SMHI
Oceanographic Unit
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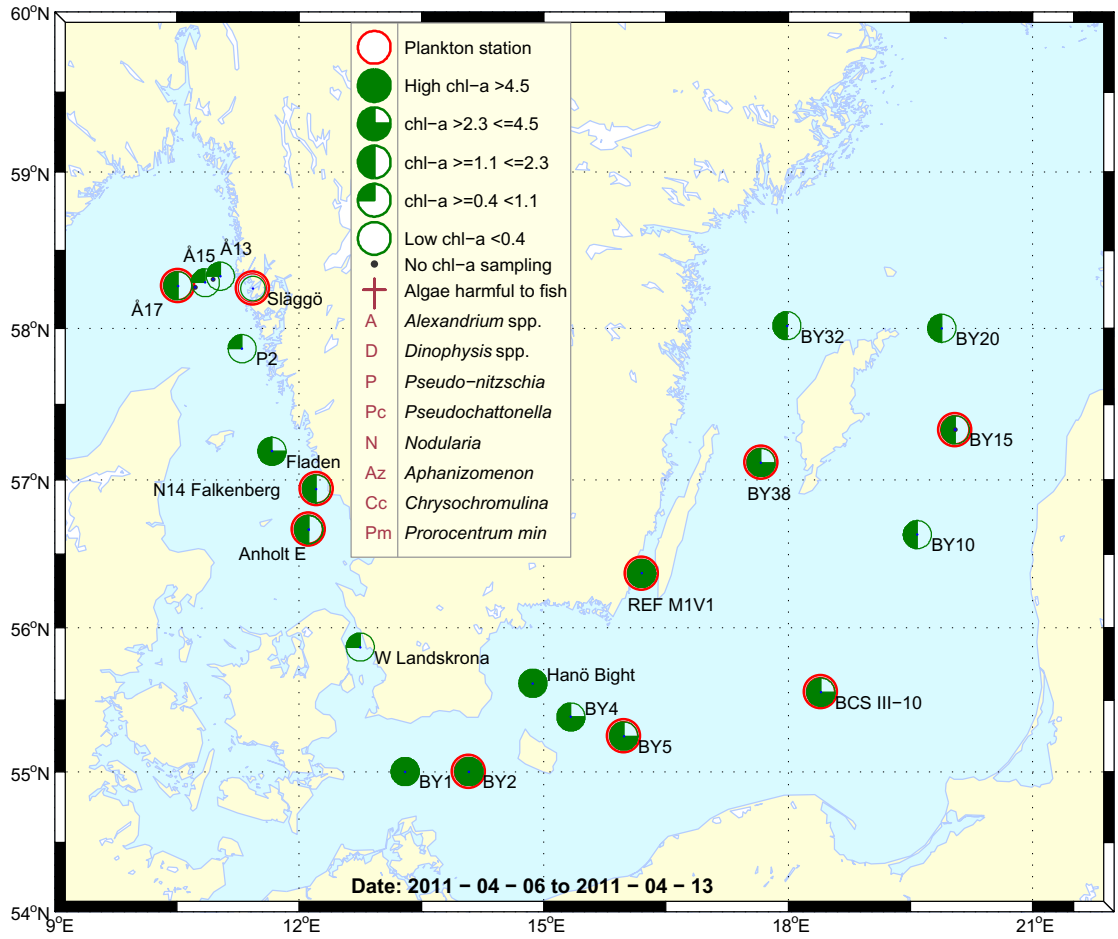
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

**Sammanfattning**

I Skagerrak dominerade släktet *Dinobryon* fram för allt vid utsjöstationen Å17. De integrerade klorofyll *a* koncentrationerna visade tydligt att vårblomningen var ett avslutat kapitel detta år.

Även i Kattegatt återfanns relativt låga klorofyll *a* koncentrationer. Få arter återfanns och fram för allt dominerade den heterotrofa dinoflagellaten *Peridiniella danica*. Endast ett fåtal celler av den tidigare så vanligt förekommande skadliga alg släktet *Pseudochattonella* återfanns nu.

I Östersjöns var vårblomning ett faktum i de södra samt västra delarna med för säsongen höga integrerade klororfyll *a* värden. Samtidigt återfanns även en klar dominans av kiselalger som vanligtvis förekommer under våren. Vid de norra samt östra delarna av Östersjön noterades däremot ingen tendens till blomning.




