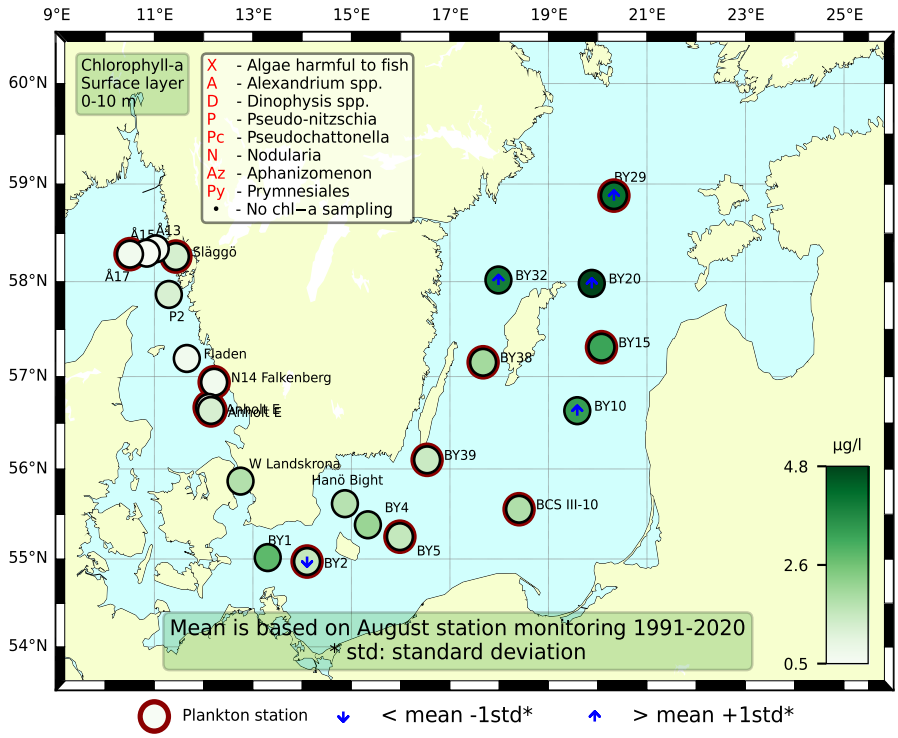
SMHI
Oceanographic Unit
No 7, August 2025

AlgAware
Dnr: 2025/71/3.1.3
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning
Artdiversiteten och de totala cellantalen var relativt låga både i Skagerrak och Kattegatt. Högst totalt cellantal uppmättes vid N14 Falkenberg vid Kattegatts kust. Filamentösa cyanobakterier återfanns vid alla stationer förutom Å17 i yttre Skagerrak. Det var *Dolichospermum* sp. * och *Nodularia spumigena** som noterades i relativt höga antal, framför allt i Kattegatt. Det kan nämnas att de filamentösa cyanobakterierna har återfunnits ända in i de Bohuslänska fjordarna i andra mätprogram. Intressant nog har det också varit höga halter fosfat under tiden, vilket ger cyanobakterier en konkurrensfördel i förhållande till andra växtplankton, som behöver både inorganiskt löst fosfat och kväve i vattnet för att tillväxa. Dessa cyanobakterier har förmågan att binda atmosfärisk kvävgas vilket alltid finns tillgängligt. De integrerade klorofyllvärdena (0–20 m) i Skagerrak var inom det normala och i Kattegatt var de under det normala för denna månaden. Samtliga integrerade värdena från 0–10 m låg inom det normala i de båda områdena.

Diversiteten och cellantalen av växtplankton var överlag låga vid samtliga stationer i Östersjön. I den södra delen av Östersjön var förekomsten av filamentösa cyanobakterier nästan obefintlig. Öster om Gotland och Norr om Gotland återfanns en hel del filament av *Aphanizomenon flosaquae* men endast ett fåtal filament av *Nodularia spumigena**. Vid en station mellan Öland och Gotland var det filamentösa släktet *Dolichospermum** relativt vanlig. De mellersta samt nordligare stationerna i Östersjön hade klorofyllkoncentrationer något över det normala för månaden i den övre vattenmassan (0-10m).



Abstract
The species diversity and the total cell numbers were relatively low in the Skagerrak and Kattegat areas. The highest cell counts were found at N14 Falkenberg at the Kattegat coast. Filamentous cyanobacteria were found at all stations except Å17 in the open Skagerrak. *Dolichospermum* sp. * and *Nodularia spumigena* *were the cyanobacteria that were observed and they were rather numerous, foremost in the Kattegat. The filamentous cyanobacteria have been found along the coast and into the fjords of Bohuslän in other monitoring programmes as well. Interestingly, the phosphate concentrations have been high which give the cyanobacteria an advantage compared to other phytoplankton which need both inorganic phosphate and nitrogen to grow. These cyanobacteria are able to utilize atmospheric nitrogen, which is always available. The integrated chlorophyll concentrations (0–20 m) in the Skagerrak were within normal whereas the ones in the Kattegat were below normal for this month. All of the integrated concentrations from 0–10 m were within normal in both areas.

The diversity and cell abundances of phytoplankton were generally low in the Baltic Sea. In the southern part of the Baltic Sea filamentous cyanobacteria were almost completely absent. East of Gotland and north of Gotland quite a few filaments of *Aphanizomenon flosaquae* were found but only occasional filament of *Nodularia spumigena**. The filamentous genus *Dolichospermum** were noted at one station between Gotland and Öland. The stations in the middle and north of the Baltic Proper had chlorophyll a concentration above what is normal for the month in the upper layer of the water column (0-10m).

Below follows a more detailed information on species composition and abundance. Species marked with * are potentially toxic or harmful.

