SMHI
Oceanographic Unit
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AlgAware
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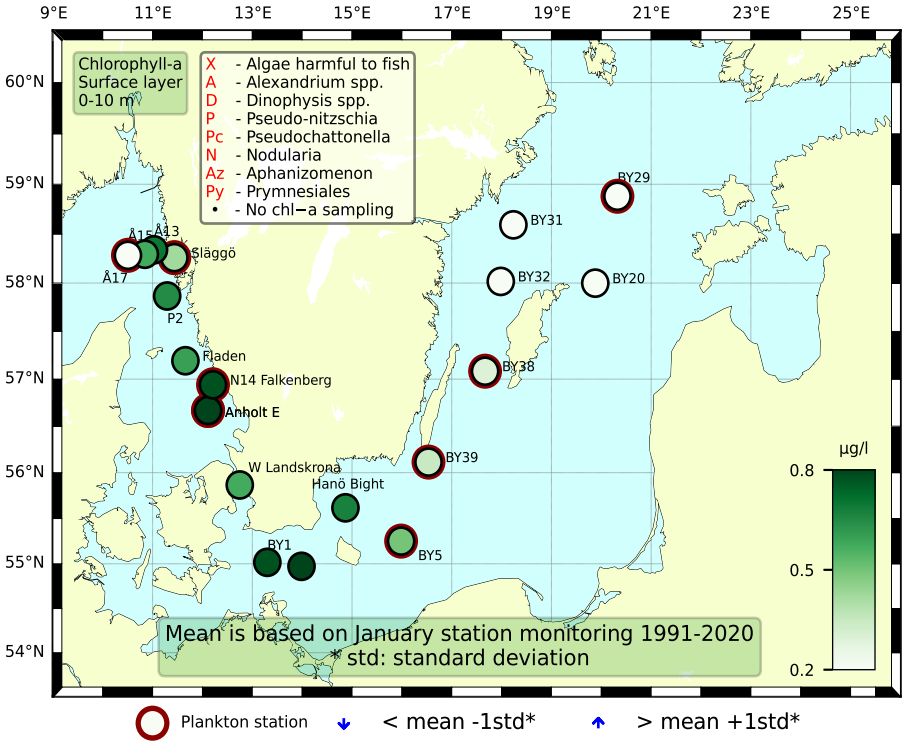
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

## Sammanfattning

På grund av storm kunde ett flertal stationer inte provtas.

Artdiversiteten av växtplankton och totala antalet celler var låga vid samtliga stationer i Västerhavet. I Skagerrak dominerade små celler av olika sorter. Planktonsamhället i Kattegatt var fattigt på celler och dominerades även det av små celler. Dock var kalkalgen *Emiliania huxleyi* vanlig vid samtliga provtagningar. De integrerade klorofyllhalterna (0–10 m och 0–20 m) var låga men inom det normala för månaden vid alla stationer.

Diversiteten och cellantalen av växtplankton var generellt sett väldigt låga i Östersjön. Enda undantaget från de låga cellantalen var vid BY2, den sydvästligaste stationen där kiselalgen *Cerataulina pelagica* var oväntat talrik. Vid stationen BY29 förekom den potentiellt toxinbildande *Dinophysis acuminata** med ett fåtal celler i ett annars cellfattigt samhälle. De integrerade klorofyllhalterna var låga men inom det normala för månaden vid alla stationer.




## Abstract

Several stations were not sampled due to stormy weather.

The species diversity and total cell numbers were both low at all stations along the west coast. In the Skagerrak the samples had a domination of small cells of various speicies. The plankton community in the Kattegat had low cell numbers and were dominated by small cells. The coccolithophore *Emiliania huxleyi* was however common at all sampling stations. The integrated chlorophyll concentrations were low but within normal for this month at all stations.

