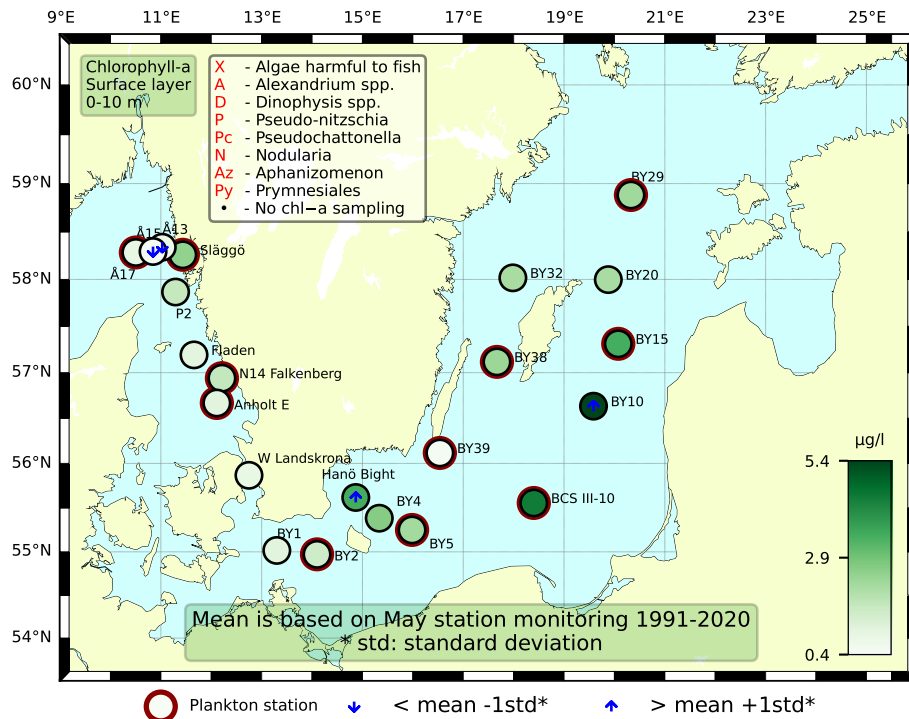


## Sammanfattning

En blomning av en liten art inom gruppen prymnesiales\* observerades i Skagerrak och Kattegatt. Även klorofyllfluorescenstopparna i Skagerrak orsakades delvis av samma art, men inslaget av en dinoflagellat var påtagligt vid Släggös topp och vid Å13 och P2 var mängden kiselalger stor. Relativt hög artdiversitet vid framför allt Släggö dominerades av kiselalger i låga eller moderata antal. De integrerade klorofyllhalterna var låga för månaden vid Å13 och Å17, i övrigt inom det normala.

Diversiteten och cellantalen av växtplankton var generellt sett måttliga i Egentliga Östersjön. Den typiska vårbloomingdinoflagellaten *Peridiniella catenata* var vanlig vid flera stationer, men kiselalgerna förekom endast i låga mängder och utgjorde inte någon vårblooming. Kiselalger som observerades i låga antal inkluderade *Skeletonema marinoi*, *Pauliella taeniata* och *Thalassiosira gravida*. Vid BY2 Arkona dominerades samhället av pikoplankton, mindre flagellater och ciliater. Ciliaten *Mesodinium rubrum* var vanlig till mycket vanlig vid samtliga stationer. De integrerade klorofyllhalterna var inom det normala för månaden vid samtliga stationer.



## Abstract

The bloom of a small prymnesiales\* species was observed in the Skagerrak and Kattegat areas. The chlorophyll fluorescence peaks in the Skagerrak were partly caused by the same prymnesiales\*, but the presence of an unidentified dinoflagellate was obvious at the Släggö peak, and at Å13 and P2 the number of diatoms was large. A relatively high species diversity at Släggö, was dominated by diatoms in moderate cell numbers. The integrated chlorophyll concentrations were low for this month at Å13 and Å17 and normal at all other stations.

Phytoplankton diversity and cell abundances were generally moderate in the Baltic Proper. The typical spring bloom dinoflagellate *Peridiniella catenata* was common at several stations, while diatoms occurred only in low numbers and did not constitute a spring bloom. Diatoms observed included *Skeletonema marinoi*, *Pauliella taeniata* and *Thalassiosira gravida*. At BY2 Arkona the community was dominated by pico sized unicells, small flagellates and ciliates. The ciliate *Mesodinium rubrum* was common to very common at all stations. The integrated chlorophyll concentrations were within the normal range for this month at all stations.

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

## The Skagerrak

### Släggö (Skagerrak coast) 4<sup>th</sup> of May

The phytoplankton diversity was rather high and was dominated by small flagellates, specifically a small (3–5 µm) prymnesiales\* species. A variety of species of diatoms and dinoflagellates were observed in moderate numbers.

