SMHI
Oceanographic Unit
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AlgAware
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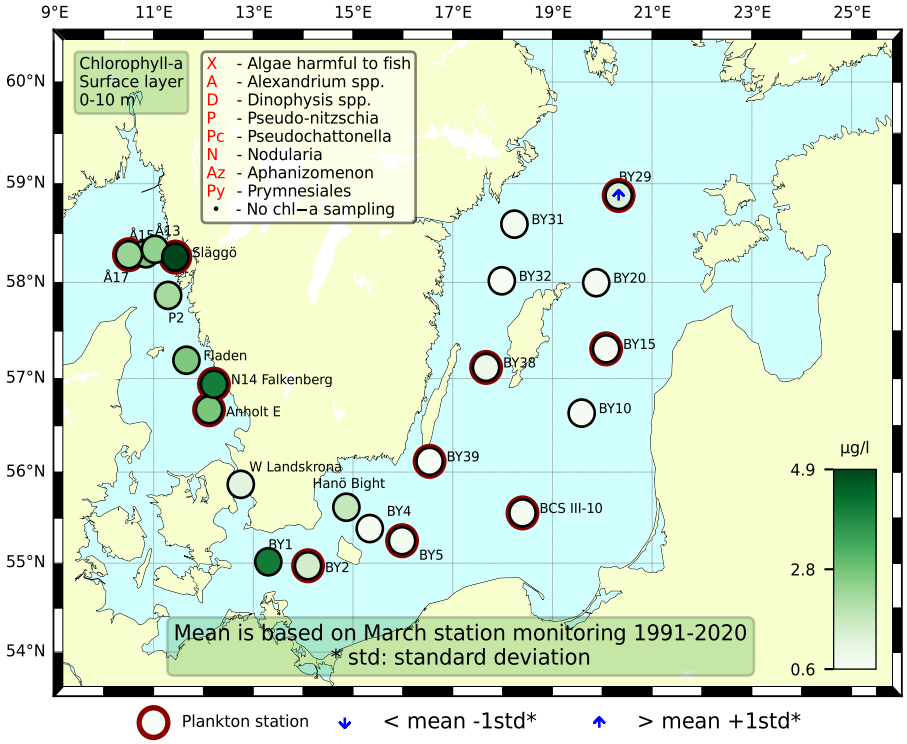
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning
Vårblomningen var igång i Västerhavet med dominans av kiselalger som arten *Skeletonema marinoi* och släktena *Thalassiosira* och *Chaetoceros*. Högst artdiversitet och cellantal återfanns i Kattegatt, lägst vid Å17 i yttre Skagerrak. Höga klorofyllvärden uppmättes kring 15–20 meter vid många stationer, vid Släggö var halterna höga från 0–5 meter. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var trots höga enskilda värden inom det normala för månaden vid alla stationer.

Diversiteten och cellantalen av växtplankton var generellt sätt mycket låga i Östersjön men något högre cellantal återfanns vid de nordliga stationerna norr om Gotland. Den kedjebildande kiselalgen *S. marinoi*, vanlig i vårblomningen, återfanns vid de flesta stationer och var vanligast i proverna från norr. Även *Peridiniella catenata*, den dinoflagellat som även den är vanlig i vårblomningen i Östersjön, återfanns i låga tätheter vid ett par stationer. Imaging FlowCytobot, som provtar under färd och tar bilder, identifierade enstaka filament av *Aphanizomenon flosaquae* i Östersjön men det var endast vid BY5 som det återfanns i flertalet filament i mikroskopet. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var inom det normala för månaden vid nästan alla stationer.



Abstract
The spring bloom was ongoing in the Kattegat and Skagerrak areas with dominance of diatoms. The species *Skeletonema marinoi* and the genera *Thalassiosira* and *Chaetoceros* were the most abundant taxa. The highest species diversity and cell numbers were found in the Kattegat, the lowest was found at Å17 in the open Skagerrak area. High chlorophyll concentrations were found around 15–20 m at several stations, at Släggö, the concentrations were high at 0–5 m. In spite of high individual concentrations, the integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month at all stations.

Diversity and cell abundance of phytoplankton were generally very low in the Baltic Sea but slightly higher cell abundance was noted at the more northerly stations north of Gotland. The chain-forming diatom *S. marinoi,* common during the spring bloom, was present at most stations but were more common at the more northerly stations. Also, *Peridiniella catenata*, a dinoflagellate also common in the spring bloom in the Baltic Proper was found in lower numbers at some stations. The Imaging FlowCytobot, that samples on the way and take photos, recorded single filaments of *Aphanizomenon flosaquae* in the Baltic, but only in samples taken at BY5 filaments were seen in the microscope samples. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within the normal range for this month at almost all stations.

