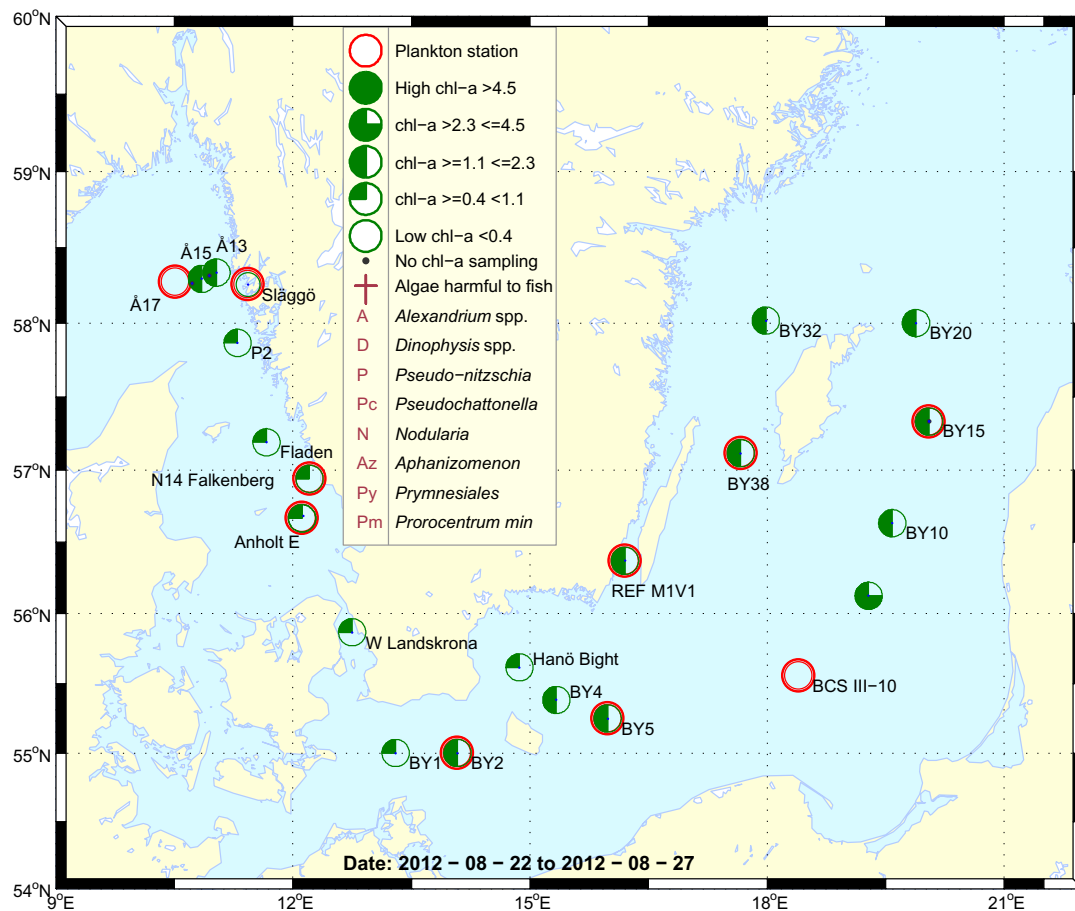


## Sammanfattning

Växtp planktonsamhällets artdiversitet var låg i både Skagerrak och Kattegatt förutom vid första provtagningstillfället vid Anholt E. I både Skagerrak och Kattegatt återfanns höga celltätheter av kalkflagellaten *Emiliania huxleyi*. Denna art brukar normalt sett återfinnas i högre tätheter under sensvåren eller försommaren i dessa vatten. Även olika celler från klassen Prymnesiales, som tidigare hänförs till släktet *Chrysochromulina*, återfanns i relativt höga celltätheter vid samtliga stationer och framför allt vid N14 Falkenberg. Bland de stora algerna utmärkte sig framför allt kiselagera *Proboscia alata* samt *Dactyliosolen fragilissimus*. De integrerade (0-20m) klorofyllhalterna i Skagerrak och Kattegatt var inom det normala för säsongen.

