SMHI
Oceanographic Unit
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AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

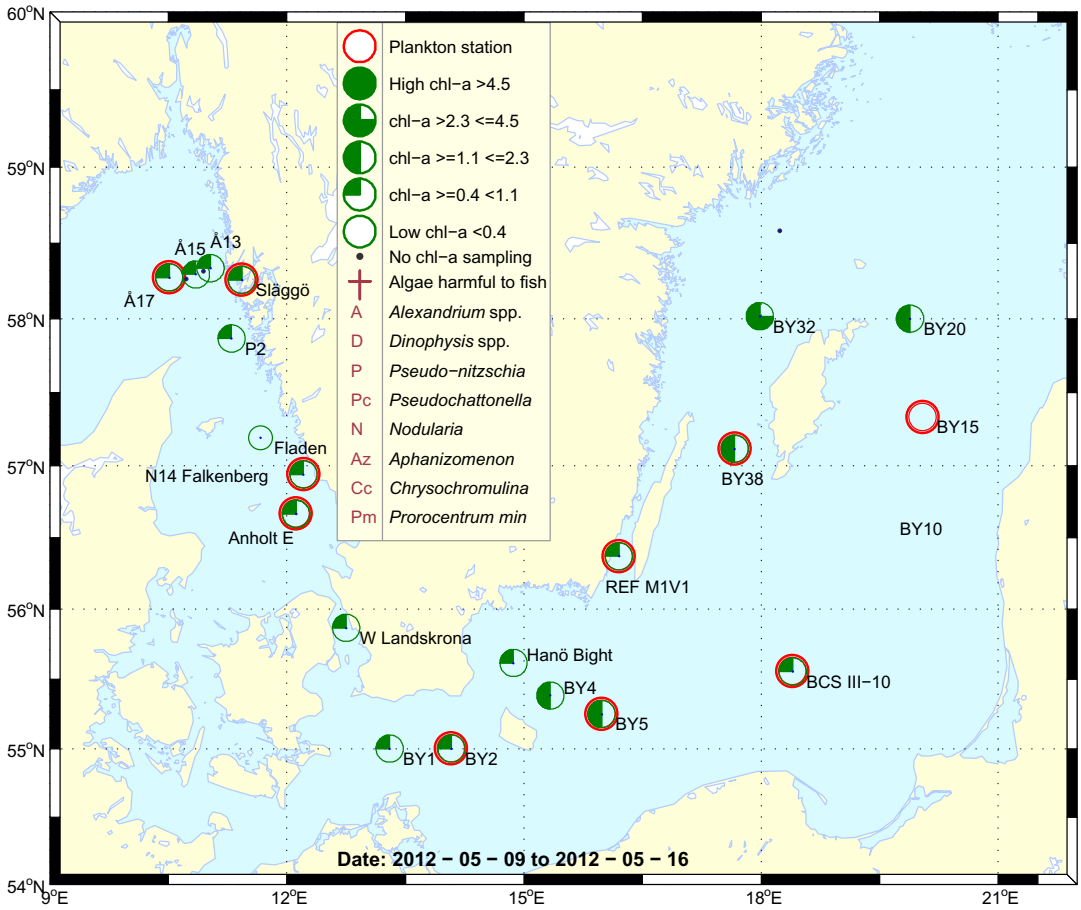
Sammanfattning

I både Skagerrak och Kattegatt var växtplanktonsamhällets artdiveristet låg. Små flagellater och då fram för allt olika cryptomonader dominerade vid samtliga stationer i Västerhavet.

De integrerade (0-20m) klorofyllhalterna i Skagerrak var normala och i Kattegatt något lägre än normalt.

Växtplanktonsamhället i Östersjön varierade på de olika stationerna men generellt dominerades det av ciliaten *Mesodinium rubrum*, små cryptomonader och guldalgsläktet *Dinobryon.* Arter från det potentiellt toxiska släktet *Dinophysis* fanns representerat dock under varningsgränserna på alla stationer.

De integrerade (0-20m) klorofyllhalterna var normala och på någon station lägre än normalt i Östersjön.



Abstract

The phytoplankton species diversity was low in both the Kattegat and the Skagerrak. Small flagellates dominated and especially different cryptomonads were common.