The Skagerrak

Å17 (open Skagerrak) 9th of August
The species diversity and the cell counts were very low with one exception, the coccolithophorid *Emiliania huxleyi* which was rather numerous. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were normal for this month.

Släggö (Skagerrak coast) 9th of August
The total cell numbers and biodiversity were both medium high. Diatoms were the most abundant genus, with *Leptocylindrus danicus*, *Skeletonema marinoi* and *Pseudo-nitzschia* spp.* being among the most abundant species. The dinoflagellate *Prorocentrum micans* was numerous, as was the coccolithophorid *E. huxleyi.* The filamentous cyanobacterium *Nodularia spumigena** was present with several units of vital looking specimens. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were normal for this month.

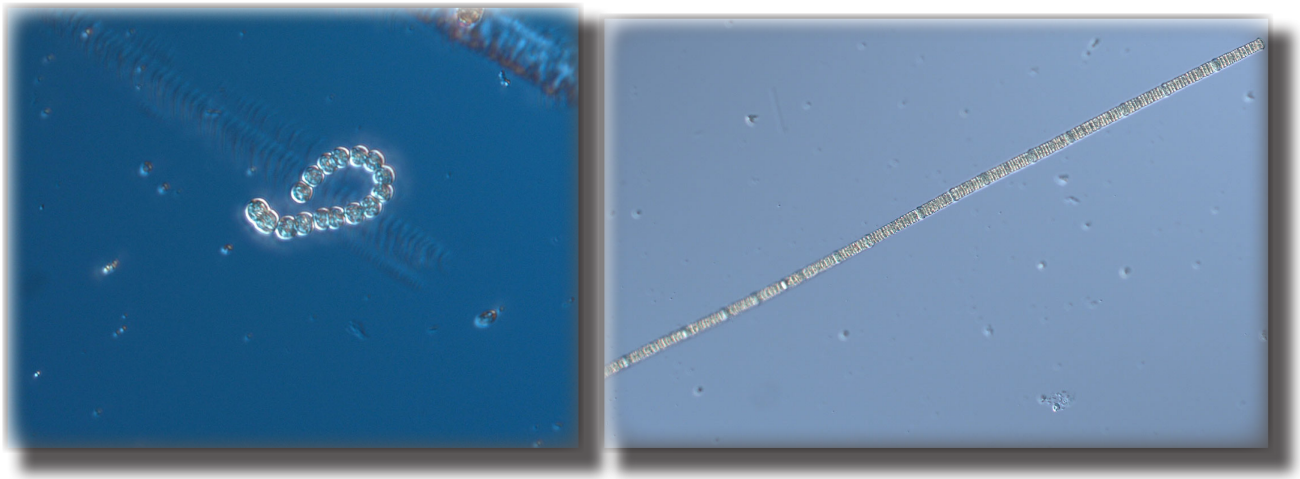


Fig 1. The cyanobacteria *Dolichospermum* sp. *, left, and *Nodularia spumigena** were found in relatively high amounts in the Skagerrak and Kattegat areas. Photo: A. Skjevik.

The Kattegat

Anholt E 10th and 14th of August
The species diversity and total cell counts were very low at the first visit and even lower at the second. The cyanobacteria *N. spumigena** and *Dolichospermum* sp. * and the coccolithophorid *E. huxleyi* were however rather abundant at the first occasion. The species composition differed somewhat between the two occasions. The integrated chlorophyll concentrations from 0–10 m were normal, whereas the ones from 0–20 m were low for this month.

N14 Falkenberg 10th of August
The species diversity and total cell counts were higher than at Anholt E, but still not high. The cyanobacteria *N. spumigena** and *Dolichospermum* sp. * and the coccolithophorid *E. huxleyi* were however rather abundant. The diatoms *Cerataulina pelagica* and *Pseudo-nitzschia* spp. * and the dinoflagellate *P. micans* were rather numerous. The integrated chlorophyll concentration from 0–10 m was normal, whereas the one from 0–20 m was low for this month.

Fluorescence peaks
A chlorophyll fluorescence peak at W Landskrona at 15 meters depth was mainly caused by the dinoflagellate *Tripos lineatus*. At Anholt E, also at 15 meters, a peak was caused by a variety of diatoms, dinoflagellates as well as the cyanobacteria *N. spumigena** and *Dolichospermum* sp. *

The Baltic

BY2 11th of August
The species diversity and total cell numbers were both very low. Among the larger cells different species of ciliates were most common. The smaller cells were dominated by different cryptomonads. Only a couple of short filaments of cyanobacteria were noted. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were slightly below what is normal for this month.

BY5 11th of August
The species diversity and total cell numbers were very low. The diatom genus *Chaetoceros* was most common among the larger cells. No filamentous cyanobacteria were noted in the sample. The smaller cells were dominated by different cryptomonads. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BCSIII-10 11th of August
The species diversity and total cell numbers were very low. larger cells were not many only one chain of *Chaetoceros* were noted. No filamentous cyanobacteria were noted in the sample. The smaller cells were dominated by different cryptomonads. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BY15 Gotland deep 12th of August
Phytoplankton diversity and total cell numbers were relatively low. Several filaments of *A. flosaquae* were noted together with *Binuclearia lauterbornii.* Several colony forming genera of cyanobacteria were also found in high abundances such as *Aphanothece, Lemmermanniella* and *Snowella*. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BY29 12th of August
Phytoplankton diversity and total cell numbers were both low. Among the dinoflagellates the potential toxic species *Phalacroma rotundatum** was found in unusual high numbers. Several filaments of *B. lauterbornii* were also present. Only one filament of *N. spumigena** was found. Several colony forming genera of cyanobacteria were also found in high abundances suck as *Aphanothece* and *Aphanocapsa*. The shallow integrated chlorophyll concentrations (0–10 m) was above what is normal for the month whereas the deeper integrated chlorophyll concentrations (0–20 m) were within normal for this month.

