	7
0530	N59°17.8′ E21°34′	5	2.1	0.2	0.9	3.2		
		7	1.9	0.3	0.9	3.1		
		15	2.1	0.3	0.7	3.0		
		30	0.3	0.1	0.3	0.7		
		50	0.2	0.2	0.8	1.2		
700901	BY 29	0	1.9	0.3	0.8	3.0		
1315	N58°53′ E20°19′	5	2.0	0.2	0.5	2.7		
		10	1.8	0.7	0.2	2.7		
		20	1.4	0.3	1.2	2.9		
		50	--	--	--	--		
700902	BY 32 (x)	0	1.6	<	0.7	2.3	83	7
0405	N58°00′ E18°00′	5	1.7	0.2	0.8	2.7		
		7	1.6	0.3	0.7	2.6		
		15	1.8	0.2	0.4	2.4		
		30	0.3	0.1	0.8	1.2		
		50	0.2	0.1	0.5	0.8		
700902	BY 20	0	2.7	0.9	2.7	6.3	185	
1610	N58°00′ E19°57′	5	2.4	0.5	1.7	4.6		
		10	2.0	<	0.1	2.1		
		20	2.1	0.8	2.3	5.2		
		50	0.4	0.4	1.0	1.8		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
700903	BY 15 (x)	0	3.0	1.0	3.0	7.0	194	6
0250	N57°20′ E20°03′	4	2.9	1.0	2.3	6.2		
		6	2.2	0.6	2.3	5.1		
		10	2.0	0.4	1.4	3.8		
		20	0.6	0.5	2.1	3.2		
		50	1.5	0.7	1.7	3.9		
700903	När III (x)	0	1.6	0.8	2.0	4.4		6
1220	N57°05′ E18°42′	4	1.7	0.8	2.9	5.4		
		6	1.5	0.4	2.1	4.0		
700903	BY 38	0	1.8	0.8	2.3	4.9	151	
2040	N57°07′ E17°40′	5	0.6	0.4	1.5	2.5		
		10	0.5	0.3	1.1	1.9		
		20	0.3	0.5	2.1	2.9		
		50	1.8	0.4	1.4	3.6		
700904	BY 35 (x)	0	1.6	0.3	1.0	2.9		
0500	N57°41.5′ E17°39′	4	0.7	0.6	2.1	3.4		
		6	1.6	0.5	1.9	4.0		
700904	Station 13/9	0	1.8	0.5	1.7	4.0	85	
	N57°45.7′ E16°50′	5	1.7	0.6	1.9	4.2		
		10	2.1	0.5	1.5	4.1		
		15	1.9	0.3	1.1	3.3		
		20	2.8	1.2	2.9	6.9		
700907	^{14}C-extra (x)	0	2.7	0.8	2.0	5.5	167	6
0825	N57°37.8′ E17°02′	4	3.2	0.9	3.2	7.3		
		6	1.0	0.5	1.9	3.4		
		10	0.3	0.7	2.9	3.9		
		15	1.9	0.7	1.6	4.2		
		25	1.2	0.8	3.9	5.9		
700908	BY 9 (x)	0	2.6	1.3	2.8	6.7	206	6
0715	N56°07.5′ E19°17′	4	2.4	0.8	1.6	4.8		
		6	2.4	0.8	2.4	5.6		
		15	2.5	1.0	3.4	6.9		
		30	1.9	0.1	0.4	2.4		
		50	1.4	0.3	0.5	2.2		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
700908	BY 8	0	1.7	0.3	0.8	2.8	180	8
1115	N55°38′ E18°36′	5	3.1	1.0	2.1	6.2		
		10	1.8	0.6	1.8	4.2		
		20	1.8	0.7	1.9	4.2		
		50	0.2	0.9	0.5	1.6		
700909	Hanö Bay (x)	0	2.3	0.6	2.0	4.9	171	
	N55°40.5′ E14°57.7′	5	1.7	0.6	2.1	4.4		
		7	2.8	0.4	1.5	4.7		
		15	2.6	--	0.3	2.9		
		30	1.3	0.5	1.3	3.1		
		50	1.7	0.7	1.3	3.7		
701013	W Landskrona (x)	0	2.1	0.7	1.3	4.1		