The integrated (0-20m) chlorophyll concentrations were within normal in the Skagerrak and lower than normal in the Kattegat.

The phytoplankton community in the Baltic Sea was in general dominated by *Mesodinium rubrum*, small cryptomonads and the genus *Dinobryon.* The potentially toxic genus *Dinophysis* was present at all stations.

The integrated (0-20m) chlorophyll *a* concentrations were varying from lower than normal to normal for this month.

More detailed information on species composition and abundance

The Skagerrak

Släggö (Skagerrak coast) 9th of May
Small flagellates dominated the sample. Most common was *Telonema subtile*. Different species belonging to the group cryptomonads were also common.
The integrated (0-20m) chlorophyll concentrations were slightly below normal in the coastal area of the Skagerrak.

Å17 (open Skagerrak) 9th of May
Small flagellates belonging to the group cryptomonads dominated. Different ciliate species were also present in relatively high cell numbers.

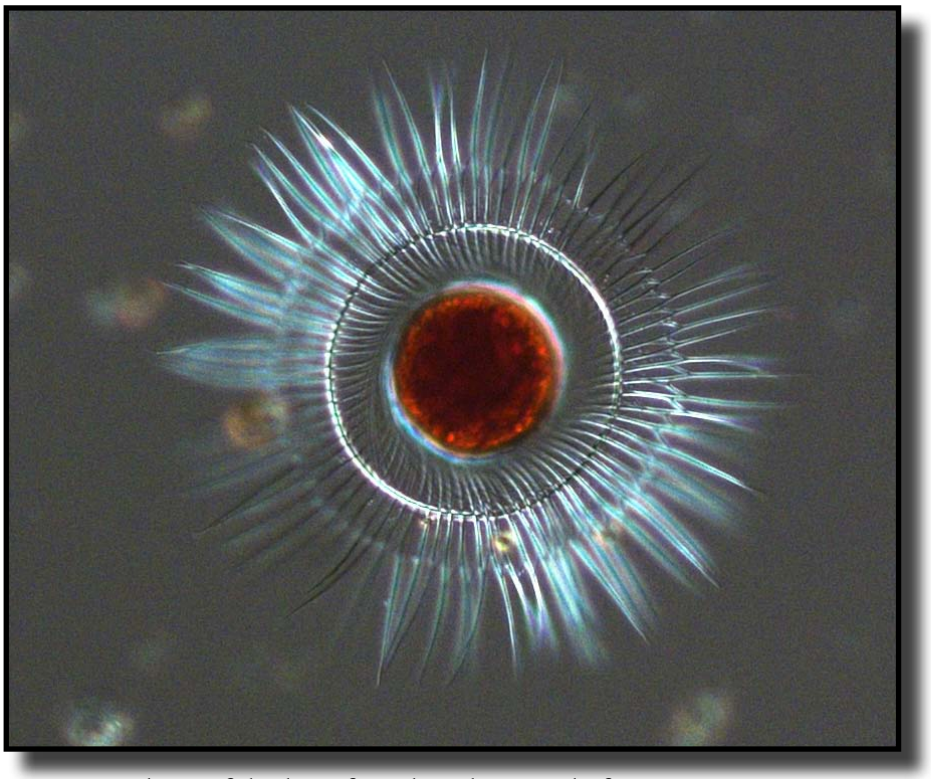
The integrated (0-20m) chlorophyll concentrations were within normal in the open sea of the Skagerrak.

The Kattegat

N14 Falkenberg 10th of May
Small species of cryptomonads were common and all other species present were in very low cell concentrations.

Anholt E 10th and 16th of May
The species composition was similar on both sampling occasions. Slightly more species were however found on the second.. Small flagellates dominated both samples and different species of cryptomonads were the most common.

The integrated (0-20m) chlorophyll concentrations were slightly below normal in the Kattegat.

