SMHI
Oceanographic Unit
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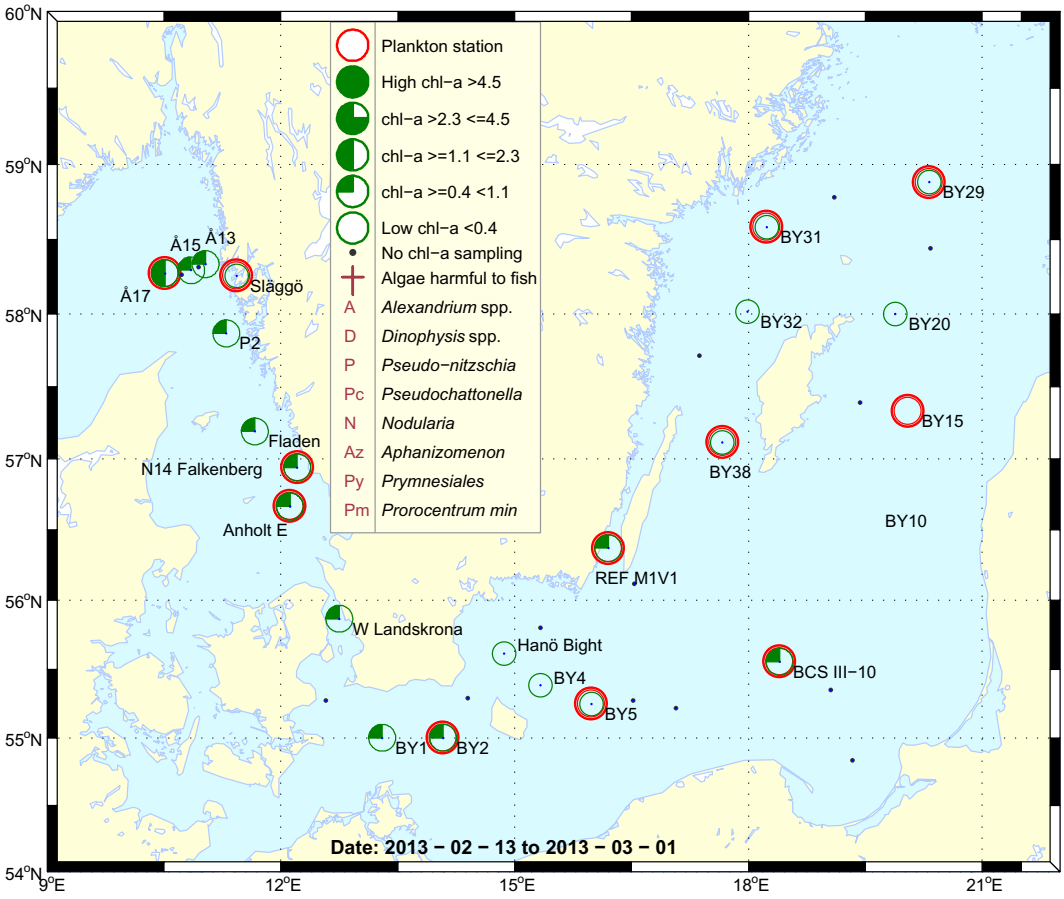
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

I Västerhavet var artdiversiteten relativt hög medan de totala cellantalen varierade kraftigt mellan stationerna. Vid Å17 återfanns höga cellantal av diverse kiselalger, framför allt *Thalassiosira* cf. m*inima* och *Skeletonema marinoi.* Det lite högre cellantalet vid denna station påvisade troligtvis en begynnande vårblomning. De integrerade (0-20 m) klorofyll *a* värdena var normala för månaden vid Å17 men gränsade till under det normala vid övriga stationer.

