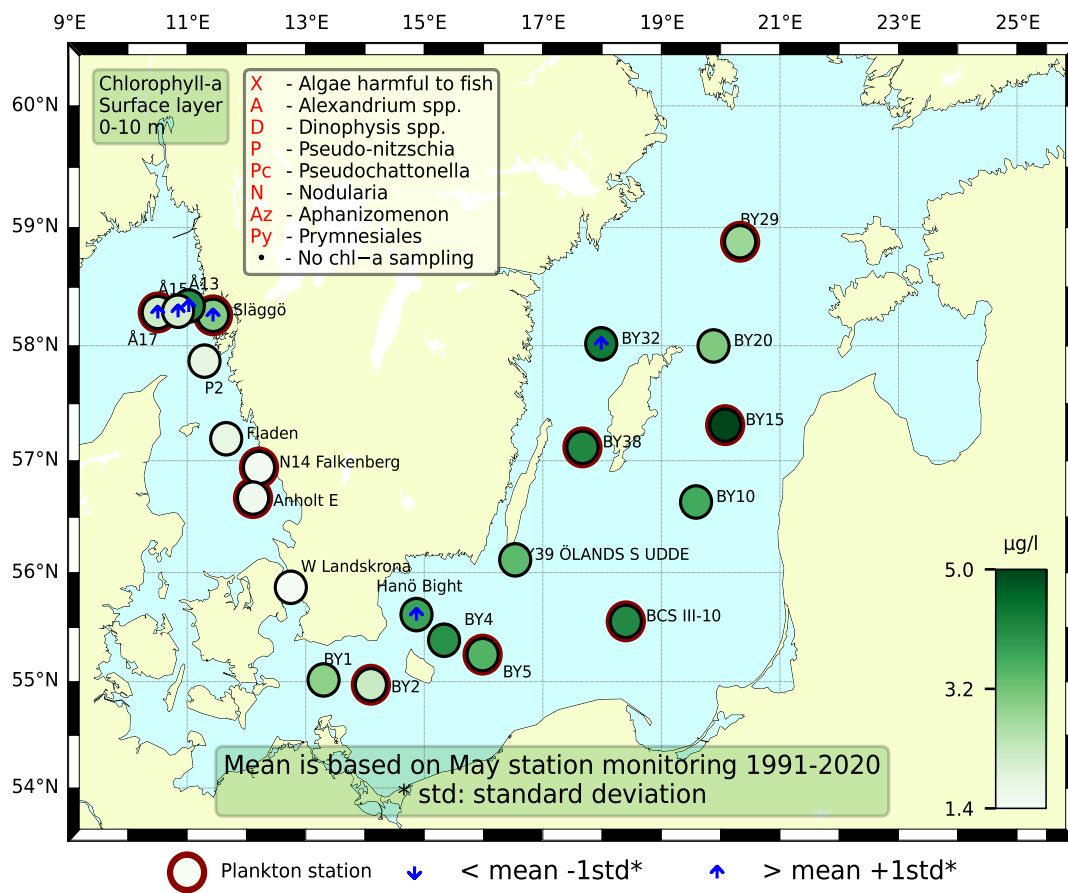


Sammanfattning

En del kedjor av kiselalgerna *Skeletonema marinoi* och *Guinardia delicatula* fanns kvar i vattnet som en rest av vårbloomingen i Västerhavet. Övriga arter var mest små flagellater av olika sorter. De integrerade klorofyllkoncentrationerna var över det normala vid stationerna i Skagerrak men normala för denna månaden i Kattegatt.

I Östersjön återfanns rester av vårbloomingen vid några stationer i form av *Skeletonema marinoi* och *Peridiniella catenata*. Utöver det var dinoflagellatsläktet *Dinophysis** vanligt och även släktet *Dinobryon*. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var normala för månaden vid alla stationer.



Abstract

Some chains of *Skeletonema marinoi* and *Guinardia delicatula* was still present as a remembrance of the spring bloom in the Kattegat and Skagerrak area. Except for the diatoms, small flagellates of different sorts were most common. The integrated chlorophyll concentrations were above normal at the Skagerrak stations but normal for this month in the Kattegat.