0430	N55°51.8′ E12°45.2′	2.5	2.3	0.5	0.9	3.7		
		5	2.4	0.5	0.9	3.8		
		7.5	1.8	0.4	0.6	2.8		
701014	BY 5 (x)	0	2.1	0.6	1.7	4.4		
0230	N55°15′ E15°59′	2.5	2.0	0.5	1.3	3.8		
		5	2.0	0.5	0.9	3.4		
		7.5	2.2	0.7	1.3	4.2		
701014	BY 8	0	1.9	0.6	0.9	3.4	141	
1515	N55°38′ E18°36′	5	2.0	0.8	1.3	4.1		
		10	1.9	0.7	1.1	3.7		
		20	1.9	0.7	1.1	3.7		
		50	0.2	0.1	0.5	0.8		
701014	BY 9 (x)	0	2.1	0.6	1.0	3.7		
2030	N56°07.5′ E19°17′	2.5	2.0	0.5	1.0	3.5		
		5	2.1	0.5	0.7	3.3		
		7.5	2.1	0.5	0.4	3.0		
701015	BY 15	0	2.4	0.3	0.8	3.5	154	8.5
1430	N57°20′ E20°03′	5	2.5	0.5	0.7	3.7		
		10	2.6	0.6	0.8	4.0		
		20	2.4	0.6	1.1	4.1		
		50	0.5	0.1	0.4	1.0		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
701016	BY 35 (x)	0	2.0	0.2	0.5	2.7		7.5
0930	N57°41.5′ E17°39′	2.5	2.5	0.1	1.8	4.4		
		5	4.1	0.3	0.5	4.9		
		7.5	3.8	0.2	0.6	4.6		
701021	BY 32	0	2.4	0.3	0.6	3.3	123	
1200	N58°00′ E18°00′	5	2.8	0.3	0.7	3.8		
		10	2.5	0.4	0.8	3.7		
		20	2.0	0.3	0.6	2.9		
		50	0.2	0.1	0.4	0.7		
701021	BY 31 (x)	0	2.5	0.7	2.1	5.3	208	
1930	N58°35′ E18°14′	5	2.7	0.6	1.6	4.9		
		10	2.7	0.6	1.6	4.9		
		15	2.3	0.6	1.3	4.2		
		20	1.7	0.8	2.3	4.8		
		50	0.4	0.6	1.6	2.6		
701023	F 31a (x)	0	1.3	0.7	1.4	3.4	92	
1030	N61°04.5′ E18°37′	5	1.2	0.4	0.8	2.4		
		10	1.4	0.4	1.0	2.8		
		15	1.5	0.7	1.7	3.9		
		20	1.3	0.5	1.3	3.1		
		30	1.4	0.4	1.1	2.9		
701025	BY 22 (x)	0	7.1	0.6	1.9	9.6		6.5
1020	N59°55′ E25°36′	5	6.3	0.2	1.3	7.8		
		10	3.2	0.4	0.9	4.5		
		15	2.6	0.3	0.7	3.6		
		20	--	--	--	--		
701026	BY 26 (x)	0	1.8	0.4	1.3	3.5		
0115	N59°22′ E22°28′	5	2.1	0.3	1.1	3.5		
		10	1.7	0.2	0.2	2.1		
		15	1.7	0.2	<0.1	1.9		
701026	BY 29	0	1.7	0.3	0.6	2.6	83	
1450	N58°53′ E20°19′	5	1.4	0.2	0.2	1.8		
		10	1.6	0.1	<0.1	1.7		
		20	1.7	0.2	0.4	2.3		
		50	0.3	<0.1	<0.1	0.4		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
701026	BY 21 (x)	0	2.0	0.1	0.5	2.6		
1815	N58°26.5′ E20°20′	5	2.3	0.2	0.6	3.1		
		10	2.2	<0.1	0.1	2.3		
		15	2.2	0.3	2.3	4.8		
701027	BY 38 (x)	0	1.7	0.2	0.2	2.1	94	10.5
0815	N57°07′ E17°40′	5	1.8	0.1	0.4	2.3		
		10	2.2	0.4	0.7	3.3		
		15	2.3	0.2	0.4	2.9		