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

The Skagerrak

Å17 (open Skagerrak) 13th of March

The usual spring bloom variety of diatom species were present but in low cell numbers. Diatoms dominated, with *Skeletonema marinoi*, *Thalassiosira nordenskioeldii* and *Thalassionema nitzschioides* being the most abundant species. Chlorophyll fluorescence peaks and high chlorophyll concentrations were found at 15–20 meters depth, the integrated chlorophyll concentrations (0–10 m and 0–20 m) were however within normal for this month.

Släggö (Skagerrak coast) 13th of March

The species diversity and cell numbers were high with diatoms dominating. The diatoms *S. marinoi, T. nordenskioeldii* and *Chaetoceros curvisetus* were the most numerous species. High chlorophyll fluorescence and chlorophyll concentrations were found at 0–5 meters depth, the integrated chlorophyll concentrations (0–10 m and 0–20 m) were however within normal for this month.

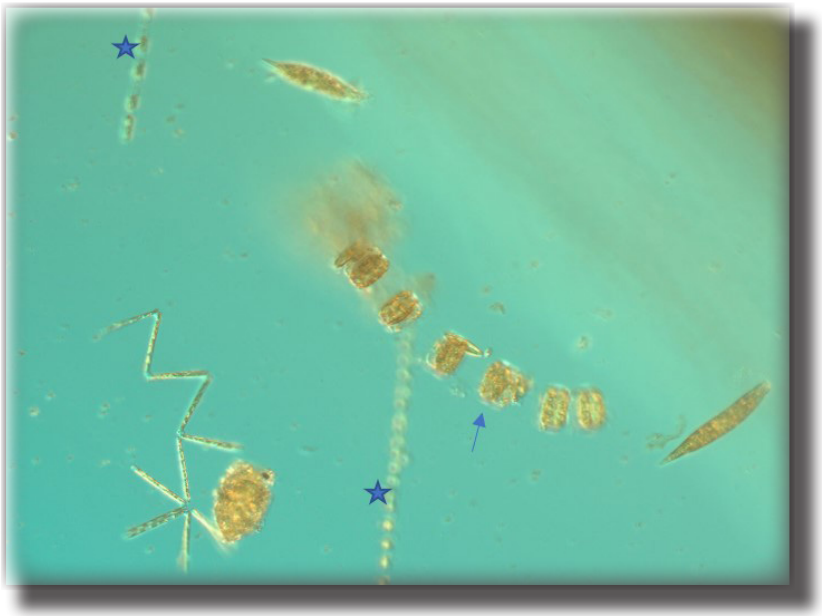


Fig 1. The diatoms *Skeletonema marinoi* (arrowheads), *Thalassiosira nordenskioeldii* (arrow) and *Thalassionema nitzschioides* (zigzag chain) were abundant at the Kattegat and Skagerrak stations. The flagellate *Eutreptiella braarudii* (elongated cells) was numerous at Släggö at the Skagerrak coast. Photo: A-T. Skjevik.

The Kattegat

Anholt E 12th of March

The most species rich sample was found here and also the highest cell counts. Diatoms dominated and *S. marinoi* was the most abundant species along with *T. nordenskioeldii*, *T. nitzschioides* and *C. curvisetus*. There were quite a few dinoflagellate species as well, however in low cell numbers. The flagellate genus *Pseudopedinella* and the Cryptomonadales group were numerous. Chlorophyll fluorescence peaks and high chlorophyll concentrations were found at around 20 meters depth, the integrated chlorophyll concentrations (0–10 m and 0–20 m) were however within normal for this month.

N14 Falkenberg 12th of March

More or less the same species composition was noted as at Anholt E, although somewhat fewer species in somewhat lower cell counts. A doubtless diatom bloom was ongoing though. Chlorophyll fluorescence peaks and high chlorophyll concentrations were found at 15–20 meters depth, the integrated chlorophyll concentrations (0–10 m and 0–20 m) were however within normal for this month.