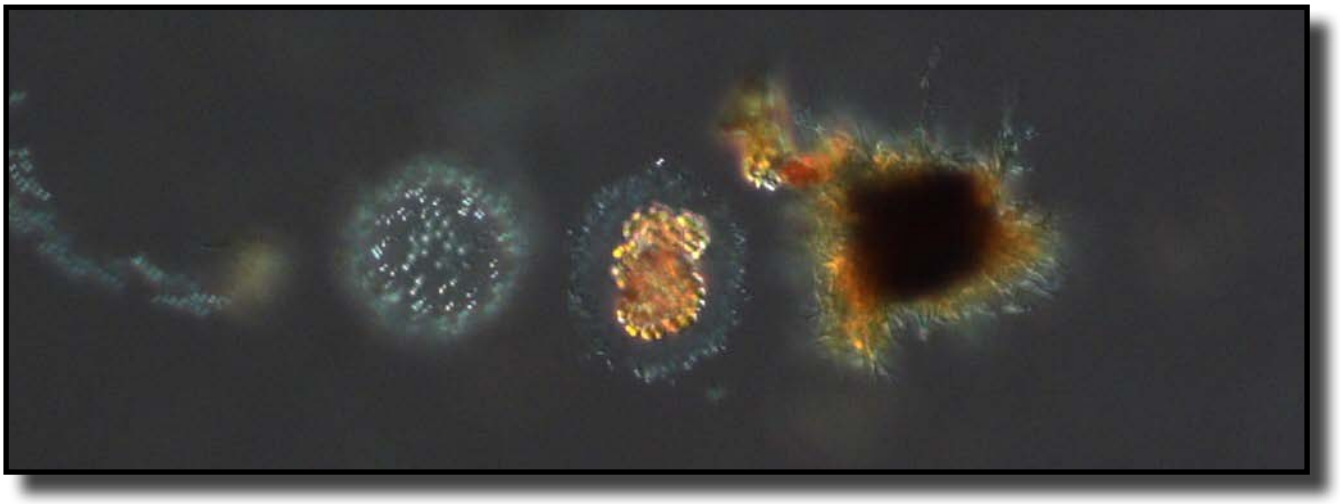


A beautiful ciliate found in the sample from BY15 West.

The Baltic Sea

BY2 Arkona Deep and BY5 Bornholm Deep 11th of May
Apart from the abundant species *Mesodinium rubrum,* the phytoplankton community was dominated by the diatom *Chaetoceros similis* and species from the genus *Dinobryon*. Cyanobacteria were represented by small colony forming species, filaments of *Nodularia spumigena* and species from the genus *Anabaena*. The potentially toxic species *Dinophysis acuminata*, *D. norvegica* and species from the potentially fish killing order Prymnesiales were present.

The integrated (0-20m) chlorophyll *a* concentration was normal at BY5 and low but within normal for this month at BY2.



Colony forming small cyanobacteria and *Mesodinium rubrum* were common at BY2 Arkona Deep.

BCS III-10 12th of May and REF M1-V1 Kalmar Sound 12th of May
These stations were dominated by the ciliate *Mesodinium rubrum*. Otherwise species from the genus *Dinobryon* and cryptomonads were abundant. The potentially toxic genus *Dinophysis* was present.

The integrated (0-20m) chlorophyll *a* concentration was lower than normal for this month.

BY15 West 13th of May and BY38 Karlsö Deep 15th of May
A lack of permit from Latvia caused that BY15 was sampled west of its original position.

The cell concentration was high compared to the other stations in the Baltic Sea and the phytoplankton community was dominated by *Dinobryon* spp., *Mesodinium rubrum, Pseudopedinella spp.* and *Peridiniella catenata*. The potentially toxic genus *Dinophysis* was present.

