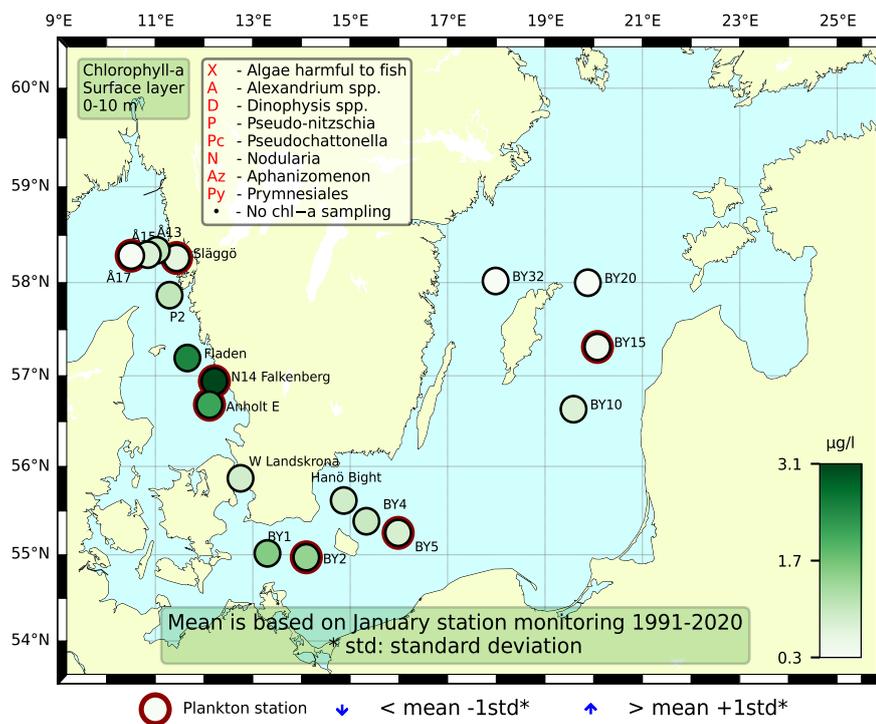


## Sammanfattning

Flertalet stationer provtogs ej pga dåligt väder.

Artdiversiteten av växtplankton och det totala antalet celler var höga vid samtliga stationer i Kattegatt. I Skagerrak provtogs endast Släggö, där lägre cellantal observerades jämfört med Kattegatt. Bilder från IFCB visade låga abundanser av små celler vid Å17, men inga mikroskopiprover kunde tas där. Samhället i Kattegatt dominerades av kiselalger, där *Pseudo-nitzschia*\* och *Skeletonema marinoi* var de vanligaste taxa. Cryptomonader var också vanliga i hela Västerhavet. Trots att cellantalen var lägre vid Släggö den 7 januari visade IFCB-bilder att abundanserna i Skagerrak var liknande dem i Kattegatt när Svea återvände en vecka senare, men inga mikroskopiprover togs då. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var relativt höga i Kattegatt, men låg inom det normala för månaden vid alla stationer.

Diversiteten och cellantalen av växtplankton var generellt sett väldigt låga i Östersjön. Växtplanktonprover för analys i mikroskop togs vid fyra stationer; BY15, BY31, BY2 samt BY5. Generellt var det kiselalger av arten *Actinocyclus octonarius*, mindre dinoflagellater, Cryptomonader, kolonibildande cyanobakterier och olika ciliater i Östersjön. Detta stämmer överens med bilderna från IFCB:n, med enda undantaget att det var bara vid BY5 som den filamentösa cyanobakterien *Aphanizomenon* fanns i mikroskopiprovet, medan IFCB:n hittade släktet i princip i hela Östersjön. De integrerade klorofyllhalterna var inom det normala för månaden vid alla stationer.



## Abstract

Several stations were not sampled due to bad weather.

Phytoplankton species diversity and total cell numbers were high at all stations in the Kattegat. In the Skagerrak, only Släggö was sampled, where lower cell numbers were observed compared with the Kattegat. IFCB images showed low abundances of small cells at Å17, but no microscopy samples could be collected there. The community in the Kattegat was dominated by diatoms, with *Pseudo-nitzschia*\* and *Skeletonema marinoi* as the most common taxa. Cryptomonads were also common throughout the western sea area. Although cell numbers were lower at Släggö on 7 January, IFCB images indicated that abundances in the Skagerrak were similar to those in the Kattegat when Svea returned one week later, but no microscopy samples were collected then. Integrated chlorophyll concentrations (0–10 m and 0–20 m) were relatively high in the Kattegat but remained within the normal range for the month at all stations.