A chlorophyll fluorescence peak at 15 meters was partly caused by a prymnesiales\* bloom, the same small (3–5 µm) species as the one found in the sample from 0–10 meters. There was however also a large number of unidentified naked dinoflagellates present, 8–10 µm wide. Although the fluorescence peak was significant, the integrated chlorophyll concentrations were within normal for this month.

### Å17 (open Skagerrak) 4<sup>th</sup> of May

Both species diversity and total cell numbers were low compared to Släggö. The small flagellate genus *Pyramimonas* was however found in rather high abundance. The same prymnesiales\* species as observed at Släggö was found in low cell numbers. The integrated chlorophyll concentrations were below normal for this month.

### Å13 (open Skagerrak) 4<sup>th</sup> of May

A fluorescence peak at seven meters was mainly caused by a number of diatom species; *Detonula pumila*, *Pseudo-nitzschia* spp.\* , *Leptocylindrus minimus* and *Proboscia alata* in enhanced numbers among many other species in low numbers.

### P2 (Skagerrak) 5<sup>th</sup> of May

A fluorescence peak at 15 meters was dominated by various diatoms of which *Pseudo-nitzschia* spp.\* and *D. pumila* were the most numerous as well as the small prymnesiales\* (3–5 µm) species.

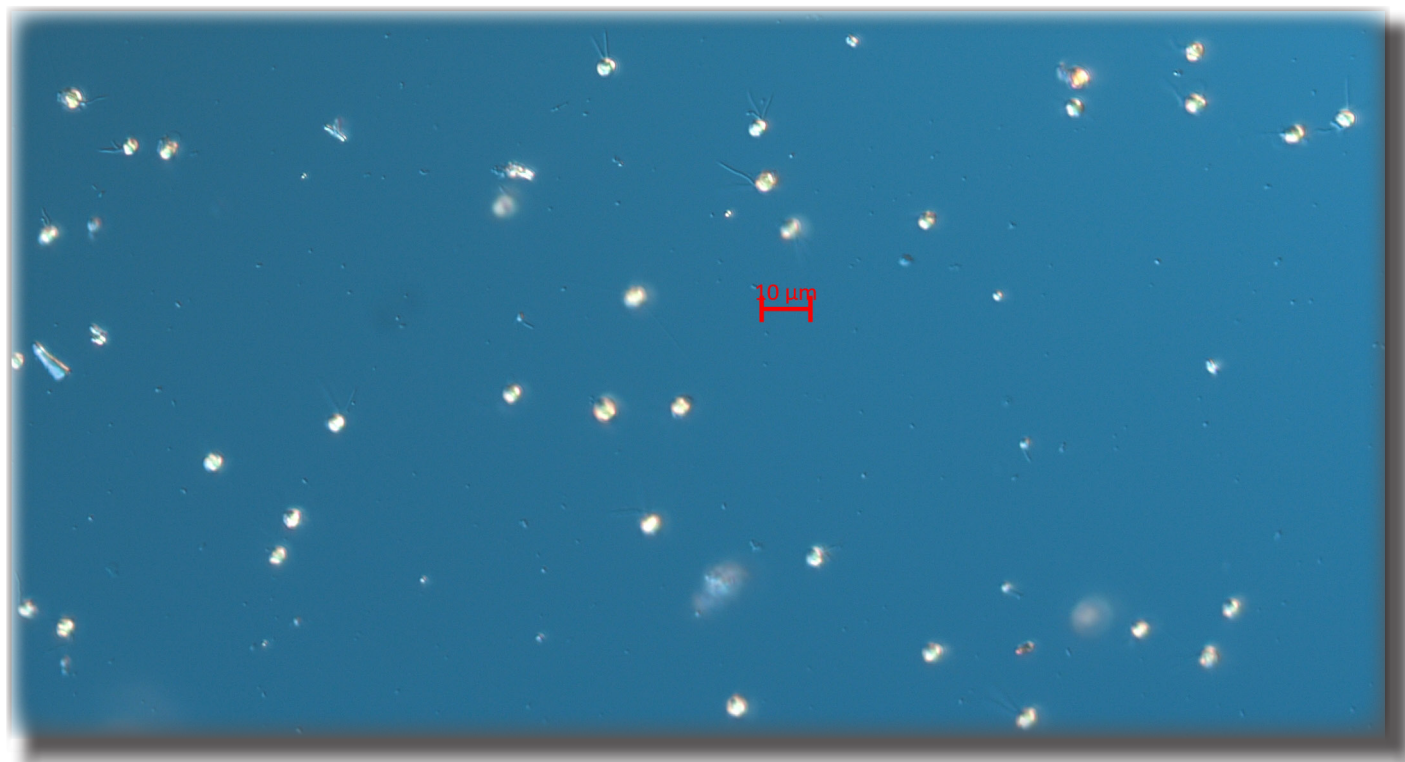


Fig 1. The bloom of a prymnesiales species, 3-5 µm wide, was found in the Skagerrak and at N14 in the Kattegat. Photo: A-T Skjevik.

