SMHI
Oceanographic Unit
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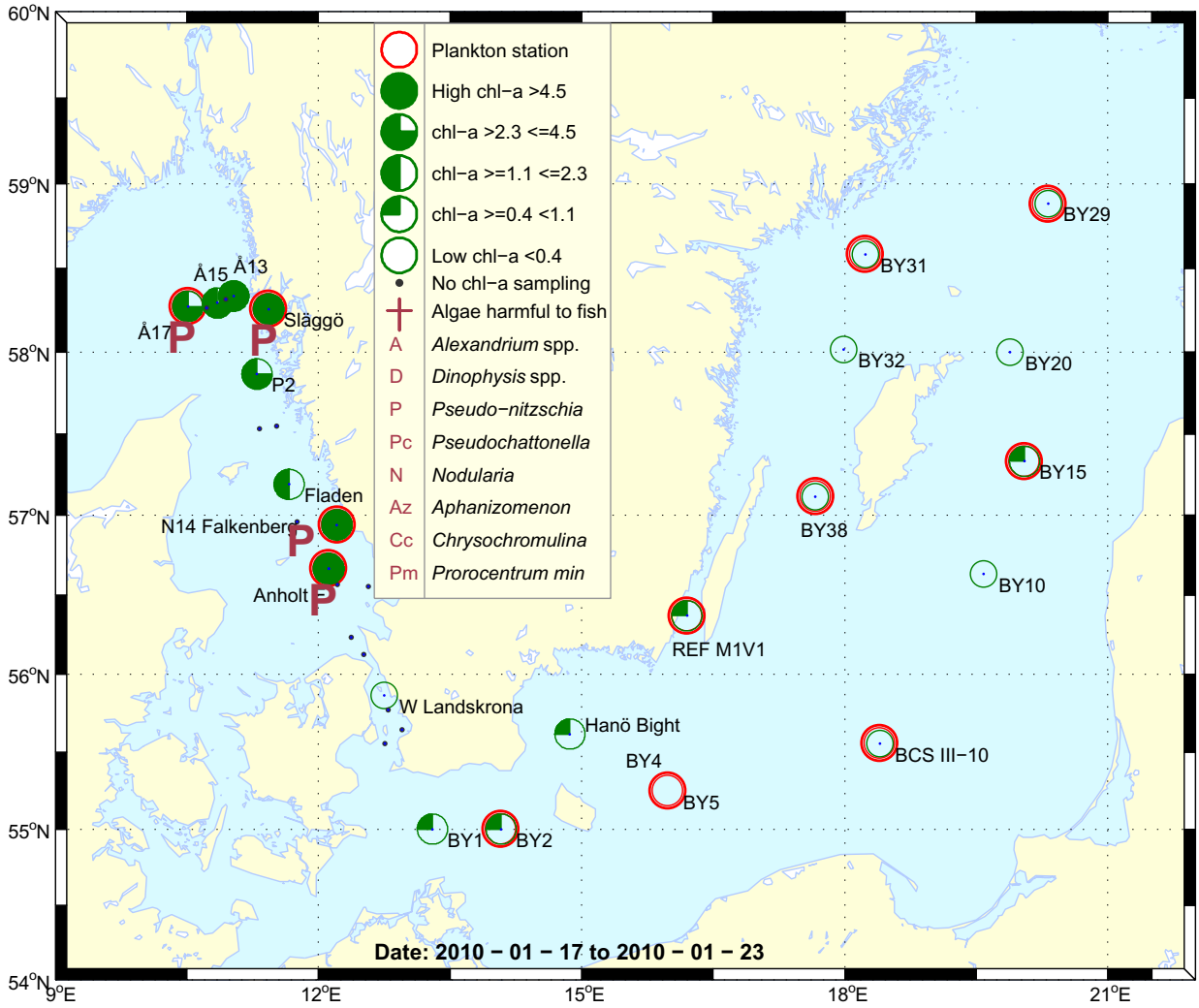
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Ovanligt höga klorofyllhalter och cellantal uppmättes i Västerhavet i mitten av januari. Kiselalger dominerade proverna med framför allt arterna *Skeletonema costatum*, *Pseudo-nitzschia delicatissima*-gruppen* och *Thallassiosira nordenskioeldii*. *P. delicatissima*-gruppen* observerades över gränsvärdet vid samtliga stationer, dock har det inte rapporterats om AST (Amnesic Shellfish Toxin) i svenska vatten, som vissa kloner inom denna grupp av alger potentiellt producerar.