Diversity and cell abundances of phytoplankton were generally very low in the Baltic Proper. Phytoplankton samples for analysis in the microscope were sampled at four stations; BY15, BY31, BY2 and BY5. In general, it was diatoms of the species *Actinocyclus octonarius*, small dinoflagellates, Cryptomonads, colony forming cyanobacteria and various ciliates in the Baltic Proper. This is in accordance with images from the IFCB, with the only exception that it was only at BY5 that the filamentous cyanobacterium *Aphanizomenon* was present in the microscopy sample, while the IFCB found the genus in more or less the entire Baltic. 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) 7<sup>th</sup> of January

Both species diversity and total cell numbers were low to moderate. Cryptomonadales were the most abundant taxon in the samples. Among the larger cells, diatoms such as *Pseudo-nitzschia*\* were common. The dinoflagellate *Azadinium caudatum* var. *margalefi* was observed at the station. Integrated chlorophyll concentrations from 0–10 m and 0–20 m were within the normal range for this month.

### Å17 (Skagerrak coast) 8<sup>th</sup> of January

No microscopy sample was collected at the station, but IFCB images indicate low total abundances. Cells belonging to the order Cryptomonadales were the most common, followed by other small taxa.

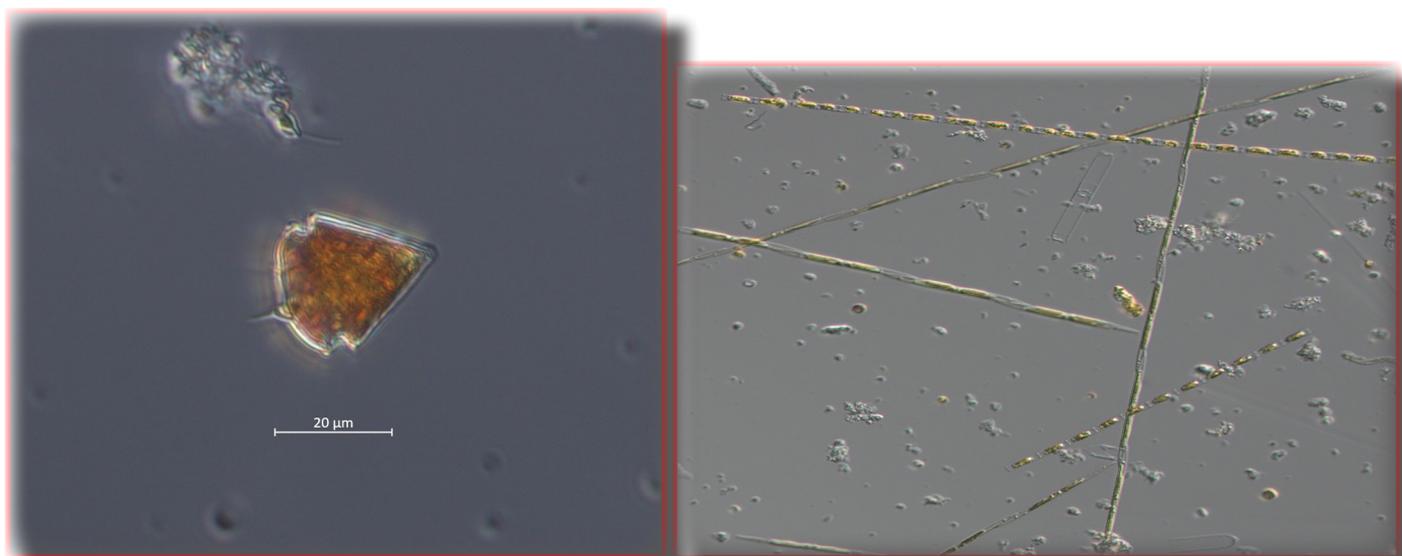


Fig 1. The dinoflagellate *Azadinium caudatum* var. *margalefi* was observed at Släggö (left). Samples from the Kattegat were dominated by diatoms, particularly species of the genus *Pseudo-nitzschia*\* (right).