The Baltic

BY2 Arkona and BY5 Bornholm deep 11th of March

The phytoplankton diversity and abundances were very low. Mainly small cells such as different Cryptomonadales, the cyanobacteria colony genus *Lemmermanniella*, and a few filaments of *S. marinoi* were noted at BY2. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BCSIII-10 11th of March

The phytoplankton diversity and abundances were very low with mainly small cells such as Cryptomonadales and the dinoflagellate *Heterocapsa rotundata*. A few colonies of the cyanobacteria genus *Lemmermanniella* were also recorded. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

BY15 Gotland deep 10th of March

The phytoplankton diversity and abundances were very low with mainly small cells such as Cryptomonadales and *S. marinoi.* The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

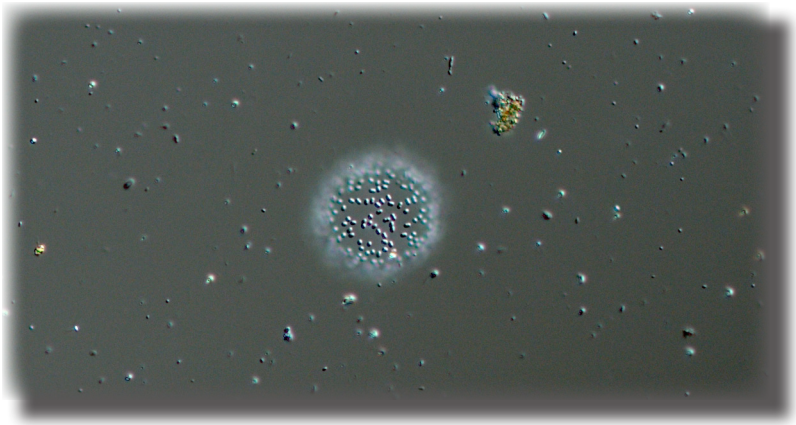


Fig 1. The colony forming cyanobacteria *Lemmermanniella* spp. was found at several stations in the Baltic Sea. Photo: M. Johansen.

BY29 9th of March

The phytoplankton diversity and total abundance were moderate. Diatoms were dominating and several chains of *S. marinoi* were observed together with several chains of the genus *Chaetoceros*. Among the small cells Cryptomonadales were found in highest numbers. The integrated chlorophyll concentration (0–10 m) was above normal.

BY31 Landsort deep 9th of March

The phytoplankton diversity and total abundance were moderate. Diatoms were dominating and several chains of *S. marinoi* were observed together with several chains of the genera *Chaetoceros* and *Thalassiosira*. Among the small cells Cryptomonadales were found in highest numbers.

BY38 8th of March

The phytoplankton diversity and abundances were very low with mainly small cells such as Cryptomonadales and the dinoflagellate *H. rotundata*. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