Växtp planktonsamhället i Östersjön dominerades av ciliater, cryptomonader, *Pyramimonas* spp., *Eutreptiella* spp. och ett flertal släkten från klassen Prymnesiales. Filament från *Aphanizomenon flos-aquae* påträffades i synnerhet i havsområdet öster om Gotland. Celltätheten var låg på samtliga stationer men artdiversiteten var generellt hög. De integrerade (0-20m) klorofyllhalterna i Östersjön var inom det normala för säsongen.



## Abstract

The species diversity was quite low in both Skagerrak and Kattegatt, the only exception was the first sampling occasion at Anholt E. High densities of the calcium flagellate *Emiliania huxleyi* was recorded. This species normally appear in higher densities in late spring and early summer in this area. Different cells belonging to Prymnesiales (previously recorded as belonging to the genus *Chrysochromulina*) were found in high abundance and especially at N14 Falkenberg. The large diatoms *Proboscia alata* and *Dactyliosolen fragilissimus* were found in high cell numbers.

The integrated (0-20m) chlorophyll *a* concentrations in both Skagerrak and Kattegatt were within normal for the season.

The phytoplankton community in the Baltic Sea was in general dominated by ciliates, cryptomonads, *Pyramimonas* spp., *Eutreptiella* spp. and species from the class Prymnesiales. *Aphanizomenon flos-aquae* was mostly found in The Gotland Basin but only in moderate amount. The cell density was low but the species diversity was relatively high.

The integrated (0-20m) chlorophyll *a* concentrations were within normal in The Baltic Sea.

More detailed information on species composition and abundance

## The Skagerrak

### Släggö (Skagerrak coast) 22<sup>nd</sup> of August

The species diversity was quite low. The small coccolithophore *Emiliana huxleyi* that usually are common in spring was now found in quite high numbers. Small flagellates belonging to prymnesiales (previously recorded as belonging to *Chrysochromulina* spp.) was also common. The diatom species *Dactyliosolen fragilissimus* was recorded in relatively high cell numbers.



The diatom *Proboscia alata* was numerous in the Kattegat samples.

## The Kattegat

### N14 Falkenberg 23<sup>rd</sup> of August

The species diversity was quite low. The small coccolithophore *Emiliana huxleyi* was found in high numbers. Small flagellates belonging to prymnesiales was very common. The diatom species *Proboscia alata* was recorded in relatively high cell numbers.

### Anholt E 23<sup>rd</sup> and 27<sup>th</sup> of August

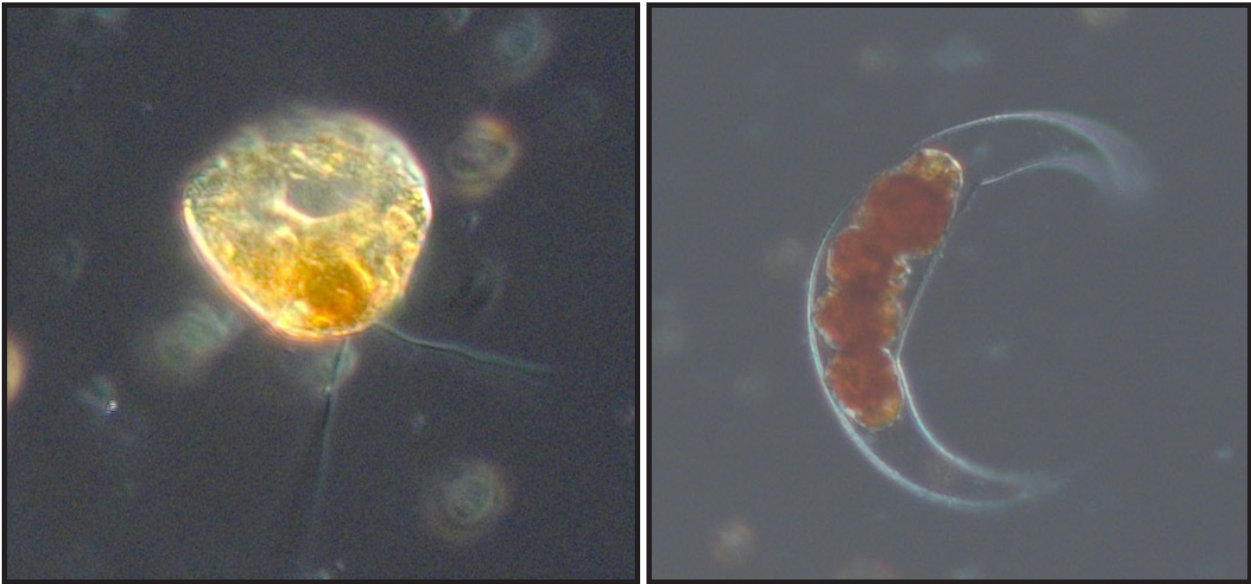
The species diversity was relatively high on the first sampling occasion but had decreased on the second occasion. The small coccolithophore *Emiliana huxleyi* was found in quite high cell numbers on both occasions. Small flagellates belonging to prymnesiales was also common on both sampling occasions. The diatom species *Proboscia alata* and *Dactyliosolen fragilissimus* both appeared in quite high cell numbers, the former had the highest cell density.