Photo: A. Torstensson.

## The Kattegat

### Anholt E and N14 Falkenberg 9<sup>th</sup> of January

Species diversity and total cell numbers were high in both samples, though N14 Falkenberg showed slightly higher abundances than Anholt E. Diatoms dominated, with particularly high concentrations of *Pseudo-nitzschia* spp.\* and *Skeletonema marinoi*. Cryptomonadales were also common among the smaller cells. Integrated chlorophyll concentrations for 0–10 m and 0–20 m were within the normal range for this month.

## The Baltic

### BY15 Gotland deep 12<sup>th</sup> of January

The phytoplankton diversity and abundances were low. Among the diatoms, *Actinocyclus octonarius* was quite numerous and a few cells of *Skeletonema marinoi* were present. Dinoflagellates were mostly represented by small species such as *Gymnodinium verruculosum*, but a few *Dinophysis acuminata*\* were present. The colony forming cyanobacteria *Snowella* sp. was quite numerous as well as Cryptomonadales and the ciliate *Mesodinium rubrum*. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

### BY31 Landsort deep 12<sup>th</sup> of January

The phytoplankton diversity and abundances were low. Among the diatoms, there were only a few *A. octonarius* and *Chaetoceros* sp. present. Dinoflagellates were more numerous, especially Gymnodiniales. There were also a few single cells of the typical spring bloom chain forming dinoflagellate *Peridiniella catenata*. Cyanobacteria, ciliates and various smaller cells were present but in smaller amounts than at the other stations.

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

The phytoplankton diversity and abundances were low. Among the diatoms, there were only a few *A. octonarius*, *Chaetoceros subtilis* and *Thalassiosira* cf. *kushirensis* present. Dinoflagellates were more numerous, especially Gymnodiniales. Both the diversity and abundance of cyanobacteria were low with only a few filaments of *Pseudanabaena* sp. present. Cryptomonadales and the ciliate *M. rubrum* were quite numerous. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

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

The phytoplankton diversity and abundances were low. Among the diatoms, *A. octonarius*, *Coscinodiscus radiatus* and the potentially toxin producing *Pseudo-nitzschia* sp.\* were present. Dinoflagellates were more numerous, especially Gymnodiniales. There were also a few single cells of the typical spring bloom chain forming dinoflagellate *P. catenata*. Cyanobacteria were mainly represented by the genus *Aphanizomenon*, which was quite numerous. Cryptomonadales were quite numerous, but various ciliates, including *M. rubrum*, were present in low amounts. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