In the Baltic Sea, some remnants of the spring bloom were found as both *Skeletonema marinoi* and *Peridiniella catenata* were common at several stations. The dinoflagellate genus *Dinophysis** was common and also the genus *Dinobryon*. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were above normal 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

Å17 (Skagerrak coast) 6th of May

The species diversity and total cell number were both moderate. The diatom *Guinardia delicatula* was the most abundant of the larger cells, together with various ciliates. The smaller cells were quite numerous and small cryptomonadales were common. The integrated chlorophyll concentrations (0–10 m) were above normal for this month.

Släggö (Skagerrak coast) 6th of May

The species diversity and total cell number were both moderate. The dinoflagellate *Dinophysis norvegica** was common among the larger cells, together with the diatom species *Dactyliosolen fragilissimus* and *G. delicatula*. The smaller cells were quite numerous and cryptomonadales were common. The integrated chlorophyll concentrations (0–10 m) were above normal for this month.

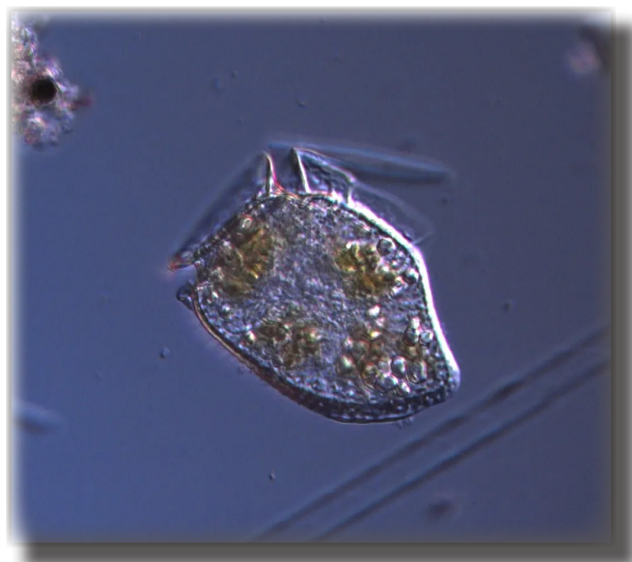


Fig 1. The dinoflagellate *Dinophysis norvegica** was found in moderate amounts at station Släggö. Photo: A-T Skjevik.

The Kattegat

Anholt E 7th of May

The species diversity and total cell number were both low. Small cells dominated the sample, and cells from the order cryptomonadales were common. The diatoms *Skeletonema marinoi* and *G. delicatula* were abundant among the larger cells. The chlorophyll (0–10 m and 0–20 m) were within normal for this month.

N14 Falkenberg 7th of May

The species diversity and total cell number were both moderate. The diatoms *S. marinoi* and *G. delicatula* were most abundant of the larger cells. The smaller cells were quite numerous and cells from the order cryptomonadales were common. The chlorophyll (0–10 m and 0–20 m) were within normal for this month.

Fladen 7th May

The chlorophyll peaks at 5, 10 and 15 meters were all dominated by *G. delicatula*, although the overall abundances were low in the samples. The chlorophyll (0–10 m and 0–20 m) were within normal for this month.

The Baltic

BY2 Arkona 9th of May

The phytoplankton abundance and diversity were both moderate. Some filaments of *Aphanizomenon flosaquae* were found. Among the dinoflagellates the potentially toxic species *Dinophysis acuminata** was most abundant and the smaller cells were dominated by cryptomonadales and the genus *Dinobryon*. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

BY5 Bornholm deep 9th of May

The phytoplankton diversity and abundances were both high. The diatom *Skeletonema marinoi* dominated the cell counts. There were a few genera of dinoflagellates in low numbers. Among the smaller cells, *Dinobryon* spp. and different cryptomonadales were the most common. The filamentous cyanobacterium *A. flosaquae* was present in low amounts. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

BCS III-10 9th of May

The phytoplankton abundance and diversity were moderate. The diatom *S. marinoi* was found in highest cell numbers. Ciliates were also abundant and among these *Mesodinium rubrum* were the most abundant. The smaller cells were dominated by the genus *Dinobryon*. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

BY15 10th of May

The phytoplankton diversity was moderate but the total abundances quite low. Dinoflagellates were common and especially *Dinophysis acuminata** and *Peridiniella catenata*. The cyanobacterium *A. flosaquae* was present in low amounts. Different ciliates were common. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