## The Baltic Sea

### BY2 Arkona Deep 23<sup>rd</sup> and BY5 Bornholm Deep 24<sup>th</sup> of August

The Arkona Deep phytoplankton sample was dominated by cryptomonads, *Pyramimonas* spp., small dinoflagellates and species from the potentially fish killing class Prymnesiales. The cell concentration was very low but the species diversity was high. Small flakes were visible in the surface water in the Bornholm Deep and the analyses from a bucket sampling revealed that *Aphanizomenon flos-aquae* dominated the surface accumulation.

The potentially toxic dinoflagellates *Prorocentrum minimum*, *Dinophysis norvegica* and *D. acuta* were present in low numbers.



The flagellate *Ebria tripartita* (left) and the dinoflagellate *Dissodinium pseudolunula* were present at the station Arkona Deep.

### BY 9 Klaipeda 25<sup>th</sup> of August

Owing to the lack of permit from Poland to sample BCSIII-10, BY 9 was sampled. In addition to *Eutreptiella* spp., *Pyramimonas* spp. and ciliates, different species from the class Prymnesiales were a substantial part of the total phytoplankton community.

### BY15 Eastern Gotland Basin 25<sup>th</sup> of August

*Aphanizomenon flos-aquae* was common at this station otherwise the phytoplankton community was dominated by *Pyramimonas* spp., cryptomonads, ciliates and small dinoflagellates. In addition, species from the class Prymnesiales were common. Filaments of the cyanobacteria *Nodularia spumigena* were present in small amounts.