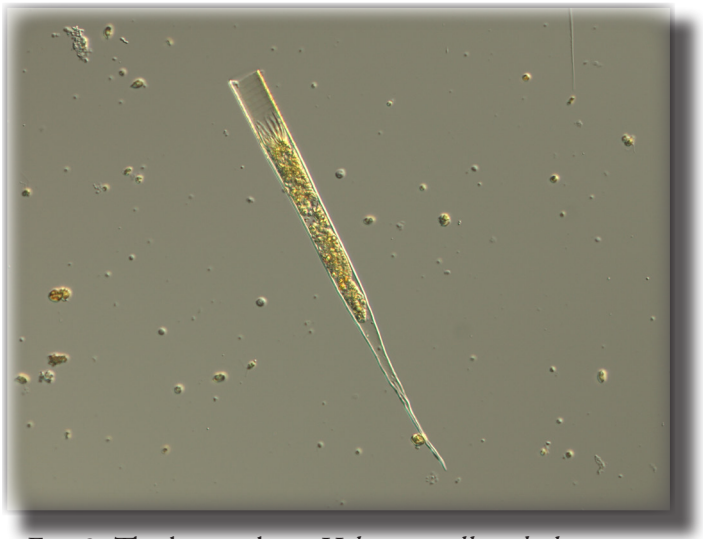


Fig. 2. The large ciliate *Helicostomella subulata* was present at several stations in the Baltic Sea.

BY31 Landsort deep 13th of August
Phytoplankton diversity was moderate but total cell numbers was low. Quite a few filaments of *A. flosaquae* was found together with several filaments of *B. lauterbornii* but only a couple filaments of *N. spumigena**.

BY38 13th of August
Phytoplankton diversity was moderate but total cell numbers was low. The diatom *Chaetoceros castracanei* was found in several chains together with *A. flosaquae* but only a couple filaments of *N. spumigena**. The genus *Oocystis* and different species of cryptomonads was most common among the smaller cells. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BY39 13th of August
Phytoplankton diversity was moderate but total cell numbers was low. This was the only station were the filamentous genus *Dolichospermum** was common. There was also plentiful of different colony forming cyanobacteria species such as *Aphanothece paralleliformis* and the genus *Lemmermanniella.* The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

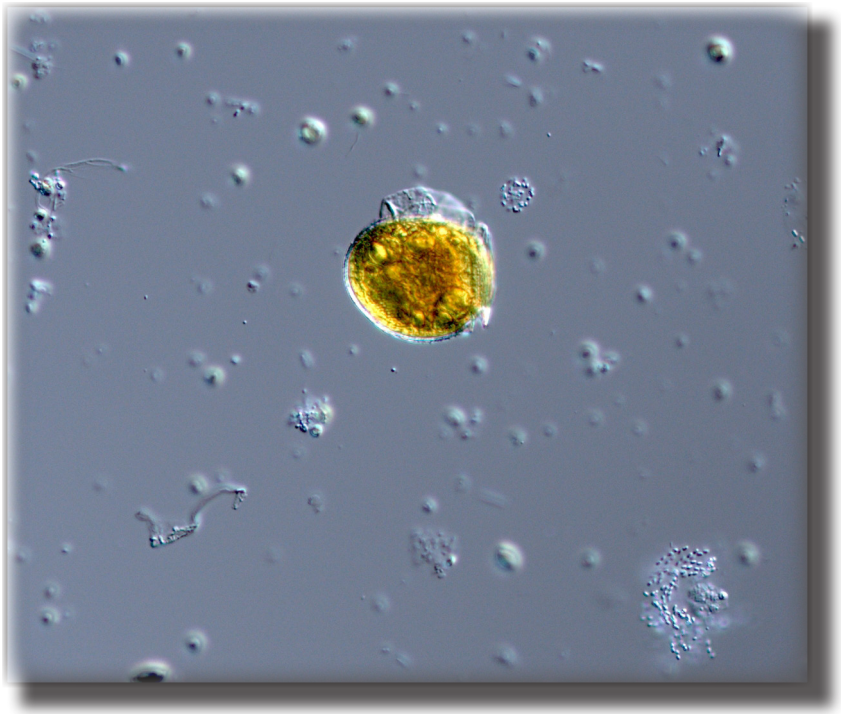
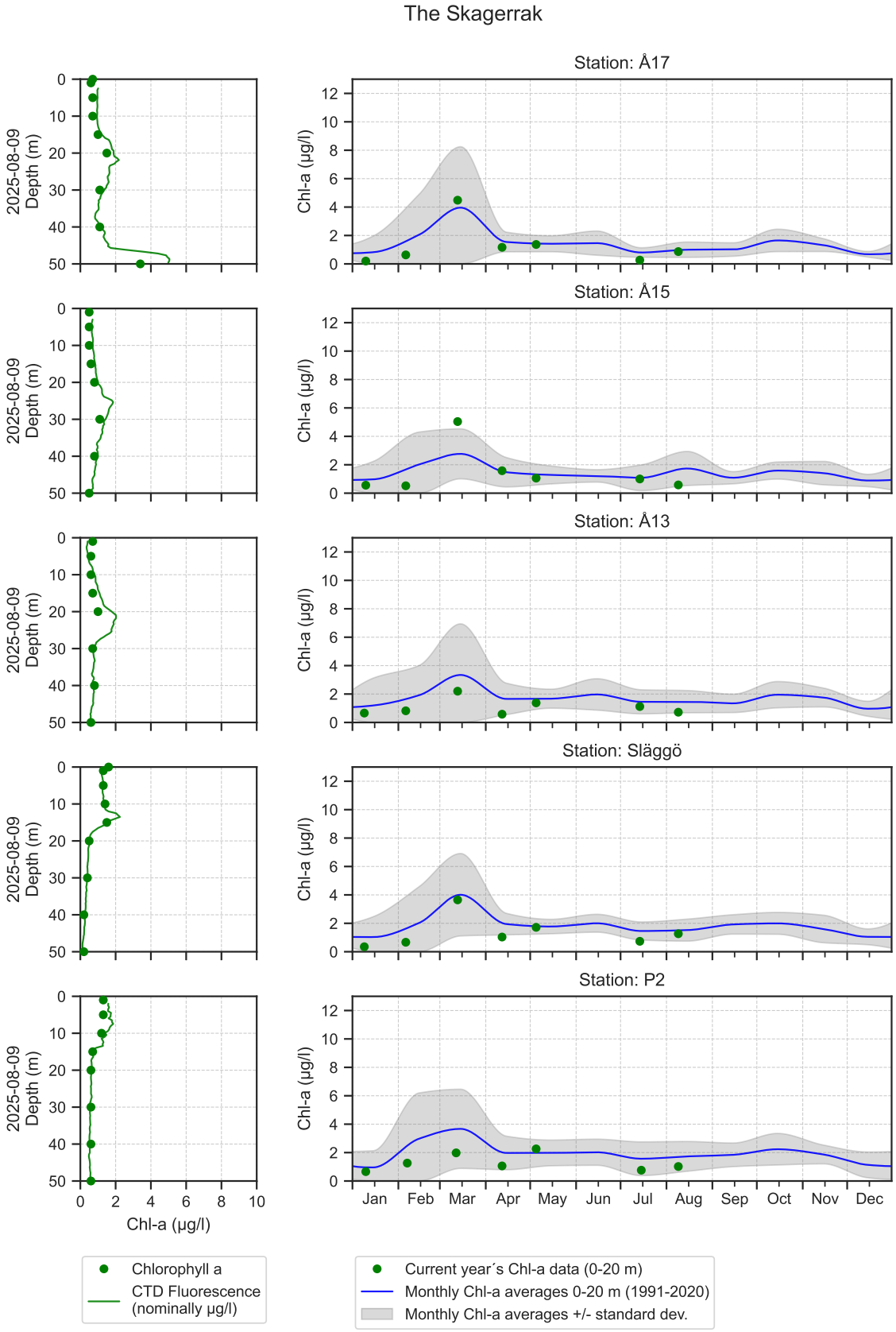


