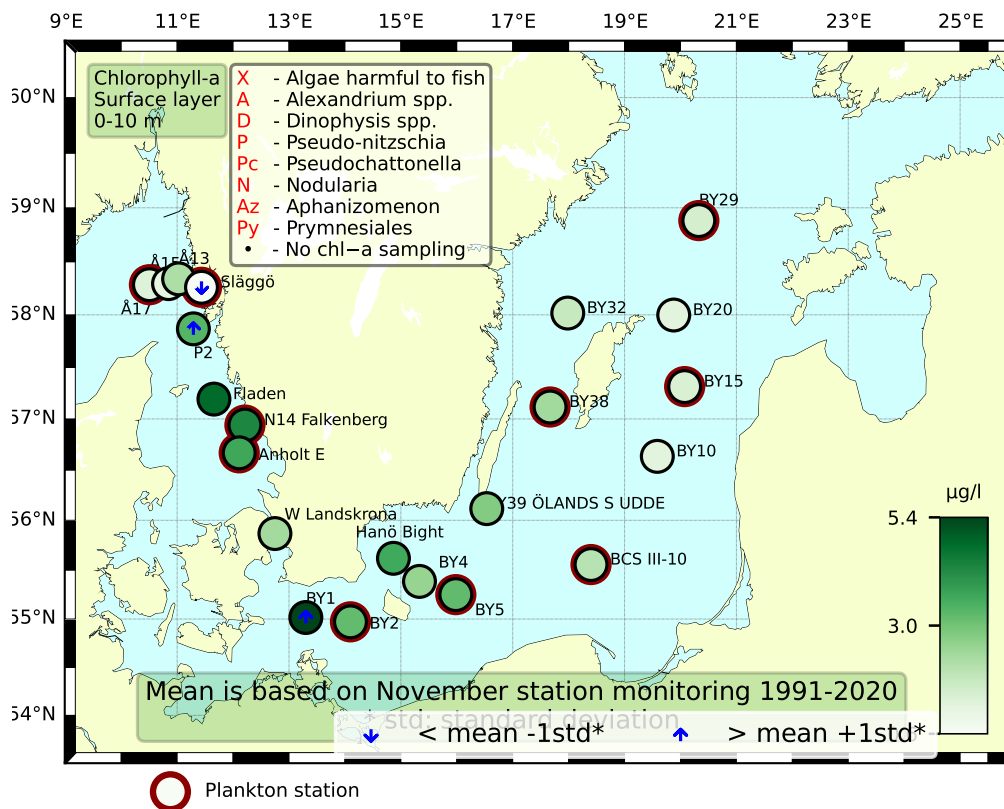


## Sammanfattning

Artdiversiteten och de totala cellantalen var låga i Skagerrak men högre i Kattegatt. Kiselalger dominerade vid samtliga stationer och bland de större cellerna, *Pseudo-nitzschia*\* var vanlig vid de flesta stationer. De små cellerna hade en dominans av cryptomonader och *Emiliana huxleyi*. De integrerade klorofyllhalterna var inom det normala förutom vid Släggö där de integrerade klorofyllvärdena var under det normala för månaden.

Det var vinterförhållanden i växtplanktonvärlden i Egentliga Östersjön denna månad. Bara vid BY2 var växtplanktondiversiteten hyfsat hög, i övrigt var antal arter och totala cellantal generellt sett låga. De integrerade klorofyllhalterna (0–10 och 0–20 m) var inom det normala för månaden vid alla stationer förutom vid BY1, där de låg rejält över en standardavvikelse.



## Abstract

The species diversity and the total cell numbers were low in the Skagerrak but higher in the Kattegat. Overall diatoms dominated at all stations and among the larger cells, *Pseudo-nitzschia*\* was common at most stations. The smaller cells had a dominance of cryptomonads and *Emiliana huxleyi*. The integrated chlorophyll concentrations were within normal with only one exception, at Släggö, where the integrated chlorophyll concentrations were below normal for this month.

Winter conditions prevailed in the Baltic Proper phytoplankton world this month. Only at BY2 in the southwestern Baltic, the phytoplankton diversity was fairly high. At all other stations, the number of species and total cell numbers were generally low. The integrated chlorophyll concentrations (0–10 and 0–20 m) were within the normal range for this month at all stations in the Baltic Proper, except at BY1 where they were well above one standard deviation.