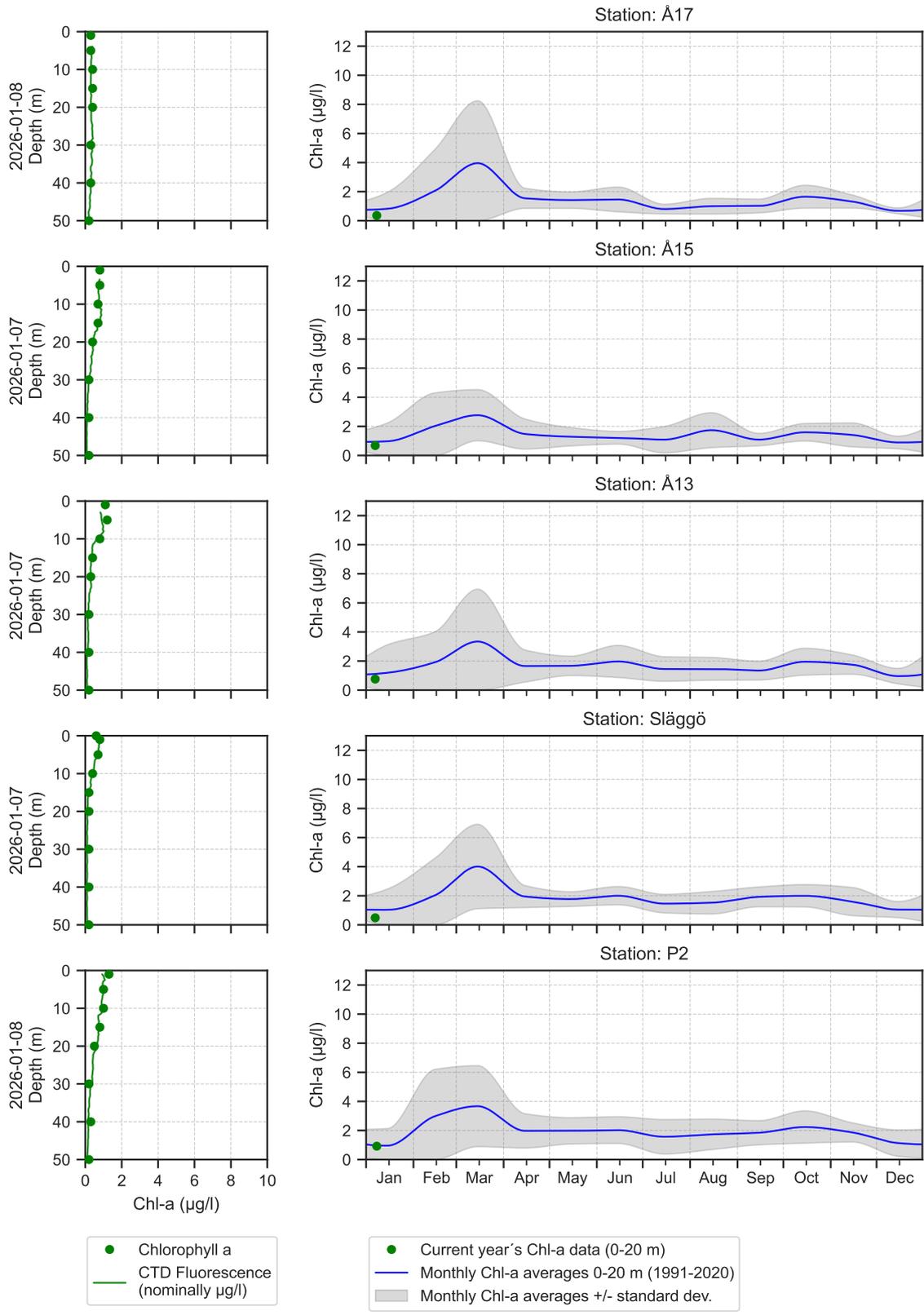


Fig 2. A single cell of the typical chain forming dinoflagellate *Peridiniella catenata* (left) from station BY31. The genus *Aphanizomenon* was quite numerous at station BY5 (right). Photo M. Karlberg.