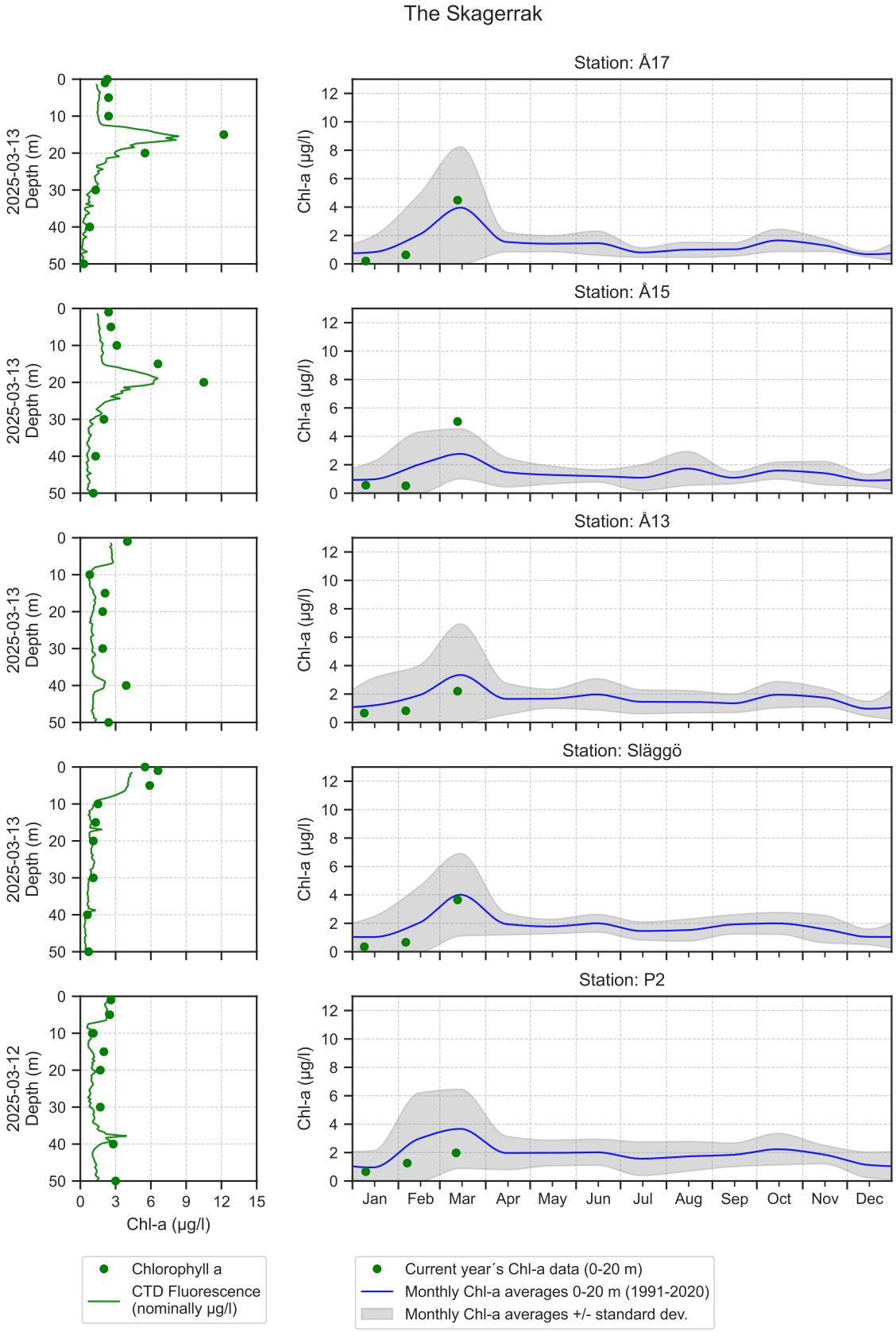
BY39 8th of March

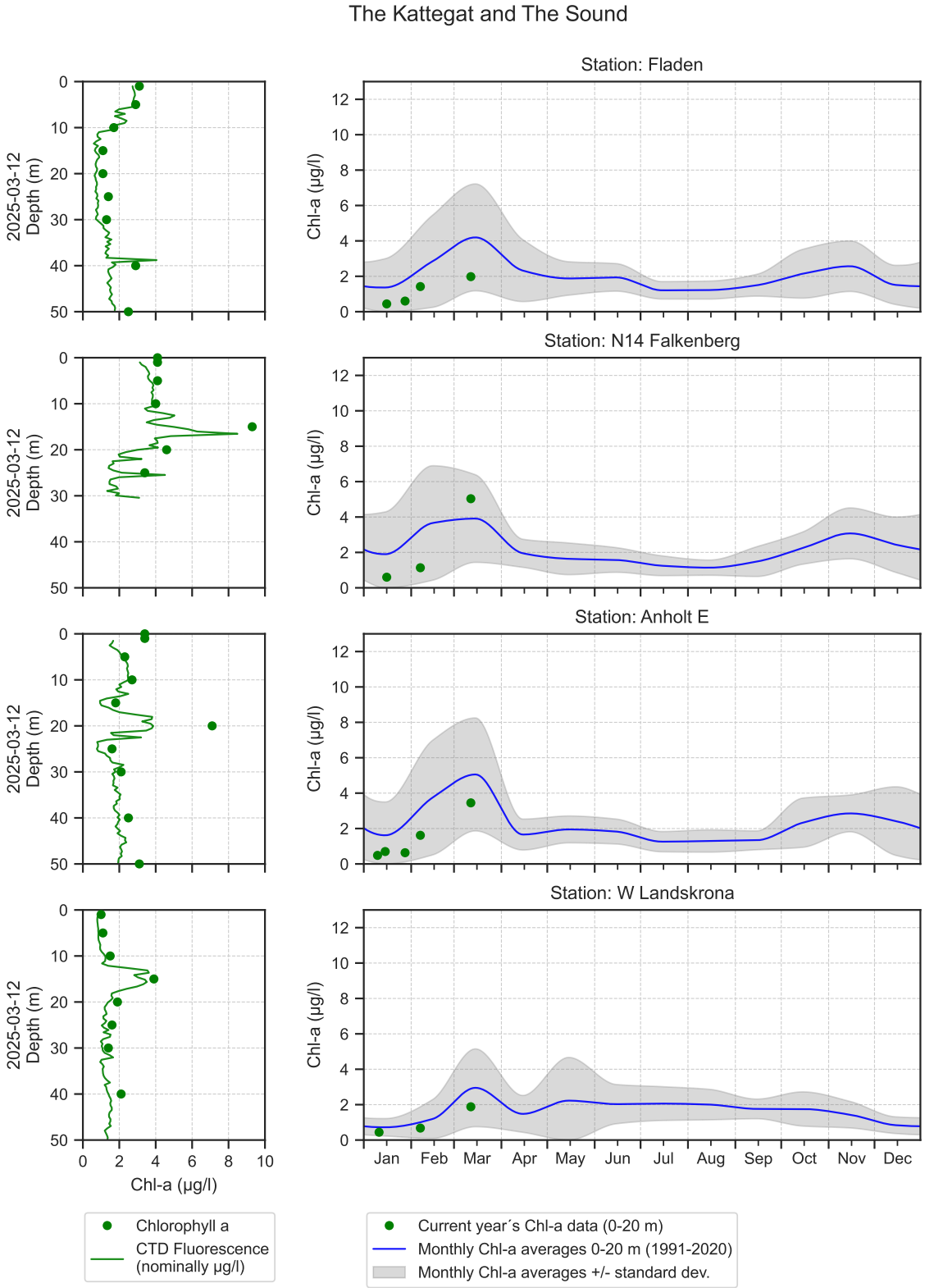
The phytoplankton diversity and abundances were very low. Mainly small cells were noted such as different species belonging to Cryptomonadales. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were low for the month.