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

## The Skagerrak

### Å17 (Skagerrak open Sea) 11<sup>th</sup> of November

The phytoplankton diversity was moderate but cell numbers low. Small cells dominated and *Emiliana huxleyi* was most common. Among the larger some cells the diatom *Dactyliosolen fragilissimus* was most commonly found but some cells of the genus *Tripos* was recorded. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within normal for this month.

### Släggö (Skagerrak coast) 11<sup>th</sup> of November

The phytoplankton diversity was moderate but cell numbers low. Small cells dominated and *E. huxleyi* and different cryptomonads were most common. Among the larger some cells the diatom genus *Pseudo-nitzschia*\* was most commonly found. The integrated (0–10 and 0–20 m) chlorophyll concentrations were both below what is normal for this month.

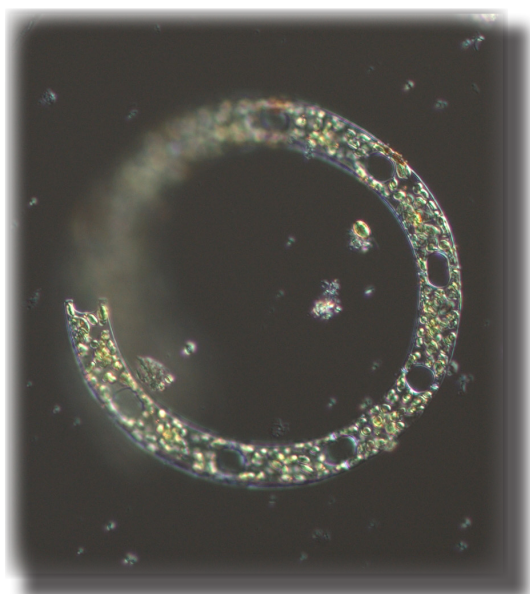


Fig 1. The beautiful diatom *Eucampia zodiacus* was present in the Kattegat. Photo: M. Johansen.

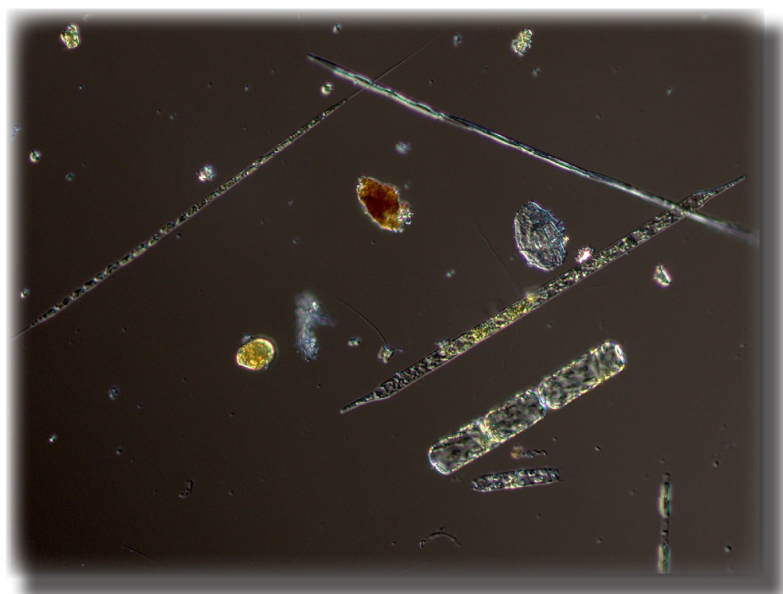


Fig 2. Various species of diatoms were the most common among the larger cells this month. Photo: M. Johansen.

## The Kattegat

### N14 Falkenberg 12<sup>th</sup> of November

The phytoplankton diversity was high and this was the most species rich station sampled during the cruise. Diatoms dominated among the larger cells with a diverse community of for example *Guinardia delicatula*, *Pseudo-nitzschia*\* and *Ditylum brightwelli*. The smaller cells were dominated by different cryptomonads but the flagellate *Emiliana huxleyi* was also present. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within normal for this month.

### Anholt E 12<sup>th</sup> of November

The phytoplankton diversity and total cell numbers were both high. Diatoms dominated among the larger cells with a diverse community of for example *Pseudo-nitzschia*\* and different species of the genus *Chaetoceros*. The smaller cells were dominated by different cryptomonads and the flagellate *E. huxleyi*. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within normal for this month.