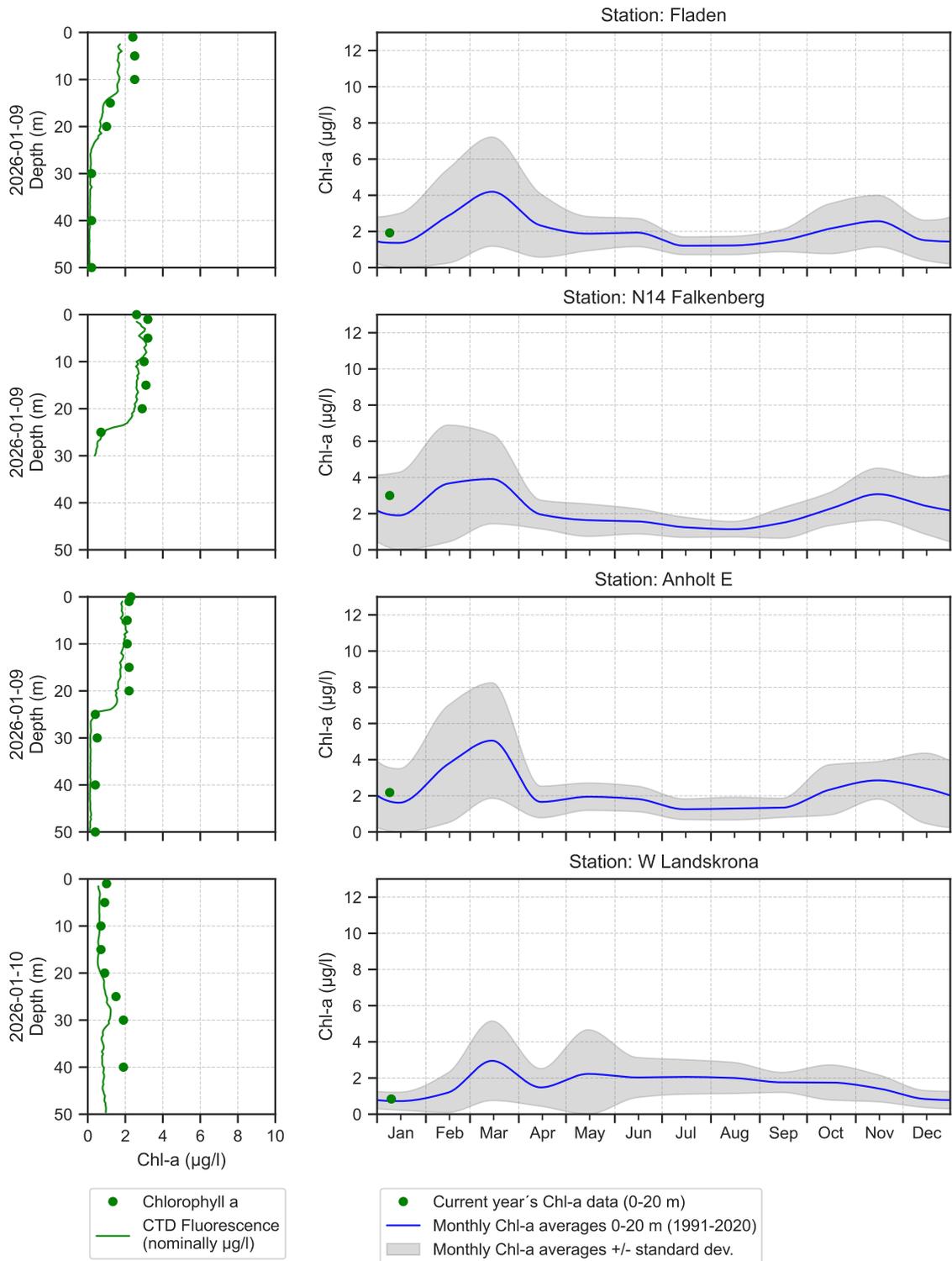
Selection of observed species	Släggö	Anholt E	N14
Red=potentially toxic species	7/1	9/1	9/1
Hose 0-10 m	presence	presence	presence
Ciliophora	present	present	present
Centrales	present	present	present
Cerataulina pelagica		present	present
Chaetoceros danicus		present	present
Chaetoceros similis		present	present
Chaetoceros subtilis	present	present	present
Coscinodiscus radiatus		present	
Cylindrotheca closterium	present	present	
Dactyliosolen fragilissimus		present	
Detonula pumila			present
Ditylum brightwellii		present	present
Guinardia delicatula	present		
Guinardia flaccida	present	present	present
Leptocylindrus danicus	present		
Leptocylindrus minimus	present	present	
Pennales	present		
Proboscia alata	present		
Pseudo-nitzschia	common	very common	very common
Pseudosolenia calcar-avis			present
Skeletonema marinoi	present	common	common
Thalassiosira angulata	present		present
Thalassiosira anguste-lineata		present	present
Thalassiosira gravida		present	present
Thalassiosira punctigera	present	present	present
Choanoflagellata	present		
Prymnesiales	present		
Cryptomonadales	common	common	common
Pseudanabaena		present	
Octactis speculum	present	present	present
Azadinium caudatum var. margalefii	present		
Gymnodiniales	present	present	
Heterocapsa rotundata	present		
Katodinium glaucum		present	
Peridinales			present
Protoperidinium			present
Protoperidinium bipes		present	
Protoperidinium conicum			present
Tripos lineatus	present	present	present
Tripos muelleri		present	present
Eutreptiella	present		
Mesodinium rubrum	present	present	
Laboea strobila		present	
Pyramimonas	present		