I Östersjön var antalet arter och cellantal låga vilket orsakade låga klorofyllhalter normala för årstiden.



Abstract

Extraordinarily high levels of chlorophyll *a* and high cell numbers were found in the Skagerrak and Kattegat areas in mid January. The diatoms *Skeletonema costatum*, *Pseudo-nitzschia delicatissima*-group* and *Thalassiosira nordenskioeldii* dominated the phytoplankton samples. *P. delicatissima*-group* was found with cell numbers above its critical limit, although there has been no reports of AST (Amnesic Shellfish Toxin) in Swedish waters, which is a toxin potentially produced by this group of algae.

In the Baltic Sea the number of species and the cell numbers were low causing low chlorophyll *a* values normal for the season.

The Skagerrak

Å17 17th of January (open Skagerrak)

cf. *Heterosigma akashiwo*, a potentially toxic flagellate.

A diatom bloom was observed with large amounts of *Skeletonema costatum* and *Pseudo-nitzschia delicatissima*-group*. *Thalassiosira nordenskioeldii* and many other diatom species normal in spring blooms were abundant. The potentially toxic flagellate *Heterosigma akashiwo** was common.

Släggö 17th of January (Skagerrak coast)

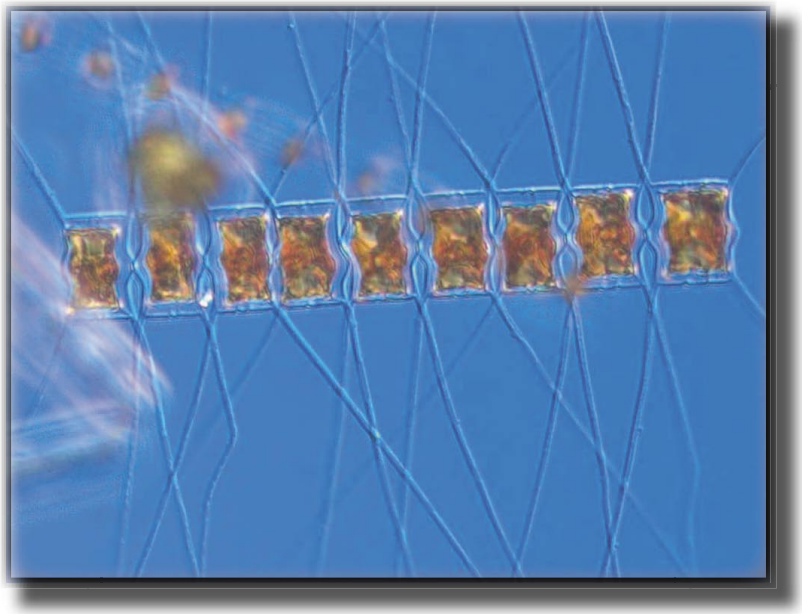
The cell counts were even higher than at Å17, but the species composition was more or less the same. The chlorophyll *a* maximum was the highest value this month and was consistent from the surface to 10 meters depth. Consequently the integrated (0-20m) chlorophyll value was very high and high above average for this month.

The integrated (0-20m) chlorophyll *a* values were high above average for this month at all of the Skagerrak sampling sites.

The Kattegat

N14 Falkenberg 18th of January

The number of phytoplankton species was the highest at this station. The dominant diatoms were represented by the same species as the ones in the Kattegat area, but e.g. *Chaetoceros* species were more abundant. The integrated (0-20m) chlorophyll value was high above average.



An unusually long chain of the diatom *Chaetoceros similis.*

Anholt E 18th and 23rd of January

The chlorophyll *a* surface sample at the second visit was thrice the value at the first. The integrated (0-20m) chlorophyll values did not differ much though, and the cell counts and number of species were similar at the two occasions. The species composition did not differ from the rest of the Kattegat and Skagerrak stations, i.e. the diatoms *Skeletonema costatum*, *Pseudo-nitzschia delicatissima*-group* and *Thalassiosira nordenskioeldii* dominated.

