SMHI
Oceanographic Unit
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AlgAware
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ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

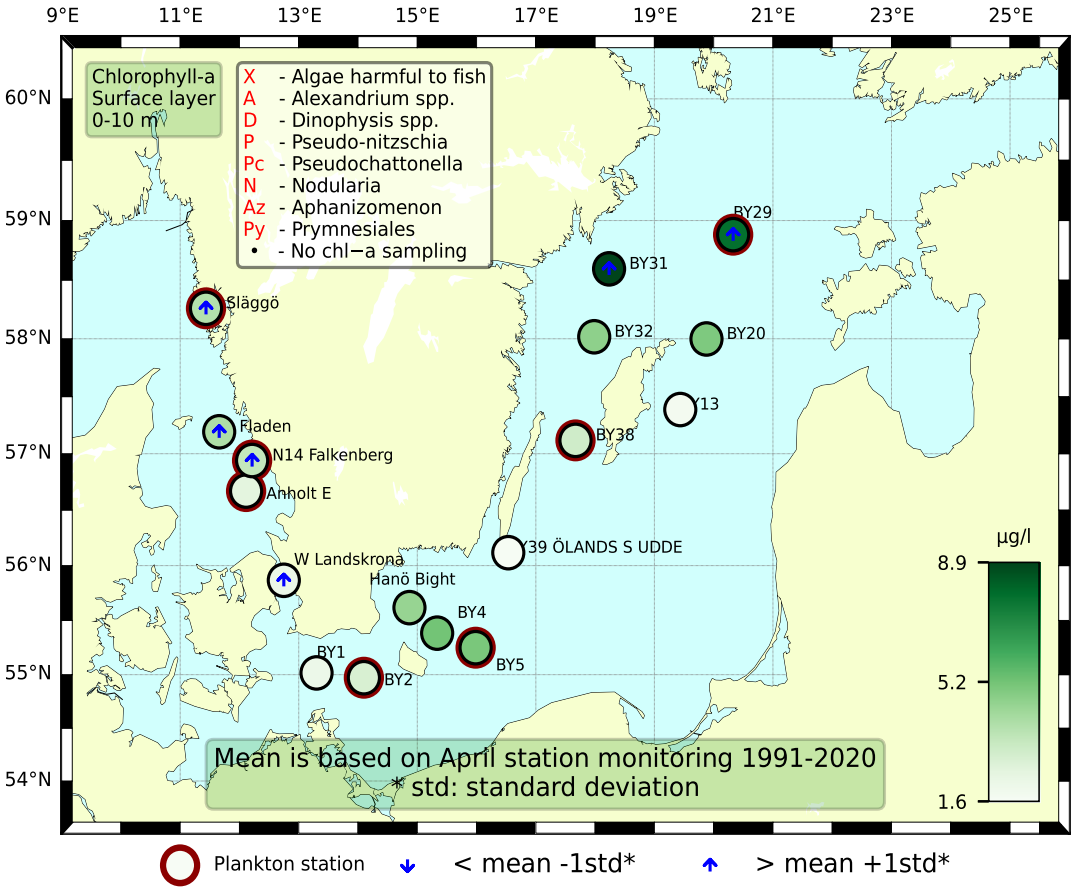
Sammanfattning

Alla stationer i Skagerrak förutom Släggö fick ställas in på grund av hårt väder.

Vårblomningen var över och cellantal samt biodiversitet överlag låg. En del kedjor av *Skeletonema marinoi* och *Guinardia delicatula* fanns kvar i vattnet som en liten rest. Övriga arter var mest små flagellater av olika sorter. De integrerade klorofyllkoncentrationerna var över det normala vid både N14 Falkenberg samt Släggö men normala vid Anholt E.

BCSIII-10, BY 10 och BY 15 fick ställas in på grund av säkerhetsläget i östra Egentliga Östersjön.

I Östersjön var vårblomningen igång för fullt! De norra stationerna, BY31 och BY29, hade en klar dominans av de typiska arterna av kiselalger i vårblomningen; *Chaetoceros wighamii*, *Pauliella taeniata* och *S. marinoi*. Däremot, de södra stationerna, BY2 och BY5, hade *S. marinoi* men även flera andra grupper i ett mer varierat växtplanktonsamhälle. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var normala för månaden vid alla stationer, utom vid BY31 och BY29 där de var högre.



Abstract

Due to bad weather, all of the Skagerrak stations except Släggö were not sampled.

The spring bloom had passed and the cell concentrations and biodiversity were overall low. Some chains of *Skeletonema marinoi* and *Guinardia delicatula* was still present as a remembrance of the spring bloom. Except for the diatoms, small flagellates of different sorts were most common. The integrated chlorophyll concentrations were above normal at both N14 Falkenberg and Släggö but normal at Släggö.

Due to the unsafe situation in the Eastern Baltic Proper, BCSIII-10. BY10 and BY15 were not sampled.