### BY38 Western Gotland Basin 26<sup>th</sup> of August and REF M1-V1 Kalmar Sound 26<sup>th</sup> of August

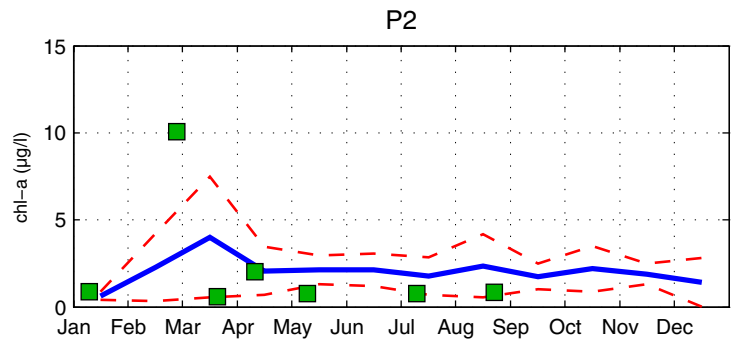
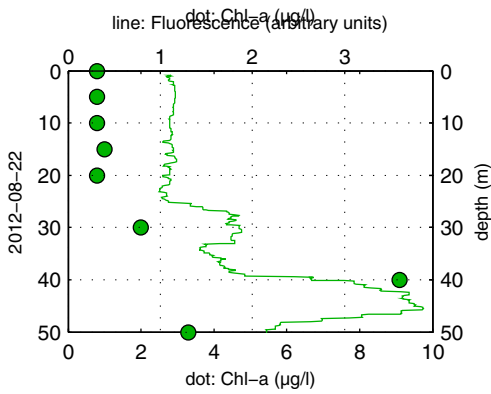
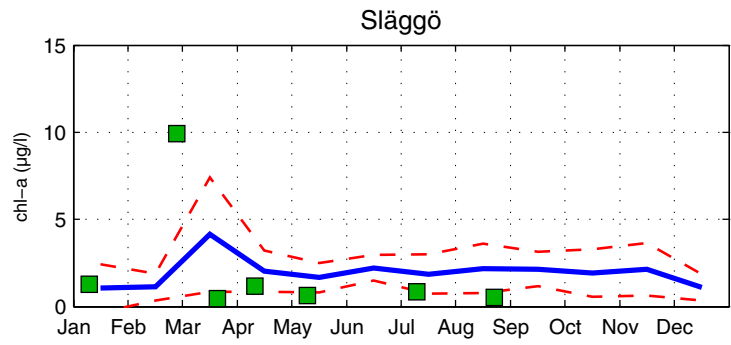
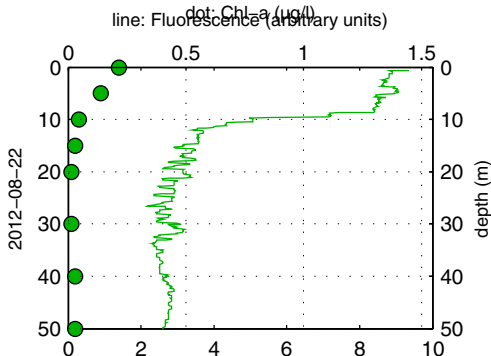
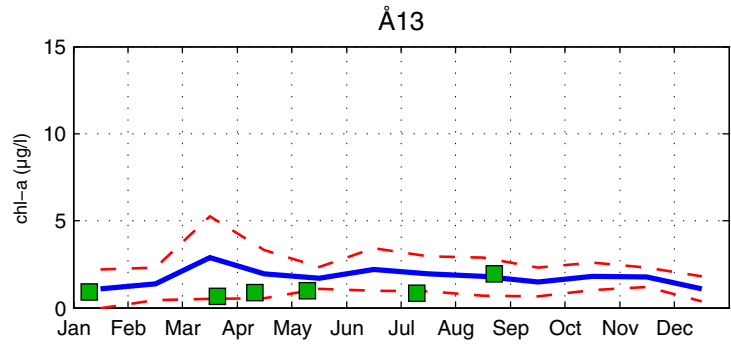
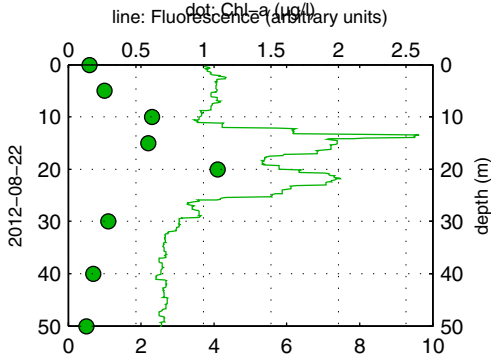
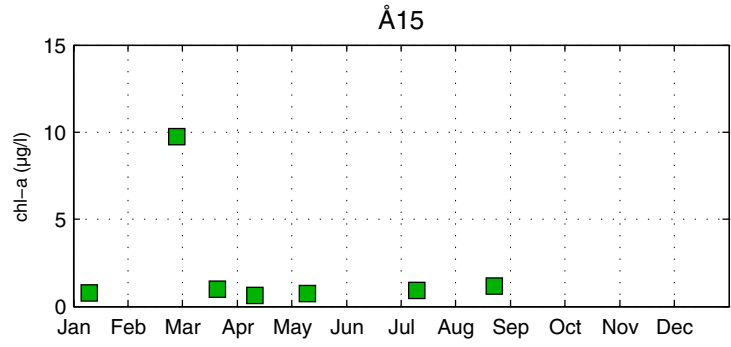
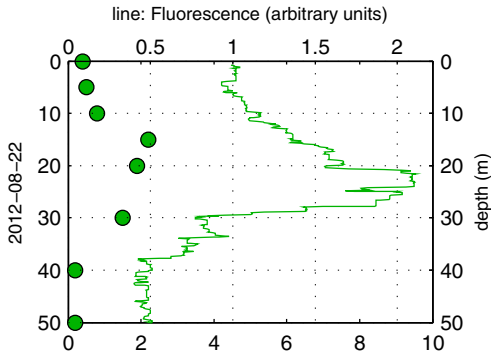
*Eutreptiella gymnastica*, *Pyramimonas* spp., small dinoflagellates, cryptomonads, and ciliates were dominating the phytoplankton community at these stations. There were moderate amounts of species from the class Prymnesiales. Filaments from three different cyanobacteria *Dolichospermum* sp., *Aphanizomenon flos-aquae* and *Nodularia spumigena* were present in small amounts.