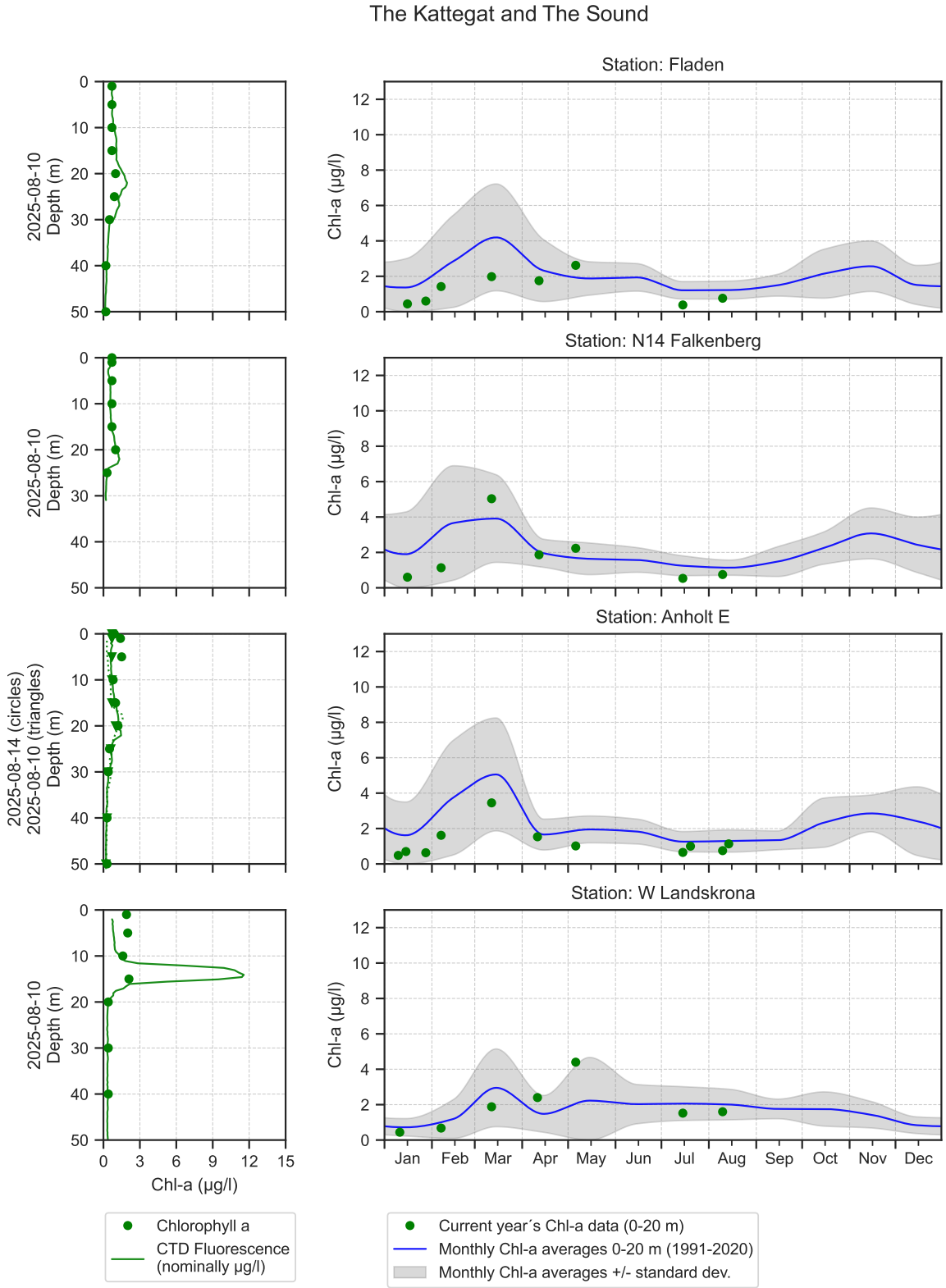
Fig. 3. The heterotrophic dinoflagellate *Phalacroma rotundatum** was found in unusually high cell numbers at several stations in the Baltic Sea.