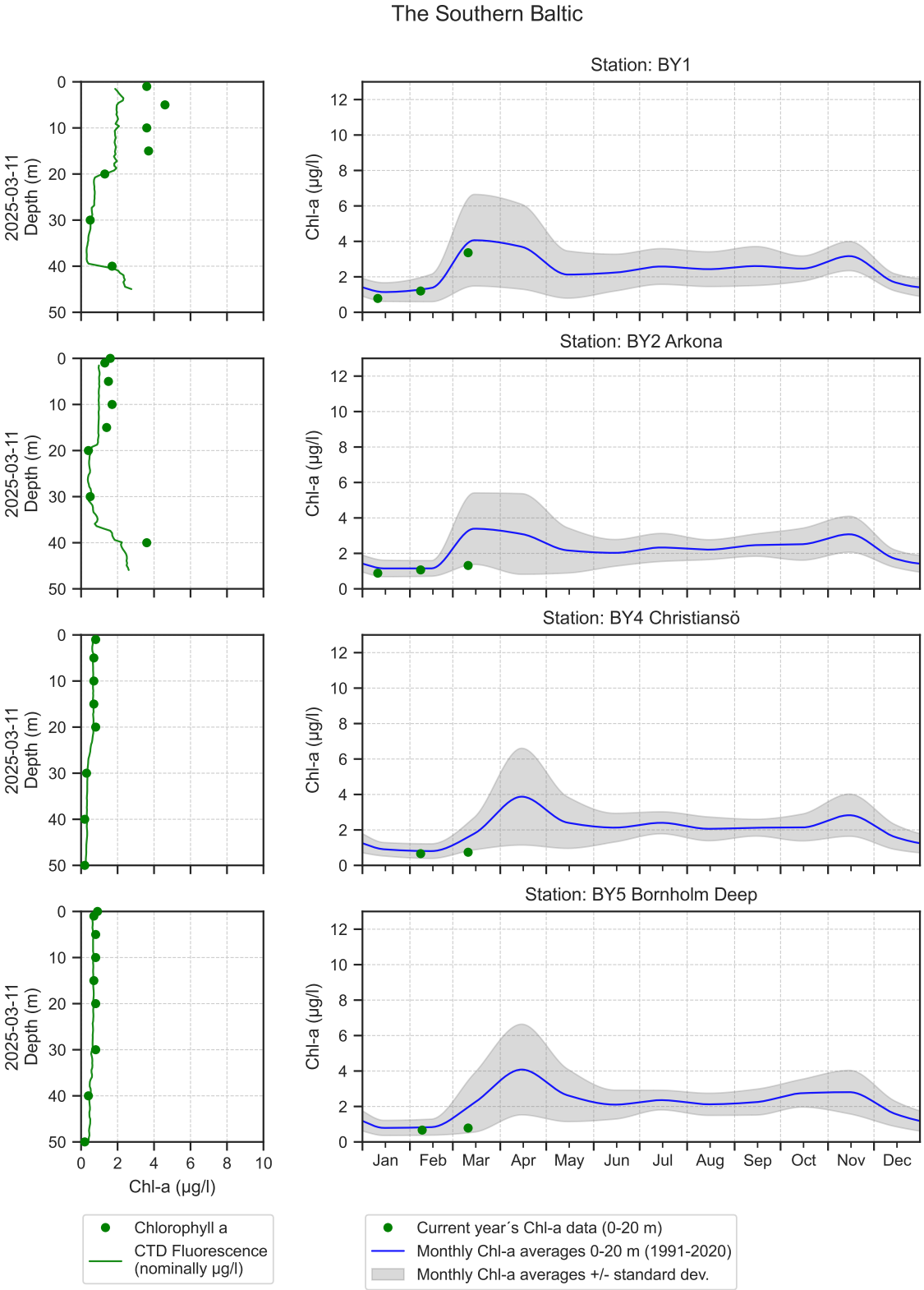
Phytoplankton analysis and text:
Ann-Turi Skjevik and Marie Johansen.