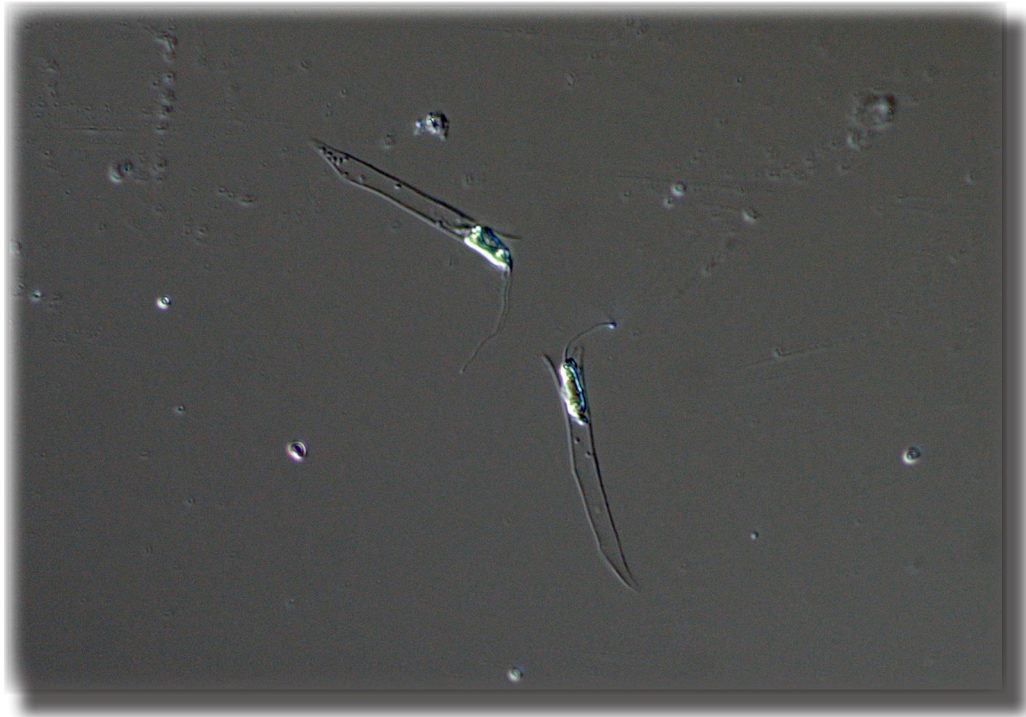


Fig 2. The genus *Dinobryon* was common at several stations in the Baltic Sea in May. Photo: M. Johansen.

BY29 11th of May

The phytoplankton diversity and total cell numbers were quite low. Dinoflagellates dominated among the larger cells and *P. catenata* was the most common species. Some ciliates were present. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

BY31 Landsort deep 11th of May

The phytoplankton diversity and abundances were moderate with some remnants from the spring bloom last month. The diatom *S. marinoi* and the dinoflagellate *P. catenata* were numerous. The smaller cells were dominated by the genus *Dinobryon* and various cryptomonadales. The cyanobacterium *A. flosaquae* was present. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

BY39 12th of May

The phytoplankton diversity and abundances were low. The dinoflagellate *P. catenata* and various gymnodiniales were the most common. Ciliates were also common and among them, *M. rubrum*. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