		20	1.6	0.3	0.6	2.5		
		50	0.2	--	--	0.2		
710111	Fladen	0	1.8	0.4	1.4	3.6	169	
1430	N57°11.5′ E11°40′	5	1.8	0.1	1.9	3.8		
		10	2.9	0.5	2.1	5.5		
		20	1.0	0.5	1.6	3.1		
		50	0.5	0.5	1.6	2.6		
710112	BY 2	0	1.6	0.6	1.9	4.1	129	
1200	N55°00′ E14°05′	5	1.3	0.4	1.2	2.9		
		10	1.1	0.5	1.3	2.9		
		20	1.0	0.4	1.0	2.4		
		45	0.6	0.4	1.4	2.4		
710112	BY 5 (x)	0	1.0	0.5	1.5	3.0	106	
2120	N55°15′ E15°59′	5	1.0	0.4	1.2	2.6		
		10	1.0	0.3	0.9	2.2		
		20	0.9	0.4	1.1	2.4		
		50	0.3	0.4	0.9	1.6		
710113	BY 9 (x)	0	0.8	0.4	1.5	2.7	135	>16
1340	N56°07.5′ E19°17′	5	0.8	0.3	0.6	1.7		
		10	0.9	0.4	1.9	3.2		
		20	0.7	<0.1	0.6	1.3		
		50	1.0	0.7	2.9	4.6		
710114	BY 15 (x)	0	0.9	0.6	1.8	3.3	164	12
0800	N57°20′ E20°03′	5	0.8	0.4	3.5	4.8		
		10	0.7	0.1	0.7	1.5		
		20	0.9	0.6	2.3	3.8		
		50	0.9	0.5	1.5	2.9		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710114	BY 38	0	0.5	0.4	1.5	2.4	155	
2130	N57°07′ E17°40′	5	0.4	0.2	1.0	1.6		
		10	0.4	0.5	1.5	2.4		
		20	0.5	0.3	1.8	2.6		
		50	0.5	0.6	3.6	4.7		
710118	BY 32 (x)	0	0.9	0.1	0.4	1.4	49	>15
1320	N58°00′ E18°00′	5	0.5	0.2	0.6	1.3		
		10	0.6	0.3	1.2	2.1		
		20	0.5	0.1	0.4	1.0		
		50	<0.1	0.2	<0.1	0.2		
710118	BY 31	0	0.5	0.1	0.8	1.4	52	
1930	N58°35′ E18°14′	5	0.5	0.2	0.5	1.2		
		10	0.5	0.3	0.6	1.4		
		20	0.4	0.2	0.4	1.0		
		50	0.2	0.1	0.6	0.9		
710119	BY 29	0	0.4	0.2	0.5	1.1	50	
0700	N58°53′ E20°19′	5	0.5	0.4	0.4	1.3		
		10	0.4	<0.1	0.6	1.0		
		20	0.5	0.2	0.4	1.1		
		50	0.4	0.1	0.4	0.9		
710120	BY 20	0	0.6	0.2	0.7	1.5	86	
0850	N58°00′ E19°57′	5	0.5	0.2	1.0	1.7		
		10	0.6	0.2	0.4	1.2		
		20	0.5	0.1	0.3	0.9		
		50	0.6	0.5	2.1	3.2		
710308	Djupa rännan	0	8.3	1.1	4.7	14.1	408	
1010	N57°33′ E11°31′	5	9.5	0.7	4.3	14.5		
		10	11.3	0.7	4.7	16.7		
		20	3.1	0.5	2.0	5.6		
		50	0.9	0.7	2.6	4.2		
710308	N Lasö	0	7.6	0.7	2.9	11.2	499	
1210	N57°30.3′ E11°08.5′	5	10.2	0.6	4.2	15.0		
		10	20.7	0.8	7.1	28.6		
		30	1.1	0.6	2.2	3.9		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710308	E Fredrikshavn	0	7.4	0.7	3.1	11.2	162	
1415	N57°26′ E10°42.5′	5	4.0	0.7	2.8	7.5		
		10	0.9	0.6	1.9	3.4		
		20	10.2	0.5	3.7	14.4		
710309	Læsö furrow	0	7.4	0.8	3.2	11.4	97	