In the Baltic Sea, the spring bloom was ongoing! The northern stations, BY31 and BY29, had a clear dominance of the typical spring bloom diatom species; *Chaetoceros wighamii*, *Pauliella taeniata* and *S. marinoi*. In contrast, the southern stations, BY2 and BY5, had *S. marinoi* but also several other groups in a more varied phytoplankton community. The integrated chlorophyll concentrations (0-10 m and 0-20 m) were normal for the month at all stations, except at BY31 and BY29 where they were higher.

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

The Skagerrak

Släggö (Skagerrak coast) 14th of April

The species diversity and total cell number were both moderate. The diatom *Guinardia delicatula* was most abundant of the larger cells. The smaller cells were quite numerous and *Pseudopedinella pyriformis, Pyramimonas* spp. and small Cryptomonadales were common. The integrated chlorophyll concentrations (0-10 m and 0-20 m) were above normal for this month.

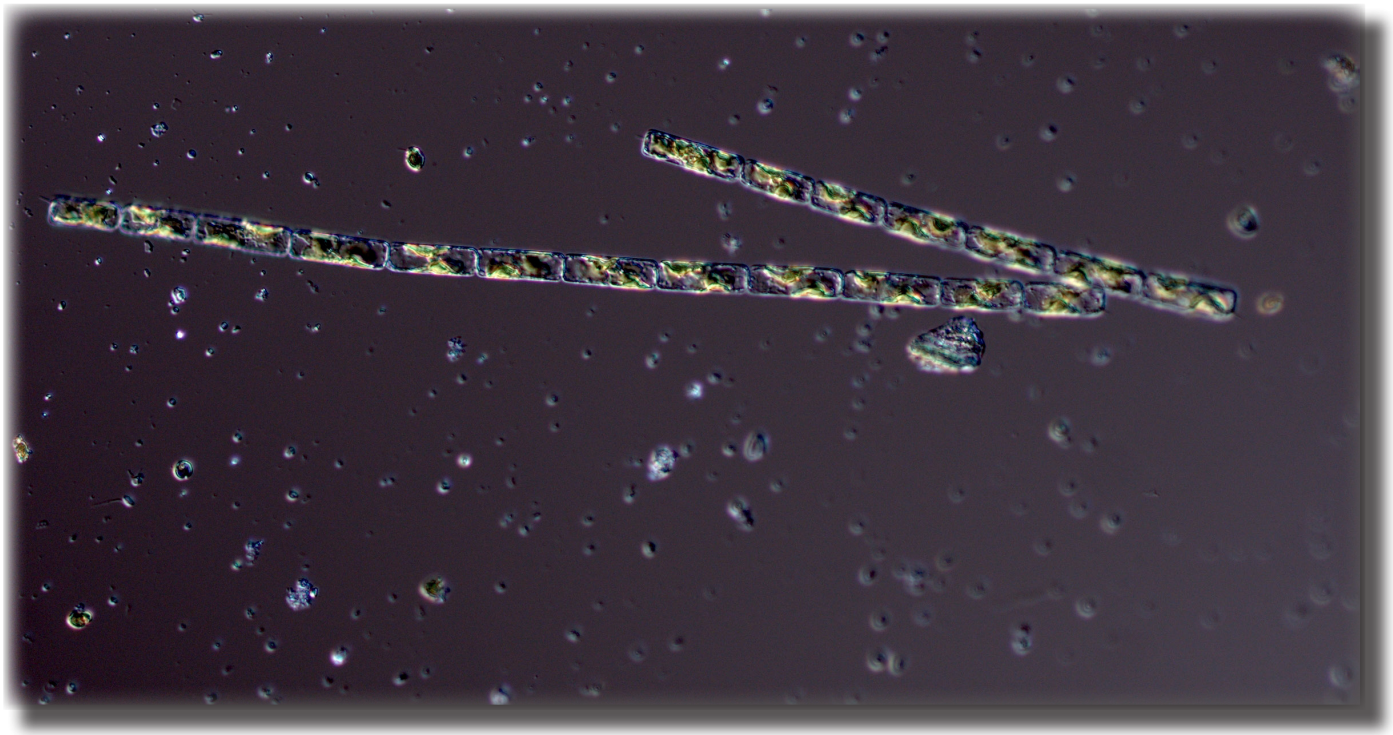


Fig 1. The diatom *Skeletonema marinoi* was still found in moderate amounts of chains at most stations along the Swedish west coast. Photo: M. Johansen.

The Kattegat

Anholt E 13th of April

The species diversity and total cell number were both low. Diatoms dominated in the sample and some chains of *Skeletonema marinoi* and *G. delicatula* were found. Among the smaller cells *P. pyriformis* was common. The chlorophyll (0-10 m and 0-20 m) were within normal for this month.