I Östersjön var det generellt låga cellantal och låg artdiversitet på samtliga stationer och växtplanktonsamhället dominerades av små cryptomonader vid de flesta stationerna. Vid Arkona (BY2) däremot fanns det en dominans av den filamentösa cyanobakterien *Aphanizomenon flos-aquae*. Vid station REF M1-V1 dominerade kiselalgerna *Skeletonema marinoi* och *Thalassiosira* spp. Enstaka celler av arten *Dinophysis acuminata* observerades vid stationerna som ligger norr och öster om Gotland (BY29, BY31 och BY15). De integrerade (0-20 m) klorofyll *a* värdena var låga men inom det normala för årstiden vid samtliga provtagningsområden.

Rapporten är en förkortad version på grund av brist på händelser i växtplanktonvärlden



Abstract

The cell concentrations were low at all stations in the Baltic Sea and at the Swedish west coast except at Å17 in the Skagerrak. The species diversity was relatively high at the Swedish west coast and low in the Baltic Sea.

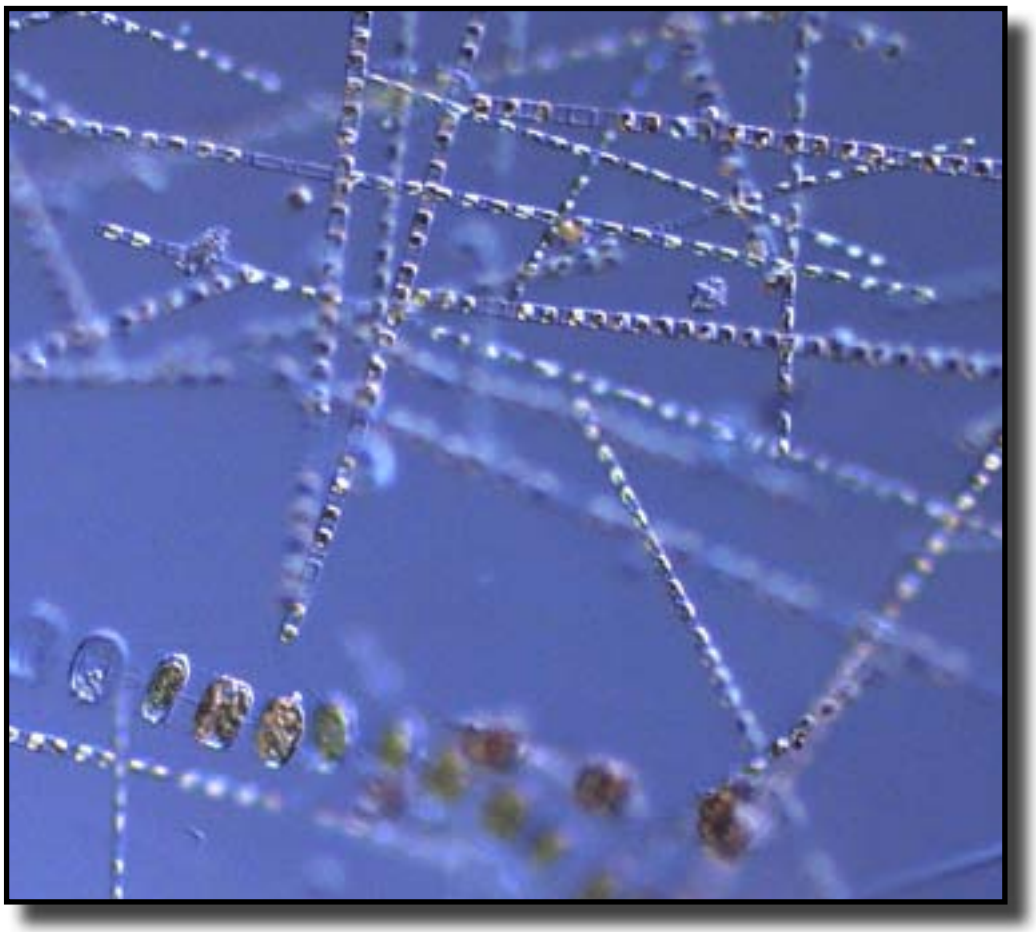
The integrated (0-20 m) chlorophyll *a* concentrations were within normal at Å17 and low but within normal at the other stations.