Diversity and cell abundance of phytoplankton were generally very low in the Baltic Proper. The only exception was BY2 located in the south west of the Baltic where the diatom *Cerataulina pelagica* was found in unusual high cell numbers considering the month. At BY29 a few cells of the toxic dinoflagellate *Dinophysis acuminata** were found in a sample otherwise poor of cells. The integrated chlorophyll concentrations were low but 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**

**Å17 (open Skagerrak) 10th of January**
The species diversity and the total cell numbers were both low. The community mostly contained small cells such as small naked dinoflagellates, the coccolithophore *Emiliania huxleyi* and the genus *Pleurochrysis*. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

**Släggö (Skagerrak coast) 9th of January**
Both the species diversity and the total cell numbers were very low. The sample contained a lot of inorganic small particles. The most abundant species among the larger cells was the dinoflagellate *Akashiwo sanguinea**. The majority of the smaller cells belonged to the order cryptomonadales but *E. huxleyi* was also common. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

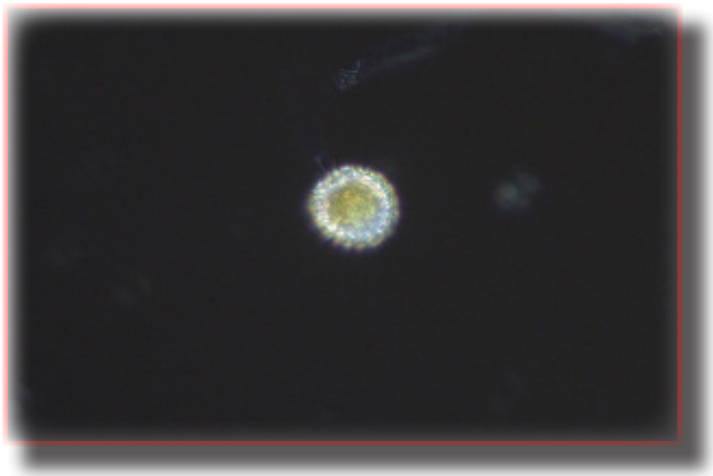


Fig 1. The coccolithophore *Pleurochrysis* was common at Å17this month. Photo: M. Johansen.

**The Kattegat**

**Anholt E 10th and 15th of January**
The species diversity and total cell numbers were low on both sampling occasions. The first sampling occasion mainly contained small cells of which *Emiliania huxleyi* was the most common. On the second occasion the relatively large dinoflagellate genus *Tripos* was found. The smaller cells were still dominated by *E. huxleyi.* The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

**N14 Falkenberg 16th of January**
The species diversity and total cell numbers were both low. The flagellate *Octactis speculum* was the most common among the larger cells. Some large dinoflagellates, such as the genera *Tripos* and *Dinophysis** were present in low numbers. The diatoms were mainly represented by the genus *Thalassiosira.* The smaller cells were dominated by different cryptomonadales and *E. huxleyi.* The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within normal for this month.

**The Baltic**

**BY2 Arkona 11th of January**
The phytoplankton diversity was low but the total cell numbers were moderate considering the season. The diatom *Cerataulina pelagica* was found in unusually high amounts being January. One filament of the cyanobacterium *Nodularia spumigena** was found which is also quite unusual this time of the year. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within the normal range for this month.

**BY5 Bornholm deep 14th of January**
The phytoplankton diversity and abundances were very low. Various naked dinoflagellates, cryptomonadales and ciliates were found. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within the normal range for this month.

**BY29 13th of January**
The phytoplankton diversity and abundances were very low. The harmful dinoflagellate *Dinophysis acuminata** was found in low cell numbers. Even the smaller cells were found I low cell counts. The integrated chlorophyll concentration (0–10 m) was within the normal range for this month.