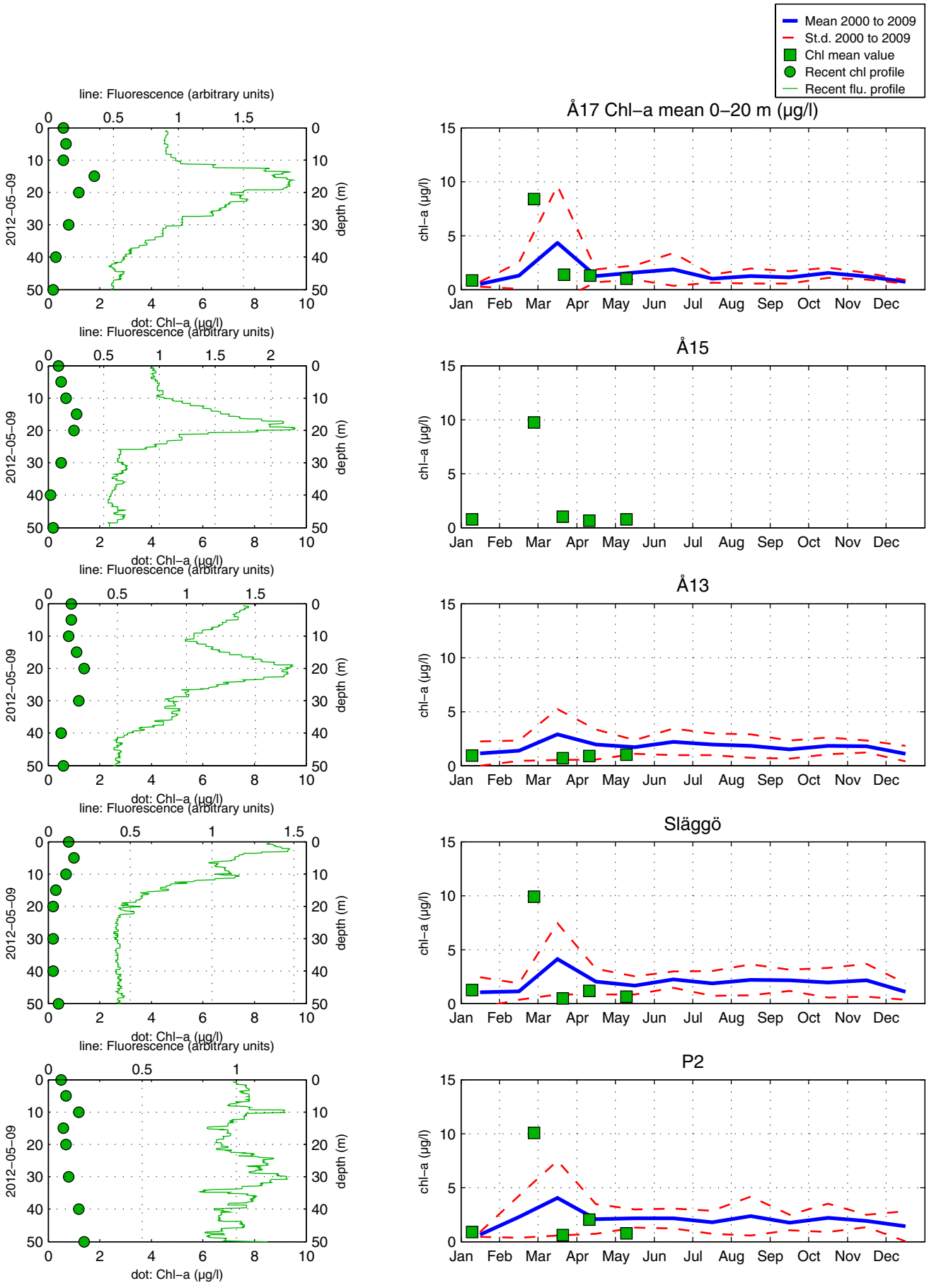
The integrated (0-20m) chlorophyll *a* concentration was normal for this month at the Karlsö Deep.