0740	N57°12′ E10°44′	5	7.0	0.8	3.4	11.2		
		15	2.5	0.6	2.1	5.2		
710309	Ålborg bay	0	7.8	0.6	3.2	11.6	134	
1015	N56°51′ E10°48.5′	5	7.5	0.7	3.4	11.6		
		10	13.5	0.6	4.6	18.7		
710309	W Anholt	0	9.9	0.5	3.5	13.9	140	
1230	N56°39′ E11°18.5′	5	9.8	0.4	3.5	13.7		
		15	10.2	0.5	3.9	14.6		
710309	Grenå II	0	7.3	0.2	2.0	9.5	90	
1430	N56°29′ E11°19′	5	7.4	0.5	2.2	10.1		
		15	4.0	0.3	1.9	6.2		
710310	Kattegatt SW	0	12.5	0.5	4.2	17.2	418	
0850	N 56°07′ E11°10′	5	12.3	0.6	4.4	17.3		
		10	14.1	0.7	4.7	19.5		
		30	2.3	0.4	1.8	4.5		
710310	SE Hesselö	0	11.5	0.6	4.0	16.1	298	
1130	N56°10′ E11°48′	5	11.5	0.6	3.8	15.9		
		10	14.1	0.9	5.5	20.5		
		30	2.5	0.5	2.1	5.1		
710310	Kullen	0	7.1	0.6	3.0	10.7	280	
1415	N56°15′ E12°24.5′	5	12.0	0.5	4.4	16.9		
		10	13.5	0.7	5.0	19.2		
		20	2.6	0.5	1.9	5.0		
710312	W Tylön	0	10.4	0.8	3.6	14.8	165	
0430	N56°37′ E12°34′	5	10.8	0.9	4.8	16.6		
		15	13.2	0.7	4.0	17.9		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710312	SW Varberg	0	7.7	0.7	3.4	11.8	273	
0740	N57°01' E12°12.5'	5	7.3	0.5	3.0	10.8		
		10	7.1	0.5	2.8	10.4		
		30	3.5	0.4	2.0	5.9		
710312	E Fladen	0	4.9	0.1	1.5	6.5	256	
0930	N57°12.5' E11°58'	5	5.0	0.9	1.9	7.8		
		10	3.4	0.5	1.7	5.6		
		30	1.8	0.8	2.4	5.0		
		50	1.2	0.4	1.6	3.2		
710312	SW Tistlarna	0	6.4	0.6	3.1	10.1	258	
1145	N57°26.5' E11°41'	5	6.5	0.5	2.4	9.4		
		10	6.3	0.7	2.6	9.6		
		35	1.5	0.4	1.4	3.3		
710419	Fladen	0	0.9	0.6	1.6	3.1	183	
1500	N57°11.5' E11°40'	5	1.5	0.5	1.4	3.4		
		10	2.6	0.7	2.9	6.2		
		20	1.7	0.7	1.9	4.3		
		50	0.5	0.5	1.0	2.0		
710420	BY 2	0	3.2	0.7	1.3	5.2	166	
1430	N55°00' E14°05'	5	3.7	0.5	1.5	5.7		
		10	4.5	0.4	1.4	6.3		
		20	1.8	0.3	1.0	3.1		
		40	1.9	0.4	0.7	3.0		
710421	BY 5	0	3.3	0.8	2.2	6.3	268	
0030	N55°15' E15°59'	5	3.4	0.6	1.9	5.9		
		10	4.1	0.6	1.8	6.5		
		20	3.7	0.6	1.8	6.1		
		50	0.8	0.7	1.9	3.4		
710421	BY 7 (x)	0	6.3	0.7	1.8	8.8		8
0555	N55°13' E17°04'	5	6.3	0.8	2.4	9.5		
		7	6.6	0.8	2.3	9.7		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710421	BY 9	0	1.6	0.9	1.9	4.4	157	
1805	N56°07.5′ E19°17′	5	1.6	0.6	1.4	3.6		
		10	1.3	0.9	1.5	3.7		