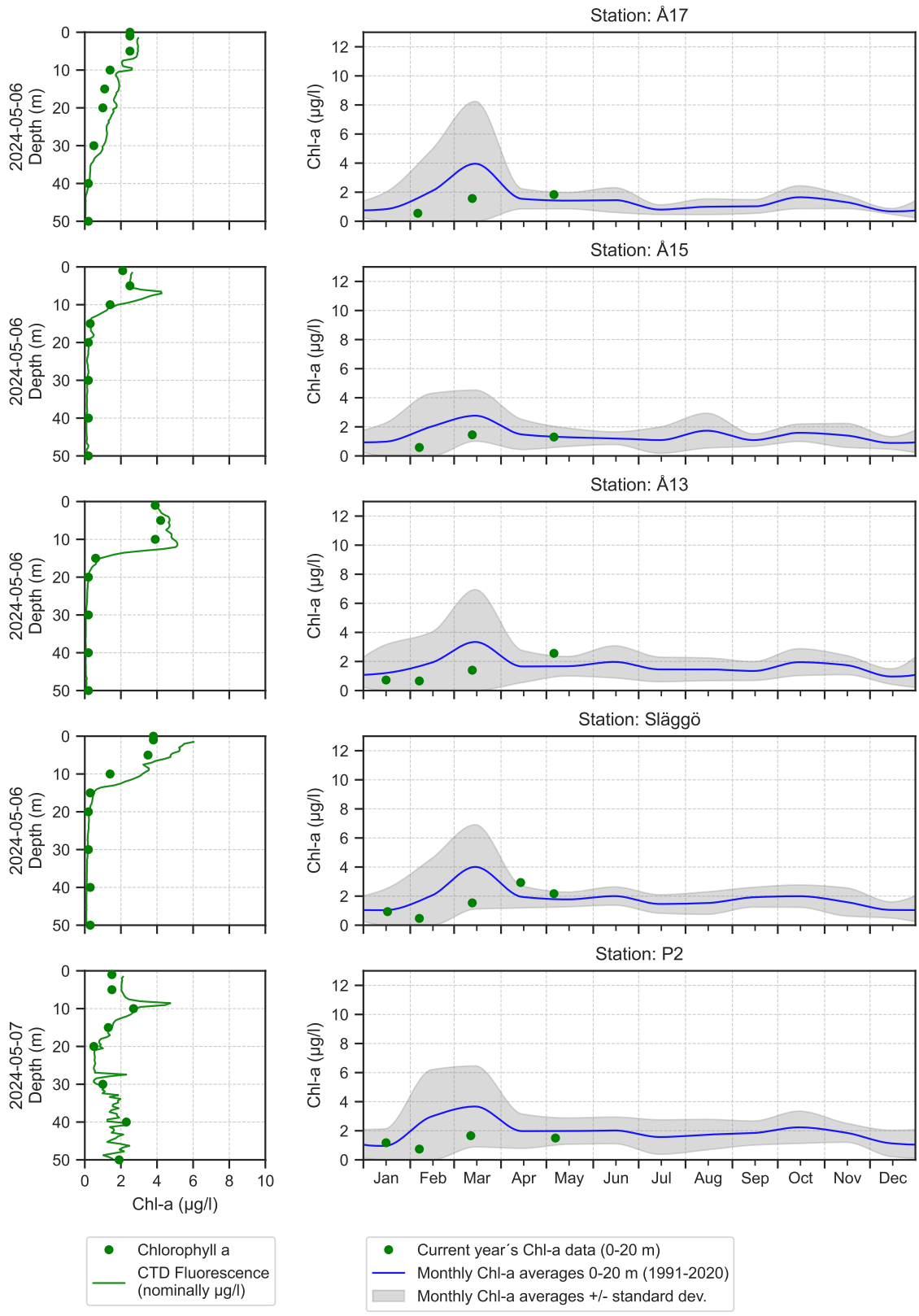
BY38 12th of May

The phytoplankton diversity and abundances were moderate. Dinoflagellates dominated and *P. catenata* and *Heterocapsa rotundata* were the most common. The dinoflagellate *D. acuminata** was present. Among the smaller cells the genus *Pyramimonas* and the order cryptomonadales were the most common. The cyanobacterium *A. flosaquae*, was found in low numbers. The integrated (0–10 m and 0–20 m) chlorophyll concentrations were within the normal range for this month.