N14 Falkenberg 14th of April

The species diversity and total cell number were both moderate. The diatom *S. marinoi* was most abundant of the larger cells. The smaller cells were quite numerous and *P. pyriformis, Pyramimonas* spp. and small *Pseudochattonella* sp. were common. The integrated chlorophyll concentrations (0-10 m and 0-20 m) were above normal for this month.

The Baltic

BY39 9th of April

The phytoplankton diversity and abundances were low. The diatoms that usually dominate the spring bloom were few and there were some *Melosira arctica* and *Skeletonema marinoi*, but not in very high density. Furthermore, both *Pauliella taeniata* and *Chaetoceros wighamii* were missing at BY39. Among the dinoflagellates, *Peridiniella catenata* and various Gymnodiniales are usually present in high numbers during the spring bloom, but at this station they were in moderate amounts. The filamentous cyanobacterium, *Aphanizomenon* spp. was not present at BY39. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were low but within the normal range for this month.

BY38 10th of April

The phytoplankton diversity and abundances were low and very similar to BY39. The only difference was that at BY38 the diatoms *P. taeniata* and *C. wighamii* were present as well as the cyanobacterium *Aphanizomenon flosaquae*, but in low numbers. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

BY31 Landsort deep 10th of April

The phytoplankton diversity and abundances were high with a typical spring bloom community. The diatoms *P. taeniata*, *C. wighamii* and *S. marinoi* were all in high density, as well as the dinoflagellates *Heterocapsa rotundata* and also *P. catenata* and various Gymnodiniales. The cyanobacterium *A. flosaquae* were present. The integrated (0-10 m) chlorophyll concentration was above the normal range for this month.

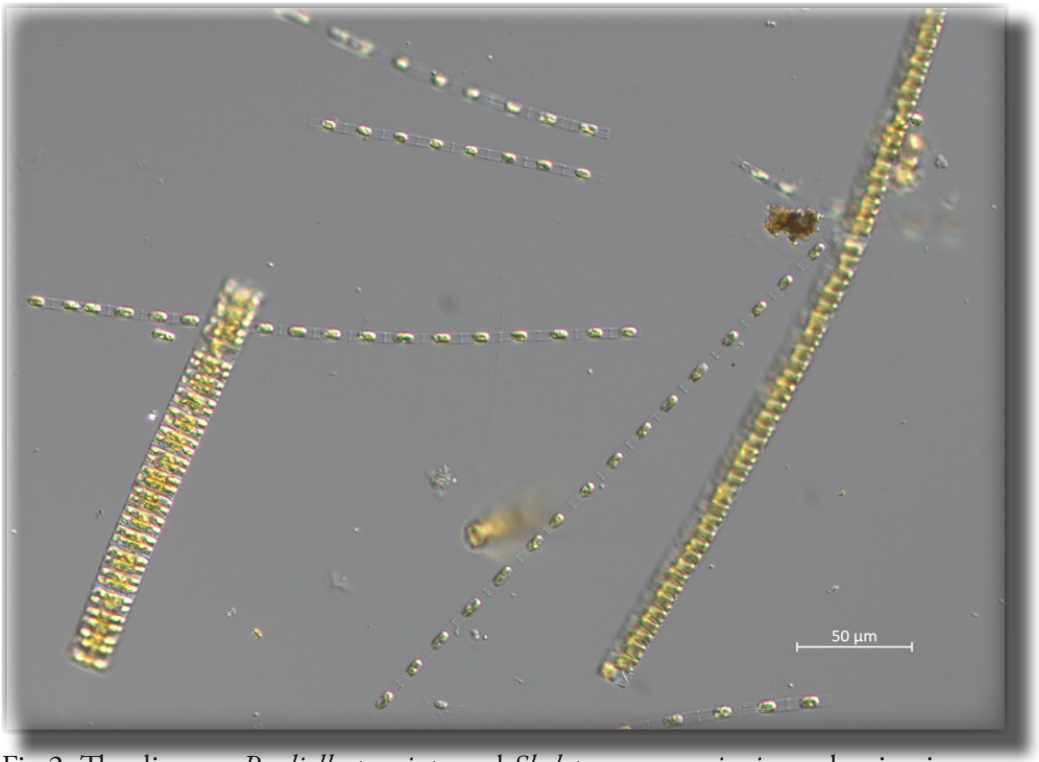


Fig 2. The diatoms *Pauliella taeniata* and *Skeletonema marinoi* was dominating the spring bloom community at BY29 in April. Photo: M. Karlberg.

BY29 10th of April

The phytoplankton diversity was low but abundances were high with a dominance of the diatoms *P. taeniata* and *S. marinoi*. Other spring bloom species, both other diatoms and dinoflagellates, were there, but in lower amounts. A spring bloom in action, no question about it! The filamentous cyanobacterium *Aphanizomenon* spp. was not present at BY29. The integrated (0-10 m) chlorophyll concentration was above the normal range for this month.