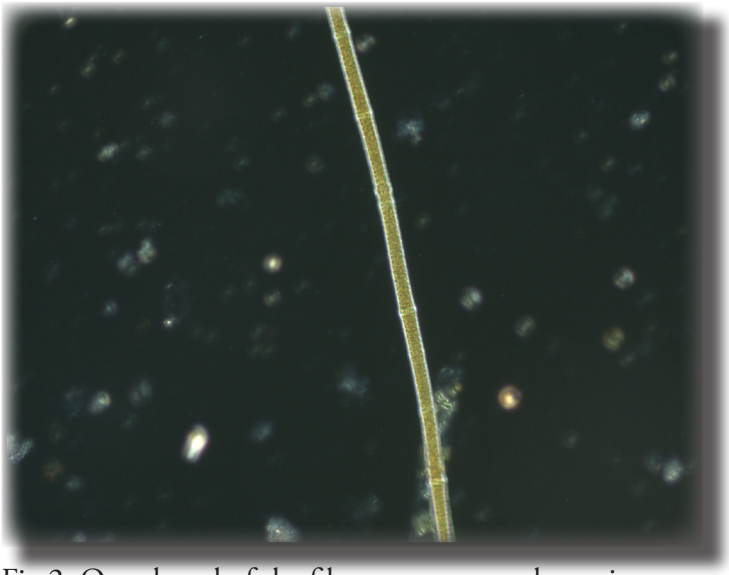


Fig 2. One thread of the filamentous cyanobacterium *Nodularia spumigena** was found at station BY2 in the Arkona Basin. Photo M. Johansen.

**BY31 Landsort deep 13th of January**
The phytoplankton diversity and abundances were very low with only a few cells of naked dinoflagellates and single occurrence of other taxa.

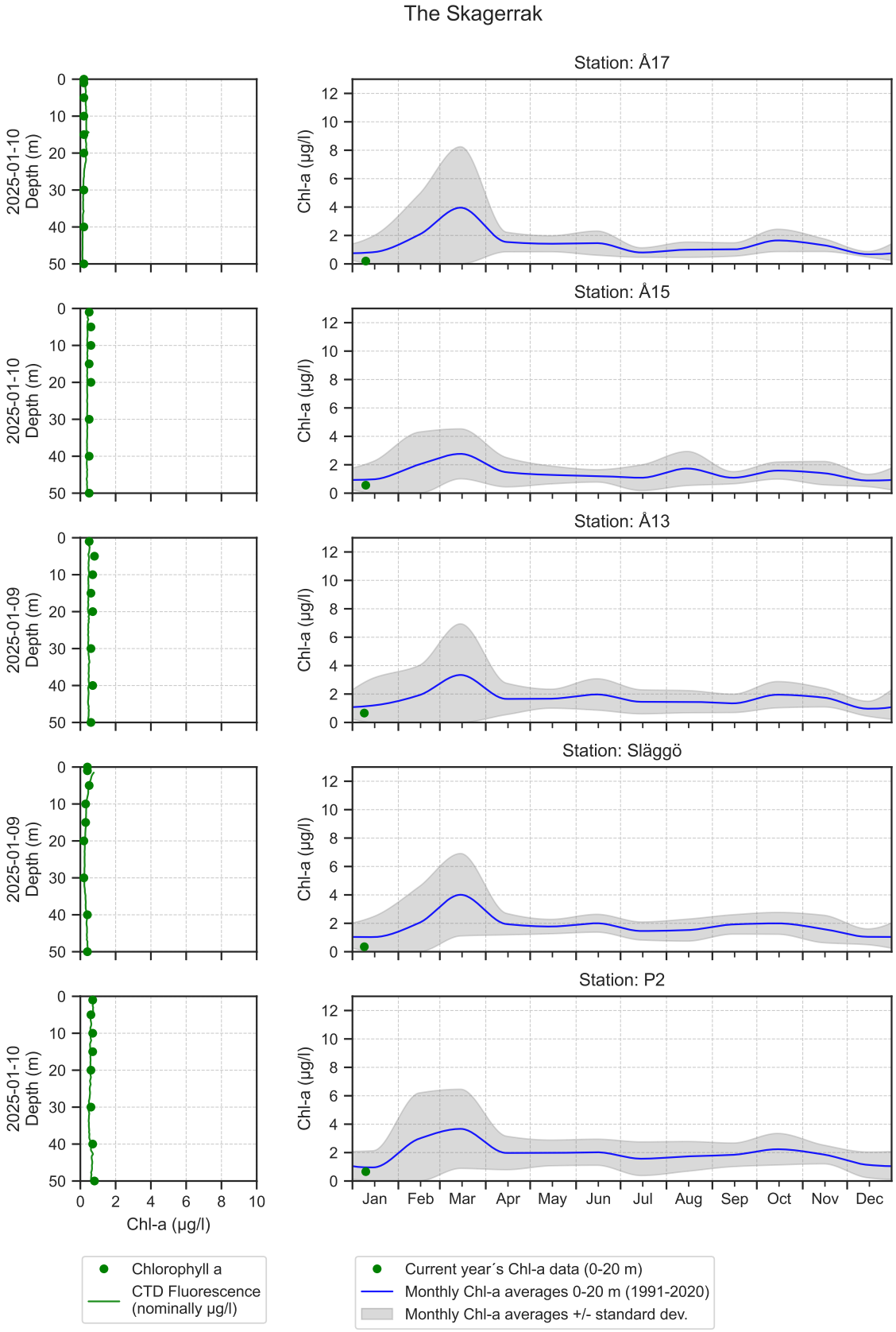
**BY38 14th of January**
The phytoplankton diversity and abundances were very low with only a few cells found in the entire sample. Mainly small cells such as cryptomonadales and gymnodiniales were recorded. The integrated chlorophyll concentrations (0–10 m and 0–20 m) were within the normal range for this month.