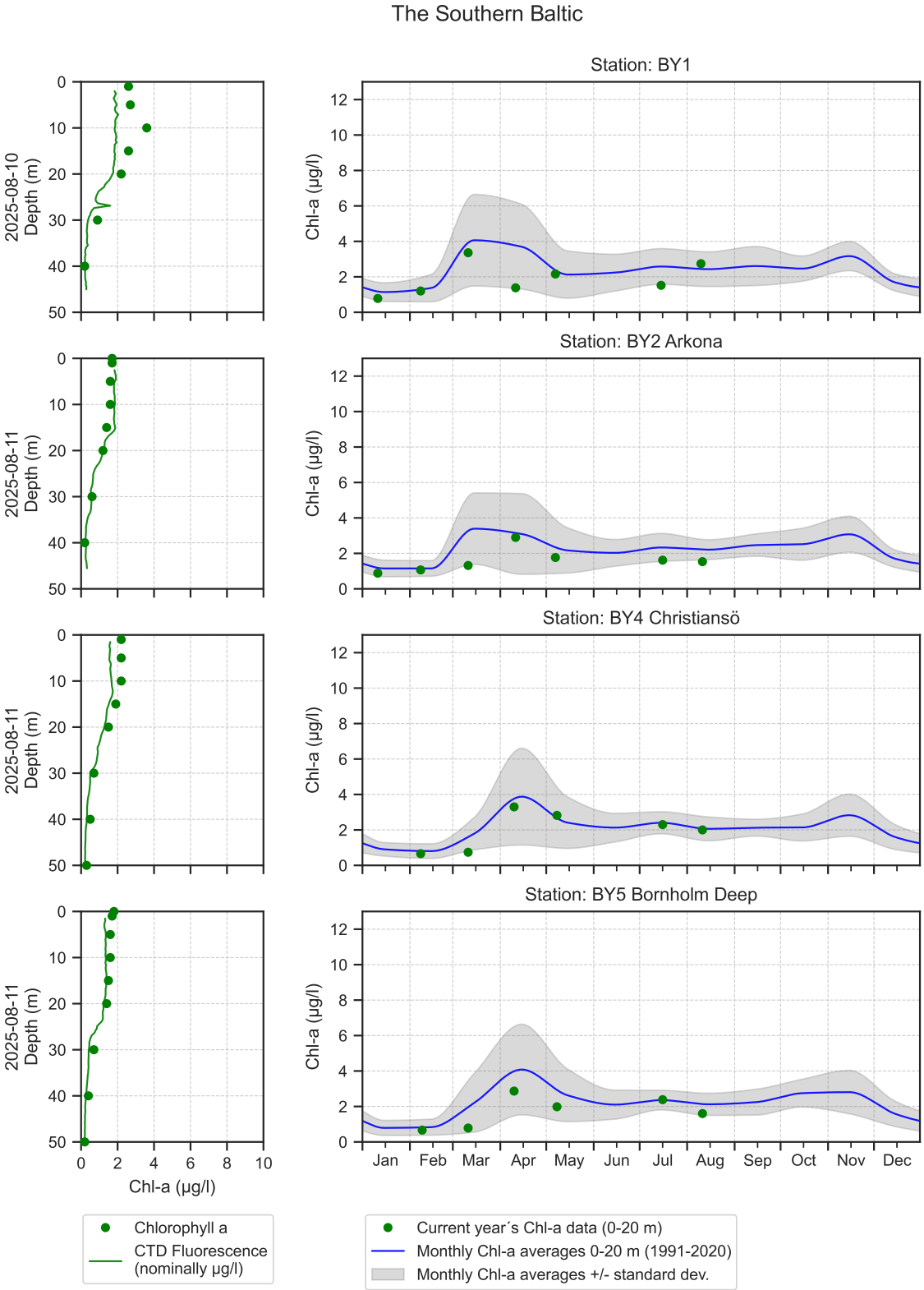
Phytoplankton analysis and text:
Ann-Turi Skjevik and Marie Johansen.