The integrated (0-20m) chlorophyll *a* values were within average at West Landskrona and Fladen.

The Baltic Sea

The phytoplankton diversity was very low.

Note that the stations BY4 and BY5 could not be sampled.

The integrated chlorophyll *a* values were within average at all stations.

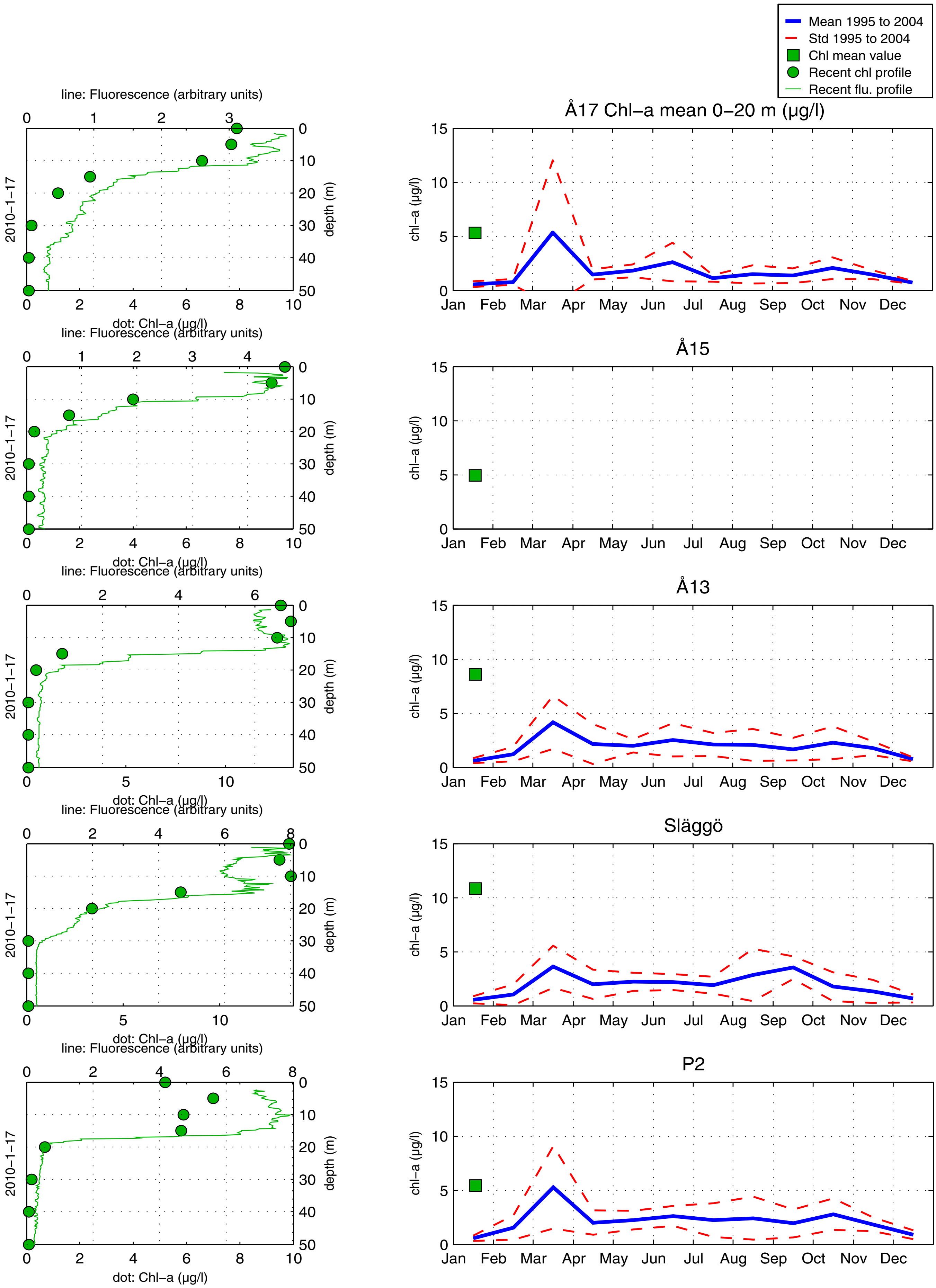
Sunset in the Baltic. Photo: Sari Sipilä