BY13 11th of April
The phytoplankton diversity and abundances were quite high with many of the spring bloom diatoms and dinoflagellate species. The cyanobacterium *A. flosaquae* was present in low amounts. The integrated (0-10 m) chlorophyll concentration was low but normal for this month.

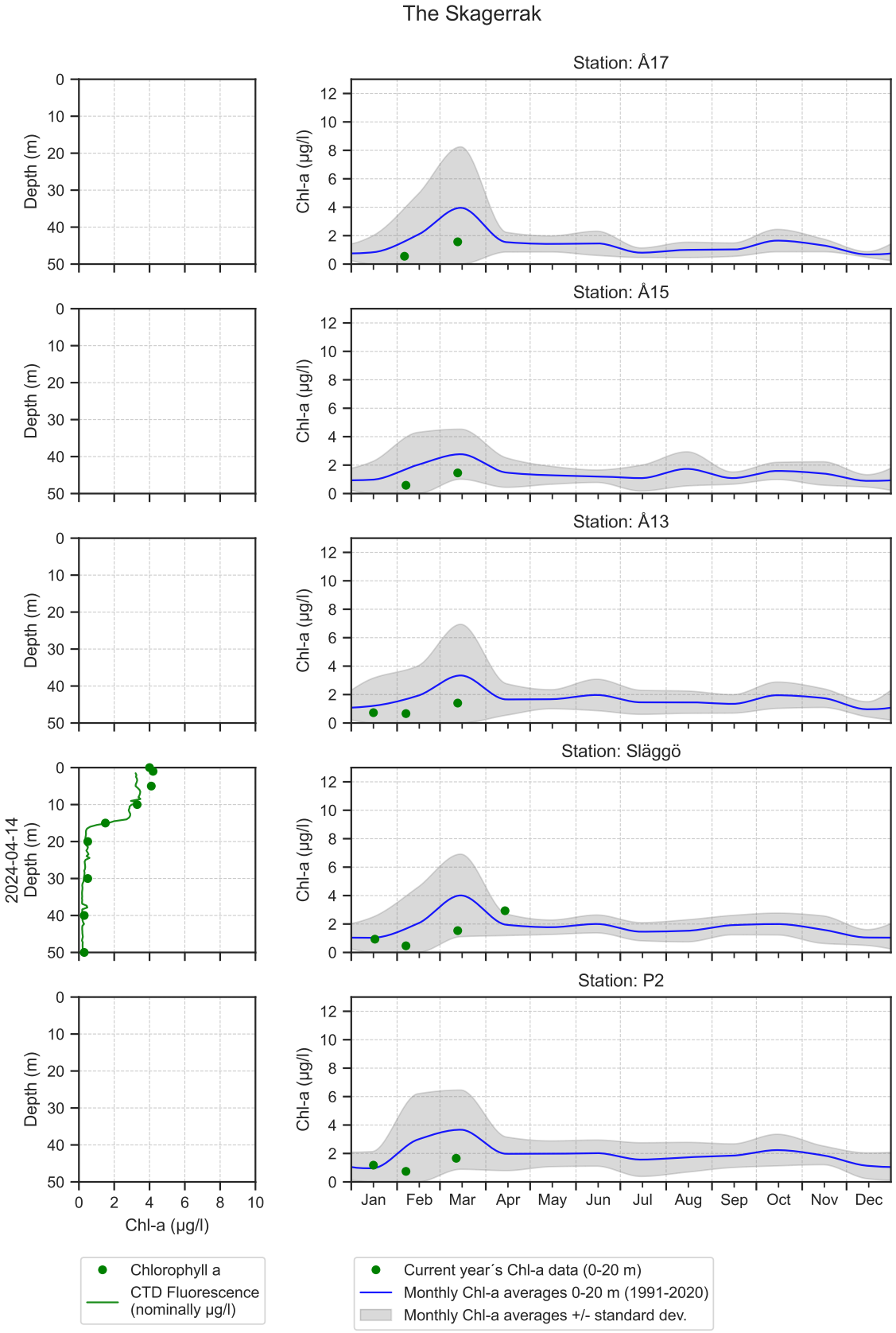
BY5 Bornholm deep 12th of April
The phytoplankton diversity and abundances were both high. Among the diatoms, *S. marinoi* was present in high amounts. There were also several dinoflagellate genera in high density; various Gymnodiniales, *H. rotundata* and *P. catenata*. Furthermore, several other groups were abundant; *Dinobryon* sp., *Pyramimonas* spp., Cryptomonadales, ciliates and flagellates. The filamentous cyanobacterium *A. flosaquae*. was common at BY5. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