This report is a shortened version because of lack of events in the phytoplankton world.

The Skagerrak and the Kattegat

The species diversity was relatively high at all sampling stations at the Swedish west coast while the total cell number between the stations varied considerably. The highest cell concentration was found at Å17 where several diatom species were found. The diatom *Thalassiosira* cf. *minima* exceeded 1 million cells per liter. *Skeletonema marinoi* was common with over 700 000 cells per liter. This high abundance indicated that the spring bloom was in progress. Only a few thousand cells were found totally in the samples from the other stations.

The integrated (0-20 m) chlorophyll *a* concentrations were within normal at Å17 and low but within normal at all other stations.



The diatoms *Skeletonema marinoi* and *Thalassiosira* sp. Photo: Ann-Turi Skjevik.

The Baltic Sea

The species diversity and the cell abundances were low at all stations in the Baltic Sea. The plankton community was mainly dominated by different cryptomonads. Some observations are of interest though. There was a dominance of the filamentous cyanobacterium *Aphanizomenon flos-aqua* at the Arkona Basin (BY2). The diatoms *Skeletonema marinoi* and *Thalassiosira* spp. dominated at REF M1-V1. A few cells of the toxic dinoflagellate *Dinophysis acuminata* were observed at the stations located north and east of Gotland (BY29, BY31 and BY15).

The integrated (0-20 m) chlorophyll *a* concentrations were low but within normal for the season,

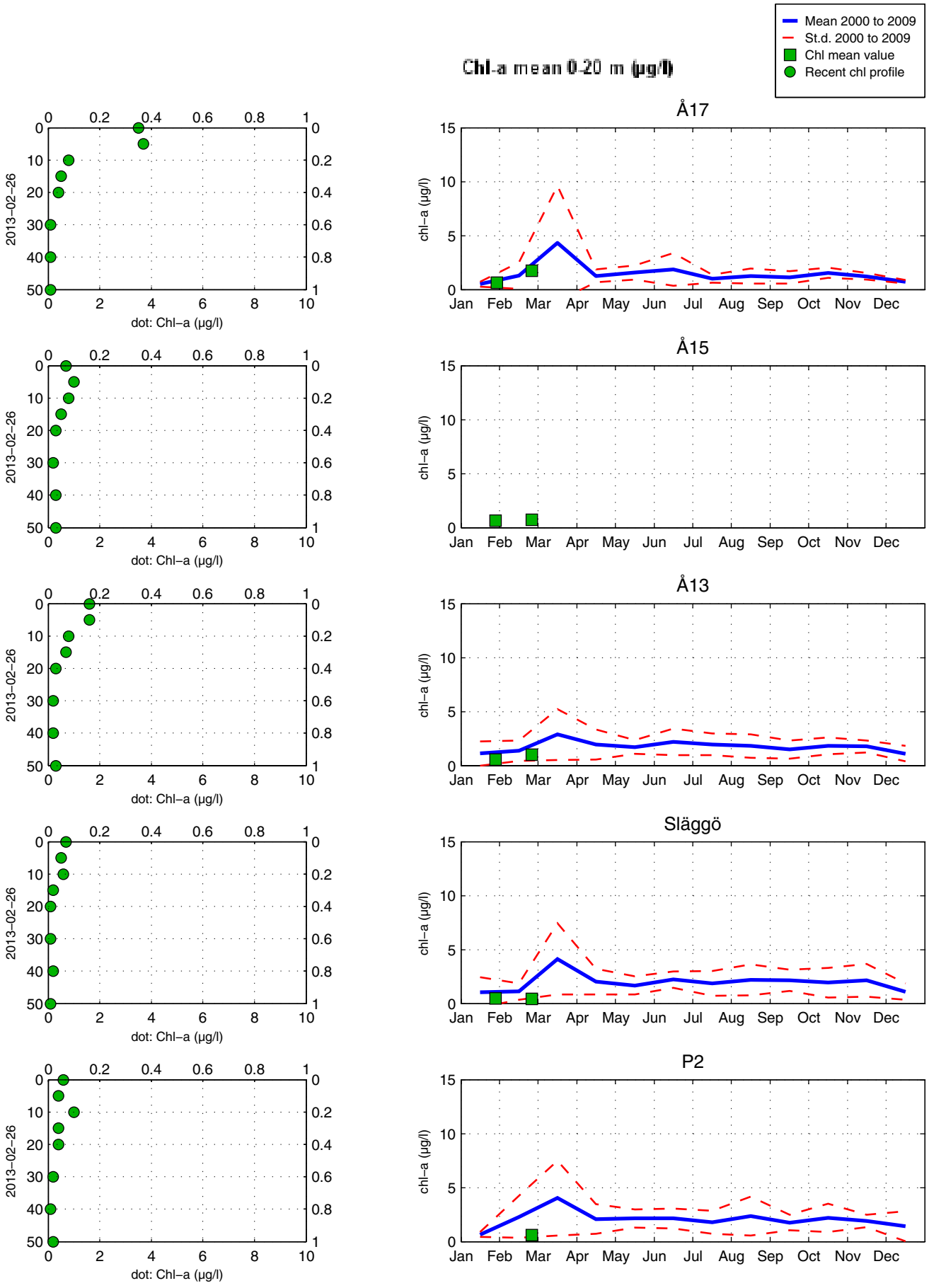
The potentially toxic dinoflagellate *Dinophysis acuminata.*
Photo: Malin Mohlin.