Phytoplankton analysis and text by:
Ann-Turi Skjevik

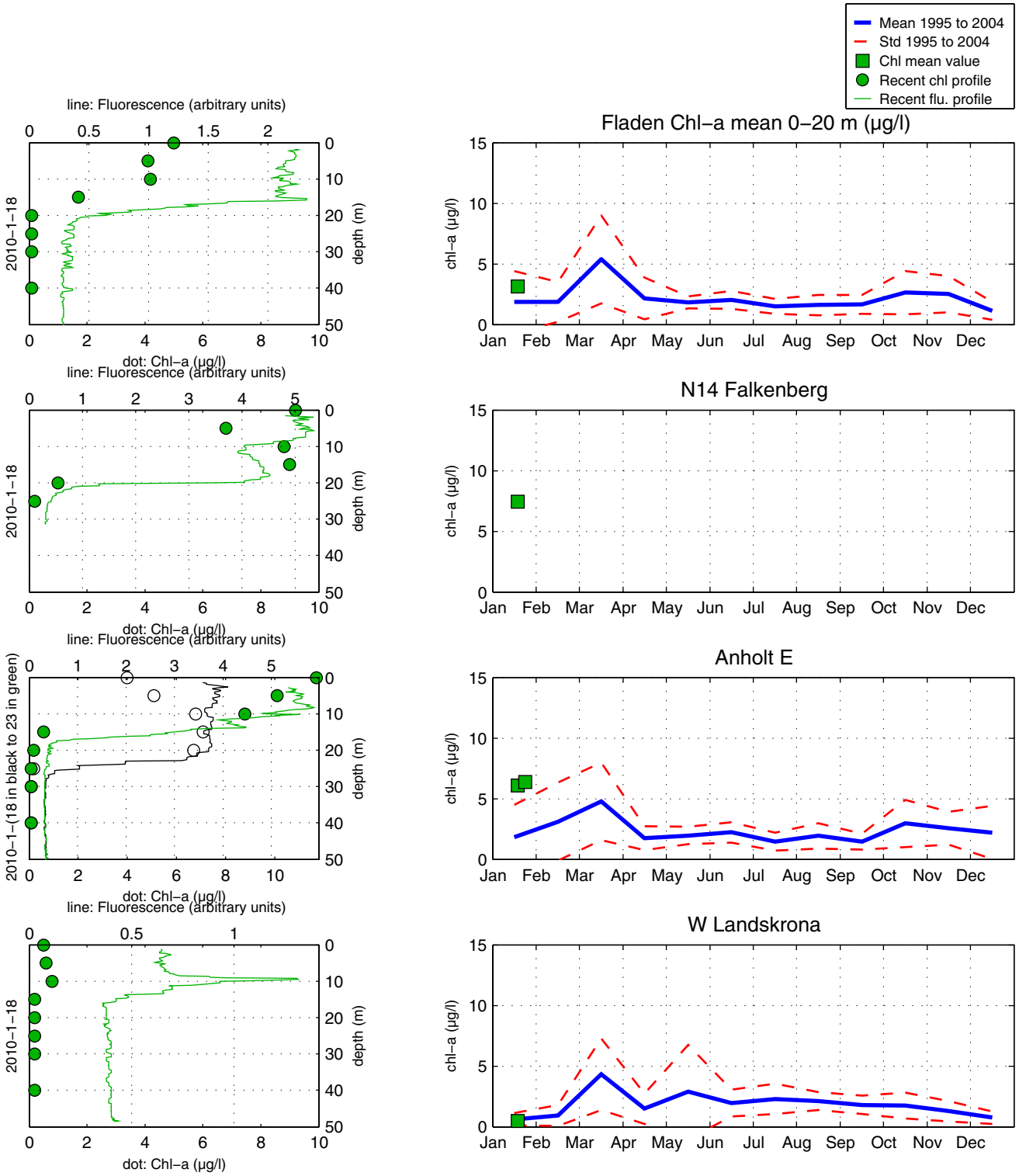
Selection of observed species	**Å17**	**Släggö**	**N14**	**Anholt E**	**Anholt E**
Red=potentially toxic species	**2010-01-17**	**2010-01-17**	**2010-01-18**	**2010-01-18**	**2010-01-23**
	cells/l	**cells/l**	**cells/l**	**cells/l**	**cells/l**
Attheya septentrionalis	present	present	present	present	present
Cerataulina pelagica		present			present
Chaetoceros affinis			present	present	present
Chaetoceros concavicornis	present	present	common	present	present
Chaetoceros constrictus		present	common	present	
Chaetoceros curvisetus	present		present		
Chaetoceros danicus	present	present	common	present	present
Chaetoceros debilis	common	present	common	present	present
Chaetoceros didymus			present		present
Chaetoceros laciniosus		present	present		
Chaetoceros pseudobrevis	present		present		
Chaetoceros similis		present	present	present	present
Chaetoceros subtilis			present		present
Cylindrotheca closterium	present		present	present	
Dactyliosolen fragilissimus	present	present	present	present	
Ditylum brightwellii	present	present	present	present	present
Guinardia delicatula	present	present	present	present	present
Leptocylindrus danicus	common	common	common	common	common
Leptocylindrus minimus			present	present	present
Navicula transitans	present	present	present		
cf. *Nitzschia longissima*	present	present	present	present	present
Proboscia alata	present	present	present	present	present
Pseudo-nitzschia delicatissima-group	1.2 million	1.1 million	1.2 million	998 000	1.1 million
Pseudo-nitzschia seriata-group	common	common	common	common	common
Pseudosolenia calcar-avis		present	present	present	
Rhizosolenia hebetata	present		present	present	
Rhizosolenia setigera	present	present	present		present
Skeletonema costatum complex	1.4 million	2.8 million	1.5 million	2.6 million	2.8 million
Thalassionema nitzschioides	common	common	common	common	common
Thalassiosira angulata		present	present	present	
Thalassiosira anguste-lineata	present		present	present	present
Thalassiosira nordenskioeldii	very common	340 000	150 000	390 000	330 000
Thalassiosira rotula					present
Heterocapsa rotundata		present	present		
Heterocapsa spp.		present			
Protoperidinium bipes		present		present	
Chrysochromulina spp.	present	present	present		present
Heterosigma akashiwo	common	common	present	present	common
Cryptomonadales spp.	common	common	common	common	common
Dictyocha speculum	present	present	present		present
Pseudochattonella farcimen		present			present
Pyramimonas spp.		present			
Pseudopedinella pyriforme		present		present	
Pseudopedinella spp.	present	present	present		
Calliacantha natans	present				
Leucocryptos marina	present	present	present	present	present
Telonema subtile	present			present	
Mesodinium rubrum		present	present	present	present