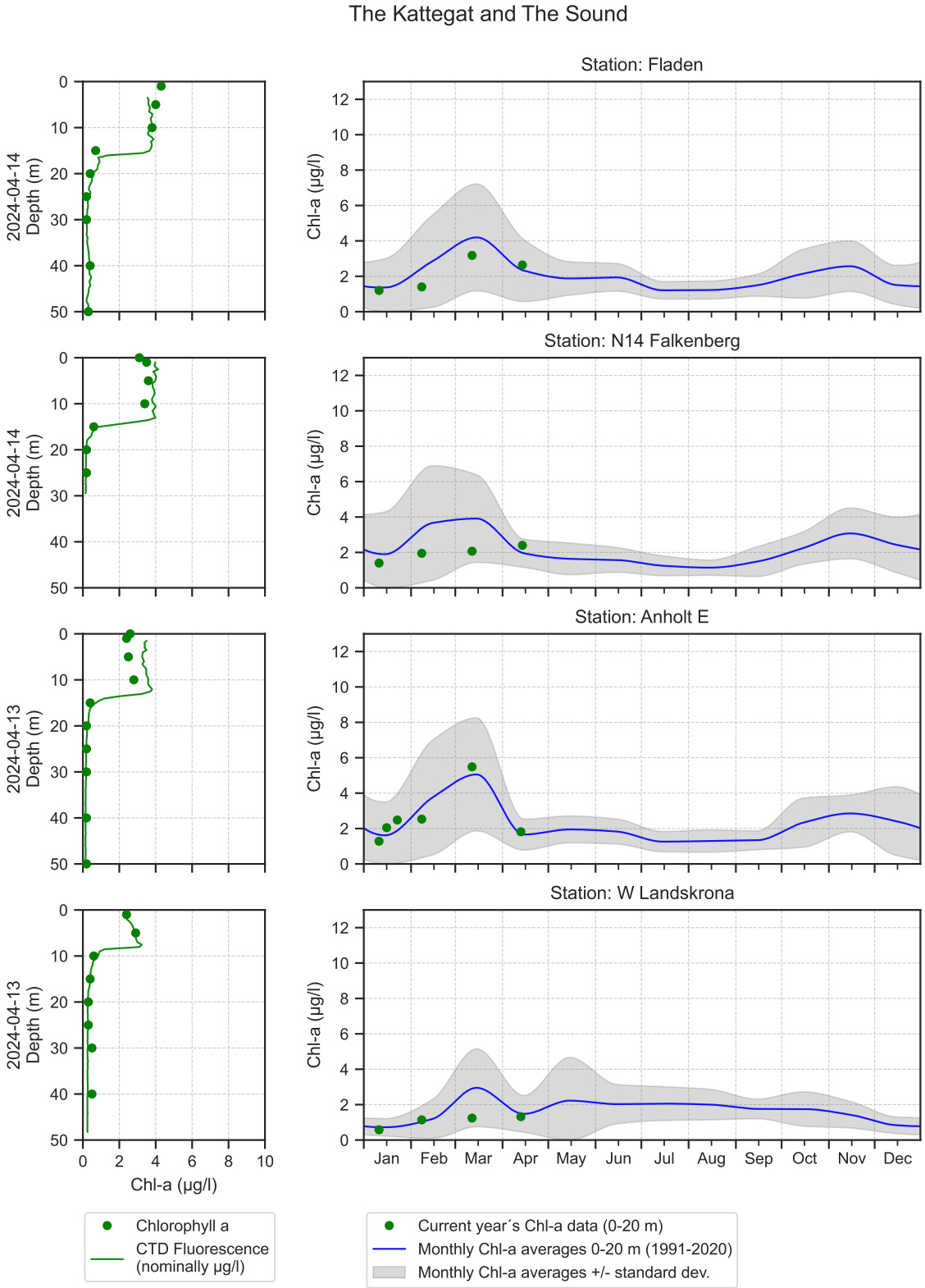
BY2 Arkona 13th of April
The phytoplankton abundance was very similar to BY5, but the diversity was a bit lower. The integrated (0-20 m and 0-10 m) chlorophyll concentrations were within the normal range for this month.