## The Baltic

### BY2 Arkona 13<sup>th</sup> of November

The species diversity was low, but the cell numbers of the diatoms *Cerataulina pelagica*, *Dactyliosolen fragilissimus* and the filamentous cyanobacterium *Aphanizomenon flosaquae* were fairly high. The potentially harmful dinoflagellate *Prorocentrum cordatum*\* was present in moderate cell counts. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BY5 Bornholm deep 13<sup>th</sup> of November

The species composition was more or less the same as at BY2, but the total cell numbers were much lower. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BCSIII-10 14<sup>th</sup> of November

The phytoplankton diversity was low, a moderate number of the filamentous cyanobacterium *A. flosaquae* was however found. Ciliates and cryptomonads were present in elevated cell numbers. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BY15 Gotland deep 14<sup>th</sup> of November

The phytoplankton diversity was very low. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BY29 15<sup>th</sup> of November

The phytoplankton diversity was very low, only cryptomonads were found in somewhat elevated cell numbers. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BY31 15<sup>th</sup> of November

A few filaments of the filamentous cyanobacterium *A. flosaquae* were present. The phytoplankton diversity was however very low.

### BY38 16<sup>th</sup> of November

The phytoplankton diversity was very low, only centric diatoms and cryptomonads were found in somewhat elevated cell numbers. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

### BY39 16<sup>th</sup> of November

The phytoplankton diversity was very low, only ciliates and cryptomonads were found in somewhat elevated cell numbers. The integrated (0–10 and 0–20 m) chlorophyll concentrations were within the normal range for this month.