Selection of observed species	**BY2**	**NESvaneke**	**BCS III-10**	**BY15**	**BY 29**	**BY 31**	**BY38**	**Ref. M1-V1**
Red=potentially toxic species	**2010-01-19**	**2010-01-22**	**2010-01-22**	**2010-01-21**	**2010-01-21**	**2010-01-20**	**2010-01-20**	**2010-01-19**
[1] quantified in m/l	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**
Chaetoceros danicus				present		present		
Chaetoceros impressus							present	
Chaetoceros similis						present		
Cylindrotheca closterium	present							
Leptocylindrus danicus	present							
Pseudo-nitzschia seriata-group	present							
Pseudo-nitzschia delicatissima-group	common							
Skeletonema costatum	present	present				present		common
Thalassiosira rotula								present
Dinophysis acuminata						present		
Dinophysis norvegica						present		
Gonyaulax spinifera								present
Heterocapsa rotundata	present							present
Heterocapsa spp.	present	present				present		
Peridiniella catenata				present		present	present	
Chrysochromulina polylepis					present	present	present	present
Chrysochromulina spp.	present	present	present	present	present	present	present	
Cryptomonadales spp.	very common	very common	common	common		present	common	common
Planctonema lauterbornii						common	present	
Pyramimonas spp.	common						present	
Aphanizomenon spp.			present	present	present	very common	common	
Calliacantha longicaudata					present			
Calliacantha natans		present		present	present	presens	present	present
Ebria tripartita						present		
Leucocryptos marina		present	present		present		present	present
Telonema subtile			present		present	present	present	present
Mesodinium rubrum		present	present	present	present	present	present	present