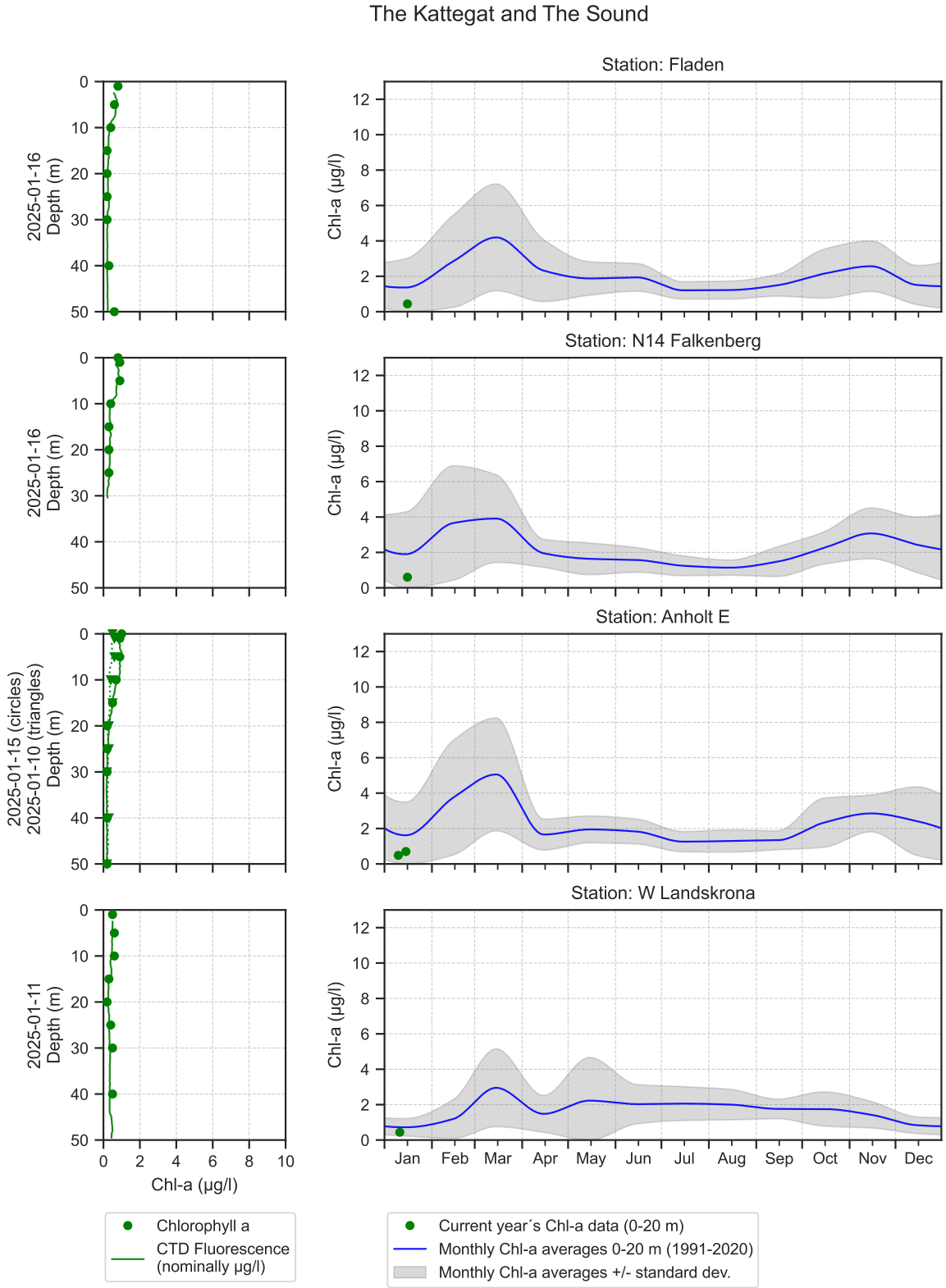
**BY39 12th of January**
The phytoplankton diversity and abundances were very low with only a few cells found in the entire sample. Each taxon was represented by only one or two cells. The integrated (0–10 m) chlorophyll concentration was within the normal range for this month.