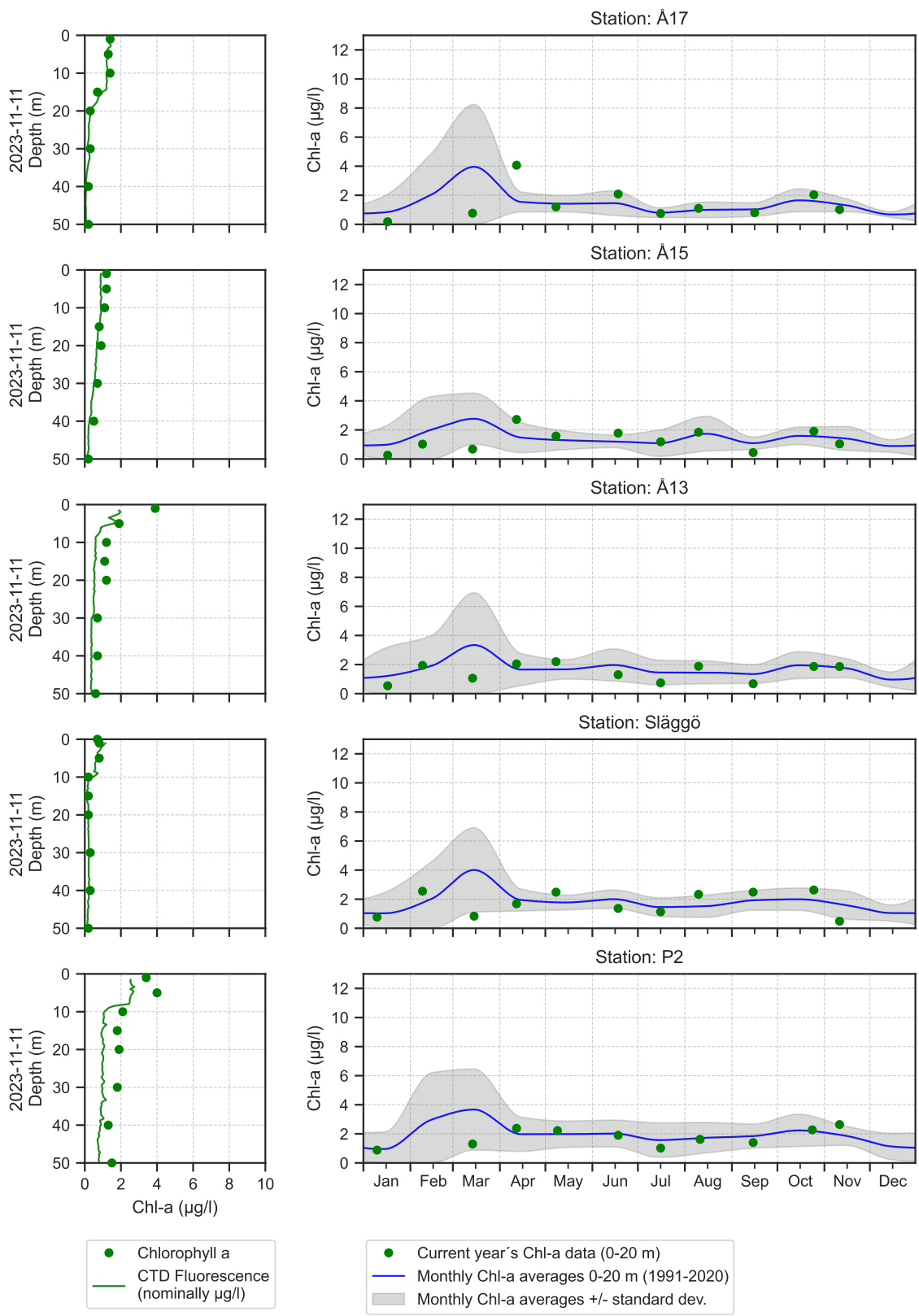


Fig 3. The diatom *Dactyliosolen fragilissimus*, here entangled in a crustacean, was numerous at BY2. Photo: A-T. Skjevik

Selection of observed species	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	12/11	12/11	11/11	11/11
Hose 0-10 m	presence	presence	presence	presence
Centrales			present	
Cerataulina pelagica	common	present		
Chaetoceros	present			
Chaetoceros circinalis	present			
Chaetoceros cf. convolutus	common	common	present	present
Chaetoceros danicus	common	present		
Chaetoceros socialis	common	common		
Coscinodiscus concinnus			present	
Dactyliosolen fragilissimus	common	common	present	common
Detonula pumila	present		present	
Ditylum brightwellii	present	common	present	present
Eucampia zodiacus		present		
Guinardia delicatula	common	common	present	present
Guinardia flaccida		present		
Lauderia annulata	present			
Leptocylindrus danicus	common	common	present	present
Nitzschia longissima	present	present		
Paralia sulcata				present
Proboscia alata	present	present		
Pseudo-nitzschia	very common	very common	common	
Pseudosolenia calcar-avis	present	present	present	
Rhizosolenia setigera	present	present	present	
Rhizosolenia setigera f. pungens	present	present		
Skeletonema marinoi	common	present		
Thalassionema frauenfeldii		present		
Thalassionema nitzschioides	present	present		
Thalassiosira	common	common	present	present
Thalassiosira angulata		present		present
Thalassiosira anguste-lineata	present			
Thalassiosira gravida	present	present	present	
Thalassiosira punctigera		present		
Amphidinium sphenoides	present			
Dinophysis acuminata				present
Gymnodiniales			common	common
Heterocapsa rotundata				present
Protoperidinium bipes			present	
Protoperidinium granii	present			
Torodinium			present	present
Tripos furca				common
Tripos lineatus	present		present	
Tripos longipes				present
Tripos macroceros				present
Tripos muelleri		present		present
Emiliana huxleyi	very common	common	common	very common
Pleurochrysis				present
Monoraphidium			present	
Pterosperma				present
Cryptomonadales	very common	common	common	present
Dictyocha fibula			present	
Dictyochaales		present		present
Octactis speculum		present		present
Paulinella ovalis			present	
Ciliophora		present	common	present