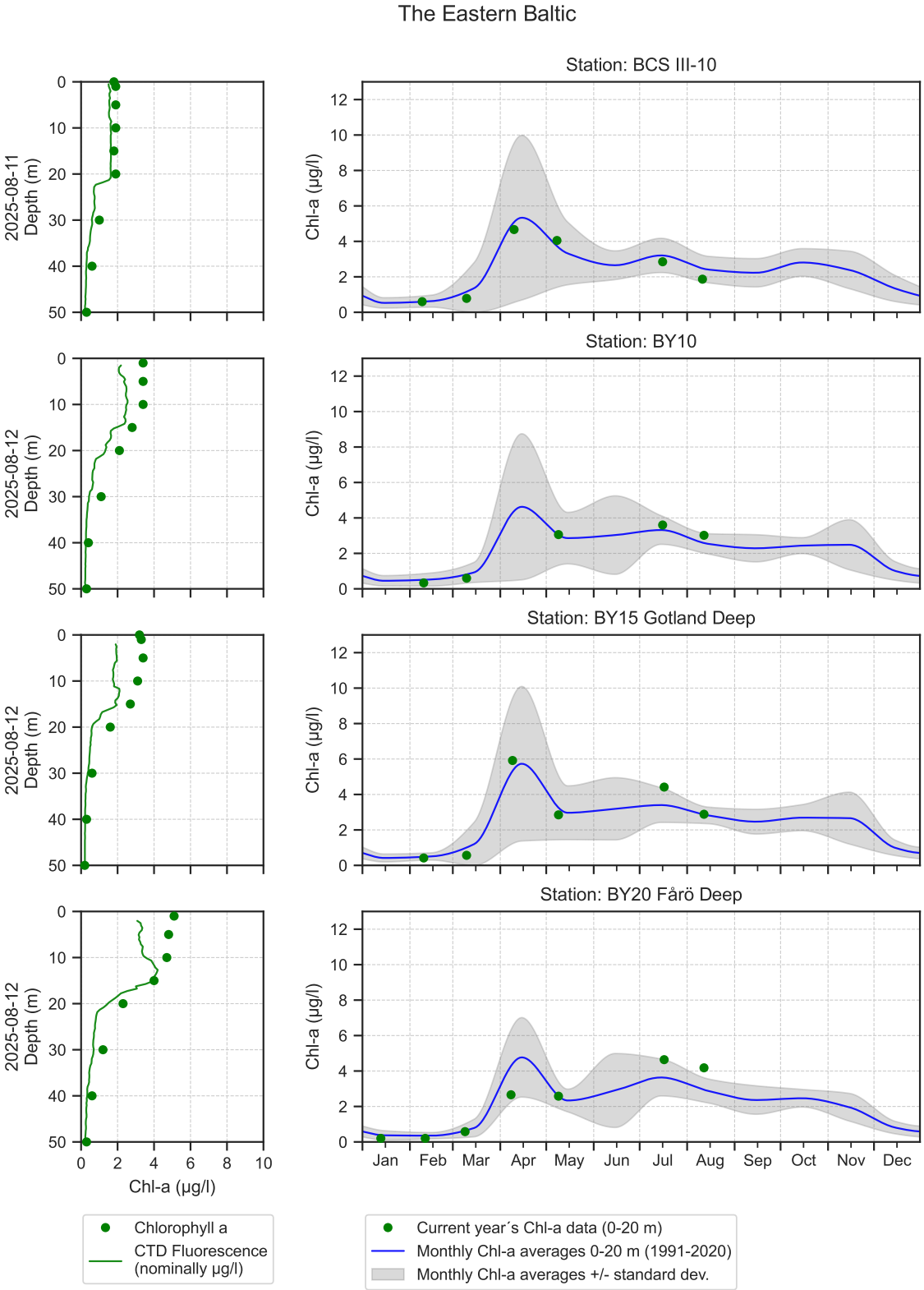
Selection of observed species	Anholt E	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	10/8	14/8	10/8	9/8	9/8
Hose 0-10 m	presence		presence	presence	presence
Cerataulina pelagica		present	common	present	
Chaetoceros debilis	present	present			
Chaetoceros laciniosus		present		present	
Chaetoceros socialis				present	
Chaetoceros throndsenii		present	present		present
Cylindrotheca closterium	present	present	present	present	present
Dactyliosolen fragilissimus		present	present	present	
Guinardia delicatula				present	present
Leptocylindrus danicus	present			common	present
Leptocylindrus minimus				present	
Nitzschia longissima	present	present	present	present	
Proboscia alata	present		present	common	present
Pseudo-nitzschia	present	common	common	common	present
Pseudosolenia calcar-avis	present		present	present	
Rhizosolenia imbricata				present	
Rhizosolenia setigera f. pungens				present	
Skeletonema marinoi		present	common	common	present
Alexandrium pseudogonyaulax	present				
Azadinium			present	present	
Dinophysis norvegica					present
Dinophysis tripos		present			
Dissodinium pseudolunula	present				
Gymnodiniales	present	present	present		present
Gyrodinium flagellare	present				present
Gyrodinium spirale			present		present
Heterocapsa			present	present	present
Heterocapsa rotundata	present				present
Heterocapsa triquetra				present	
Katodinium glaucum	present				
Lingulodinium polyedra			present		
Peridiniella danica					present
Phalacroma rotundatum	present		present		present
Polykrikos schwartzii		present			
Prorocentrum micans	present	present	common	common	present
Protoceratium reticulatum			present		
Protoperidinium	present	present	present		
Protoperidinium conicum	present				
Protoperidinium pellucidum	present		present	present	
Torodinium robustum					present
Tripos furca		present			
Tripos fusus	present	present	present	present	present
Tripos lineatus	common	present	present		
Tripos macroceros			present	present	
Tripos muelleri	present	present	present		present
Aphanothece paralleliformis		present			
Dolichospermum	common	present	common		
Nodularia spumigena	present	present	common	present	
Snowella		present			
Emiliania huxleyi	common	present	common	common	common
Prymnesiales					present
Dinobryon	present		present	present	
Dinobryon balticum	present	common	present		
Dinobryon faculiferum	present		present	present	
Dictyocha fibula				present	
Octactis speculum					present
Pyramimonas	present	present		present	present
Commation					present
Heterosigma akashiwo	present				
Cryptomonadales	common	present	present	common	common
Leucocryptos marina	present				present
Oocystis		present			
Ebria tripartita	present	present		present	present
Telonema subtile					present
Ciliophora	present	present	common	present	common
Mesodinium rubrum		present		present	
Strombidium	present	present		present	present