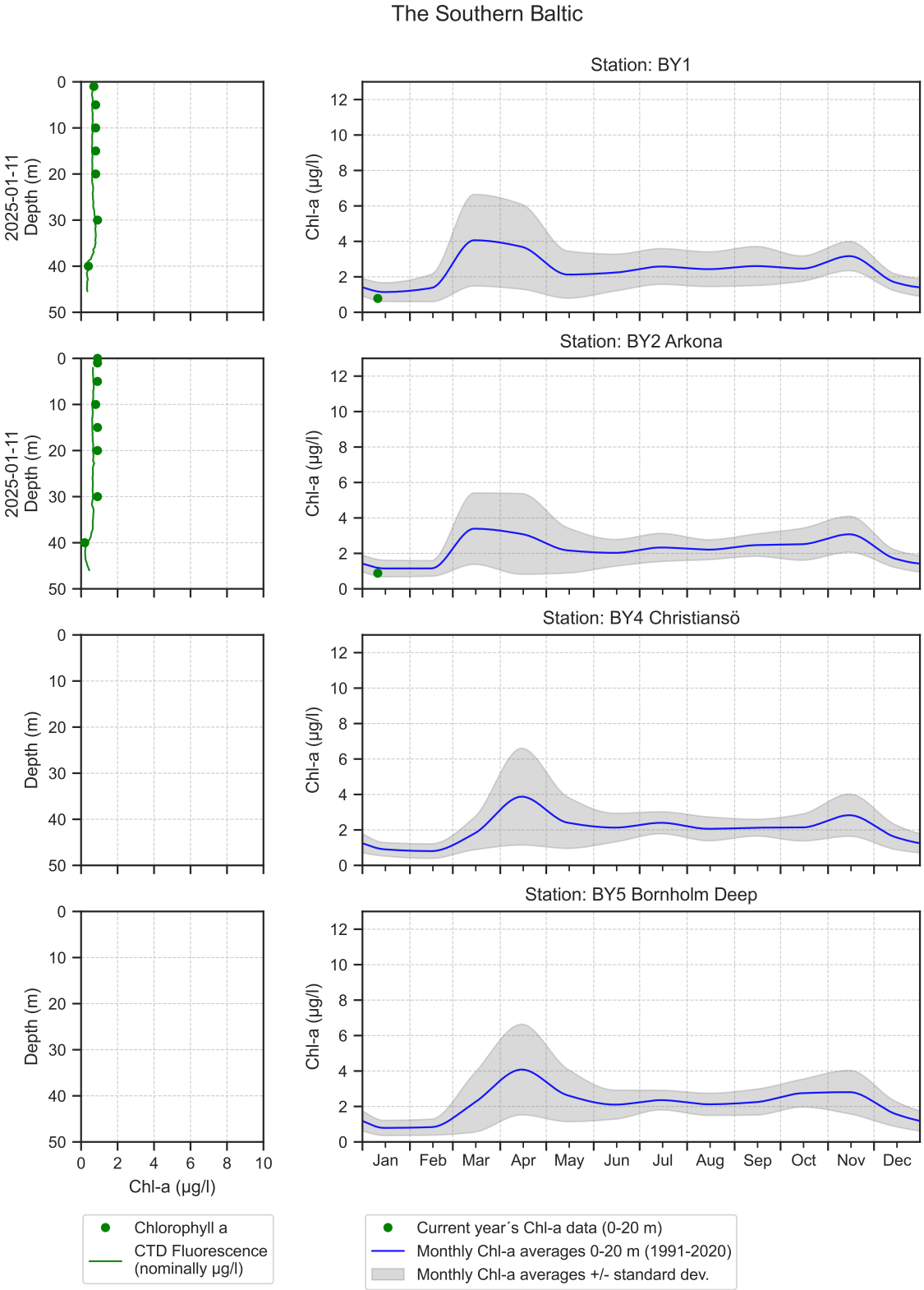
Phytoplankton analysis and text:
Marie Johansen.