		20	1.6	0.6	1.4	3.6		
		50	0.8	0.4	0.8	2.0		
710422	BY 15	0	1.7	1.6	4.4	7.7	148	13
0430	N57°20′ E20°03′	5	0.9	0.6	1.6	3.1		
		10	1.1	0.7	1.5	3.3		
		20	1.0	0.7	1.1	2.8		
		50	0.9	0.5	0.8	2.2		
710422	BY 20	0	4.6	0.9	1.9	7.4	270	
1615	N58°00′ E19°57′	5	4.7	0.8	2.0	7.5		
		10	4.7	0.8	1.7	7.2		
		20	3.9	0.7	2.0	6.6		
		50	0.5	0.5	1.0	2.0		
710423	BY 31	0	4.2	0.9	2.4	7.5	290	6
0400	N58°35′ E18°14′	5	4.3	0.9	2.3	7.5		
		10	4.4	0.8	1.9	7.1		
		20	4.2	0.9	2.4	7.5		
		50	0.5	0.4	1.2	2.1		
710423	BY 33	0	3.0	0.8	2.0	5.8		8
1810	N57°38.5′ E18°11.5′	5	3.1	0.1	2.1	5.3		
		10	2.7	0.6	1.6	4.9		
		15	2.7	0.6	1.4	4.7		
710426	BY 32	0	4.2	1.7	2.0	7.9	248	8
0930	N58°00′ E17°58′	5	3.9	0.8	2.4	7.1		
		10	4.2	0.7	1.9	6.8		
		20	3.7	0.6	1.8	6.1		
		50	0.5	0.3	0.5	1.3		
710426	BY 29	0	3.4	0.5	1.4	5.3	211	
2010	N58°53′ E20°19′	5	3.4	0.6	1.8	5.8		
		10	1.9	0.4	1.2	3.5		
		20	3.4	0.5	1.2	5.1		
		50	1.8	0.4	0.6	2.8		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710427	BY 27	0	8.9	0.9	2.7	12.5	503	6
0330	N59°17.8′ E21°34′	5	9.4	1.0	3.2	13.6		
		10	9.6	0.9	3.5	14.0		
		20	8.9	0.9	2.9	12.7		
		50	1.0	0.6	1.4	3.0		
710427	BY 21 (x)	0	9.1	1.0	4.4	14.5		7
1140	N58°26.5′ E20°20′	4	10.1	0.9	4.5	15.5		
		6	10.7	0.9	4.6	16.2		
710428	BY 38	0	4.4	0.7	2.2	7.3	299	
0015	N57°07′ E17°40′	5	4.7	0.7	2.2	7.6		
		10	5.3	0.5	2.3	8.1		
		20	4.9	0.5	1.9	7.3		
		50	1.1	0.5	0.9	2.5		
710428	BY 39	0	2.8	0.7	neg.	(3.5)		12
1000	N56°07′ E16°32′	8	3.7	0.4	1.4	5.5		
		10	3.3	0.5	1.5	5.3		
710816	Fladen	0	0.9	0.6	3.0	4.5	157	
1900	N57°12′ E11°38.5′	5	0.8	0.5	1.6	2.9		
		10	1.0	0.4	1.8	3.2		
		20	1.1	0.7	2.1	3.9		
		50	0.4	0.6	1.0	2.0		
710817	W Landskrona (x)	0	0.9	0.8	2.5	4.2		10
0710	N55°51.8′ E12°45.2′	8	2.0	0.6	1.5	4.1		
		10	3.1	0.7	2.6	6.4		
710817	BY 2 (x)	0	2.4	1.2	0.8	4.4	175	9
1715	N55°00′ E14°05′	5	2.1	1.1	2.8	6.0		
		10	2.3	0.9	1.4	4.6		
		20	2.7	1.1	1.7	5.5		
		40	0.4	0.4	1.1	1.9		
710818	BY 5 (x)	0	8.3	0.4	2.3	11.0	204	8
0630	N55°15′ E15°59′	5	1.5	0.6	1.9	4.0		
		10	1.6	0.7	1.7	4.0		
		20	1.4	0.5	1.1	3.0		
		50	0.7	1.0	2.9	4.6		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710819	BY 9	0	2.9	0.8	2.6	6.3	269	