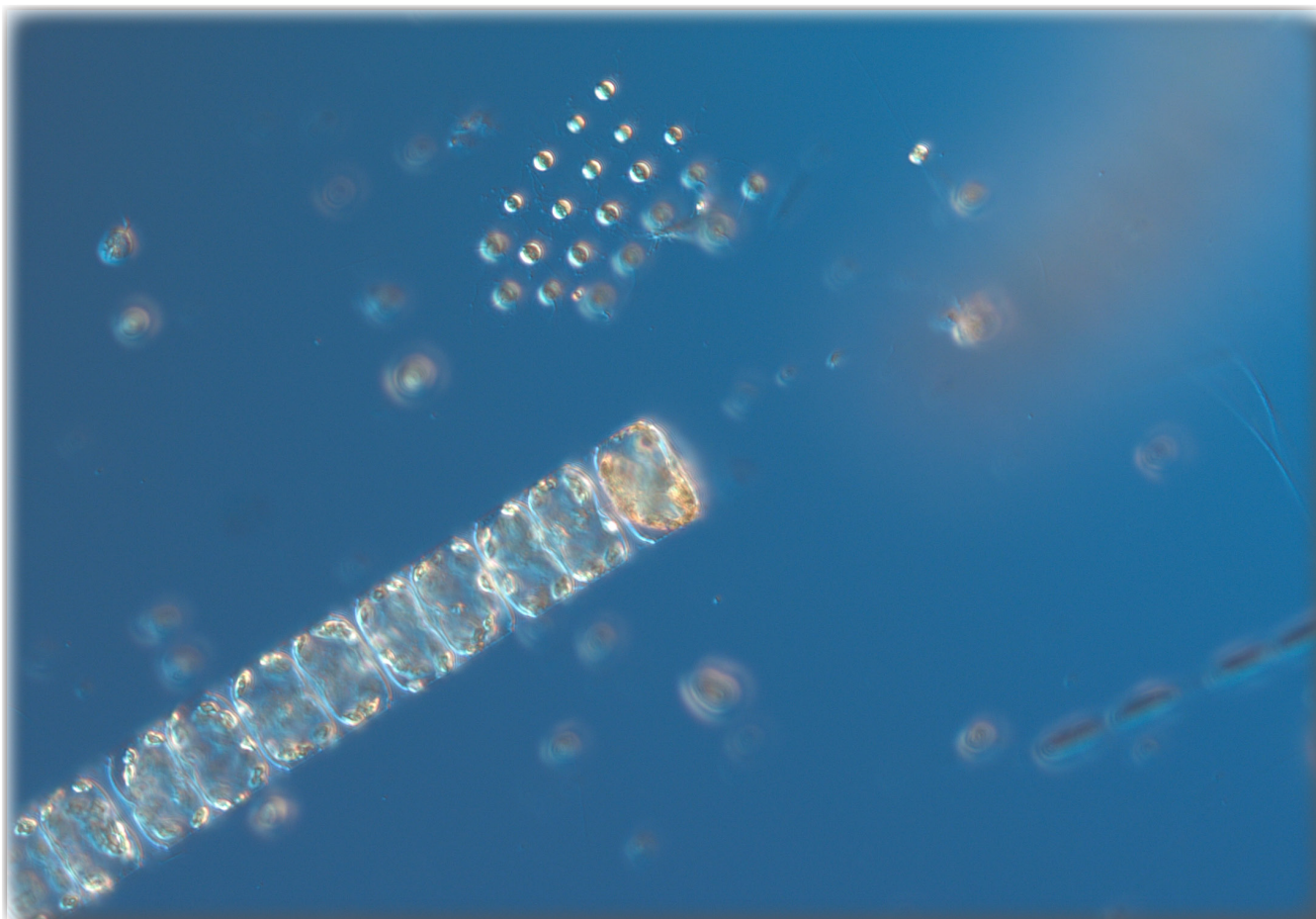


Fig 2. The chain forming diatom *D. pumila* was abundant especially at the chlorophyll fluorescence peaks in the Skagerrak. The organism above it is a very well organized colony of choanoflagellates. Photo: A-T. Skjevik.

### **The Kattegat**

#### **N14 Falkenberg 5<sup>th</sup> of May**

The total cell numbers were high due to the bloom of a small prymnesiales\*, probably the same species as the one in the Skagerrak. The species diversity was however low. Heterotrophic dinoflagellates like *Perididinella danica* and *Katodinium glaucum* and ciliates were rather common. The integrated chlorophyll concentrations were within the normal range for this month.

#### **Anholt E 5<sup>th</sup> of May**

The phytoplankton situation was rather similar to the one at N14, although the prymnesiales bloom was somewhat smaller. The integrated chlorophyll concentration from 0–20 meters was below normal for this month.



The

**Baltic** Fig 3. The potentially toxic dinoflagellate *Dinophysis acuminata*\* was common at station BY5.  
Photo: A. Torstensson.