**Abstract**

The genus *Dinobryon* dominated in the Skagerrak area, the dominance was especially pronounced at the outer station Å17. Low chlorophyll *a* values clearly indicated that the spring bloom had now ended.

Low chlorophyll *a* concentrations were also recorded in the Kattegat area. Few species were recorded and especially the heterotrophic dinoflagellate *Peridiniella danica* was common. Only a few cells of the ichtyotoxic (ichtyo = fish) genus *Pseudochattonella* were recorded on this cruise.

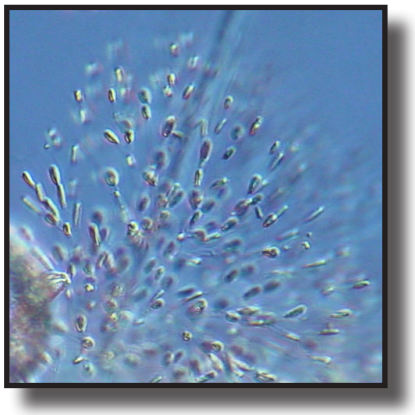
A spring bloom situation was evident in the southern and western part of the Baltic Sea. A dominance of spring bloom related diatoms were evident. The northern and eastern parts of the Baltic did not present any indications of a spring bloom.

More detailed information on species composition and abundance

## The Skagerrak

**Å17 13th of April (open Skagerrak)**
The phytoplankton flora was clearly dominated by the genus *Dinobryon* but small flagellates were also present in relatively high cell numbers. The integrated chlorophyll *a* values were within normal for the season and well below spring bloom values.

**Släggö 13th of April (Skagerrak coast)**
Only a few cells of each species were recorded in a community with low species diversity. The genus *Dinobryon* was still dominating but to a lesser extent. The integrated chlorophyll *a* content was quite low but still within normal for the month



*Dinobryon balticum*

## The Kattegat

**Anholt E 7th and 13th of April**
The phytoplankton community structure was quite the same on both occasions. The heterotrophic dinoflagellate *Peridiniella danica* dominated on both occasions. Remains of the ichtyotoxic genus *Pseudochattonella* (dictyochophyceae) were also recorded. The integrated chlorophyll *a* concentration was higher on the first sampling occasion than on the last but both concentrations were within normal for the month.

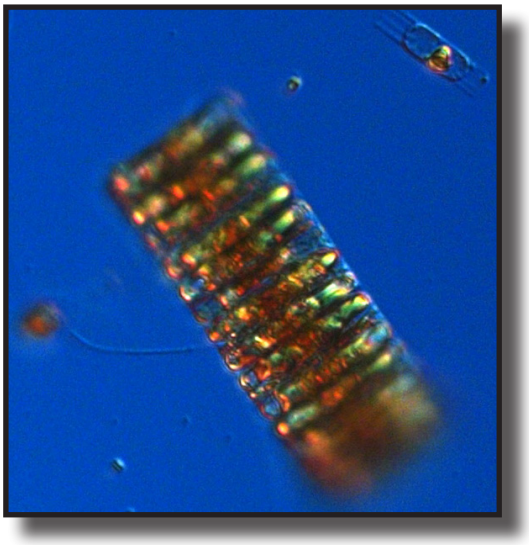
**N14 Falkenberg 8th of April**
The species diversity was poor at this station with quite low total cell counts. A lot of heterotrophic cells were recorded among others the dinoflagellate *Peridiniella danica*. The genus *Dinobryon* (Chrysophyceae) and the ichtyotoxic genus *Pseudochattonella* dominated slightly. The integrated chlorophyll *a* values were relatively low.

## The Baltic Sea

**BY2 8th of April**
A bloom was evident and several typical spring bloom diatoms were recorded such as *Skeletonema marinoi, Chaetoceros wighamii* and the genus *Achnantes*. The integrated chlorophyll *a* concentration was also well above what is normally recorded during this month.

**Ref M1V1 Kalmar Sound 9th of April**
A bloom was evident at this station. The diatom *Skeletonema marinoi* was still dominating. *Chaetoceros holsaticus*, *C. wighamii* and also the genus *Achnanthes* were found in high cell numbers. The integrated chlorophyll *a* concentrations were high.

**BY5 12th of April**
Only a few cells were recorded and low species diversity was found. Small flagellates dominated at this station. The diatom *Skeletonema marinoi* was present in relatively high cell numbers together with the genus *Achnanthes.* The chlorophyll *a* concentration was low and within normal for the season.