Phytoplankton analysis and text by:
Malin Mohlin and Marie Johansen

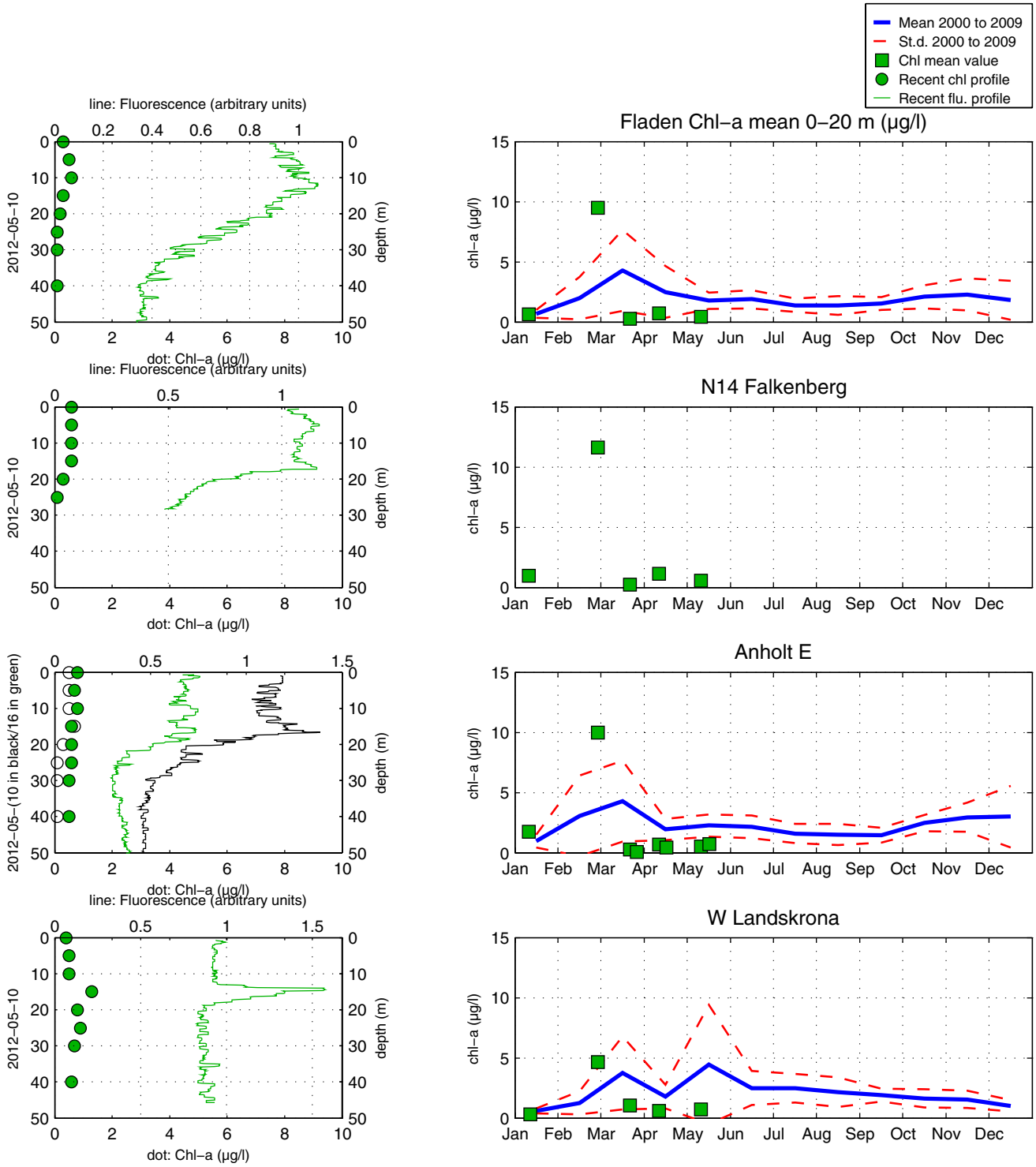
Selection of observed species		Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species		9/5	9/5	10/5	10/5	16/5
	Sflag	Cells/l	Cells/l	Cells/l	Cells/l	Cells/l
Chaetoceros danicus				present		present
Chaetoceros decipiens				present		
Dactyliosolen fragilissimus		present				
Skeletonema marinoi			present			
Ceratium fusus				present		
Ceratium longipes		present				present
Ceratium tripos		present	present	present	present	present
Gymnodiniales		common	present		present	present
Heterocapsa	spp			present		
Katodinium glaucum				present		present
Peridiniales		present			present	
Phaeocystis	spp				present	
Prymnesiales		common			common	common
Choanoflagellidea		present				present
Pyramimonas	spp	present	common	present	common	common
Cryptomonadales		common	common	common	common	common
Plagioselmis prolonga					present	common
Teleaulax	spp	common	common	present	common	common
Pseudopedinella	spp			present		
Pseudopedinella pyriforme						present
Ebria tripartita						present
Telonema subtile			common			
Ciliophora		present	present	present	present	present
Laboea strobila		present				
Mesodinium rubrum						present