**BY2 Arkona 6<sup>th</sup> of May**

The phytoplankton diversity was low but abundances were high, due to high amounts of pico sized unicells and flagellates. Ciliates were numerous, including two species of *Mesodinium*, with *M. rubrum* present. Dinoflagellates were represented by Gymnodiniales, Peridiniales, *Heterocapsa rotundata*, *K. glaucum* and *P. danica*. Diatoms were few, represented only by *Chaetoceros similis* and *Skeletonema marinoi*. The smaller cells comprised species of *Dinobryon*, *Pyramimonas* and cryptomonads. Several colony forming cyanobacteria genera were present, including *Lemmermanniella* and *Snowella*. The integrated 0–10 and 0–20 m chlorophyll concentrations were low but within the normal range for this month.

#### **BY5 Bornholm deep and BCSIII-10 7<sup>th</sup> of May**

The phytoplankton diversity and abundances were moderate at both stations. The ciliate *M. rubrum* was common at both stations. Dinoflagellates were quite abundant, with *Dinophysis acuminata*\* common at BY5, together with *Amylax triacantha*, *P. catenata*, *P. danica*, *Katodinium glaucum* and Gymnodiniales at both stations. Diatoms were almost absent, with only a few observations, including *Pauliella taeniata* at BY5 and *Chaetoceros danicus*. The smaller cells comprised *Dinobryon* (common at BY5), unicells and cryptomonads. A few colony forming cyanobacteria genera were present, including *Lemmermanniella* and *Snowella* at both stations, and *Aphanizomenon flosaquae* at BCSIII-10. The integrated 0–10 and 0–20 m chlorophyll concentrations were within the normal range for this month.

#### **BY15 Gotland deep 8<sup>th</sup> of May**

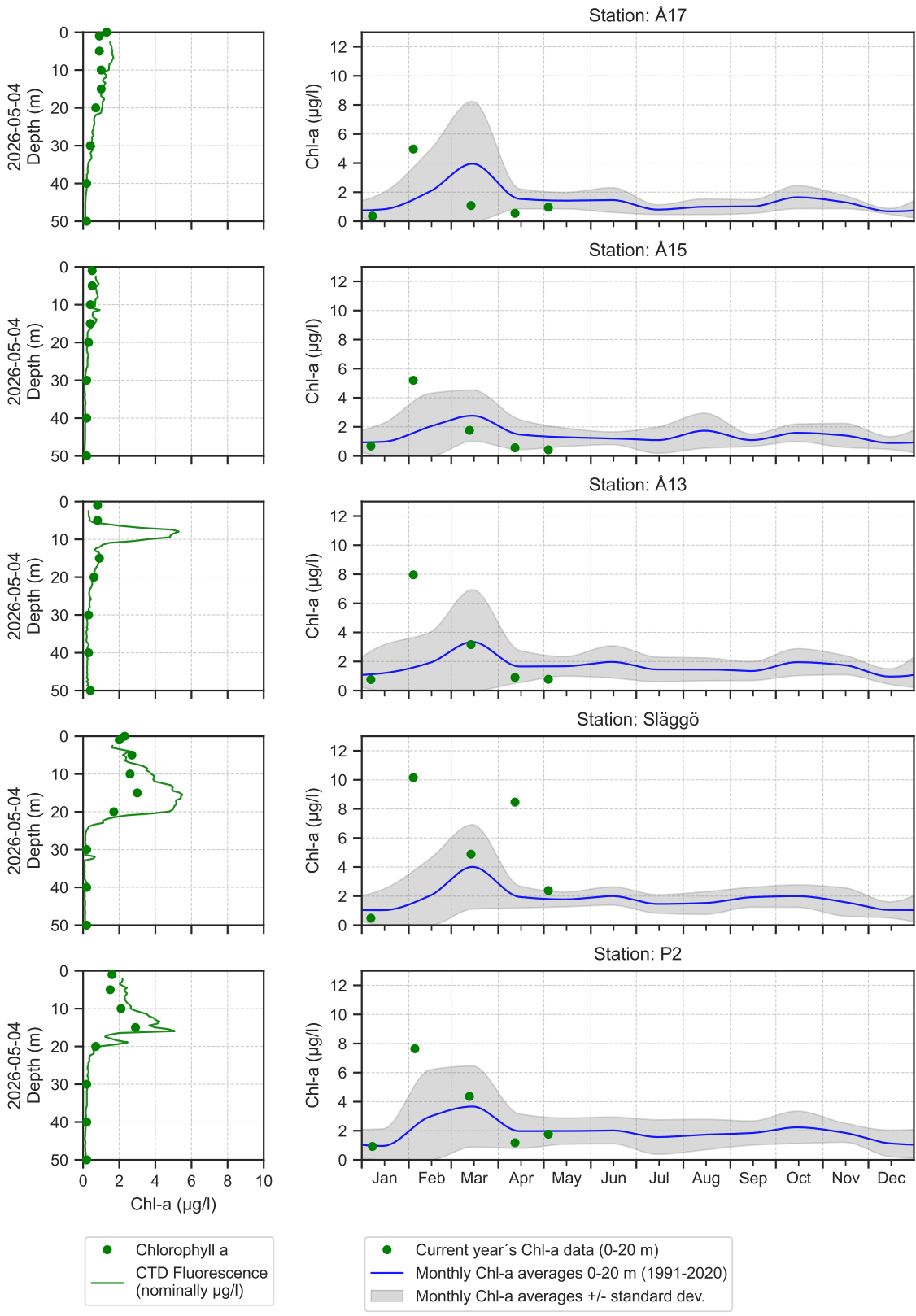
Phytoplankton analysis and text:  
Ann-Turi Skjevik and Anders Torstensson.