*Achnantes taeniata*

**BCSIII-10 11th of April**
The phytoplankton community was dominated by diatoms but no bloom was evident. Several species of the genus *Chaetoceros* were found, among others *C. wighamii* but *Skeletonema marinoi* was still found in highest numbers. The integrated chlorophyll *a* values were within normal for this month.

**BY38 9th of April**
Diatoms dominated clearly at this station but without bloom forming abundances. The species *C. wighamii* dominated closely followed by *Skeletonema marinoi*. The integrated Chlorophyll *a* concentration was within normal for the season.

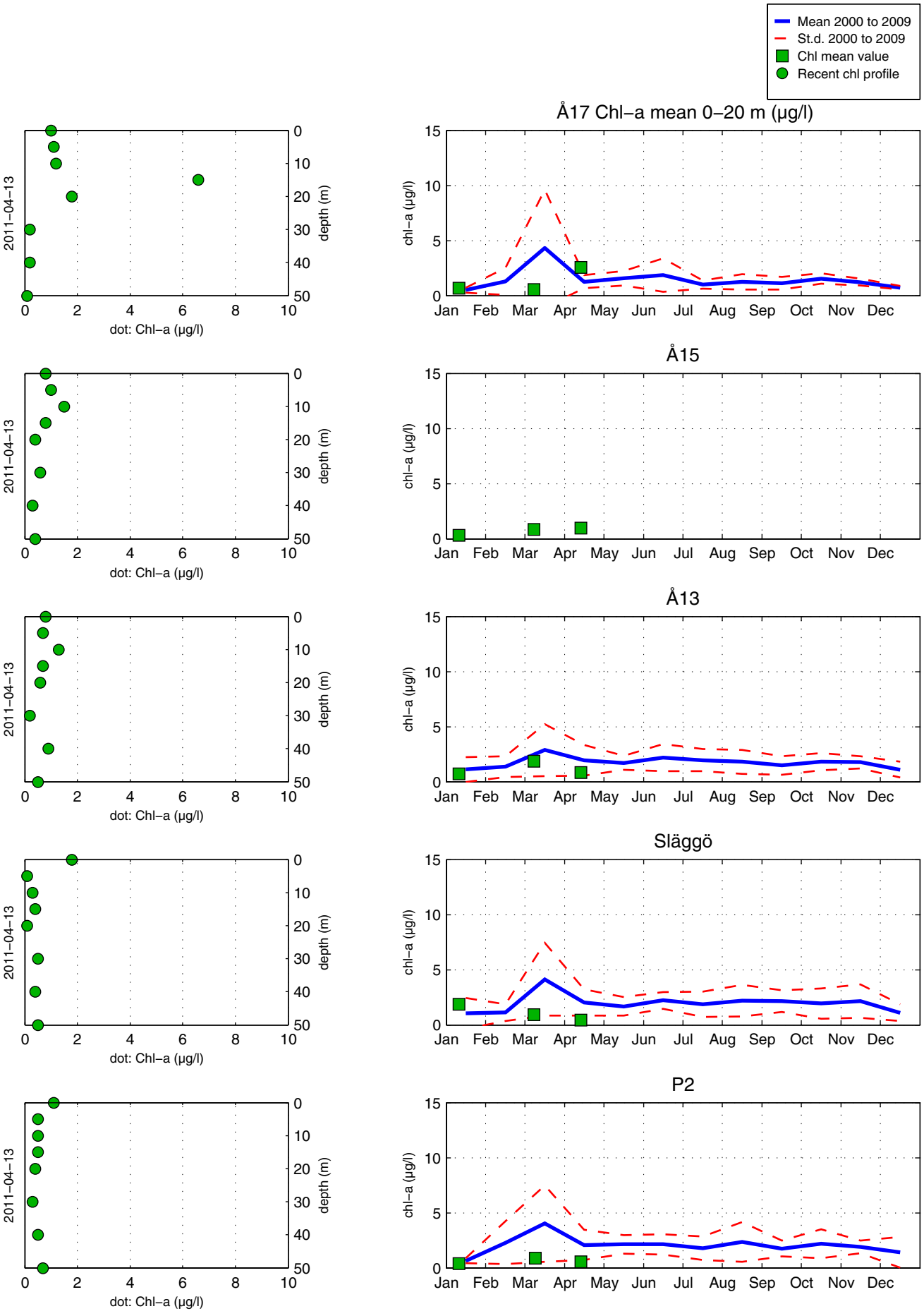
**BY15 10th of April**
Only a few species were found and low numbers of each species were recorded. The diatom genus *Achnanthes* dominated but a few cells of *C. wighamii* was also found. The integrated chlorophyll *a* value was low but within normal.