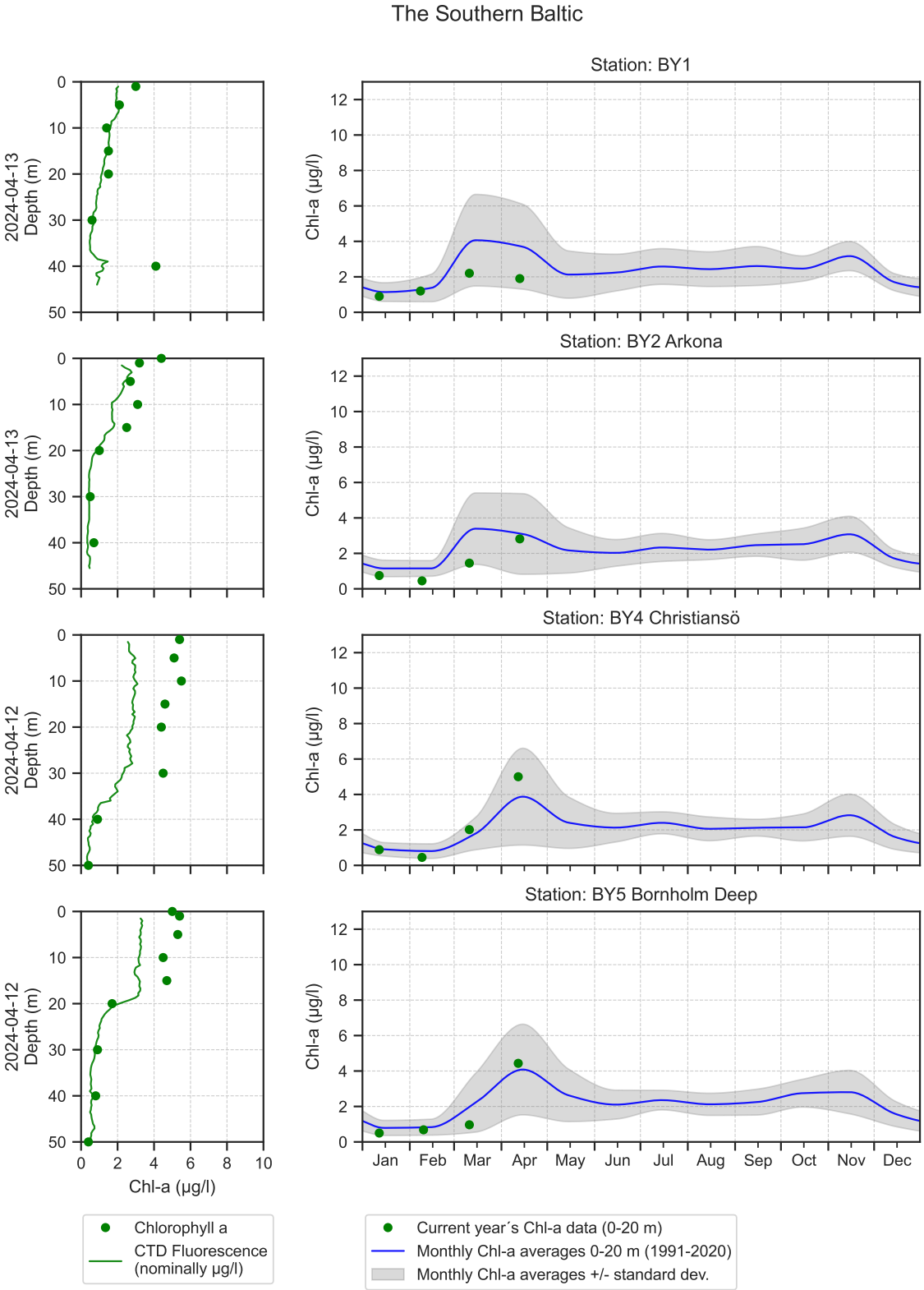
Phytoplankton analysis and text:
Marie Johansen and Maria Karlberg.