2355	N56°05′ E19°10′	5	2.1	0.7	1.3	4.1		
		10	2.2	0.9	2.2	5.3		
		20	2.5	1.2	3.5	7.2		
		50	0.4	0.6	2.2	3.2		
710819	BY 15 (x)	0	2.9	0.5	1.3	4.7	262	9
0925	N57°20′ E20°03′	5	2.7	0.9	2.4	6.0		
		10	1.8	0.9	1.6	4.3		
		20	2.5	1.3	3.5	7.3		
		50	0.5	0.8	1.6	2.9		
710819	BY 20	0	1.8	0.6	1.9	4.3	177	
2200	N58°00′ E19°54′	5	1.8	0.6	1.4	3.8		
		10	2.4	0.5	1.5	4.4		
		20	1.6	1.1	1.4	4.1		
		50	0.4	0.4	1.4	2.2		
710820	BY 31 (x)	0	2.1	0.6	2.0	4.7	133	6.5
0630	N58°35′ E18°14′	5	1.6	0.6	1.7	3.9		
		10	1.5	0.7	1.4	3.6		
		20	0.9	0.5	1.4	2.8		
		50	0.3	0.2	0.8	1.3		
710823	BY 32	0	2.0	0.4	1.3	3.7	179	
1250	N58°00′ E18°00′	5	2.2	1.0	3.3	6.5		
		10	2.4	0.5	1.5	4.4		
		20	2.1	0.6	1.0	3.7		
		50	0.4	0.5	1.2	2.1		
710824	BY 27 (x)	0	2.2	0.6	1.3	4.1	120	5.5
0600	N59°17.8′ E21°34′	5	2.0	0.5	1.1	3.6		
		10	2.1	0.4	0.8	3.3		
		20	1.3	0.4	0.8	2.5		
		50	0.4	0.2	0.7	1.3		
710824	BY 29 (x)	0	2.4	0.7	1.2	4.3	142	7
1305	N58°53′ E20°19′	5	2.2	0.4	0.9	3.5		
		10	2.1	0.5	1.1	3.7		
		20	1.8	0.4	0.7	2.9		
		50	0.4	0.4	1.1	1.9		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
710825	BY 36 (x)	0	1.6	0.3	0.5	2.4		6.5
0600	N57°43′ E17°22′	4	1.8	0.2	0.4	2.4		
		6	1.9	0.3	1.5	3.7		
710825	BY 38 (x)	0	1.6	0.5	1.1	3.2	89	7
1430	N57°07′ E17°40′	5	1.6	0.4	1.0	3.0		
		10	1.8	0.3	0.6	2.7		
		20	1.4	0.1	<0.1	1.5		
		50	0.3	0.2	0.5	1.0		
710826	Hanö extra (x)	0	1.5	0.3	0.7	2.5	115	10
0730	N55°37′ E14°52′	5	1.1	0.4	0.6	2.1		
		10	1.2	0.2	0.4	1.8		
		20	1.5	0.7	1.2	3.4		
		50	0.3	0.1	0.7	1.1		
711129	Fladen	0	2.2	0.5	2.4	5.1	244	
1530	N57°11.5′ E11°40′	5	2.5	0.6	3.1	6.2		
		10	2.7	0.3	1.7	4.7		
		20	2.9	0.9	2.8	6.6		
		50	0.7	0.3	1.3	2.3		
711130	W Landskrona (x)	0	0.9	0.5	2.0	3.4		
0640	N55°51.8′ E12°45.2′	2.5	0.8	0.5	2.2	3.5		
		5	0.8	0.3	1.1	2.2		
		10	0.8	0.4	1.6	2.8		
		15	0.7	0.4	1.2	2.3		
711130	BY 2	0	1.8	0.3	0.9	3.0	151	
1715	N55°00′ E14°05′	5	1.7	0.5	1.6	3.8		
		10	1.5	0.5	1.4	3.4		
		20	1.1	1.0	1.7	3.8		
		50	0.4	0.3	1.0	1.7		
711201	BY 5	0	2.0	0.4	1.1	3.5	217	
0345	N55°15′ E15°59′	5	1.8	0.6	1.8	4.7		
		10	2.3	0.8	2.4	5.5		