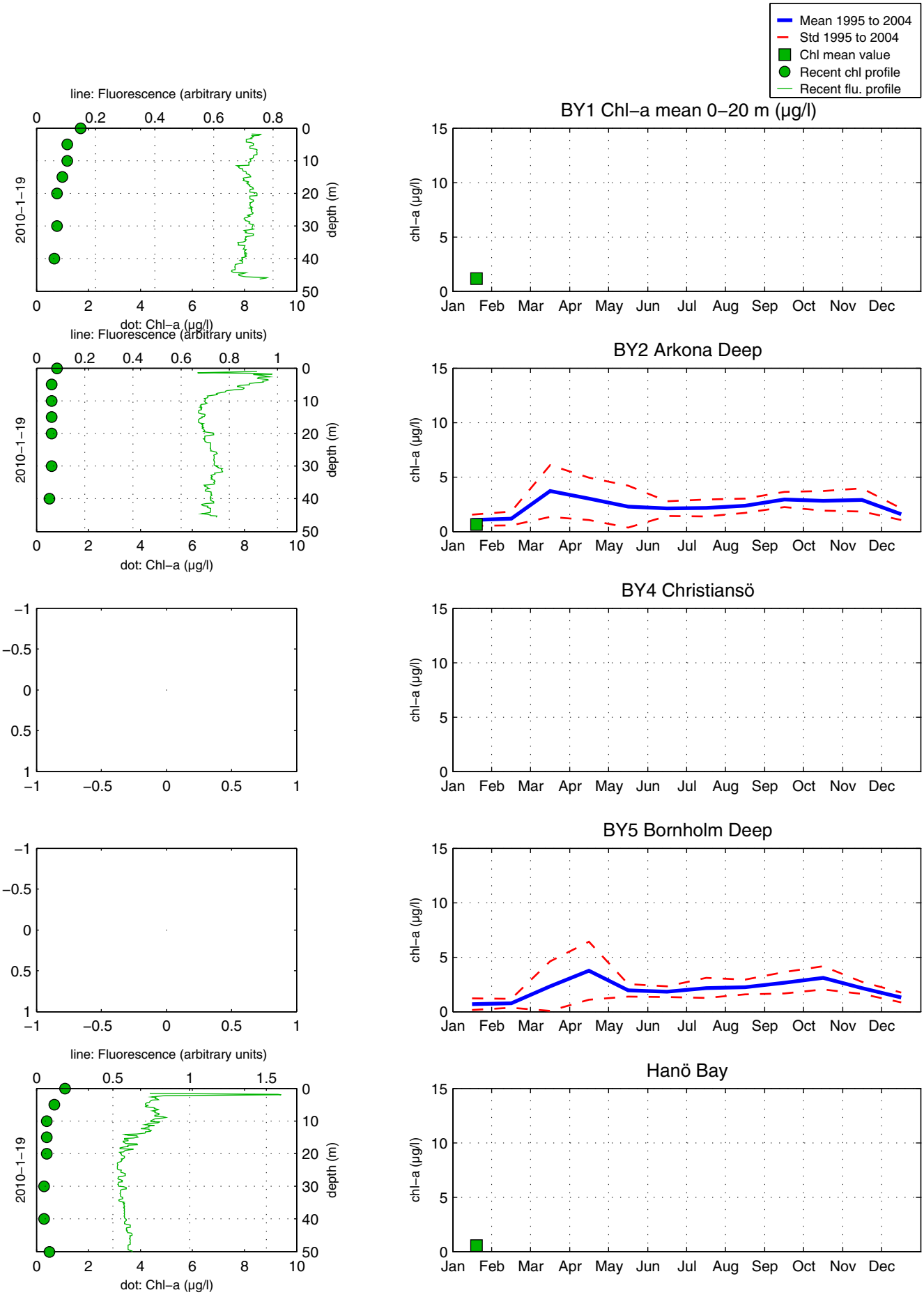
The Skagerrak



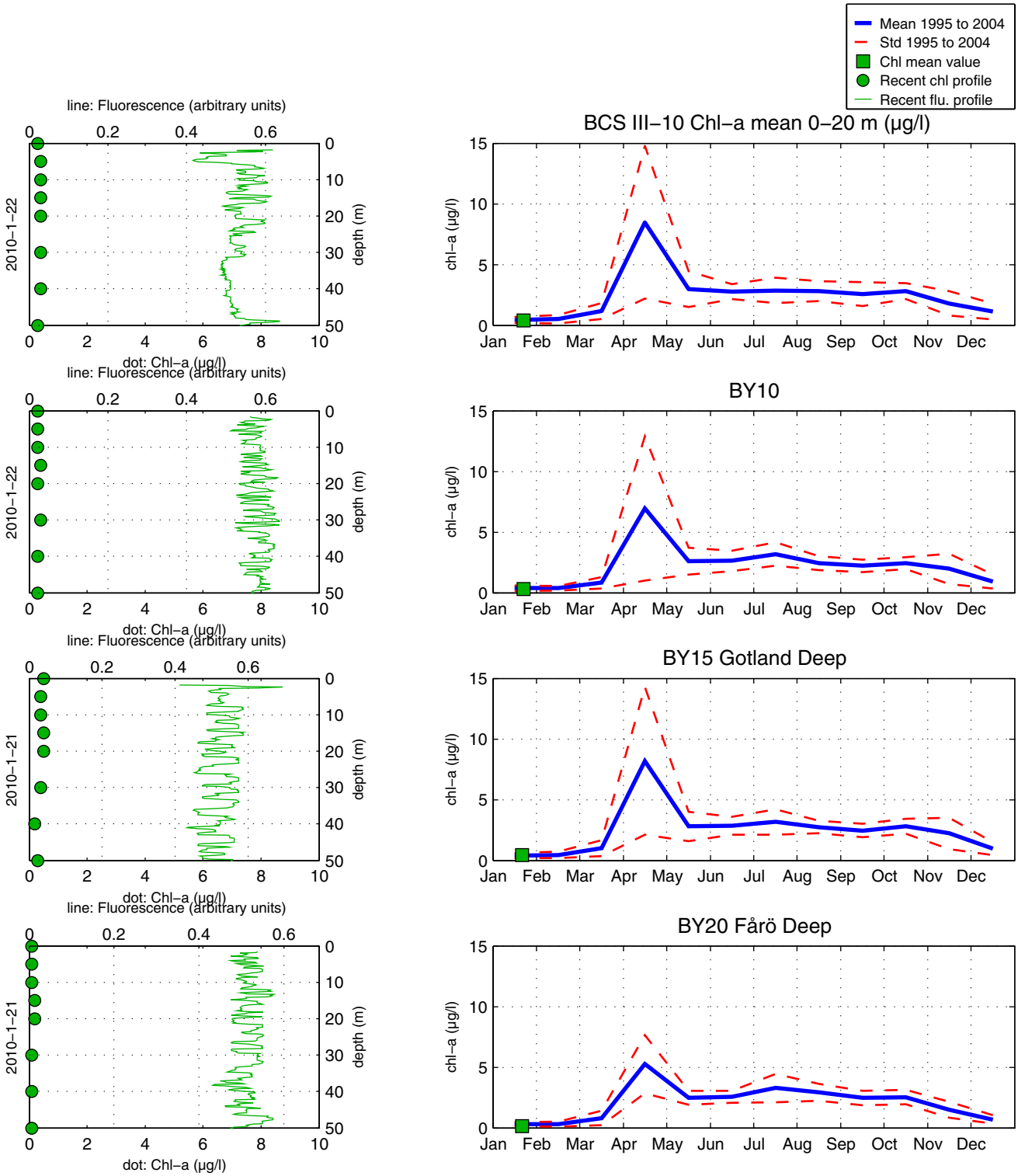
The Kattegat and the Sound

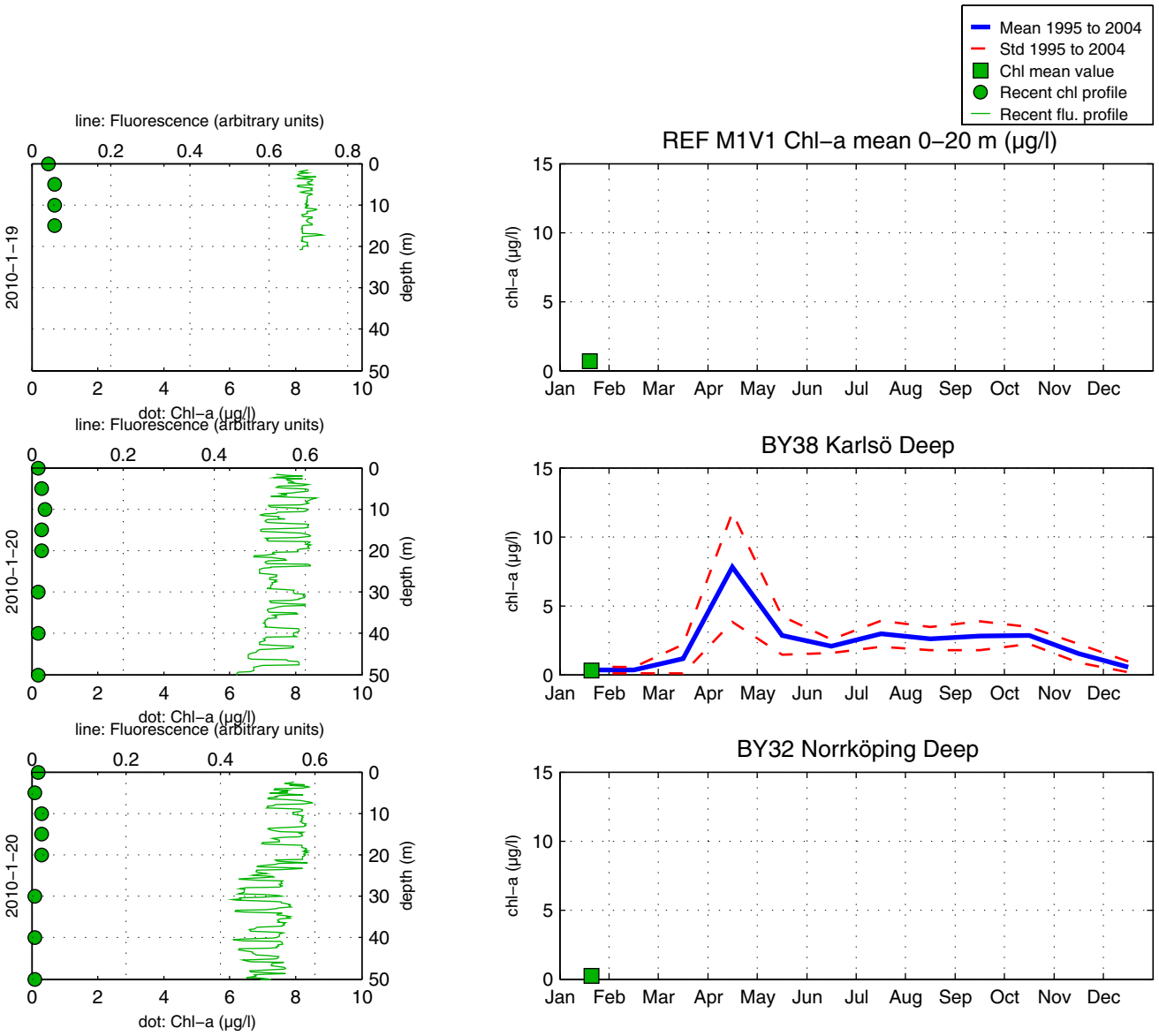


The Southern Baltic



The Eastern Baltic





Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup 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.

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.

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.

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 ro 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.
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.
Pseudo- nitzschia 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.

Översikt av 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.