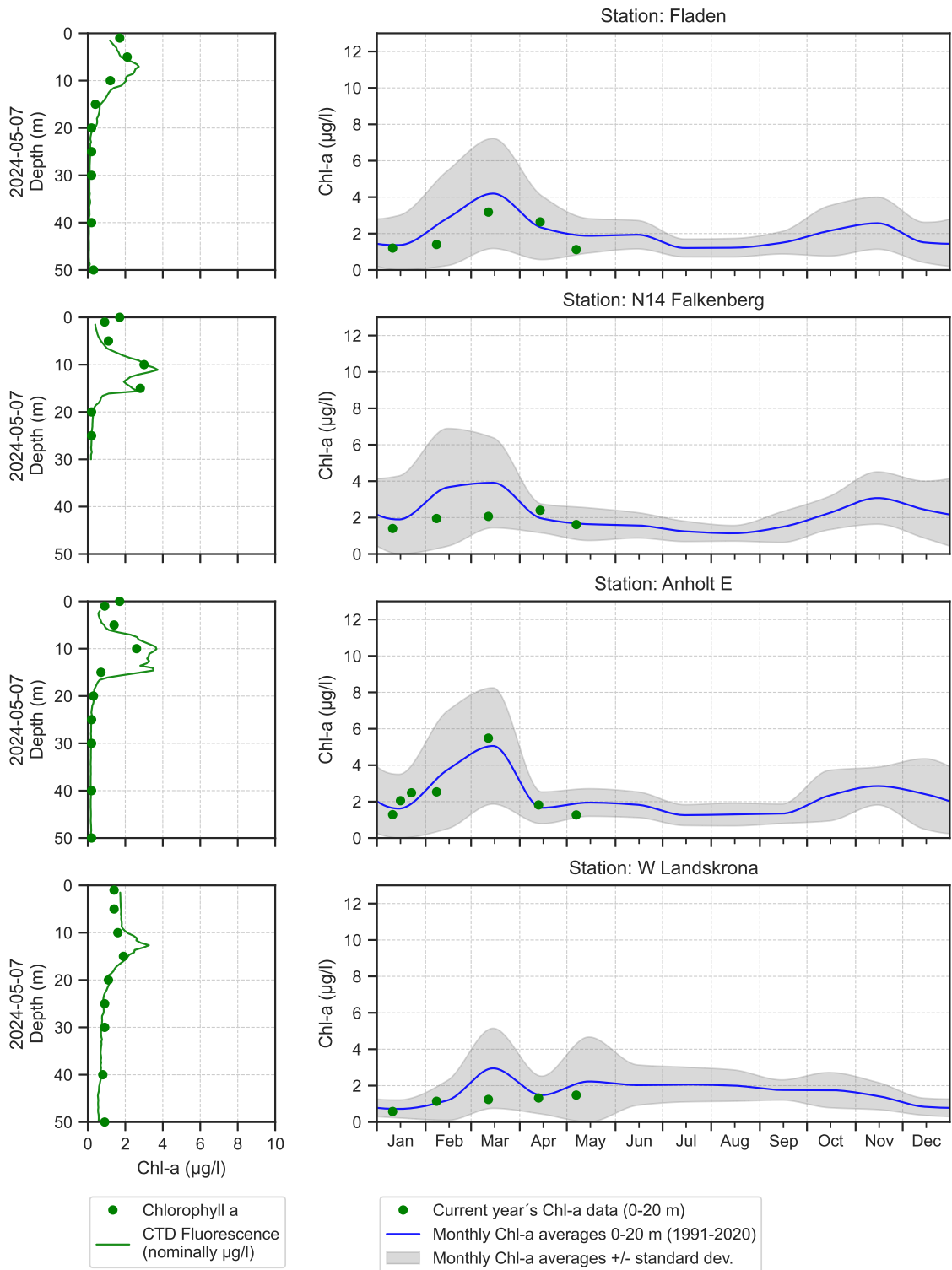
Selection of observed species	Anholt E	N14 Falkenberg	Släggö	Å17
Red=potentially toxic species	7/5	7/5	6/5	6/5
Hose 0-10 m	presence	presence	presence	presence
Ciliophora	present	present		present
Cerataulina pelagica	present		present	
Coscinodiscus radiatus			present	present
Cylindrotheca closterium				present
Dactyliosolen fragilissimus	present	present	present	present
Guinardia delicatula	present	common	present	common
Guinardia flaccida		present		
Lennoxia faveolata				present
Nitzschia longissima			present	
Pennales			present	
Proboscia alata	present	present	present	present
Pseudo-nitzschia	present		present	present
Pseudosolenia calcar-avis		present		
Rhizosolenia setigera		present		
Skeletonema marinoi	common	common	present	
Thalassionema nitzschioides	present	present		
Desmodesmus		present		
Choanoflagellata				present
Dinobryon	present			
Prymnesiales	present			present
Cryptomonadales	common	present	common	common
Apedinella radians				present
Octactis speculum	present	present		
Pseudopedinella	present	present		
Dinophysis acuminata			present	
Dinophysis norvegica	present		common	
Gymnodiniales	present	present	common	present
Heterocapsa rotundata		present		present
Katodinium glaucum			present	
Peridinales	present	present	present	present
Peridiniella danica	present			present
Scrippsiella				present
Tripos lineatus			present	present
Tripos longipes			present	
Tripos muelleri			present	present
Mesodinium rubrum				present
Pyramimonas		present		
Oocystis	present	present		