		20	2.1	0.4	1.4	3.9		
		50	1.6	0.7	2.2	4.5		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
711201	Stolpe sill	0	2.5	1.2	4.2	7.9		
0630	N55°17' E16°30'	2.5	1.6	0.4	1.8	3.8		
		5	2.5	0.5	2.3	5.3		
		10	2.3	0.9	3.6	6.8		
		15	2.9	0.7	2.5	6.1		
711201	BY 9	0	2.8	0.5	2.0	5.3	275	
2100	N56°07.5'E19°17'	5	3.1	0.7	2.5	6.3		
		10	2.6	0.4	1.5	4.5		
		20	3.1	0.5	2.0	5.6		
		50	3.3	0.4	1.9	5.6		
711202	BY 15 (x)	0	2.2	0.3	1.2	3.7	204	15
1300	N57°20' E20°03'	5	2.4	0.3	1.5	4.2		
		10	2.3	0.3	1.4	4.0		
		15	2.2	0.3	1.5	4.0		
		20	2.2	0.3	1.7	4.2		
		50	2.1	0.4	1.7	4.2		
711202	BY 20	0	0.9	0.2	1.0	2.1	147	
1930	N58°00' E19°54'	5	0.8	0.3	1.5	2.6		
		10	0.8	0.3	1.6	2.7		
		20	1.3	0.6	2.2	4.5		
		50	0.5	0.4	1.0	1.9		
711203	BY 31 (x)	0	0.8	0.4	1.1	2.3	123	11
0900	N58°35' E18°14'	5	1.3	0.1	1.2	2.6		
		10	1.4	0.3	1.2	2.9		
		15	0.7	0.1	0.7	1.5		
		20	0.8	0.7	2.1	3.6		
		50	0.5	0.2	0.5	1.2		
711203	BY 32	0	1.1	0.2	0,9	2.2	62	
1515	N58°00' E18°00'	5	0.8	0.2	0.7	1.7		
		10	0.9	0.2	0.6	1.7		
		20	0.5	<0.1	0.1	0.6		
		50	0.5	0.3	0.9	1.7		
711204	BY 36	0	0.8	0.3	1.2	2.3	69	
2345	N57°43' E17°22'	5	0.6	0.3	0.4	1.3		
		10	0.6	0.3	1.1	2.0		
		20	0.8	0.1	0.2	1.1		
		50	0.7	0.1	0.5	1.3		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
711206	BY 29	0	0.6	0.1	0.5	1.2	95	
2315	N58°53' E20°19'	5	0.5	0.2	0.8	1.5		
		10	0.6	<0.1	0.4	1.0		
		20	0.7	0.2	1.3	2.2		
		50	0.7	0.3	1.2	2.2		
711207	BY 27 (x)	0	1.3	0.1	0.8	2.2	115	
0715	N59°17.8' E21°34'	5	0.7	0.2	0.2	1.1		
		10	0.7	0.2	0.8	1.7		
		20	0.7	0.3	1.7	2.7		
		50	0.9	0.3	1.3	2.5		
711207	BY 38	0	0.7	0.3	1.0	2.0	86	
0330	N57°07' E17°40'	5	0.5	0.1	0.4	1.0		
		10	0.6	0.4	1.7	2.7		
		20	0.5	0.2	0.8	1.5		
		50	0.6	0.2	0.9	1.7		
711210	Segerstad I (x)	0	0.7	0.3	1.0	2.0	179	
0830	N56°33' E17°04'	5	0.7	0.3	1.2	2.2		
		10	0.6	0.2	1.4	2.2		
		20	0.9	0.7	2.6	4.2		
		50	0.9	0.6	2.7	4.2		
711213	Hanö extra	0	1.3	1.1	3.4	5.8	162	
1100	N55°37' E14°52'	5	1.1	0.3	1.1	2.5		
		10	1.1	0.5	1.6	3.2		
		20	1.1	0.3	1.3	2.7		
		50	0.9	0.7	2.2	3.8		
720228	Fladen							
1900	N57°11.5' E11°40'	0	14.2	0.7	6.4	21.3	352	
		5	15.7	0.6	6.5	22.8		