Selection of observed species	BY15	BY31	BY2	BY5
Red=potentially toxic species	12/1	12/1	13/1	13/1
Hose 0-10 m	presence	presence	presence	presence
Thalassiosira cf. kushirensis			present	
Actinocyclus octonarius	common	present	present	present
Chaetoceros		present		
Chaetoceros subtilis			present	
Coscinodiscus radiatus				present
Pseudo-nitzschia				present
Skeletonema marinoi	present			
Dinophysis acuminata	present			
Gymnodiniales	present	common	common	common
Gymnodinium verruculosum	common		present	present
Katodinium glaucum	present			
Lessardia elongata		present		
Peridiniella catenata		present		present
Oocystis	present			
Binuclearia lauterbornii	present	present		
Pyramimonas			present	present
Cryptomonadales	common	present	common	common
Pseudopedinella				present
Aphanizomenon				common
Lemmermanniella	present	present		
Pseudanabaena	present	present	present	
Snowella	common	present		present
Ebria tripartita				present
Ciliophora	present	present	present	present
Mesodinium rubrum	common	present	common	present

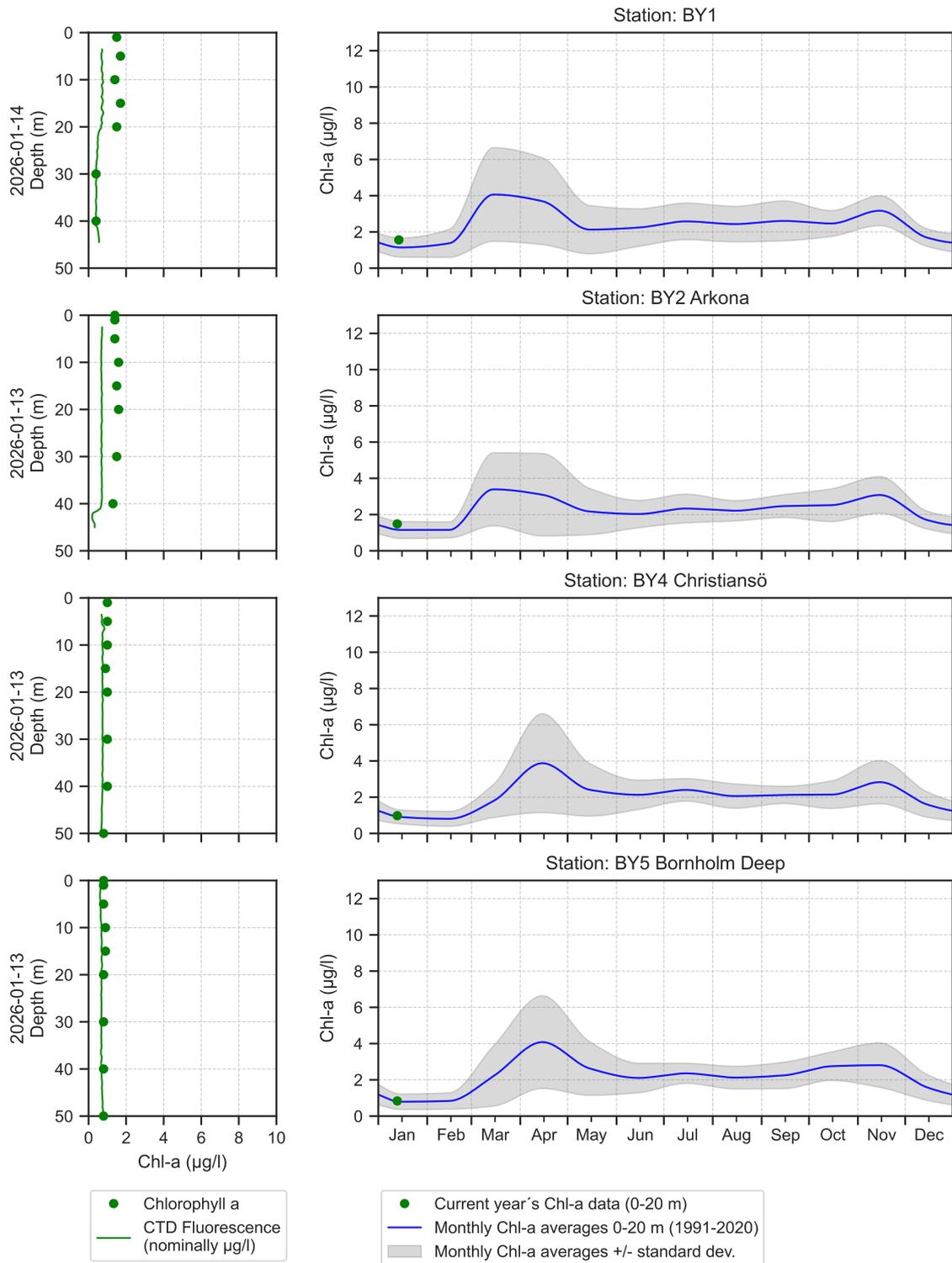
# The Skagerrak



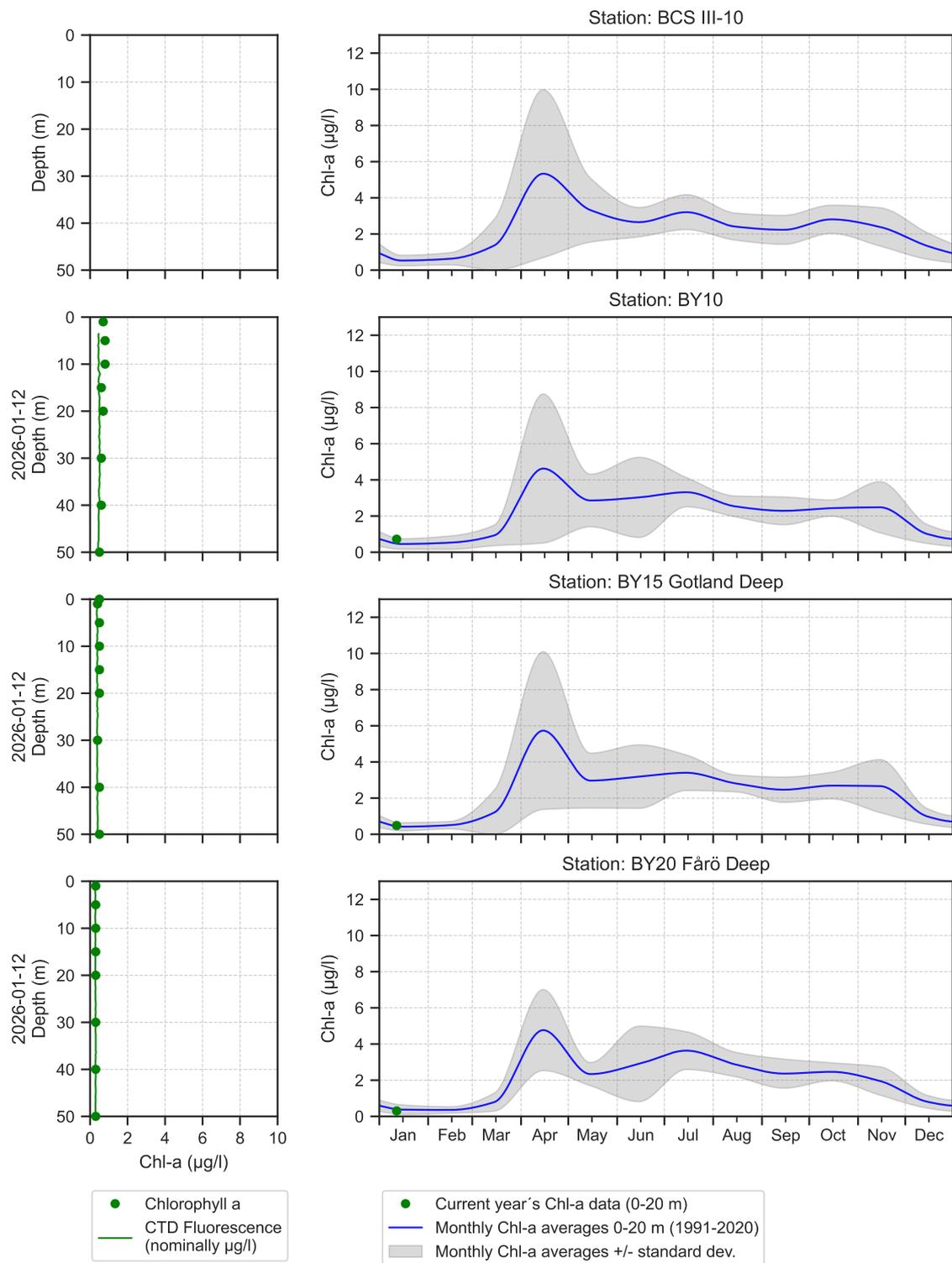
# The Kattegat and The Sound



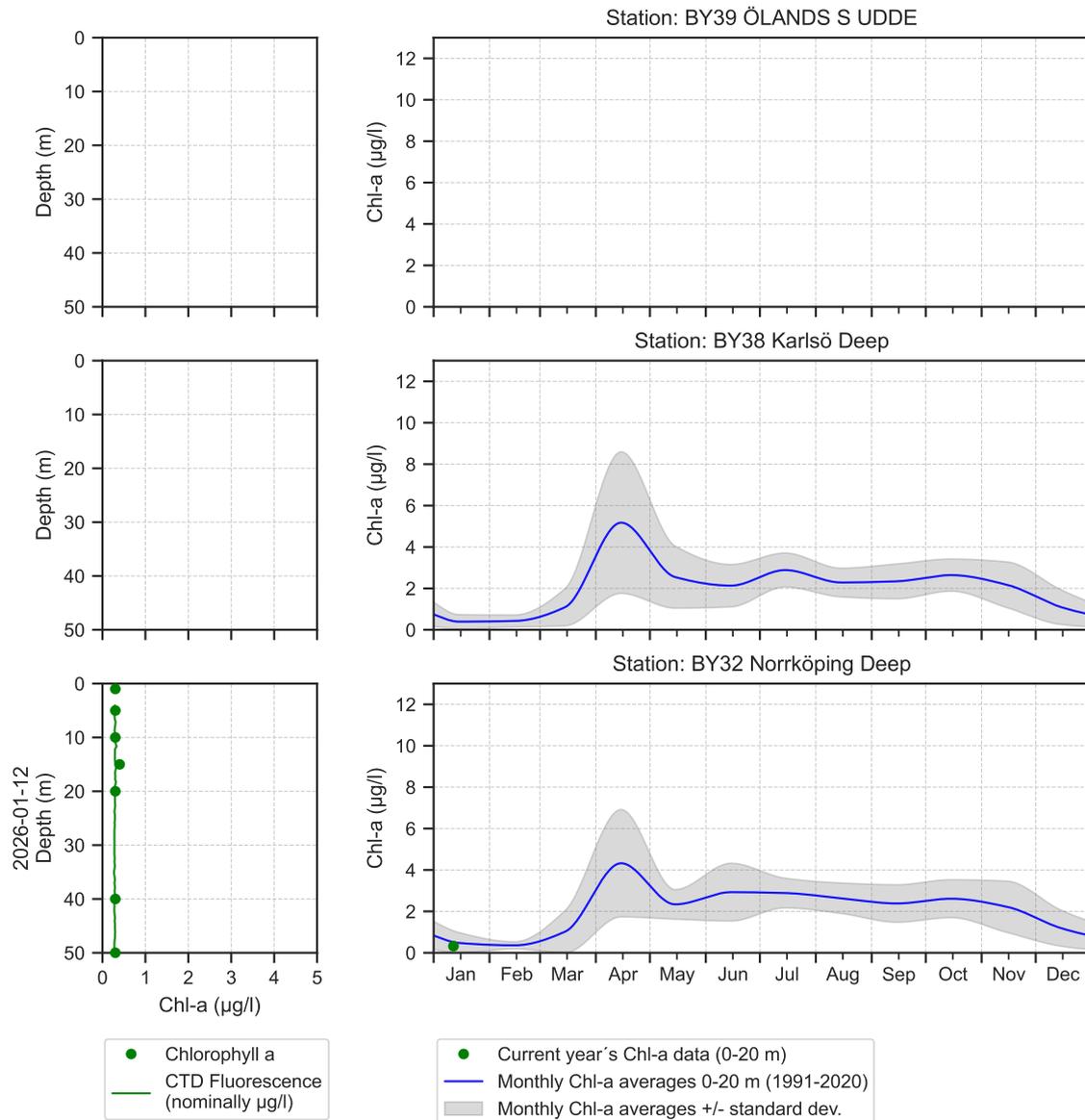
# The Southern Baltic



# 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 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 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.