Selection of observed species	BY2	BY5	BCSIII-10	BY15	BY29	BY31	BY38	BY39
Red=potentially toxic species	13/11	13/11	14/11	14/11	15/11	15/11	16/11	16/11
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Centrales			present	present	present	common	common	present
Cerataulina pelagica	common	present						
Chaetoceros castracanei	present		present	present	present	present		
Chaetoceros danicus	present	present	present		present		present	
Chaetoceros subtilis			present					
Cyclotella	present	present			present			
Cylindrotheca closterium	present							
Dactyliosolen fragilissimus	common	present						
Skeletonema marinoi	present		present					
<i>Dinophysis acuminata</i>					present			
Gymnodinium verruculosum	present	present	present	present		present		
Gyrodinium spirale					present			
Heterocapsa	present	present					present	present
Heterocapsa rotundata	present	present				present	present	present
Katodinium glaucum	present			present				present
<i>Prorocentrum cordatum</i>	present	present						
<i>Aphanizomenon flosaquae</i>	common	present	common			present	present	present
Lemmermanniella		present			present			
Snowella								present
Woronichinia				present	present	present		
Cryptomonadales	common	common	common	present	common	present	common	common
Leucocryptos marina		present						present
Pyramimonas	present	present	present					
Oocystis				present	present	present	present	present
Binuclearia lauterbornii				present		present		
Monoraphidium					present	present	present	
Calliakantha natans							present	
Choanoflagellata		present	present					
Ebria tripartita	present	present					present	
Mesodinium rubrum	present	present	present	present	present	present	present	
Ciliophora	present	present	common	present	present	present	present	common