Phytoplankton analysis and text by:
Marie Johansen

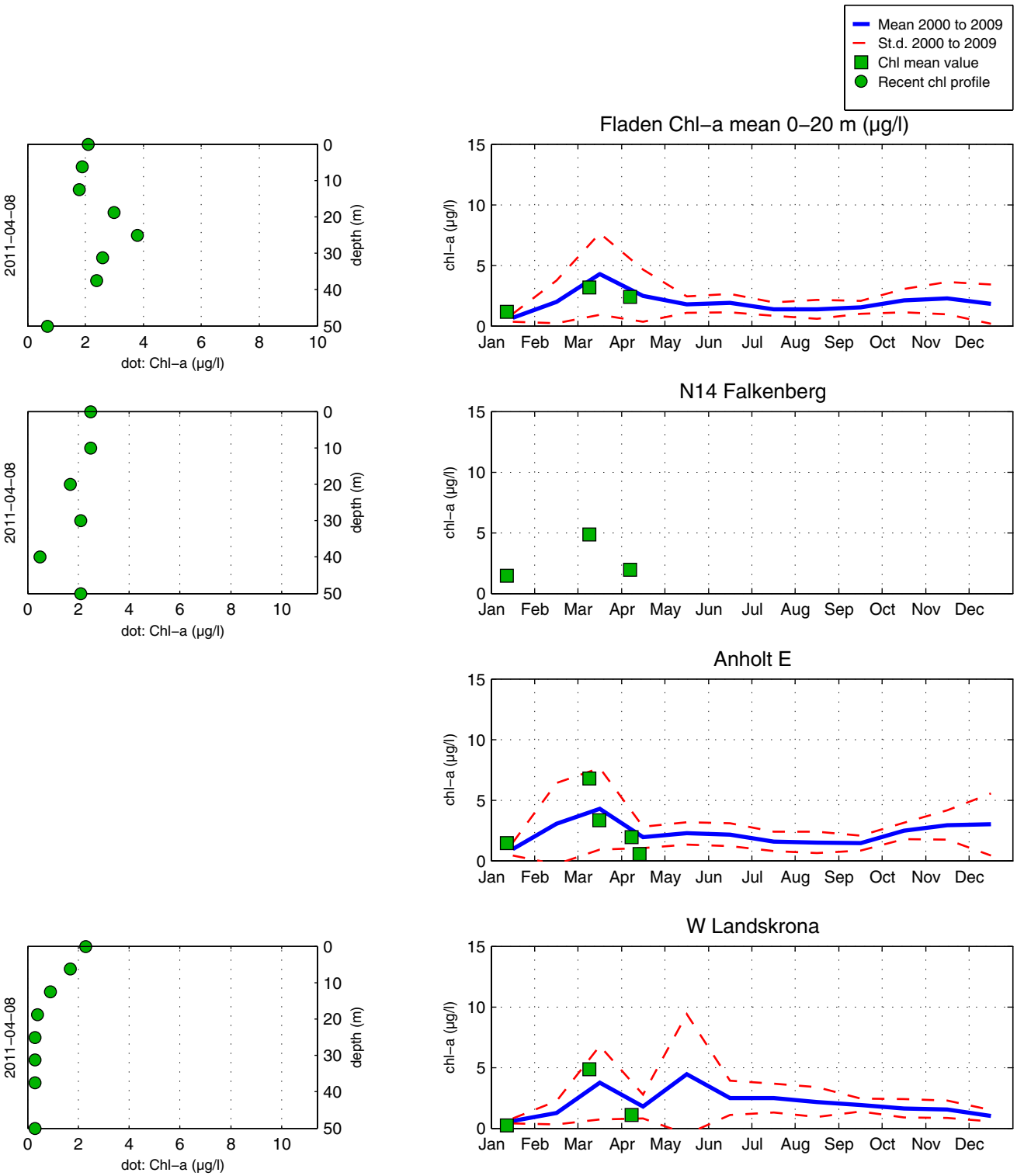
| Selection of observed species | Å17 | Släggö | Anholt E | Anholt E |
|---|---|---|---|---|
| Red=potentially toxic species | 13/4 | 13/4 | 13/4 | 7/4 |
| | cells/l | cells/l | cells/l | cells/l |
| *Chaetoceros laciniosus* | present | | present | |
| *Chaetoceros socialis* | present | present | present | |
| *Chaetoceros* spp | present | | present | |
| *Coscinodiscus* cf. *concinnus* | | | present | |
| *Leptocylindrus danicus* | present | | present | present |
| *Leptocylindrus minimus* | | | present | |
| *Proboscia alata* | present | present | | |
| *Rhizosolenia hebetata* | present | | | |
| *Rhizosolenia setigera* | present | present | present | present |
| *Skeletonema marinoi* | | | present | |
| *Thalassiosira* spp | present | | | |
| *Dinophysis norvegica* | present | present | present | present |
| *Ceratium horridum* | present | | | |
| *Gymnodiniales* spp | | present | present | common |
| *Gyrodinium spirale* | present | present | present | present |
| *Heterocapsa rotundata* | | | | |
| *Katodinium glaucum* | present | present | present | present |
| Peridiniales spp | | | | common |
| *Peridiniella danica* | present | present | common | common |
| *Protoperidinium depressum* | | present | | |
| *Protoperidinium* spp | | present | | |
| *Protoperidinium pellucidum* | present | | | |
| *Chrysochromulina* spp. | present | present | present | present |
| Cryptomonadales spp | present | present | | present |
| *Plagioselmis prolonga* | present | present | | present |
| Teleaulax *spp.* | present | present | present | present |
| *Pseudochattonella* spp. | | present | present | present |
| *Dinobryon balticum* | common | present | present | |
| *Apedinella radians* | | | present | |
| *Eutreptiella* spp. | | | | present |
| cf. *Oltmannsiellopsis* spp | | | common | |
| *Pyramimonas* spp. | | present | | |
| *Emiliana huxleyi* | present | | | |
| Craspedophyceae spp | present | present | | |
| *Katablepharis remigera* | | | | present |
| *Pterosperma* spp | | | | present |
| *Ciliophora spp.* | | present | present | present |
| *Laboea strobila* | | present | present | present |
| *Mesodinium rubrum* | present | present | present | |
| *Tintinnopsis* spp | present | | present | present |