The phytoplankton diversity and abundance were both high. The ciliate *Mesodinium rubrum* was common. Dinoflagellates were quite abundant, with *Peridiniella catenata* common,

Selection of observed species	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	5/5	5/5	4/5	4/5
Hose 0-present0 m	presence	presence	presence	presence
<i>Chaetoceros decipiens</i>			present	
<i>Cylindrotheca closterium</i>		present	common	common
<i>Detonula pumila</i>			present	present
<i>Ditylum brightwellii</i>			present	
<i>Eucampia zodiacus</i>			present	
<i>Guinardia delicatula</i>			present	present
<i>Leptocylindrus minimus</i>	present		common	present
<i>Licmophora</i>			present	
<i>Proboscia alata</i>			common	present
<i>Pseudo-nitzschia</i>			present	present
<i>Rhizosolenia setigera</i>			present	
<i>Skeletonema marinoi</i>	present		present	present
<i>Thalassionema nitzschioides</i>			present	
<i>Dinophysis acuminata</i>		present	present	present
<i>Dinophysis norvegica</i>	present	present	present	present
Gymnodiniales	common			
<i>Gymnodinium litoralis</i>				present
<i>Gymnodinium verruculosum</i>	present	present	present	present
<i>Gyrodinium flagellare</i>				present
<i>Gyrodinium spirale</i>			present	
<i>Heterocapsa</i>				present
<i>Heterocapsa rotundata</i>				present
<i>Heterocapsa triquetra</i>	present			
<i>Karlodinium veneficum</i>	present	present	present	present
<i>Katodinium glaucum</i>	present	present	present	present
Peridinales		present		
<i>Peridiniella danica</i>	present	common	present	present
<i>Protoceratium reticulatum</i>	present	present		
<i>Protoperidinium brevipes</i>	present			
<i>Protoperidinium depressum</i>				present
<i>Protoperidinium pellucidum</i>		present		
<i>Scrippsiella</i>		present	present	present
<i>Tripos fusus</i>	present	present	present	
<i>Tripos lineatus</i>	present	present	present	
<i>Tripos longipes</i>			present	
<i>Tripos muelleri</i>	present	present	present	present
Dinobryon			common	
<i>Dinobryon balticum</i>			present	
Prymnesiales	very common	dominating	very common	present
<i>Heterosigma</i>				present
<i>Pseudanabaena</i>	present	present	common	
Cryptomonadales	present	present	present	common
<i>Cymbomonas tetramitiformis</i>		present		present
<i>Octactis speculum</i>	present		present	
<i>Pseudopedinella</i>			present	
<i>Pseudopedinella pyriformis</i>				present
<i>Eutreptiella</i>		present	present	present
<i>Pyramimonas</i>			present	very common
<i>Meringosphaera mediterranea</i>				present
<i>Telonema</i>		common		
<i>Calliicantha natans</i>				present
Choanoflagellata			present	
<i>Leucocryptos marina</i>		present		present
<i>Balanion comatum</i>		present		
<i>Laboea strobila</i>	present		present	present
<i>Mesodinium rubrum</i>			present	present
Strombidium				common
Ciliophora	common	common	common	common