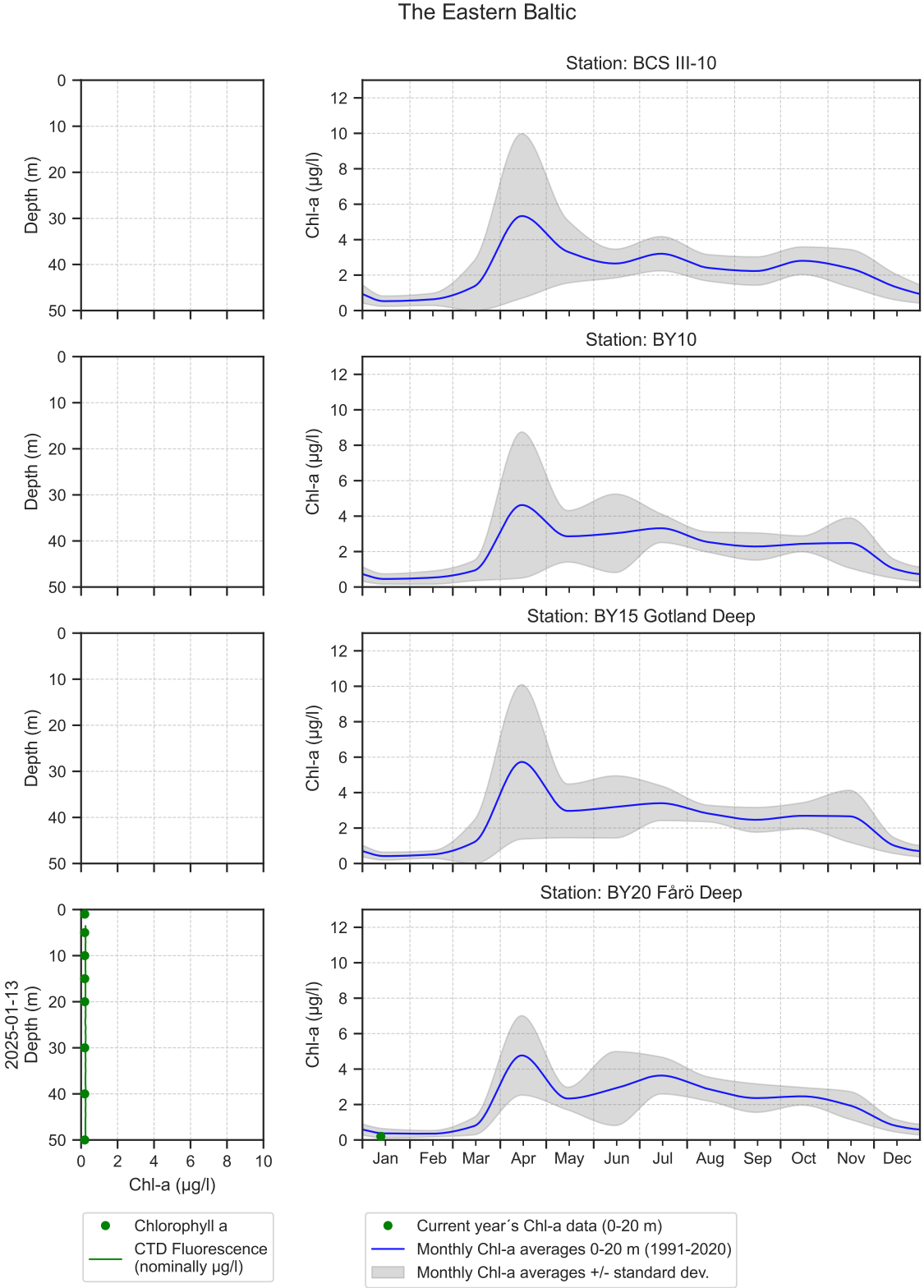
| Selection of observed species | Anholt E | Anholt E | N14 | Släggö | Å17 |
|---|---|---|---|---|---|
| Red=potentially toxic species | 10/1 | 15/1 | 16/1 | 9/1 | 10/1 |
| Hose 0-10 m | presence | presence | presence | presence | presence |
| Chaetoceros | | | | | present |
| Cylindrotheca closterium | | | | | present |
| Dactyliosolen fragilissimus | present | | | | |
| Ditylum brightwellii | | present | | | |
| Guinardia delicatula | | | present | | |
| Guinardia flaccida | present | | | | |
| Paralia sulcata | | | | present | |
| Pleurosigma | present | | | | |
| Proboscia alata | | | present | | |
| Skeletonema marinoi | | | | | present |
| Thalassiosira | present | present | present | present | present |
| Thalassiosira angulata | | present | present | | |
| Akashiwo sanguinea | present | common | present | present | |
| Azadinium | | | | present | |
| Dinophysis acuminata | | | present | | |
| Dinophysis norvegica | | | present | | |
| Gymnodiniales | present | present | | common | common |
| Gymnodinium verruculosum | | present | present | present | |
| Gyrodinium spirale | present | | | | |
| Peridiniales | | | | | present |
| Prorocentrum micans | | | present | | |
| Tripos furca | present | | | | |
| Tripos fusus | present | | | | |
| Tripos lineatus | present | common | common | present | |
| Tripos longipes | | | | | present |
| Tripos muelleri | | present | present | | |
| Emiliania huxleyi | common | common | common | | common |
| Pleurochrysis | | present | | present | common |
| Heterosigma cf. akashiwo | | | | | present |
| Cryptomonadales | present | common | common | common | common |
| Telonema subtile | | present | | | |
| Dictyocha fibula | | | | present | |
| Octactis speculum | present | | very common | | |
| Choanoflagellatea | | present | | | present |
| Paulinella ovalis | present | | present | | |
| Rhizomonas setigera | | | | | present |
| Ciliophora | | | present | present | present |