Phytoplankton analysis and text by:
Malin Mohlin and Marie Johansen

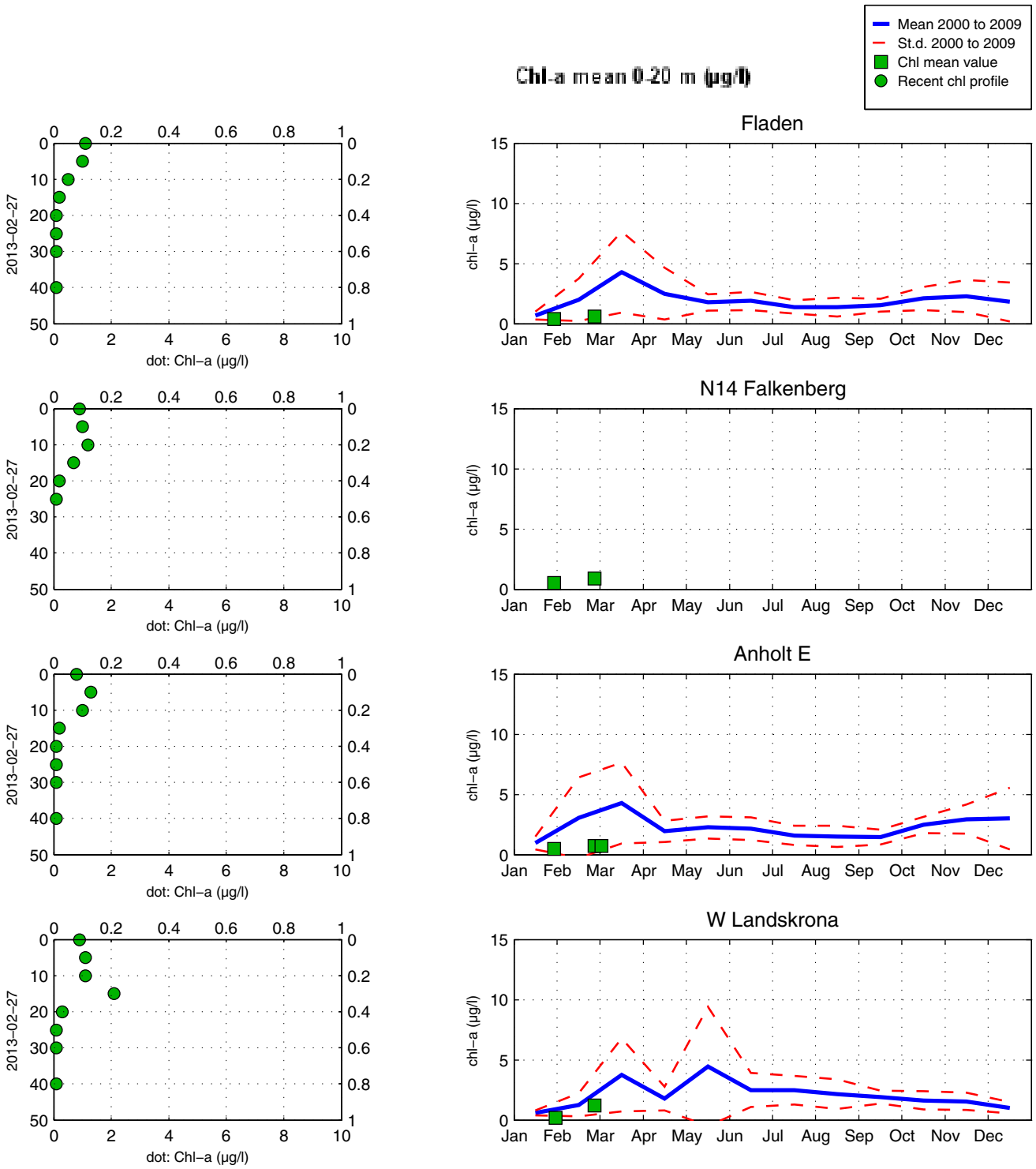
Selection of observed species	Anholt E	Anholt E	N14 Falkenberg	Släggö	Å17
Red=potentially toxic species	27/2	1/3	27/2	26/2	26/2
Hose 0-10 m	cells/l	cells/l	cells/l	cells/l	cells/l
Navicula spp	present	present			present
Thalassionema nitzschioides	present	present	present	present	present
Coscinodiscus spp					present
Detonula confervacea			present		common
Rhizosolenia hebetata f. semispina	present		present		present
Skeletonema marinoi	present	present	present	present	very common
Thalassiosira spp	present		present		
Thalassiosira cf. *minima*		present		present	very common
Chaetoceros spp	common	common	common		present
Chaetoceros debilis	present	present		present	present
Chaetoceros decipiens				present	
Chaetoceros similis			present	present	present
Chaetoceros subtilis v. subtilis	present	present	present	present	present
Amphidinium longum				present	
Ceratium lineatum	present				
Ceratium longipes		present			
Ceratium tripos	present	present	present	present	present
Dinophysis acuminata			present		
Gymnodiniales spp	present	present	present	present	present
Heterocapsa spp	present	present	present		
Heterocapsa cf. *rotundata*	present	present	common	present	present
Katodinium glaucum				present	
Peridiniales		present	present	present	present
Prymnesiales	present	present	present		present
Pyramimonas spp	present		present		present
Cryptomonadales spp	present	present	present	present	present
Hemiselmis virescens	present	present	present		
Plagioselmis prolonga	present	present	present	present	common
Teleaulax spp	common	common	common	common	common
Craspedophyceae			present		present
Leucocryptos marina					present
Telonema subtile	present		present	present	
Ebria tripartita			present		
Mesodinium rubrum	present	present	present	present	
Ciliophora spp	present	present	present	present	present