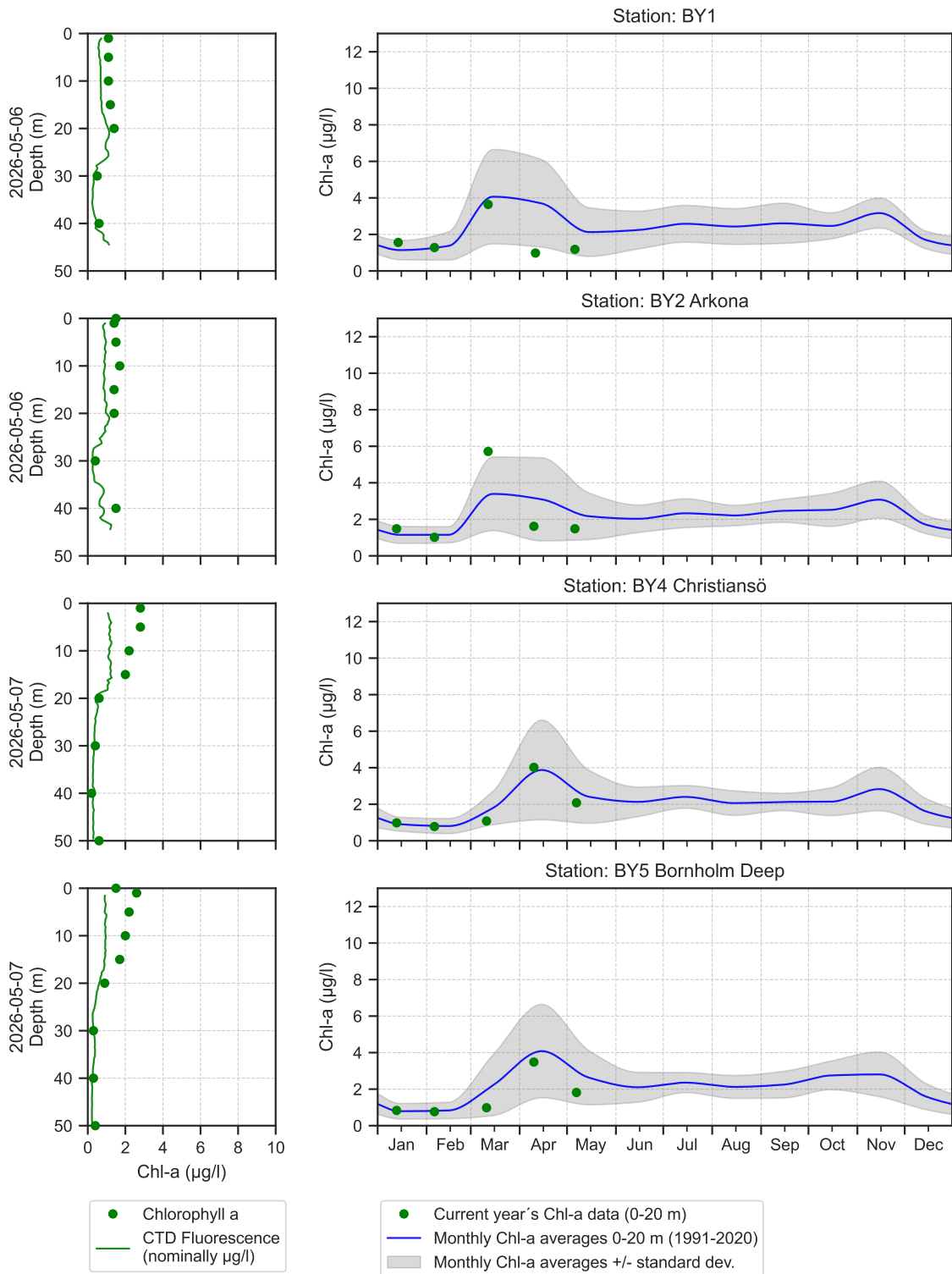
Selection of observed species	BY2	BY5	BCSIII-10	BY15	BY29	BY31	BY38	BY39
Red=potentially toxic species	6/5	7/5	7/5	8/5	9/5	9/5	9/5	10/5
Hose 0-10 m	presence	presence	presence	presence	presence	presence		presence
Ciliophora	present	present		present		present	present	present
Flagellates	common	present	present	present	present	present	present	present
Chaetoceros danicus		present						
Chaetoceros similis	present							present
Coscinodiscus				present				
Pauliella taeniata		present		present				
Skeletonema marinoi	present	present						
Thalassiosira				present				
Thalassiosira gravida				present	present			
Choanoflagellata						present		
Dinobryon	present	common	present	present	common	common	present	common
Prymnesiales				present		present	present	
Cryptomonadales	present	present		present	present	present	present	present
Aphanizomenon flosaquae			present	present		present	present	present
Lemmermanniella	present	present	present	present	present		present	present
Snowella	present	present	present		present			present
Apedinella radians							present	
Amylax triacantha		present	present	present				
Dinophysis acuminata		common	present	present	present	present		
Gymnodiniales	present	present	present	present	present	present		
Gyrodinium spirale				present				
Heterocapsa rotundata	present			present	present		present	
Katodinium glaucum	present	present	present	present	present	present		present
Peridinales	present		present	present	present	present		
Peridiniella catenata		present	common	common	common	common	present	
Peridiniella danica	present	present	present			present	present	present
Protoperidinium					present	present		
Protoperidinium bipes					present		present	
Eutreptiella	present							
Mesodinium	present	present	present					
Mesodinium rubrum	present	common	common	common	very common	common	common	present
Pyramimonas	present					present	present	present
Ebria tripartita		present	present	present			present	present
Binuclearia lauterbornii	present	present	present	present	present	present		
Unicell	common	present	present	present	present	present	present	present