Selection of observed species		BY2	BY5	BCS III-10	BY15 West	BY 38	REF M1-V2
Red=potentially toxic species		11/5	11/5	12/5	13/5	15/5	12/5
		Cells/l	Cells/l	Cells/l	Cells/l	Cells/l	Cells/l
Attheya septentrionalis			present				
Chaetoceros	spp	present	common			present	
Chaetoceros laciniosus			present				
Chaetoceros similis		common	common				
Skeletonema marinoi			present				common
Amphidinium sphenoides			present	present			
Amylax triacantha				present	present	present	present
Cladopyxis claytonii						present	present
Dinophysis acuminata		present	present	present	present	present	present
Dinophysis cf. *acuta*						present	
Dinophysis norvegica		present	present	present		present	present
Gymnodiniales		present	present	present	common		common
Gyrodinium flagellare						present	
Gyrodinium spirale					present		
Heterocapsa	spp				common		present
Heterocapsa rotundata							present
Katodinium glaucum		present	present	present	present	present	present
Peridiniales			present	present	present	present	common
Peridiniella catenata				present	common	common	
Protoperidinium	spp			present	present		
Pyrophacus horologicum						present	
Dinobryon	spp	common	common	common	common	common	common
cf. *Botryococcus braunii*			common		common	present	
Prymnesiales			common		common		
Planctonema lauterbornii		common	common			common	
Choanoflagellidea					common		common
Pachysphaera	spp				present		present
Pterosperma	spp						present
Pyramimonas	spp	common	present	present	common	common	common
Cryptomonadales		present	present	present	common	common	common
Teleaulax	spp	present	present	present	common	common	common
Pseudopedinella	spp		common		common	common	
Eutreptiella	spp					common	
Anabaena	spp	present	present	present	present	present	
Aphanizomenon	spp	present	present			present	
Cyanobacteria colony	spp	common	common		present	present	
Nodularia spumigena		present	present				
Woronichinia	spp	present	present				
Ciliophora		present	present	common	common	common	common
Mesodinium rubrum		common	common	common	common	common	common