Selection of observed species	BCS III-10	BY15	BY29	BY31	BY38	REF M1-V1	BY5	BY2
Red=potentially toxic species	15/2	16/2	17/2	17/2	13/2	14/2	28/2	28/2
Hose 0-10 m	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Coscinodiscophyceae					present		present	present
Skeletonema marinoi				present	present	common		present
*Thalassiosira*spp						present		
Dinophysis acuminata		present	present	present				
Dinophysis norvegica				present	present	present		
Gymnodiniales	present				present			present
*Gyrodinium*spp					present			
Gyrodinium spirale					present			
Heterocapsa spp				present				present
Peridiniales			present	present	present	present		present
Peridiniella catenata				present		present		
*Pyramimonas*spp				present				
Cryptomonadales	present	present	present		present	present	present	present
*Plagioselmis*spp	present		present	present	present	present	present	present
*Teleaulax*spp	common	common	common	common	common	common	present	present
Aphanizomenon flos-aquae	present	present		present			present	present
cf. *Cyanodictyon* spp							present	
*Woronichinia*spp	present		present		present		present	
Craspedophyceae				present	present		present	present
Prymnesiales				present				
Flagellates		present		present	present	present	present	present
Ciliophora	present	present	present	present	present	present	present	present
Mesodinium rubrum	present	present	present	present	present		present	present