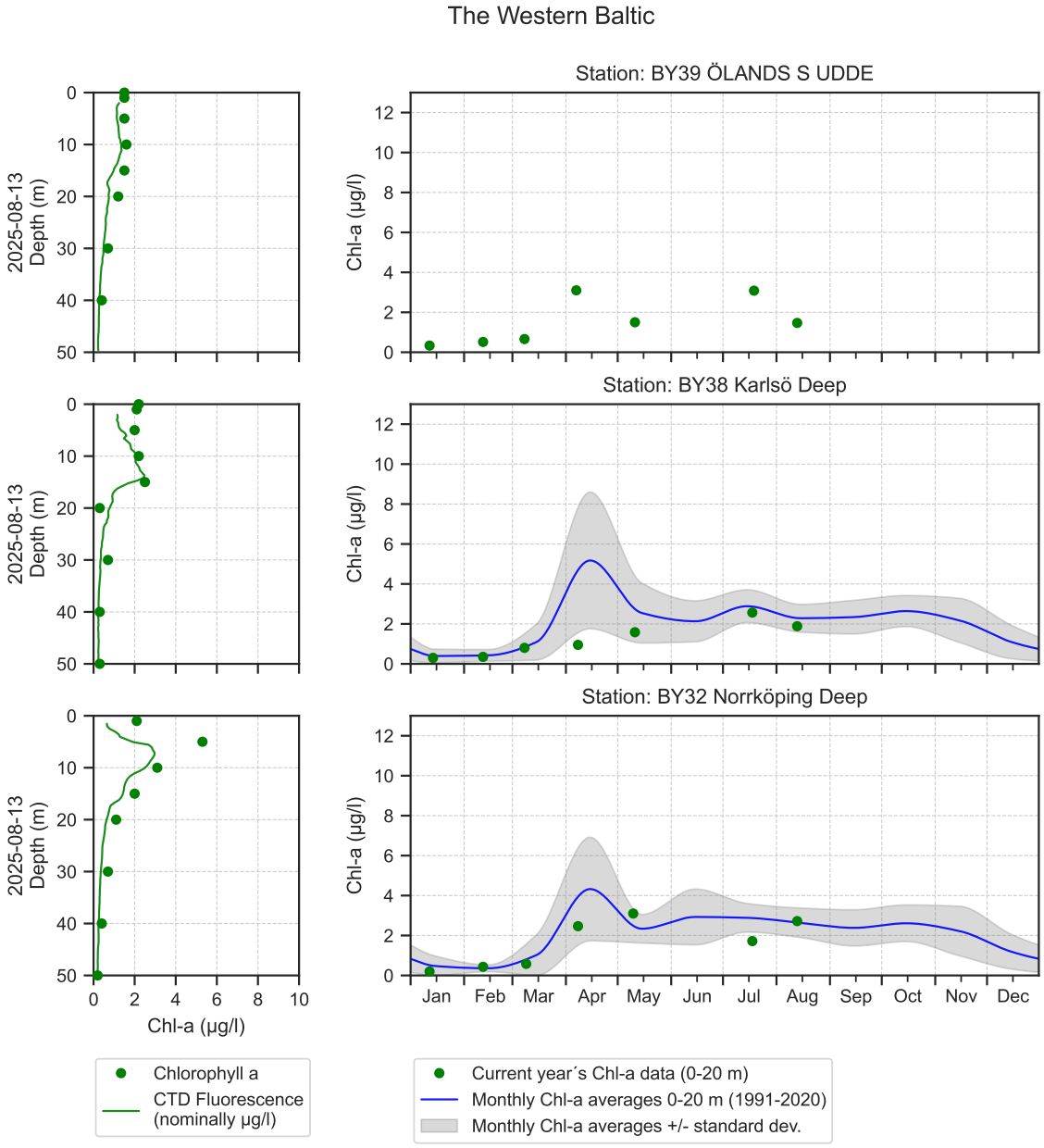
Selection of observed species	BY2	BY5	BCSIII-10	BY15	BY29	BY31	BY38	BY39
Red=potentially toxic species	11/8	11/8	11/8	12/8	12/8	13/8	13/8	13/8
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Actinocyclus		present			present			present
Chaetoceros castracanei		present	present			present	common	present
Chaetoceros danicus		common				present	present	present
Cylindrotheca closterium							present	
Skeletonema marinoi	present							
Amphidinium	present							
Amphidinium crassum						present		
Dinophysis norvegica		present						
Gymnodiniales	common	common	common	common			present	present
Gyrodinium	present							
Peridiniales			present					
Phalacroma rotundatum					common	present	present	
Prorocentrum micans	present							
Scrippsiella	present							
Tripos muelleri	present							
Binuclearia lauterbornii				common	common	common		present
Oocystis						present	common	present
Pyramimonas	present	present	present					
Cryptomonadales	common	common	common	common		common	common	common
Telonema subtile								present
Aphanizomenon flos-aquae	present			common	present	common	common	
Aphanocapsa				common	common			present
Aphanothece				common	common	present		present
Aphanothece paralleliformis				present		present		common
Dolichospermum								common
Lemmermanniella				common	present			common
Nodularia spumigena	present				present	present	present	present
Pseudanabaena			common	present	present		common	
Snowella				common	present	present	present	common
Snowella cf. lacustris					present	present	present	present
Ebria tripartita	present							present
Ciliophora	common	common	present		common	common	common	present
Mesodinium rubrum			present	present		present	present	present
Helicostomella subulata	present				present	present		


The Skagerrak
Station: Å17
Station: Å15
Station: Å13
Station: Släggö
Station: P2
2025-08-09
Depth (m)
Chl-a (µg/l)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Chlorophyll a
CTD Fluorescence (nominally µg/l)
Current year´s Chl-a data (0-20 m)
Monthly Chl-a averages 0-20 m (1991-2020)
Monthly Chl-a averages +/- standard dev.