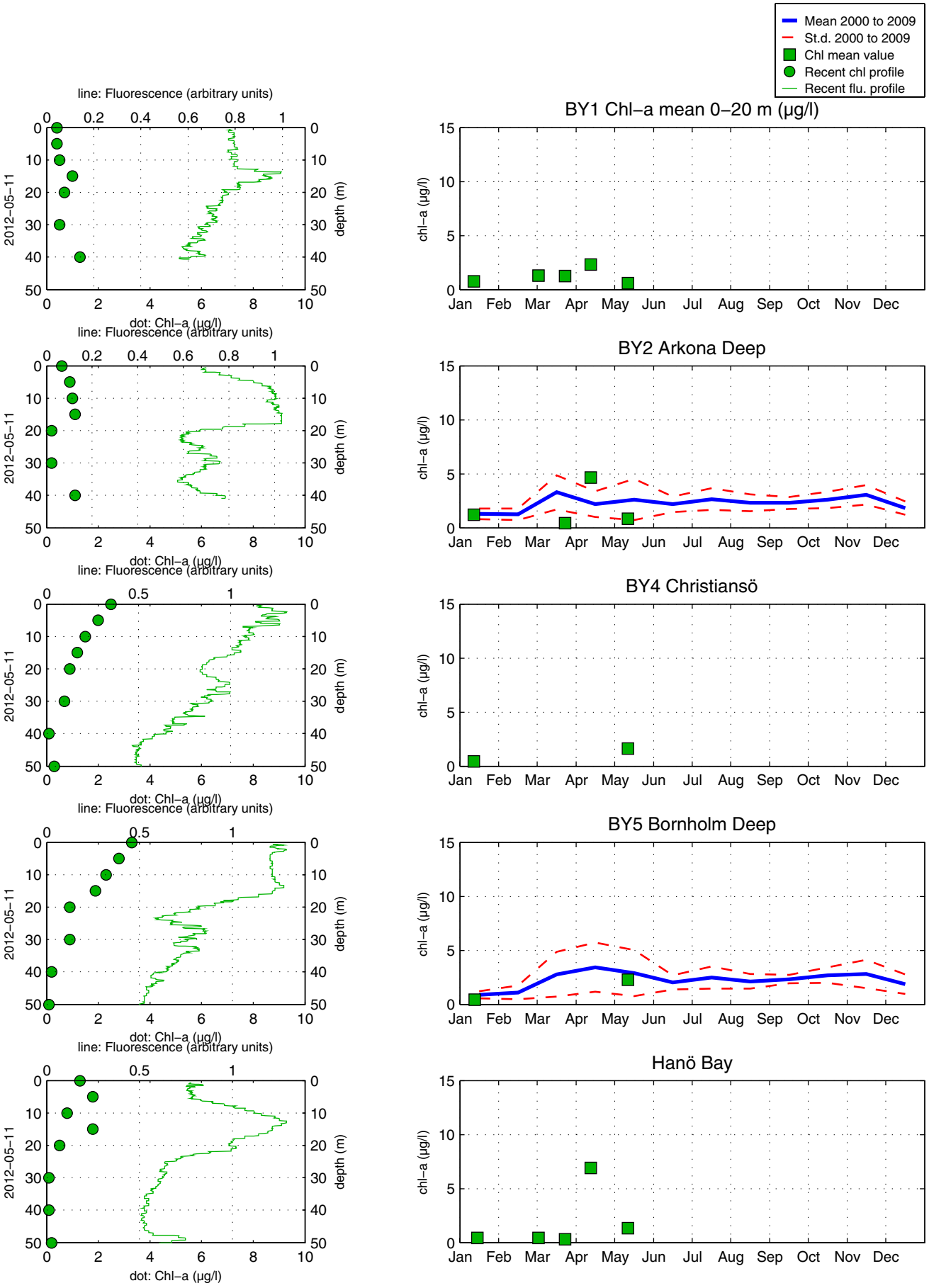
The Skagerrak



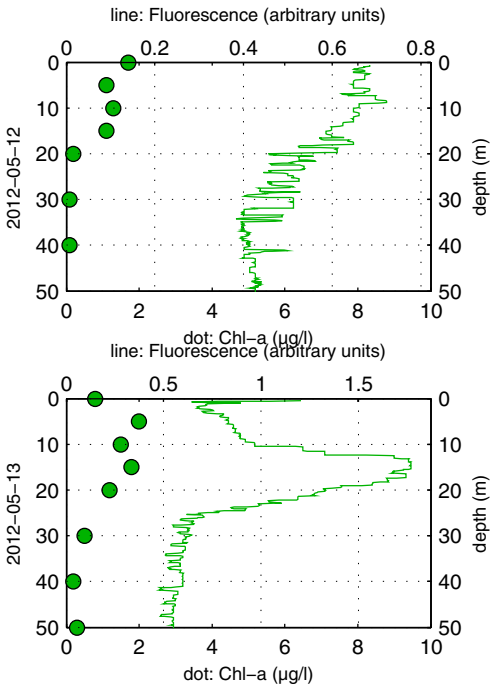
The Kattegat and the Sound