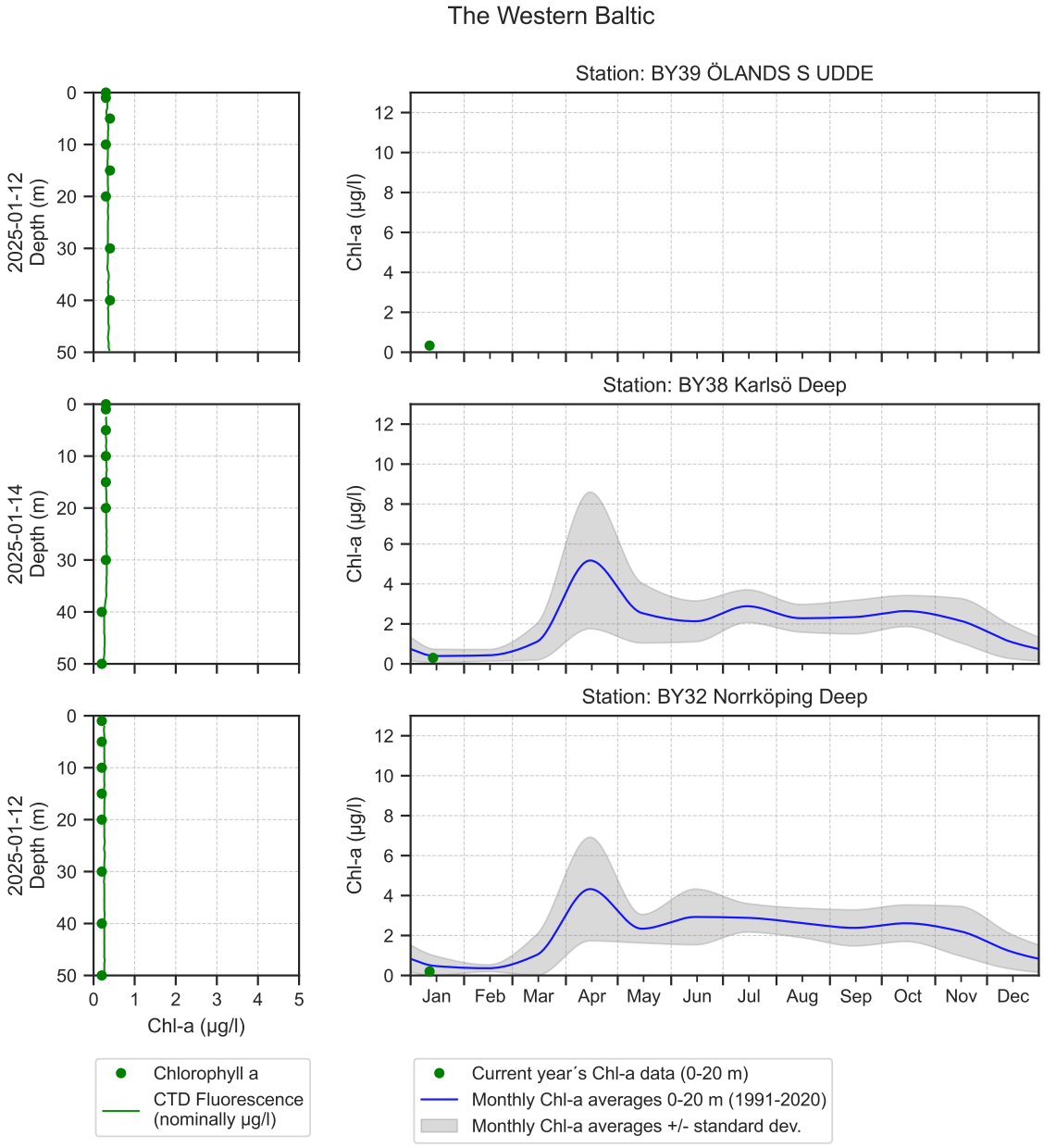
| Selection of observed species | BY2 | BY5 | BY29 | BY31 | BY38 | BY39 |
|---|---|---|---|---|---|---|
| Red=potentially toxic species | 11/1 | 14/1 | 13/1 | 13/1 | 14/1 | 12/1 |
| Hose 0-10 m | presence | presence | presence | presence | presence | presence |
| Actinocyclus | | present | | | | |
| Actinocyclus cf. octonarius | | | | | | present |
| Cerataulina pelagica | very common | | | | | |
| Chaetoceros castracanei | present | | | | | |
| Chaetoceros danicus | present | | present | | | |
| Skeletonema marinoi | | | | present | | |
| Dinophysis acuminata | | | common | present | present | |
| Gymnodiniales | present | common | common | common | present | present |
| Katodinium glaucum | | present | | | | |
| Peridiniales | present | | | | | |
| Peridiniella catenata | | | | | | present |
| Phalacroma rotundatum | | | | present | | |
| Tripos muelleri | present | | | | | |
| Prymnesiales | | | present | | | |
| cf. Botryococcus | | present | | | | |
| Oocystis | | | | present | present | present |
| Cryptomonadales | common | common | | present | common | present |
| Eutreptiella gymnastica | | present | | | | |
| Nodularia spumigena | present | | | | | |
| Lemmermanniella | | present | | | | |
| cf. Snowella | | | | | | present |
| cf. Woronichinia | present | | | | | |
| Ebria tripartita | | | present | | | |
| Ciliophora | present | common | | present | present | present |
| Mesodinium rubrum | | present | present | present | present | present |


The Skagerrak
Station: Å17
Station: Å15
Station: Å13
Station: Släggö
Station: P2
2025-01-10
2025-01-09
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.


The Kattegat and The Sound
Station: Fladen
Station: N14 Falkenberg
Station: Anholt E
Station: W Landskrona
2025-01-16
2025-01-15 (circles)
2025-01-10 (triangles)
2025-01-11
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 Southern Baltic
Station: BY1
Station: BY2 Arkona
Station: BY4 Christiansö
Station: BY5 Bornholm Deep
2025-01-11
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
Depth (m)
Chl-a (µg/l)
2025-01-13
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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Havs
och Vatten
myndigheten