The Kattegat and The Sound
Station: Fladen
Station: N14 Falkenberg
Station: Anholt E
Station: W Landskrona
2025-08-10
Depth (m)
2025-08-14 (circles)
2025-08-10 (triangles)
Chl-a (µg/l)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Chlorophyll a
CTD Fluorescence (nominally µg/l)
Current year´s Chl-a data (0-20 m)
Monthly Chl-a averages 0-20 m (1991-2020)
Monthly Chl-a averages +/- standard dev.


The Southern Baltic
Station: BY1
Station: BY2 Arkona
Station: BY4 Christiansö
Station: BY5 Bornholm Deep
2025-08-10
2025-08-11
Depth (m)
Chl-a (µg/l)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Chlorophyll a
CTD Fluorescence (nominally µg/l)
Current year´s Chl-a data (0-20 m)
Monthly Chl-a averages 0-20 m (1991-2020)
Monthly Chl-a averages +/- standard dev.


The Eastern Baltic
Station: BCS III-10
Station: BY10
Station: BY15 Gotland Deep
Station: BY20 Fårö Deep
2025-08-11
2025-08-12
2025-08-12
2025-08-12
Depth (m)
Chl-a (µg/l)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Chlorophyll a
CTD Fluorescence (nominally µg/l)
Current year´s Chl-a data (0-20 m)
Monthly Chl-a averages 0-20 m (1991-2020)
Monthly Chl-a averages +/- standard dev.



Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup. Data presenteras både från de fasta djupen och som medelvärden 0-20 m. Utöver resultaten från laboratorieanalyserna av vattenprover mäts klorofyll *a* som fluorescens från ett automatiskt instrument som sänks ned från fartyget. På så sätt kan djupt liggande, ibland tunna lager av växtplankton observeras.

About the chlorophyll graphs

Chlorophyll *a* is sampled from several depths. Data are presented both from the discrete depths and as an average 0-20 m. In addition to the laboratory analysis from the water samples chlorophyll fluorescence is measured in continuous depth profiles from the ship. This is a way to observe thin layers of phytoplankton occuring below the surface.

Om AlgAware

SMHI genomför månatliga expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHIs satellitövervakning av algblomningar finns under perioden juni-augusti på www.smhi.se. Resultat från provtagningarna kan hämtas från SMHI:s databas på sharkweb.smhi.se. Hydrografidata läggs ut varje månad, växtplanktondata läggs ut en gång per år.

About AlgAware

SMHI carries out monthly cruises in the Baltic and the Kattegat/Skagerrak. Results from semi quantitative microscopic analysis of phytoplankton samples as well as chlorophyll measurements are presented in brief in this report. Information from SMHIs satellite monitoring of algal blooms is found on www.smhi.se during the period June-August. Results from the expeditions are found in the SMHI database, sharkweb.smhi.se. Data are published monthly, phytoplankton data however, are published once a year.

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
Alexandrium spp.	Paralytic shellfish poisoning (PSP)	**Milda symptom:** Inom 30 min.: Stickningar eller en känsla av bedövning runt läpparna, som sprids gradvis till ansiktet och nacken; stickningar i fingertoppar och tår; Huvudvärk; yrsel, illamående, kräkningar, diarré **Extrema symptom:** Muskelförlamning; andningssvårigheter; känsla av att kvävas; Man kan vara död inom 2-24 timmar efter att ha fått i sig giftet, på grund av att andningsmuskulaturen förlamas.	**Mild case:** Within 30 min: tingling sensation or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headake, dizziness, nausea, vomiting, diarrhoea. **Extreme case** Muscular paralysis; pronounced respiratory difficulty; choking sensation; death trough respiratory paralysis may occur within 2-24 hours after ingestion.
Dinophysis spp.	Diarrehetic shellfish poisoning (DSP)	**Milda symptom:** Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont **Extrema symptom:** Upprepad exponering kan orsaka cancer	**Mild case:** Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. **Extreme case:** Repeated exposure may cause cancer.
Pseudo- niztschia spp.	Amnesic shellfish poisoning (ASP)	**Milda symptom:** Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramper **Extrema symptom:** Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper	**Mild case:** Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. **Extreme case:** dizziness, hallucinations, confusion, loss of memory, cramps.
Chaetoceros concavicornis/ C.convolutus	Mechanical damage through hooks on setae	**Låg celltäthet:** Ingen påverkan. **Hög celltäthet:** Fiskens gälar skadas, fisken dör.	**Low cell numbers:** No effect on fish. **High cell numbers:** Fish death due to gill damage.
Pseudochattonella spp.	Fish toxin	**Låg celltäthet:** Ingen påverkan. **Hög celltäthet:** Fiskens gälar skadas, fisken dör.	**Low cell numbers:** No effect on fish. **High cell numbers:** Fish death due to gill damage.

Oversikt över några potentiellt skadliga alger och det aktuella giftets effekt. Overview of potentially harmful algae and effects of toxins. Manual on harmful marine microalgae (2003 - UNESCO Publishing).

Kartan på framsidan visar viktat medelvärde för klorofyll *a,* µg/l (0-10 m) vid de olika stationerna. Pil upp eller ned indikerar om resultatet är över eller under en standardavvikelse från medel. Medel är beräknat utifrån aktuell månad under perioden 2001-2015. Förekomst av skadliga alger vid stationer där arter analyseras markeras med symbol.

The map on the front page shows weighted mean of chlorophyll *a*, µg/l (0-10 m) at sampling stations. The arrow up or down indicate whether the result is above or below one standard deviation from mean. The mean value is calculated using results from the actual month during the period 2001-2015. Presence of harmful algae at stations where species analysis is performed is shown with a symbol.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