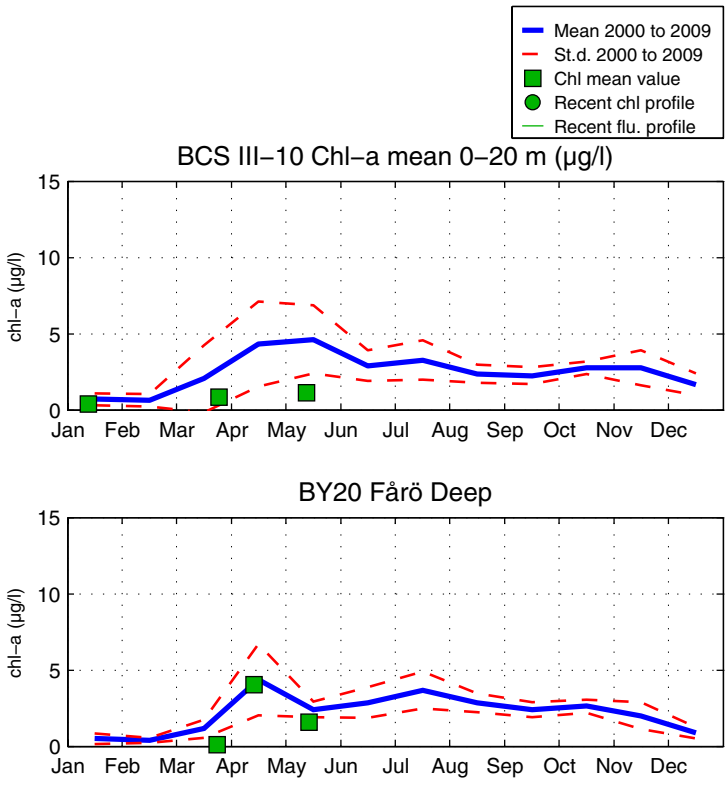


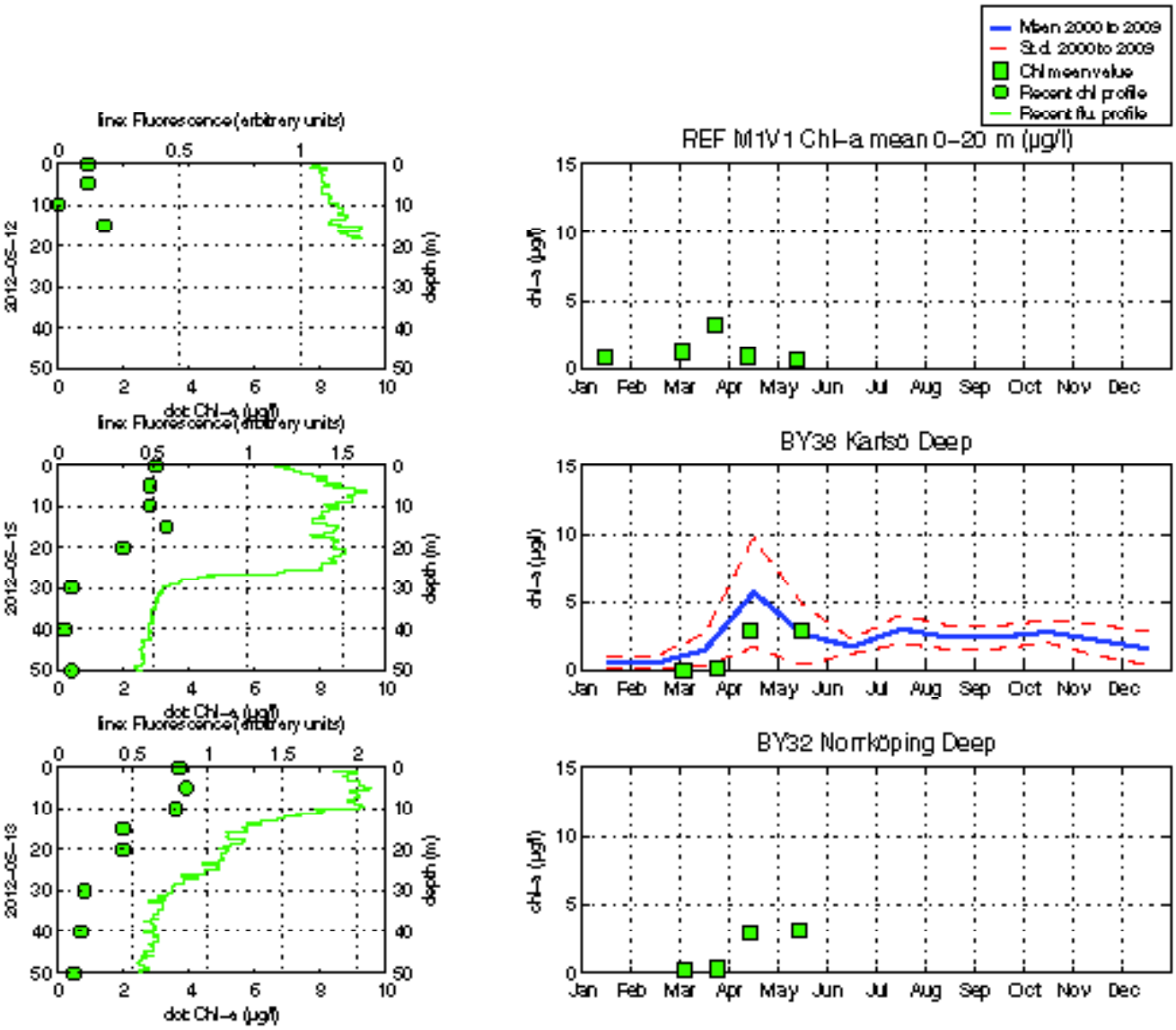
The Southern Baltic



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.