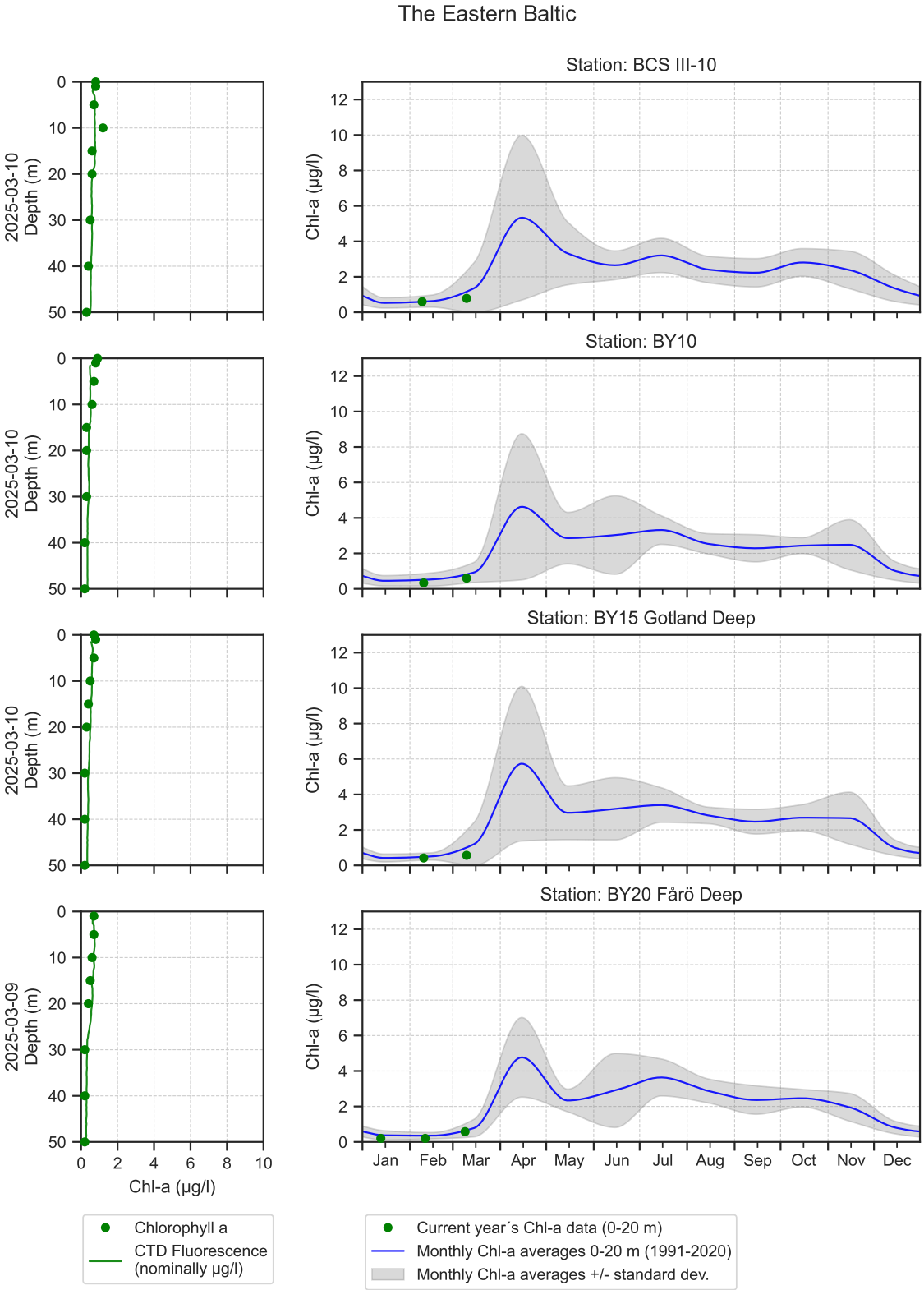
Selection of observed species	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	12/3	12/3	13/3	13/3
Hose 0-10 m	presence	presence	presence	presence
Attheya septentrionalis	present	present	present	present
Cerataulina pelagica		present		
Chaetoceros	common			
Chaetoceros curvisetus	common	present	common	present
Chaetoceros danicus	present	present		
Chaetoceros debilis	present	present	present	
Chaetoceros diadema				present
Chaetoceros laciniosus	present	present		
Chaetoceros similis	present	present	present	
Chaetoceros wighamii	present	present		
Coscinodiscus			present	present
Coscinodiscus radiatus				present
Cylindrotheca closterium			present	present
Dactyliosolen fragilissimus		present	present	present
Ditylum brightwellii	present	present	present	present
Guinardia delicatula	present	present		present
Guinardia flaccida			present	
Gyrosigma			present	
Lennoxia faveolata	present		present	present
Leptocylindrus danicus	present			
Leptocylindrus minimus		present		
Navicula transitans var. derasa f. delicatula	present	present	common	present
Nitzschia longissima	present	common	common	present
Porosira glacialis	present	present	present	
Proboscia alata	present	present		
Pseudo-nitzschia	present	present		
Rhizosolenia hebetata f. semispina	present			present
Rhizosolenia setigera	present	present	present	present
Skeletonema marinoi	very common	very common	very common	common
Thalassionema nitzschioides	common	common	common	common
Thalassiosira angulata	present	present	present	present
Thalassiosira anguste-lineata	present	present	present	
Thalassiosira gravida		present	present	present
Thalassiosira nordenskioeldii	common	common	common	common
Akashiwo sanguinea	present		present	present
Dinophysis acuminata	present	present	present	present
Dinophysis norvegica	present	present	present	present
Diplopsalis				present
Gymnodiniales			present	
Gymnodinium verruculosum				present
Gyrodinium spirale	present	present	common	present
Heterocapsa rotundata	present	present	present	
Heterocapsa triquetra	present	present	present	present
Karlodinium veneficum		present		
Katodinium glaucum	present			
Lingulodinium polyedra	present		present	present
Peridiniales		present		
Peridiniella danica	present	present	present	
Prorocentrum balticum	present			
Protoperidinium				present
Protoperidinium bipes	present	present	present	
Protoperidinium brevipes			present	
Protoperidinium depressum			present	
Protoperidinium pellucidum	present	present		
Protoperidinium steinii				present
Tripos fusus	present		present	
Tripos lineatus			present	present
Tripos longipes	present		present	present
Tripos macroceros			present	
Tripos muelleri	present			present
Apedinella radians	present	present		present
Octactis speculum		present		present
Pseudochattonella	present	present		
Pseudopedinella	common	common	present	present
Pseudopedinella pyriformis	present	present		
Emiliania huxleyi		present	present	present
Prymnesiales		present		
Dinobryon faculiferum		present		
Eutreptiella	present		present	
Eutreptiella braarudii			present	
Pyramimonas	present			present
Cryptomonadales	common	common	common	common
Katablepharis remigera	present			
Leucocryptos marina		present	present	
Ebria tripartita		present		
Paulinella ovalis	present			
Calliacantha longicaudata			present	
Choanoflagellatea		present		
Mesodinium rubrum	present			
Ciliophora	present	present	common	present
Laboea strobila	present			present
Stenosemella		present	present	present
Strombidium	present	common	present	present
Tintinnopsis	present		present	present