Selection of observed species	BCS III-10	BY2	BY5	BY15	BY29	BY31	BY38	BY39
Red=potentially toxic species	9/5	8/5	9/5	10/5	11/5	11/5	12/5	12/5
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Chaetoceros				present				
Chaetoceros danicus	present	present						
Skeletonema marinoi	very common	present	dominating			present		
Amylax triacantha				present	present	present		present
Dinophysis acuminata	present	common	present	common	present	present	present	present
Dinophysis norvegica			present					
Gymnodiniales		present	present	present	present	common	present	common
Heterocapsa rotundata						present	common	
Katodinium glaucum		present		present	present	present	present	
Peridiniales	present	present	present			present	present	
Peridiniella catenata	present		present	common	common	common	very common	common
Prorocentrum micans				present				
Protoperidinium					present			
Protoperidinium bipes							present	present
Protoperidinium brevipes				present		present		present
Dinobryon	common	common	common			common	present	present
Dinobryon balticum	common	present	common			present	present	present
Binuclearia lauterbornii	present	present	present					
Pyramimonas						present	common	
Aphanizomenon flosaquae	present	common	present	present	present	present	present	
Aphanocapsa				present				
Lemmermanniella	present	present	present					
Choanoflagellata			present					
Ebria tripartita					present	present		
Ciliophora	common	common	common	common	common	present	common	common
Mesodinium rubrum	common	present	present	common	common	present	present	common
Prymnesiales			present					
Cryptomonadales	present	common	common	common	present	common	common	present