# The Skagerrak

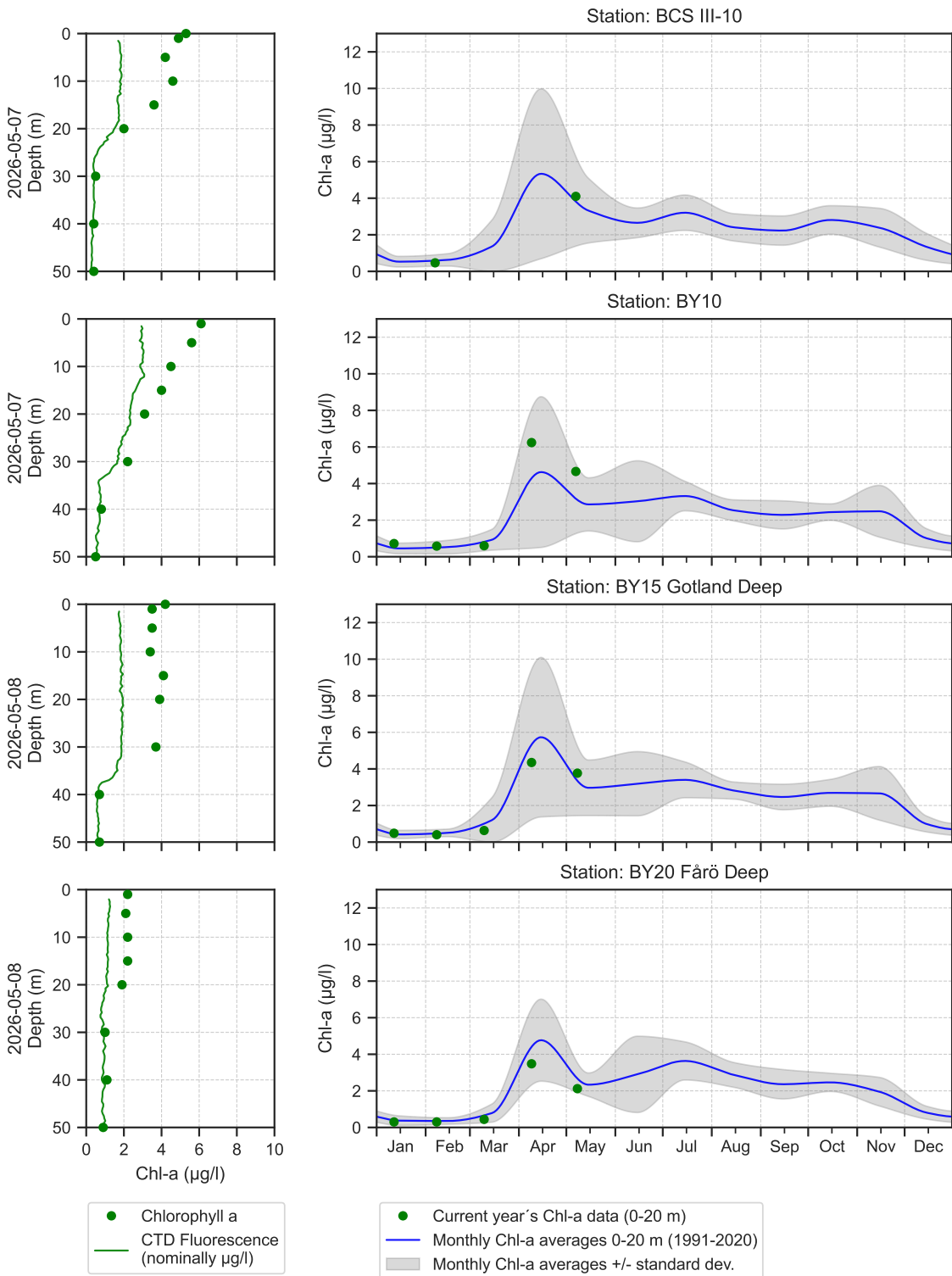




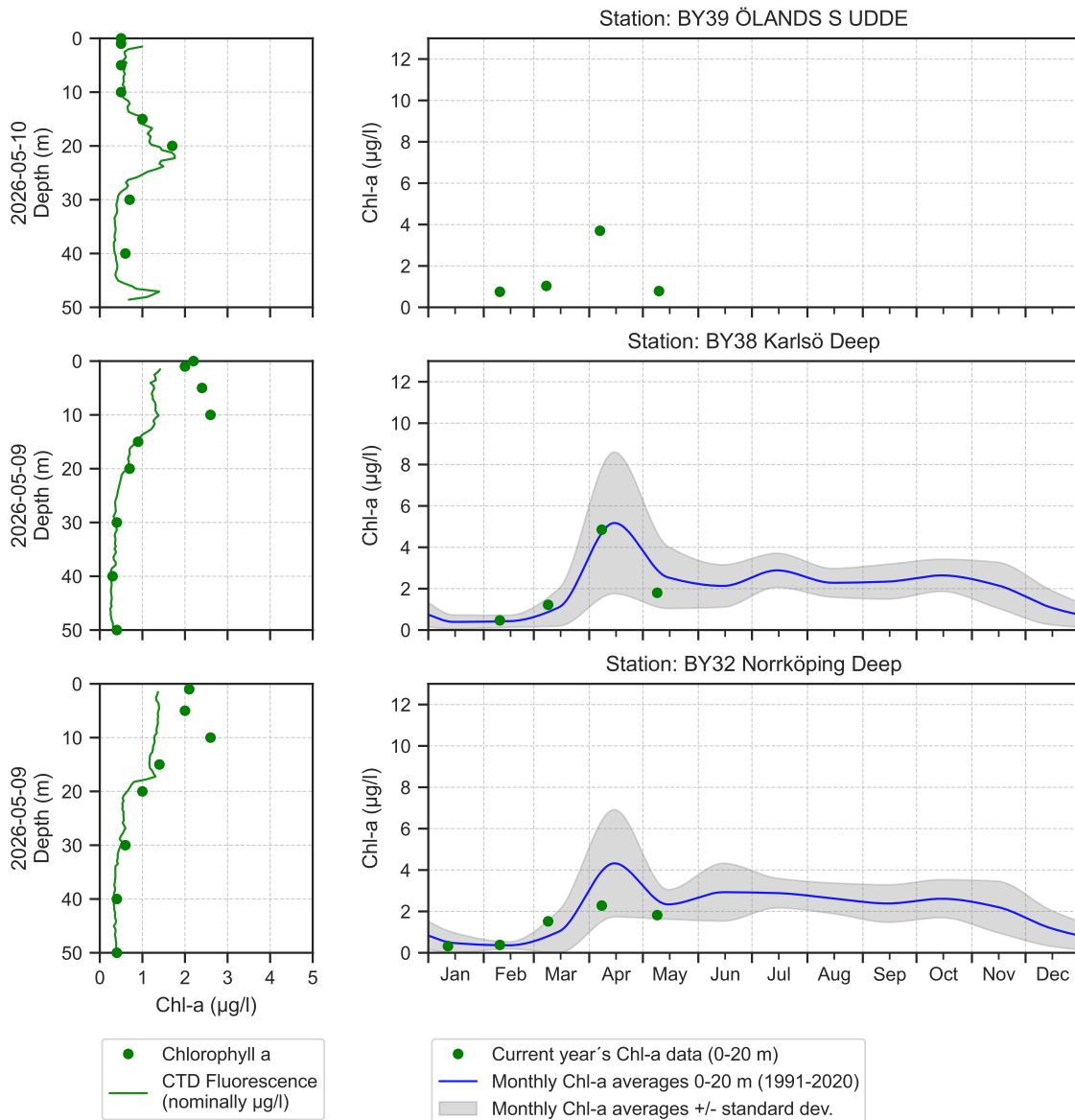
# The Southern Baltic



# The Eastern Baltic



## The Western Baltic



### 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 medelvärdet 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 occurring below the surface.

## Om AlgAware

SMHI genomför månatliga expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopisk analys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHIs satellitövervakning av algbloomningar finns under perioden juni-augusti på [www.smhi.se](http://www.smhi.se). Resultat från provtagningarna kan hämtas från SMHI:s databas på [sharkweb.smhi.se](http://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](http://www.smhi.se) during the period June-August. Results from the expeditions are found in the SMHI database, [sharkweb.smhi.se](http://sharkweb.smhi.se). Data are published monthly, phytoplankton data however, are published once a year.

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
<i>Alexandrium</i> spp.	Paralytic shellfish poisoning (PSP)	<b>Milda symptom:</b> 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 <b>Extrema symptom:</b> 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.	<b>Mild case:</b> Within 30 min: tingling sensation or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headache, dizziness, nausea, vomiting, diarrhoea. <b>Extreme case</b> Muscular paralysis; pronounced respiratory difficulty; choking sensation; death through respiratory paralysis may occur within 2-24 hours after ingestion.
<i>Dinophysis</i> spp.	Diarrhetic shellfish poisoning (DSP)	<b>Milda symptom:</b> Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont <b>Extrema symptom:</b> Upprepad exponering kan orsaka cancer	<b>Mild case:</b> Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. <b>Extreme case:</b> Repeated exposure may cause cancer.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	<b>Milda symptom:</b> Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramp <b>Extrema symptom:</b> Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramp	<b>Mild case:</b> Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. <b>Extreme case:</b> dizziness, hallucinations, confusion, loss of memory, cramps.
<i>Chaetoceros concavicornis</i> / <i>C. convolutus</i>	Mechanical damage through hooks on setae	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> Fish death due to gill damage.
<i>Pseudochattonella</i> spp.	Fish toxin	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> 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.