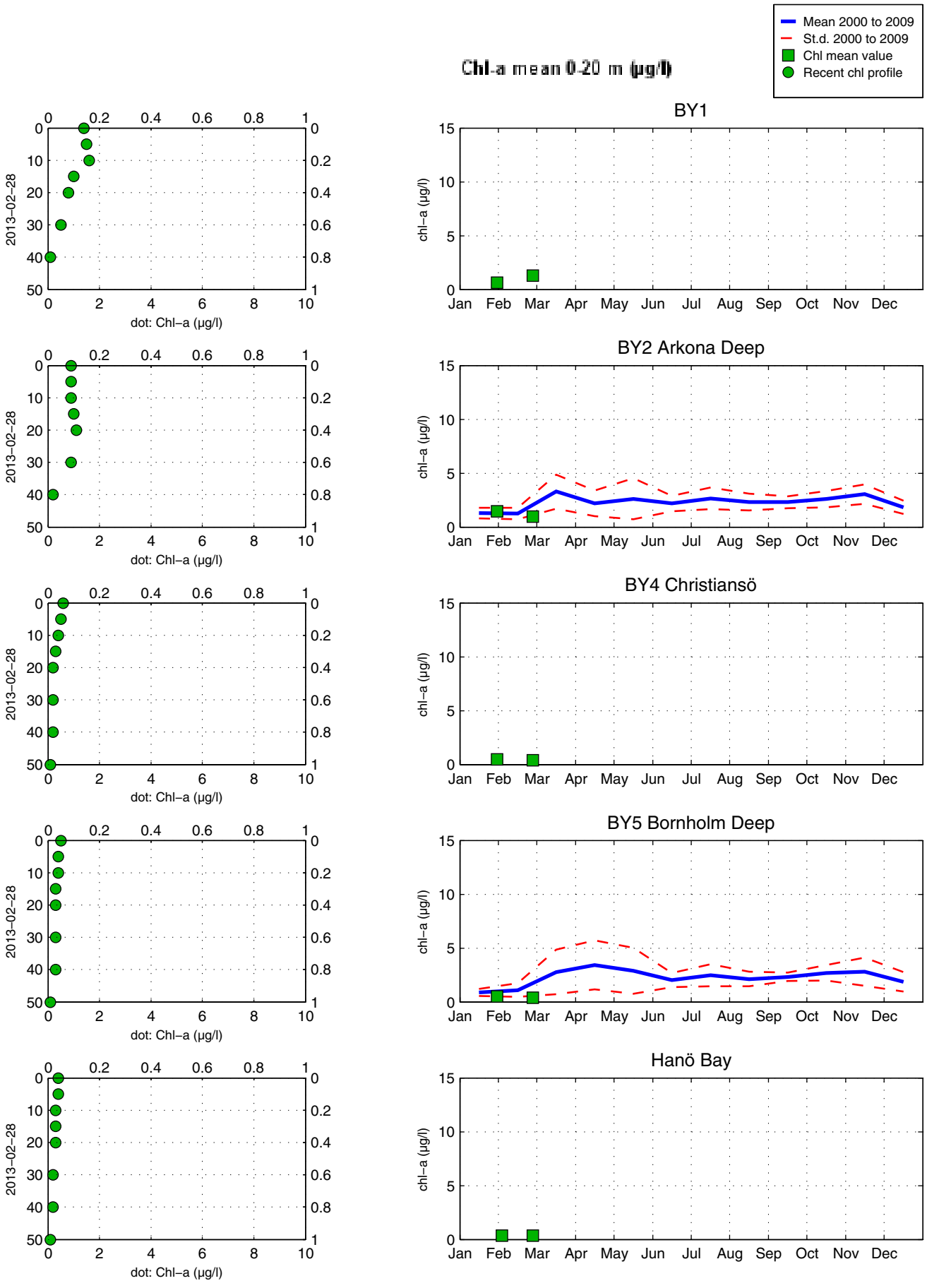
The Skagerrak



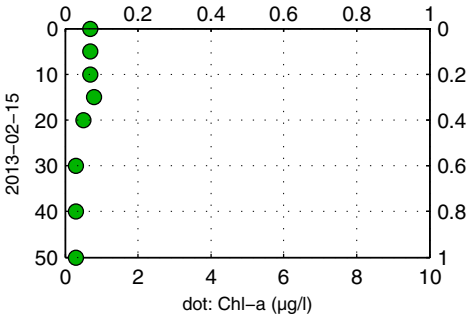
The Kattegat and the Sound

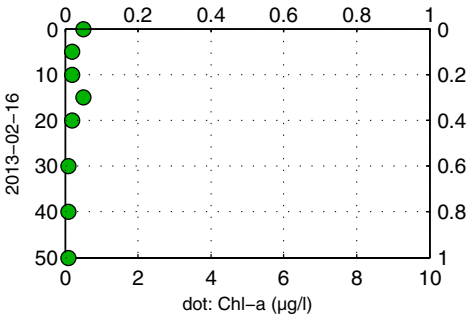


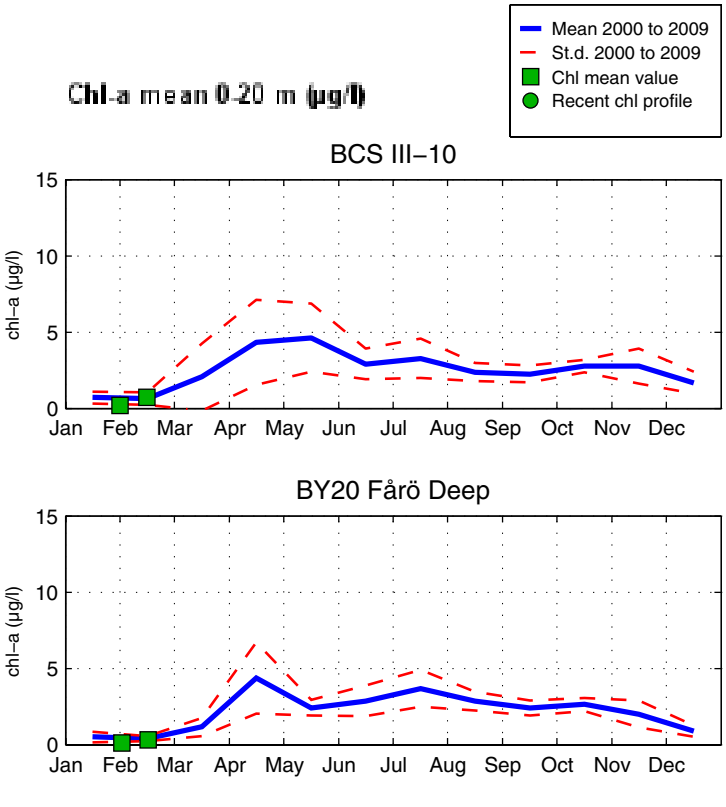
The Southern Baltic

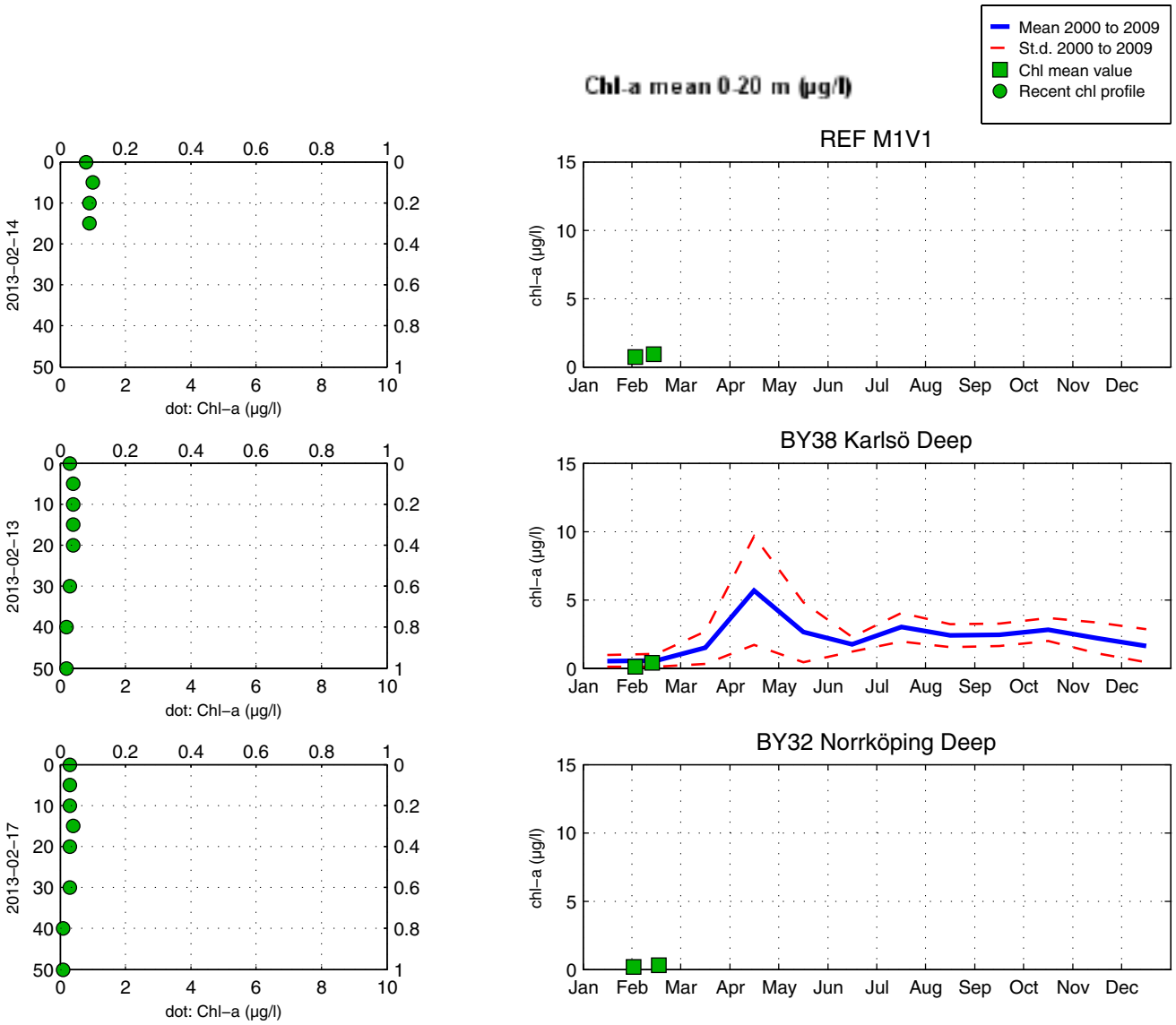


The Eastern Baltic









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 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 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.

Om AlgAware

SMHI genomför ca en gång per månad expeditioner 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

The 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 SMHI:s satellite monitoring of algal blooms is found on www.smhi.se.

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.

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.