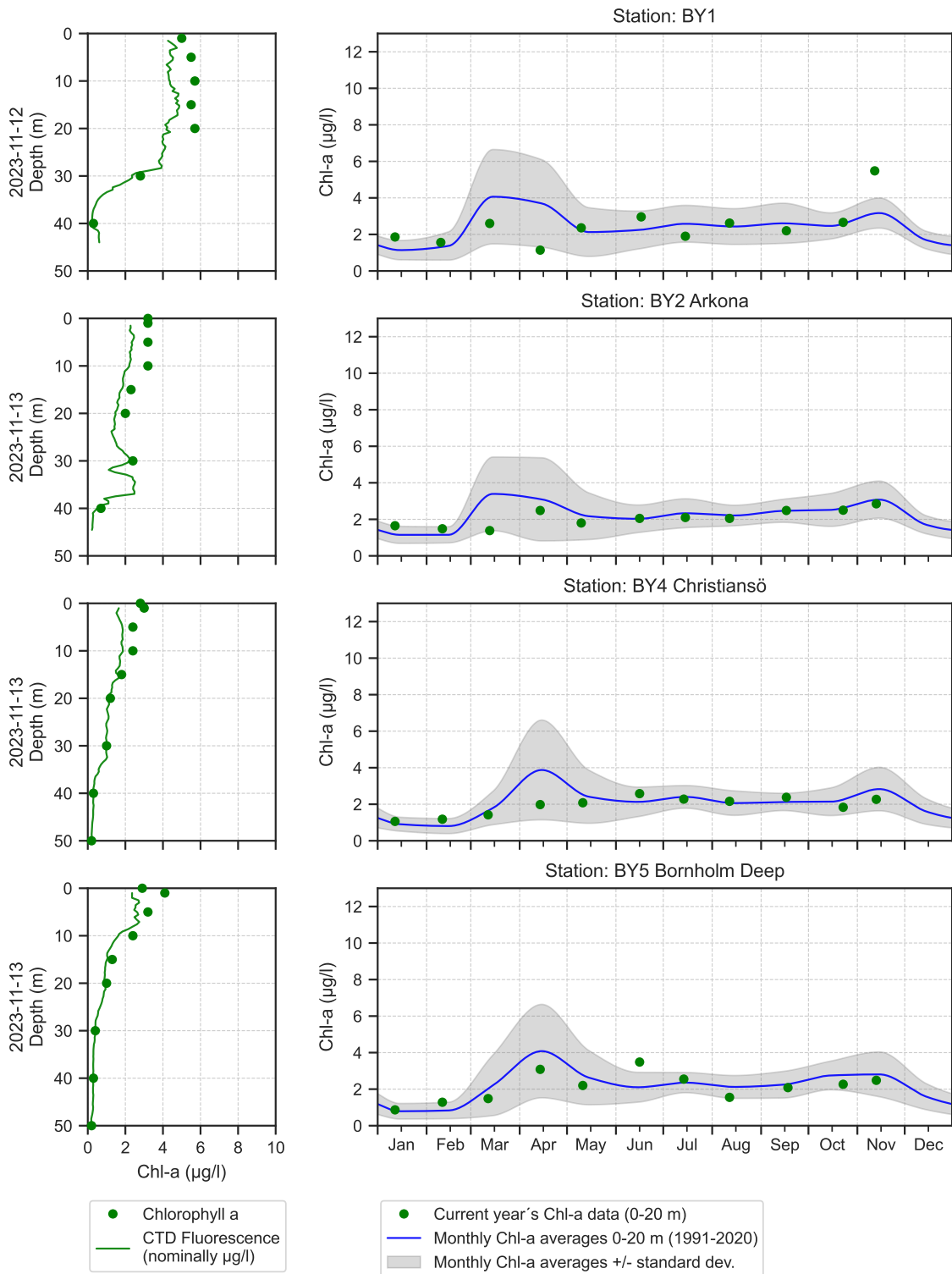
# The Skagerrak





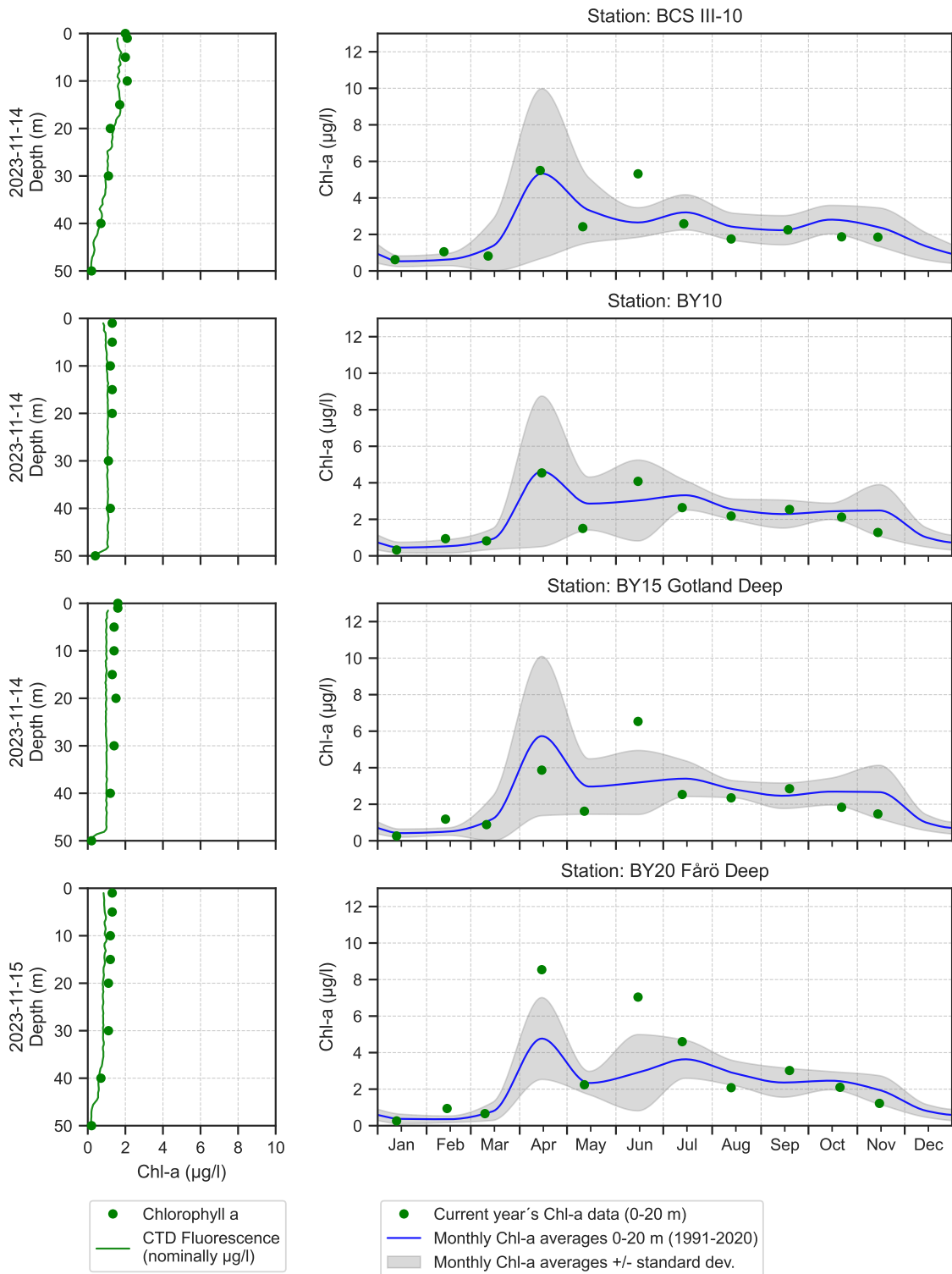


# The Southern Baltic

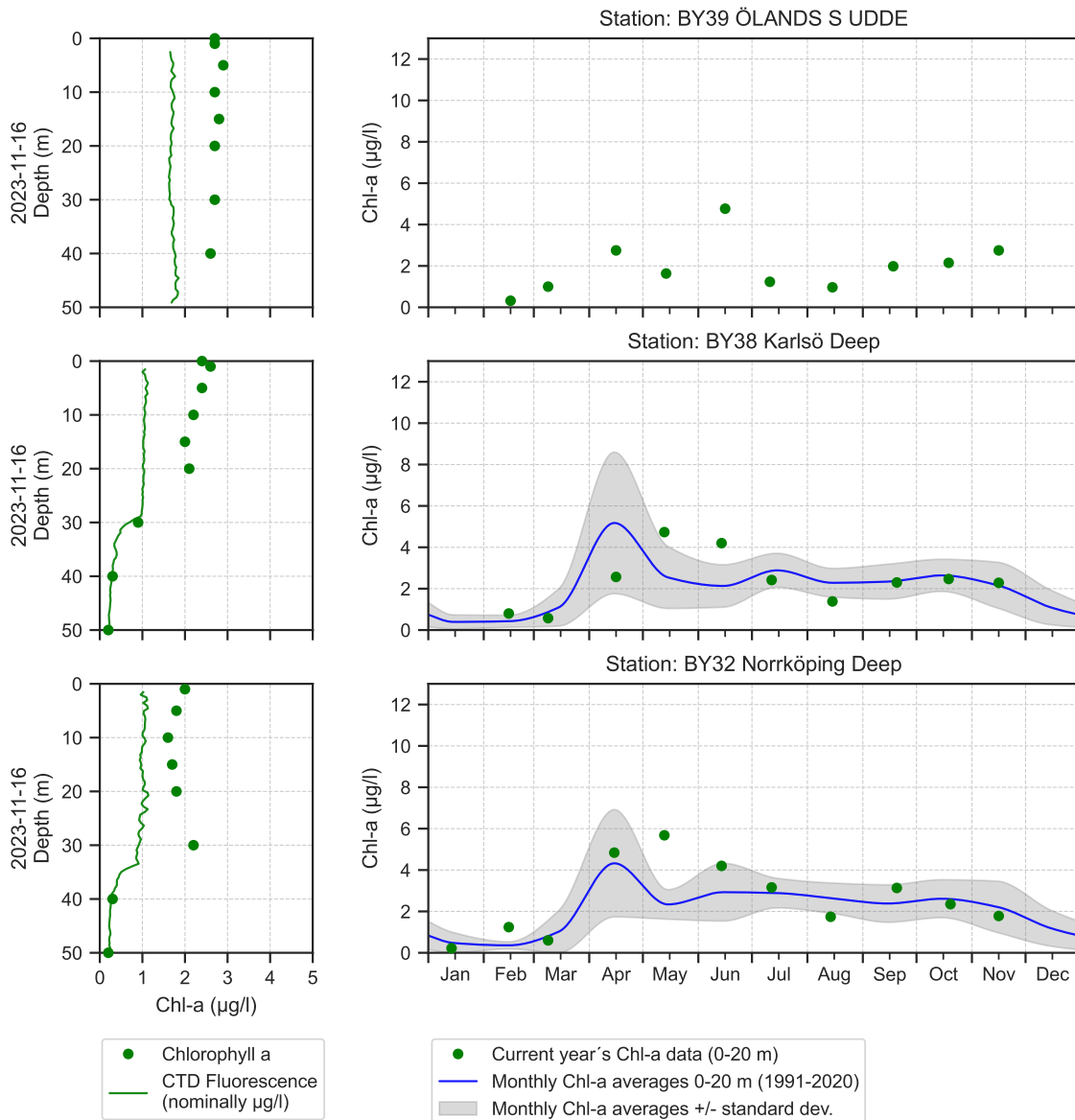




# The Eastern Baltic



## 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, kramper	<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.