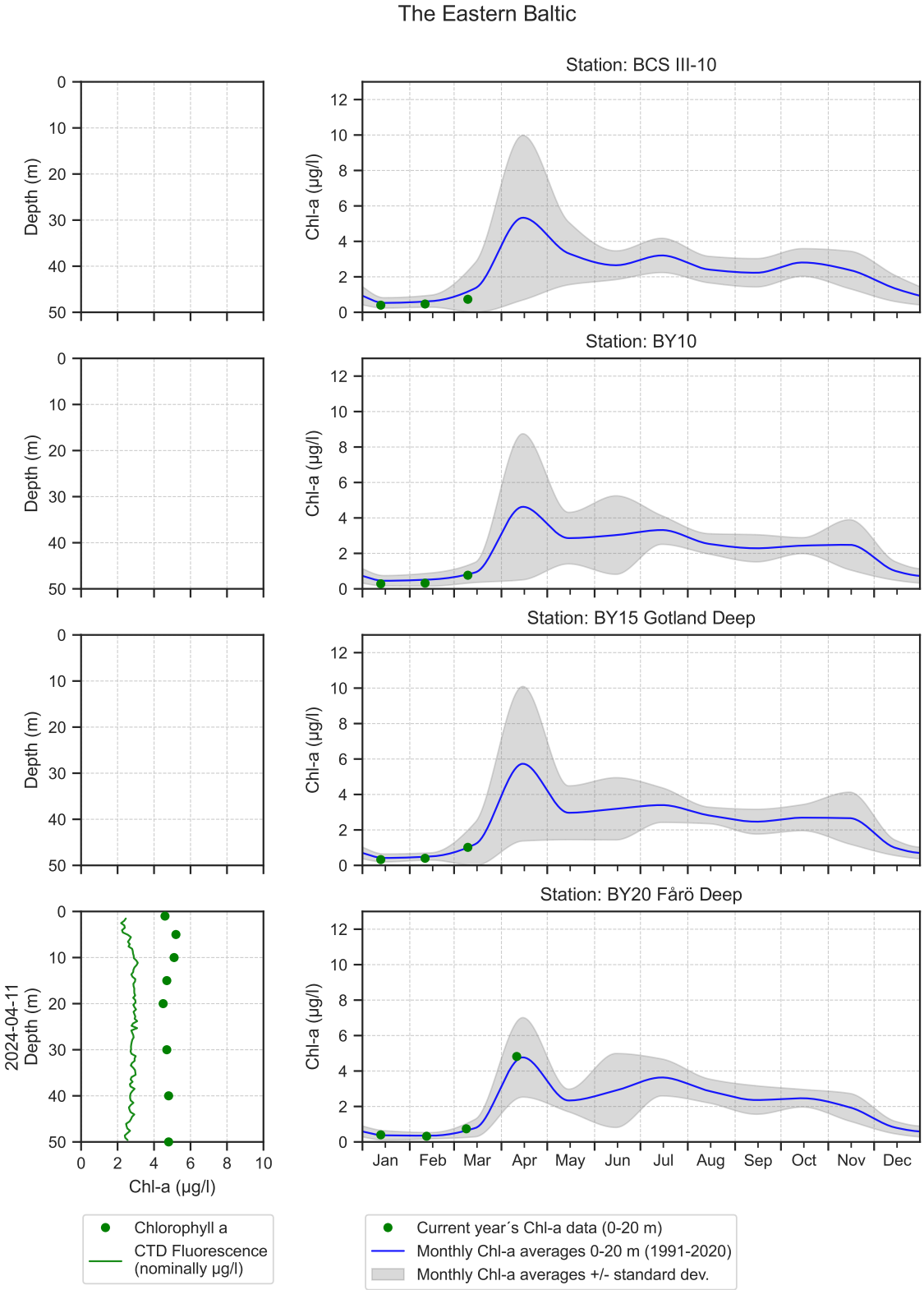
Selection of observed species	Anholt E	N14 Falkenberg	Släggö
Red=potentially toxic species	13/4	14/4	14/4
Hose 0-present0 m	presence	presence	presence
Cylindrotheca closterium		present	
Ditylum brightwellii			present
Guinardia delicatula	common	present	common
Lennoxia faveolata			present
Proboscia alata	present		
Pseudo-nitzschia	present		
Rhizosolenia hebetata f. semispina	present		
Rhizosolenia setigera		present	
Skeletonema marinoi	present	very common	present
Thalassionema nitzschioides	present	present	
Dinophysis acuminata	present		present
Dinophysis norvegica	present	present	
Gymnodiniales	present	present	common
Katodinium glaucum	present		
Peridiniales	present	present	present
Protoperidinium bipes			present
Protoperidinium crassipes			present
Protoperidinium pellucidum		present	present
Protoperidinium cf. pentagonum	present		
Prymnesiales		present	
Oocystis	present		
Pyramimonas	present	common	common
Cryptomonadales	common	common	common
Telonema subtile			present
Pseudochattonella		present	common
Pseudopedinella pyriformis	common	common	present
Eutreptiella gymnastica	present	present	present
Bicosta cf. minor	present		
Bicosta minor		present	present
Choanoflagellatea		present	present
Ebria tripartita	present		
Ciliophora	present	common	common
Mesodinium rubrum			present
Tintinnidae	present	common	present