| **Selection of observed species** | **BY2** | **Ref. M1-V1** | **BY38** | **BY15** | **BCS III-10** | **BY5** |
|---|---|---|---|---|---|---|
| Red=potentially toxic species | **8/4** | **9/4** | **9/4** | **12/4** | **13/4** | **14/4** |
| | **cells/l** | **cells/l** | **cells/l** | **cells/l** | **cells/l** | **cells/l** |
| *Achnantes* spp | very common | common | present | present | | present |
| *Chaetoceros ceratosporus* | | present | | | present | present |
| *Chaetoceros holsaticus* | common | common | present | | present | |
| *Chaetoceros wighamii* | very common | common | common | present | common | present |
| *Chaetoceros* spp. | present | | present | | present | present |
| *Fragilariopsis* | | present | | | | |
| *Melosira arctica* | | | present | | | |
| *Navicula* spp | present | | | | | |
| *Porosira glacialis* | | present | | | present | |
| *Skeletonema marinoi* | very common | very common | common | | common | present |
| *Thalassiosira* cf. *baltica* | | present | present | | present | |
| *Thalassiosira levanderi* | common | | | | present | |
| *Thalassiosira* spp. | present | present | present | | present | present |
| Gymnodiniales spp | present | | present | present | present | |
| *Heterocapsa rotundata* | present | | present | present | present | present |
| *Peridiniella catenata* | | | present | | present | |
| *Peridiniella danica* | present | | | | | |
| *Protoperidinium* spp | | present | | | | |
| Cryptomonadales spp. | present | present | | | present | common |
| *Plagioselmis prolonga* | common | present | | present | common | present |
| *Teleaulax* spp | | | | present | present | |
| *Chrysochromulina* spp | | | present | | present | present |
| *Pyramimonas* spp. | present | common | present | | present | |
| *Anabaena* spp | | | | | present | |
| *Aphanizomenon flos-aquae* | present | | present | | present | |
| *Eutreptiella* spp. | present | | | | | |
| *Katablepharis remigera* | | present | | | | |
| *Telonema subtile* | present | present | | | present | |
| *Ciliophora* spp | present | | present | present | present | present |
| *Mesodinium rubrum* | present | present | present | present | present | present |