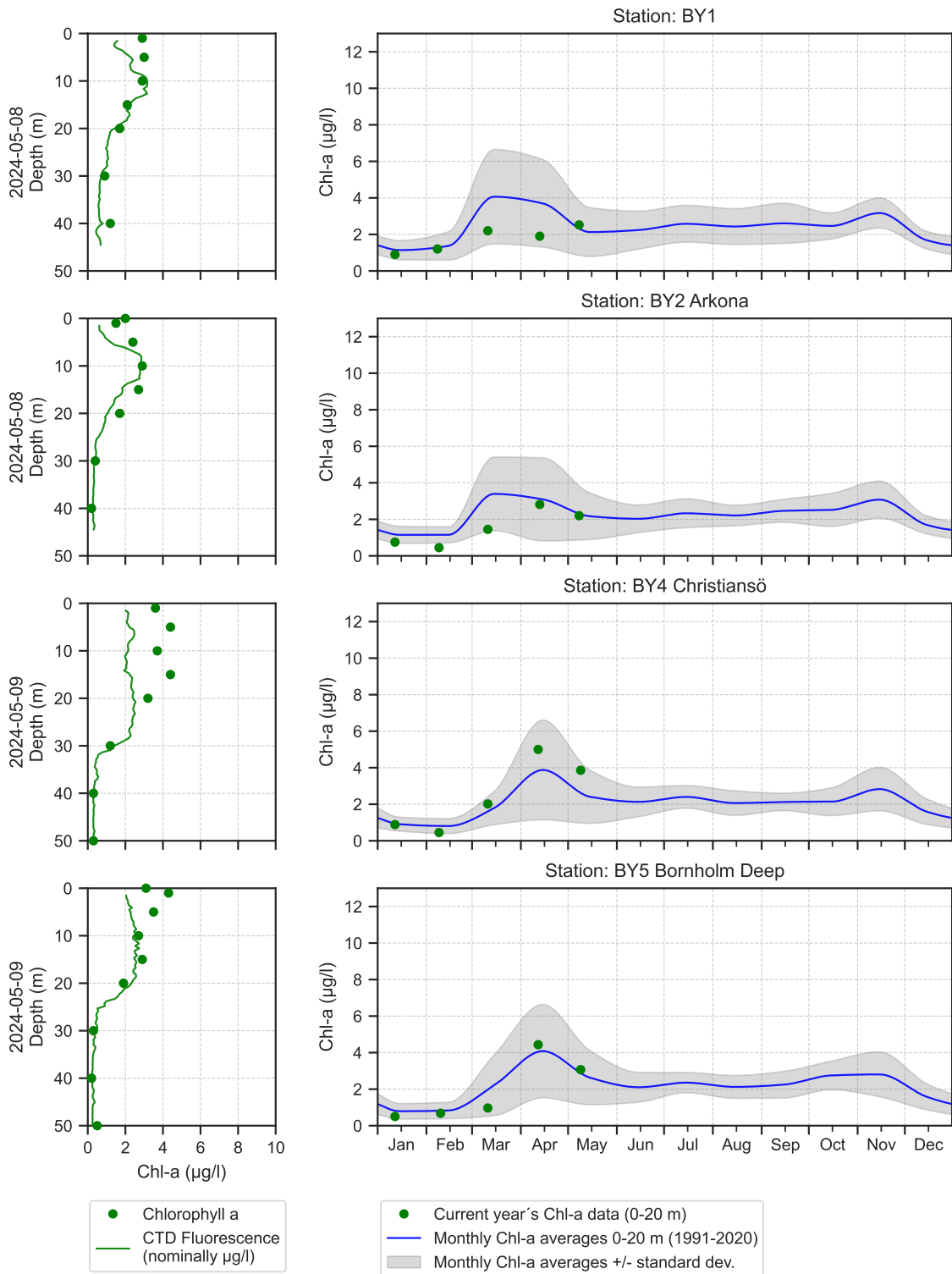
The Skagerrak



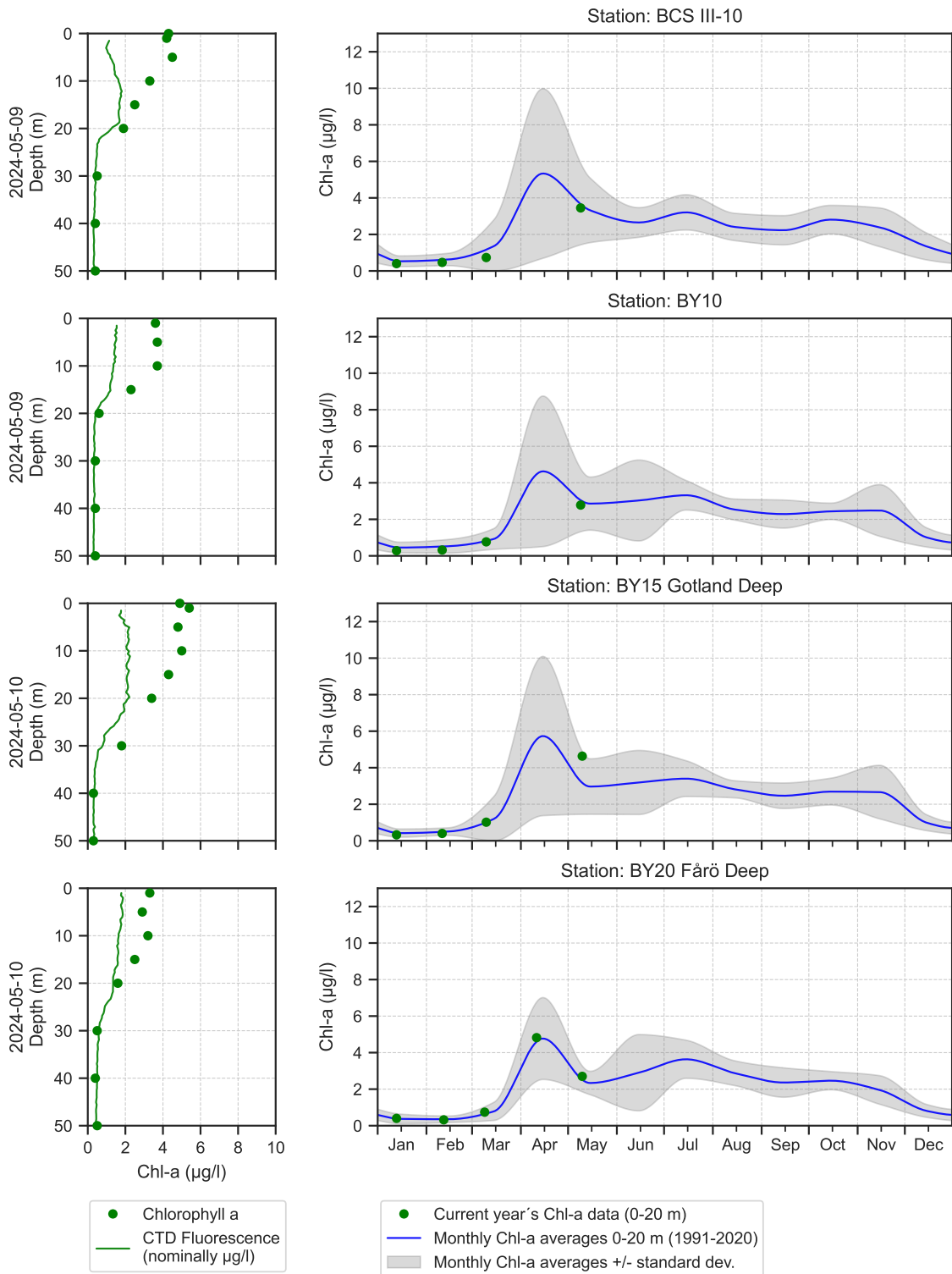
The Kattegat and The Sound



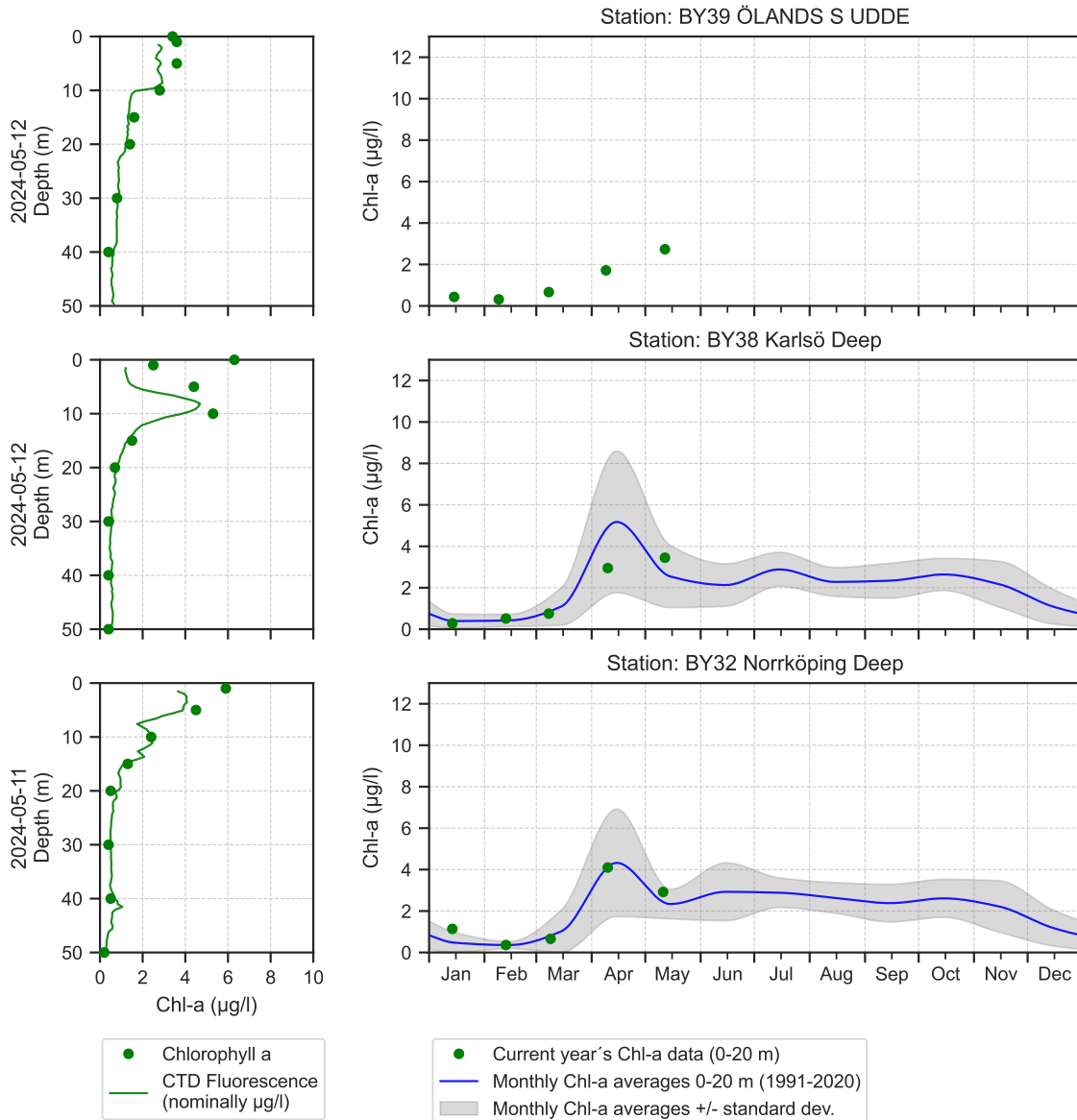
The Southern Baltic



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 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. 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
<i>Alexandrium</i> 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; headache, dizziness, nausea, vomiting, diarrhoea. Extreme case 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)	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.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	Milda symptom: Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramp 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.
<i>Chaetoceros concavicornis</i> / <i>C. convolutus</i>	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.
<i>Pseudochattonella</i> 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.