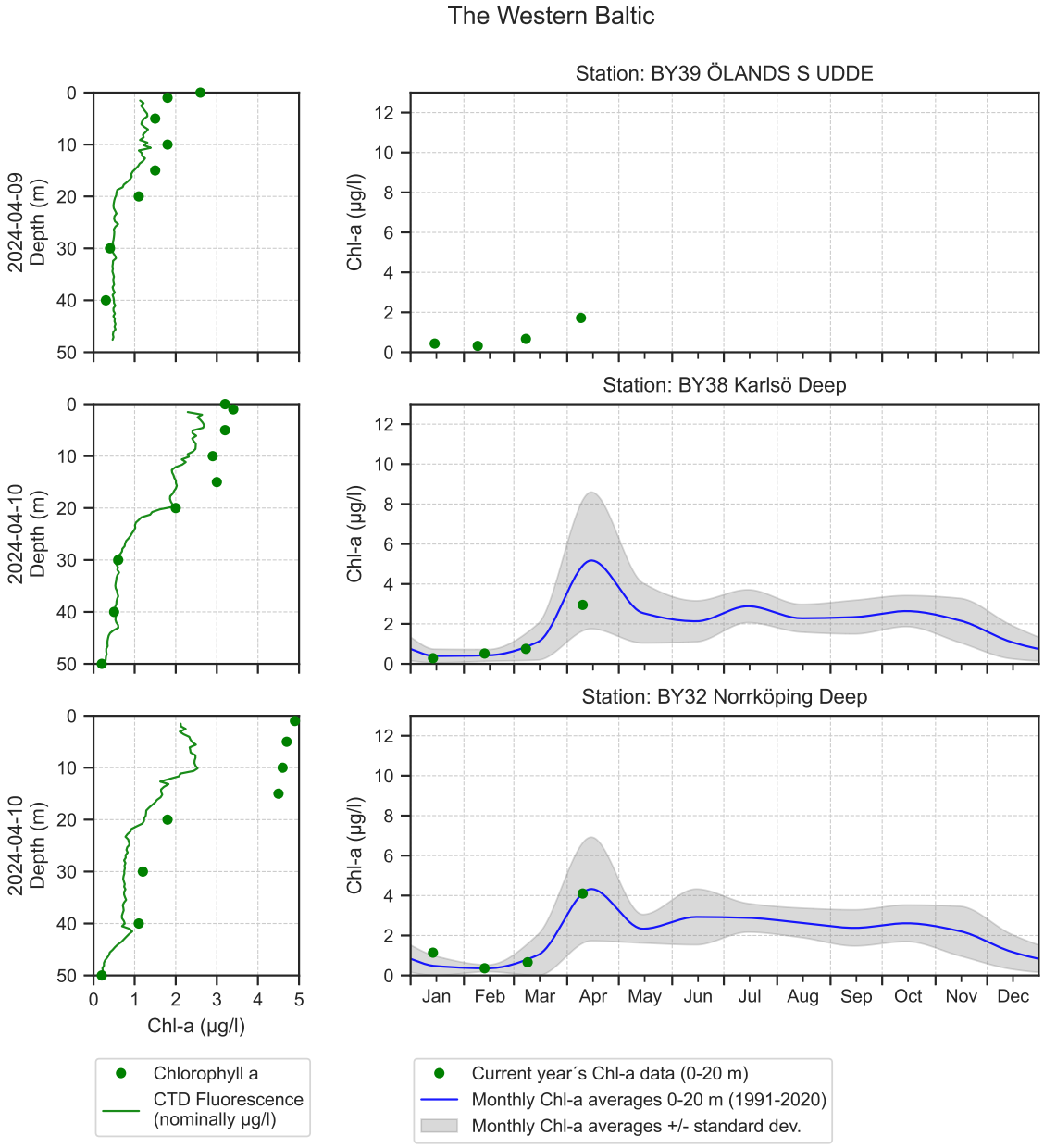
Selection of observed species	BY39	BY38	BY31	BY29	BY13	BY5	BY2
Red=potentially toxic species	9/4	10/4	10/4	10/4	11/4	12/4	13/4
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence
Centrales			common	present			
Chaetoceros	present						
Chaetoceros wighamii		common	very common	common	very common		
Cylindrotheca closterium						present	
Melosira arctica	common	present	present	present	present		
Pauliella taeniata		present	very common	dominant	common		
Skeletonema marinoi	common	common	very common	dominant	common	very common	very common
Thalassiosira baltica		present	common				
Amphidinium crassum						present	
Amphidinium sphenoides	common					present	
Amylax triacantha	present					present	present
Dinophysis acuminata	present	present			present	present	present
Gymnodiniales	common	common	common	present	common	very common	very common
Gyrodinium spirale		present			present		present
Heterocapsa rotundata	common	common	very common	common	very common	very common	very common
Katodinium glaucum					present	present	present
Peridiniella catenata	common	present	common	present	common	very common	very common
Peridiniella danica						present	
Protoperidinium bipes		present		present			
Dinobryon						very common	very common
Oocystis	present		present		present	present	
Pyramimonas spp.	present	present	common	present	common	very common	very common
Cryptomonadales	common	common	present	present	common	very common	very common
Katablepharis			present			present	present
Eutreptiella	common	common	common	present	common		
Aphanizomenon			present			common	common
Aphanizomenon flosaquae		present	present		present	common	present
cf. Aphanocapsa							present
Lemmermanniella					present		
Snowella						present	
Choanoflagellatea			common	present	present	present	present
Ebria tripartita				present			
Ciliophora	common	common	common	common	very common	very common	very common
Mesodinium rubrum	present	present	present	present	common	present	present
Flagellates	present	present	present	present	present	very common	very common


The Skagerrak
Station: Å17
Station: Å15
Station: Å13
Station: Släggö
Station: P2
Depth (m)
Chl-a (µg/l)
2024-04-14
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
2024-04-14
2024-04-13
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 Southern Baltic
Station: BY1
Station: BY2 Arkona
Station: BY4 Christiansö
Station: BY5 Bornholm Deep
2024-04-13
2024-04-12
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.


The Eastern Baltic
Station: BCS III-10
Station: BY10
Station: BY15 Gotland Deep
Station: BY20 Fårö Deep
Depth (m)
Chl-a (µg/l)
2024-04-11
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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