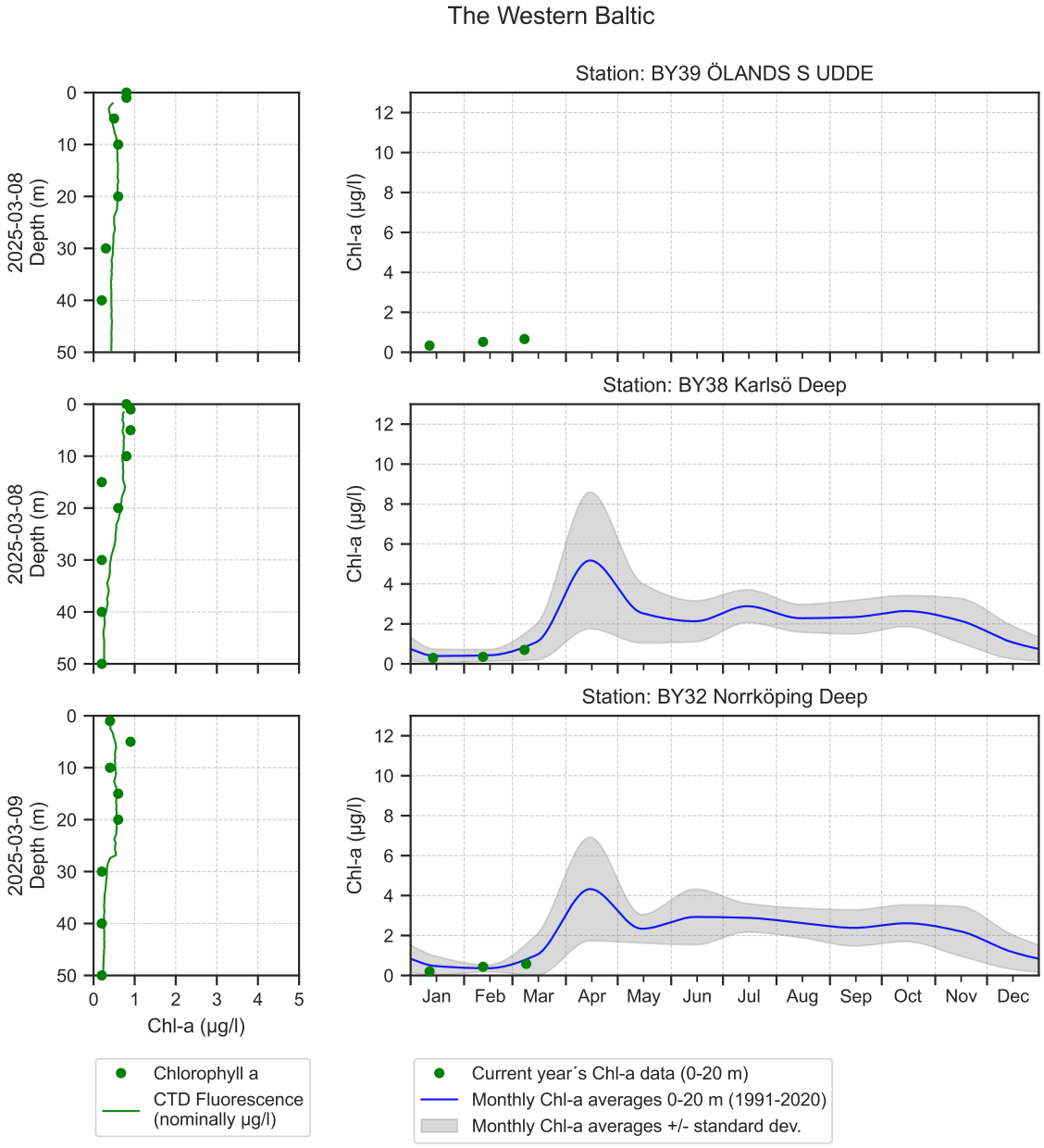
Selection of observed species	BCS III-10	BY2	BY5	BY15	BY29	BY31	BY38	BY39
Red=potentially toxic species	10/3	11/3	11/3	10/3	9/3	9/3	8/3	8/3
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Actinocyclus octonarius	present	present	present					
Centrales		present			present			
Chaetoceros					present	present	present	
Chaetoceros holsaticus					present	present		
Chaetoceros similis				present				
Chaetoceros wighamii					common	present		
Nitzschia longissima						present		
Skeletonema marinoi	present	common	present	common	very common	very common	present	present
Thalassiosira					present	present		
Thalassiosira baltica						present		
Thalassiosira levanderi						present		
Dinophysis acuminata							present	
Gymnodiniales	present	present		present	present	present		present
Heterocapsa rotundata	common	common	present		present		common	present
Peridiniella catenata			present			present		
Oocystis							present	present
Binuclearia lauterbornii		present						
Cryptomonadales	very common	common	common	common	common	common	common	common
Eutreptiella gymnastica	common	present	present	present	present	present	present	
Aphanizomenon flos-aquae			present					
Aphanocapsa		present	present			present		
Aphanothece	present						present	
Lemmermanniella	present	present	common	present			present	present
Pseudanabaena					present			
Snowella					present			
Ebria tripartita							present	
Ciliophora	common	very common	common	common	common	present	common	common
Mesodinium rubrum	present	present	present	present	present	present	present	present


The Skagerrak
Station: Å17
Station: Å15
Station: Å13
Station: Släggö
Station: P2
2025-03-13
2025-03-12
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 Kattegat and The Sound
Station: Fladen
Station: N14 Falkenberg
Station: Anholt E
Station: W Landskrona
2025-03-12
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 Southern Baltic
Station: BY1
Station: BY2 Arkona
Station: BY4 Christiansö
Station: BY5 Bornholm Deep
2025-03-11
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
2025-03-10
2025-03-09
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.



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.

Översikt 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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