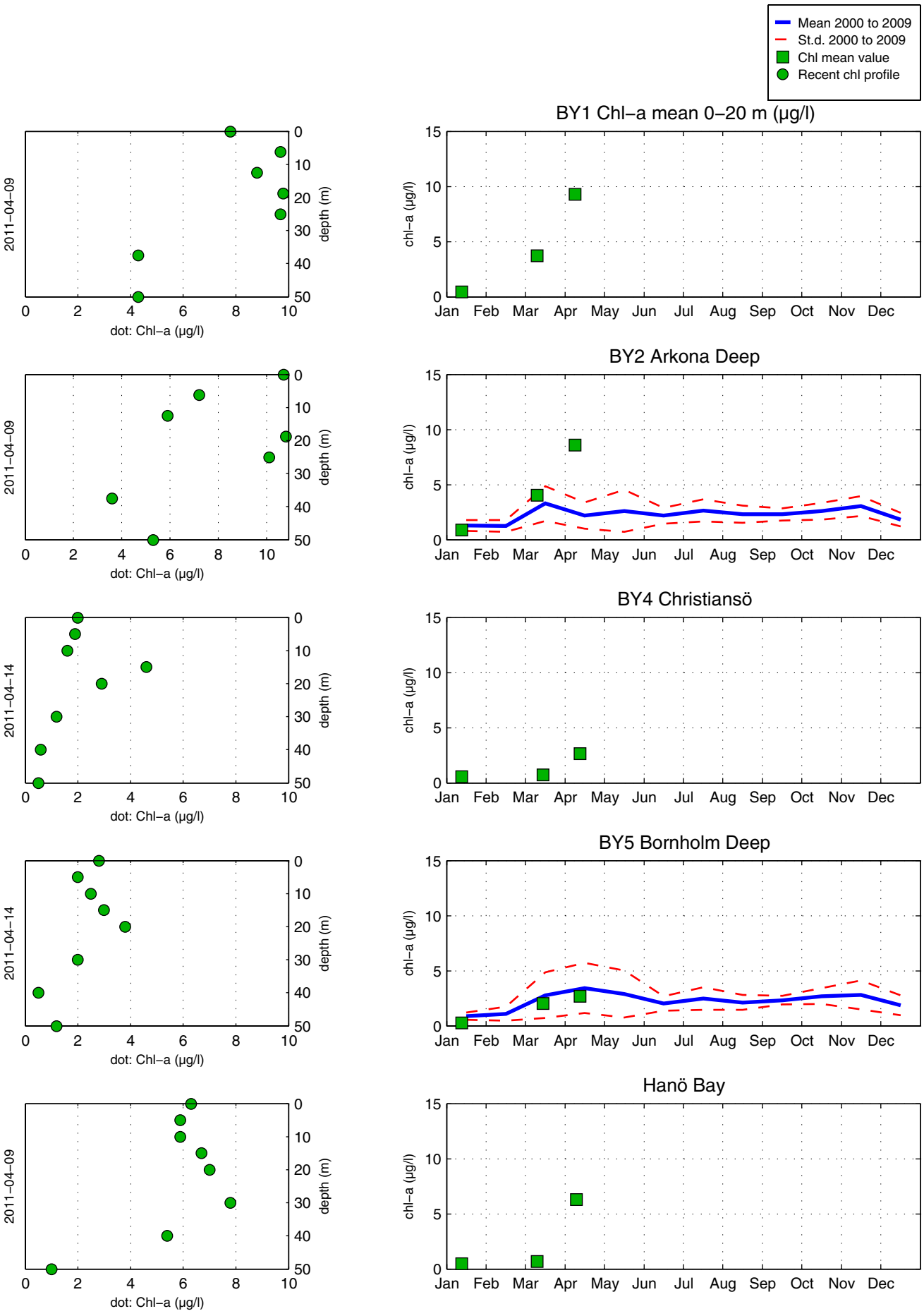
# The Skagerrak



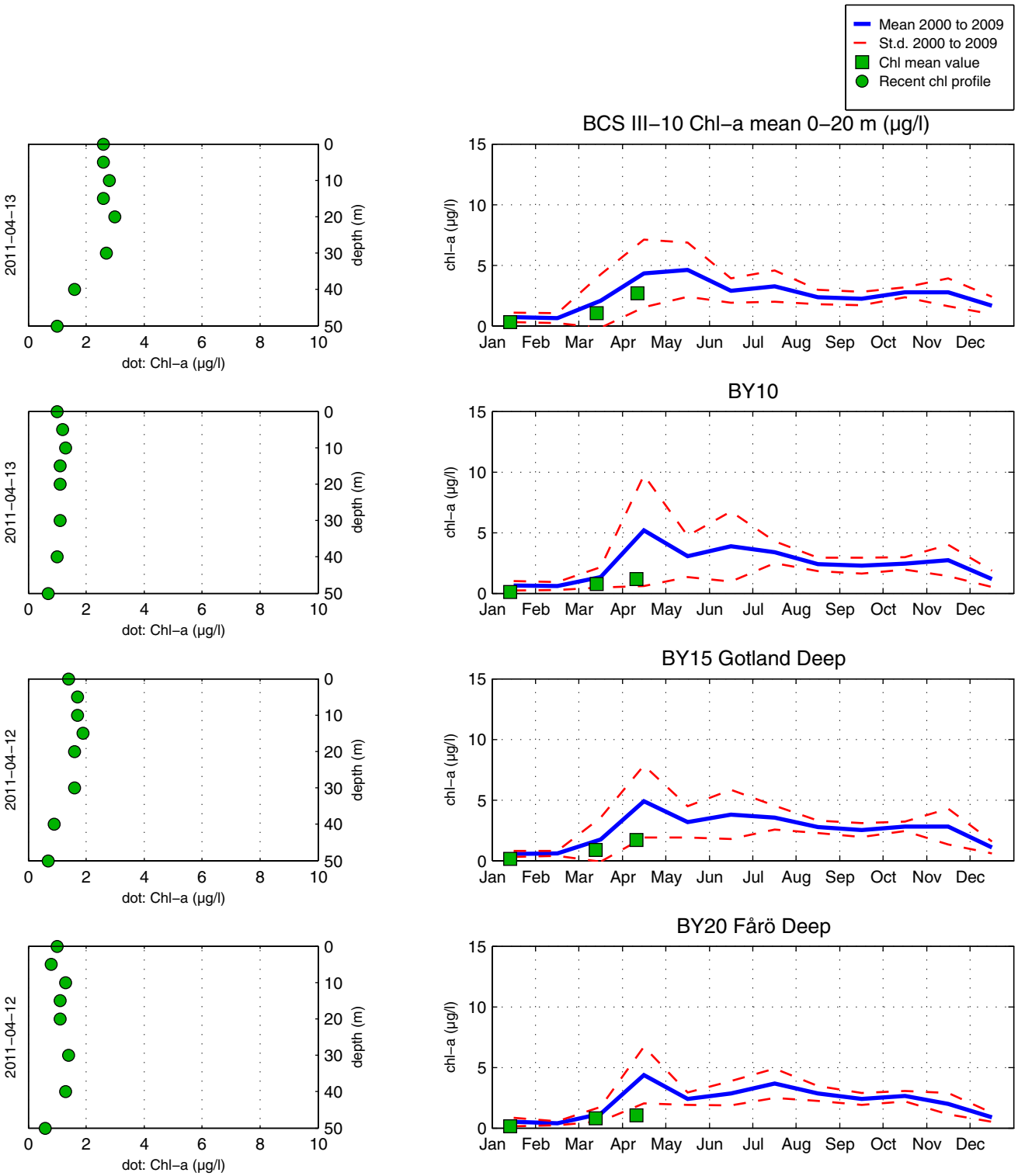
# The Kattegat and the Sound



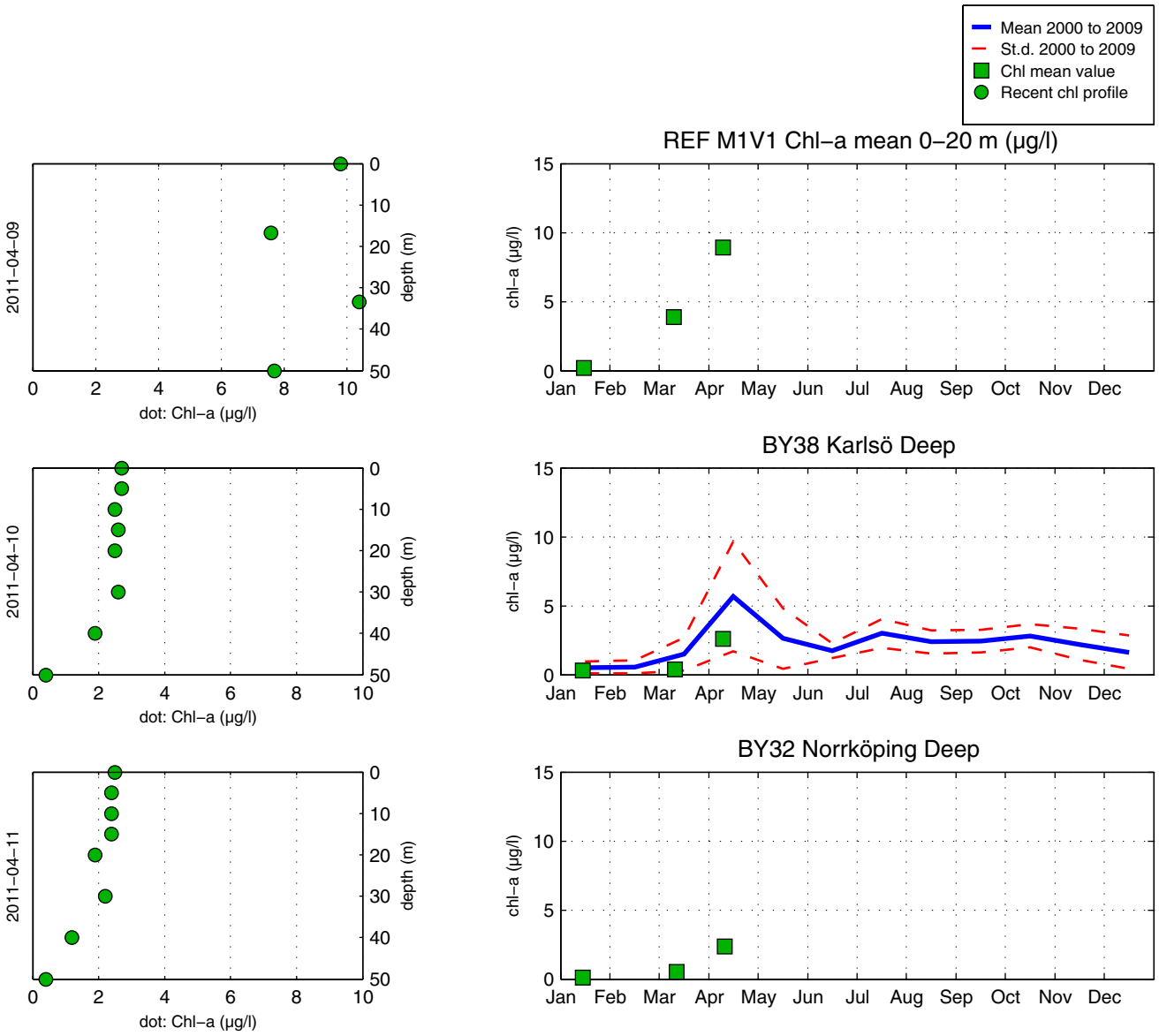
# The Southern Baltic



# The Eastern Baltic



# The Western Baltic




**Om klorofylldiagrammen**

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup från U/F Argos. 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. Tekniska problem ombord satte stopp för månadens fluorescens-mätningar.

**About the chlorophyll graphs**

Chlorophyll *a* is sampled from several depths from the R/V Argos. Data is 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 layes of phytoplankton occuring below the surface. Chlorphyll fluorescence was not measured this month due to technical problems on board.

## Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algblomningar finns på www.smhi.se.

## About AlgAware

SMHI carries out monthly cruises with R/V Argos 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 SMHI:s satellite monitoring of algal blooms is found on www.smhi.se.

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| 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, hallucinationationer, 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 (0-20 m) vid de olika stationerna. Förekomst av skadliga alger vid stationer där arter analyseras markeras med symbol. Då cirkeln är tom innebär detta att stationen inte provtagits.

The map on the front page shows weighted mean of chlorophyll *a*, µg/l (0-20 m) at sampling stations. Presence of harmful algae at stations where species analysis is performed is shown with a symbol An empty cirkel indicates that there has been no sampling at that station.