		10	4.6	0.6	3.3	8.5		
		20	0.5	0.8	2.7	4.0		
		50	0.1	0.5	2.1	2.7		

Date Time GMT	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
720229	BY 2	0	1.9	1.2	4.3	7.4	202	
1530	N55°00' E14°05'	5	1.7	0.5	2.4	4.6		
		10	2.2	0.6	1.7	4.5		
		20	0.8	0.5	2.3	3.6		
		45	0.6	1.0	3.5	5.1		
720301	BY 5	0	0.6	0.2	1.0	1.8	130	
0250	N55°15' E15°59'	5	0.7	0.6	1.7	3.0		
		10	0.6	0.3	1.9	2.8		
		20	0.6	0.3	1.3	2.2		
		50	0.5	0.6	1.9	3.0		
720301	BY 9	0	0.9	1.2	3.3	5.4	171	
2010	N56°07.5' E19°17'	5	0.8	0.8	3.0	4.6		
		10	0.8	0.8	3.1	4.7		
		20	0.5	0.4	2.1	3.0		
		50	0.3	0.4	1.9	2.6		
720302	BY 15	0	0.7	0.8	3.3	4.8	145	
1300	N57°20' E20°03'	5	0.5	0.3	1.5	2.3		
		10	0.6	0.5	2.2	3.3		
		20	0.6	0.6	2.0	3.2		
		50	0.4	0.3	1.5	2.2		
720302	BY 20	0	0.4	0.8	1.4	2.6	167	
1945	N58°00' E19°57'	5	0.5	0.4	1.7	2.6		
		10	0.6	0.4	1.8	2.8		
		20	0.6	0.4	3.3	4.3		
		50	0.3	0.4	2.0	2.7		
720303	BY 27	0	0.6	0.4	2.0	3.0	127	
0610	N59°17.8' E21°34'	5	0.4	0.3	1.3	2.0		
		10	0.5	1.0	1.4	2.9		
		20	0.5	0.4	1.7	2.6		
		50	0.3	0.5	1.6	2.4		

Date Time	Station Position	Depth m	Chloro-phyll a µg/l	Chloro-phyll b µg/l	Chloro-phyll c µg/l	Total chloro-phyll µg/l	Total chloro-phyll mg/m^2	Secchi depth m
720303	BY 29	0	0.5	0.1	1.3	1.9	118	
1310	N58°53' E20°19'	5	0.5	0.3	1.5	2.3		
		10	0.6	0.3	1.4	2.3		
		20	0.6	0.4	1.5	2.5		
		50	0.2	0.4	1.7	2.3		
720303	BY 31	0	1.0	0.6	2.3	3.9	155	
2230	N58°35' E18°14'	5	1.0	<0.1	2.5	3.5		
		10	0.4	0.6	1.3	2.3		
		20	0.6	0.6	1.6	2.8		
		50	0.9	0.5	2.2	3.6		
720306	BY 32	0	0.6	0.4	2.0	3.0	152	
1930	N58°00' E18°00'	5	0.5	0.5	1.7	2.7		
		10	0.6	0.6	1.9	3.1		
		20	0.6	0.4	2.5	3.5		
		50	0.2	0.4	1.9	2.5		
720307	BY 35	0	0.4	0.5	1.2	2.1	112	
0830	N57°41.5' E 17°39'	4	0.3	0.2	1.1	1.6		
		10	0.4	0.4	1.7	2.5		
		20	0.3	0.3	1.2	1.8		
		50	0.3	0.4	2.2	2.9		
720308	Västervik I (x)	0	0.6	0.5	1.9	3.0	148	
0930	N57°43.4' E16°58.3'	4	0.6	0.5	1.7	2.8		
		10	0.8	0.9	2.8	4.5		
		20	—	—	—	—		
		40	0.5	0.6	2.0	3.1		
720308	BY 38	0	0.6	0.7	2.7	4.0	168	
1830	N57°07' E17°40'	5	0.5	0.5	2.0	3.0		
		10	0.6	0.6	2.0	3.2		
		20	0.6	0.6	1.6	2.8		
		50	0.4	0.9	3.0	4.3		