The integrated (0-20m) chlorophyll *a* concentrations were within normal at all of the Baltic stations.

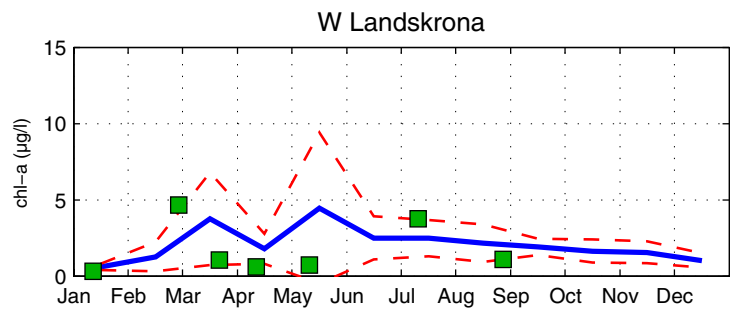
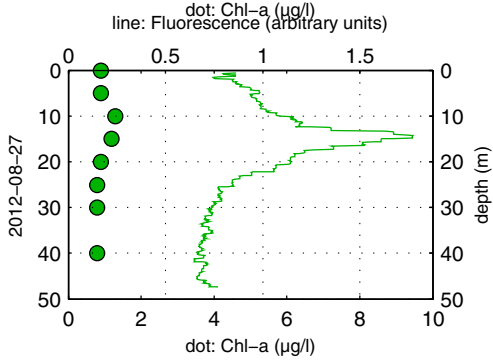
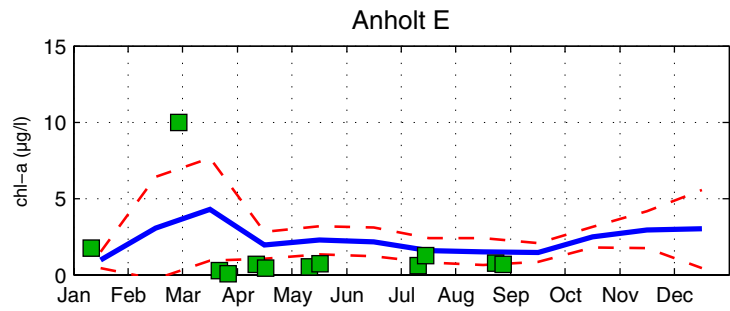
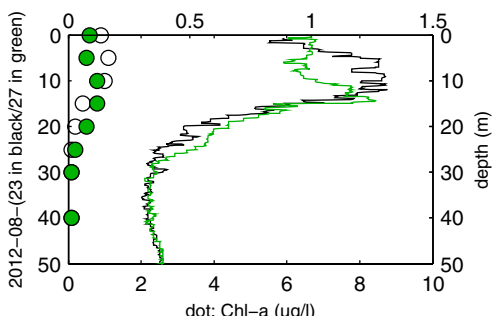
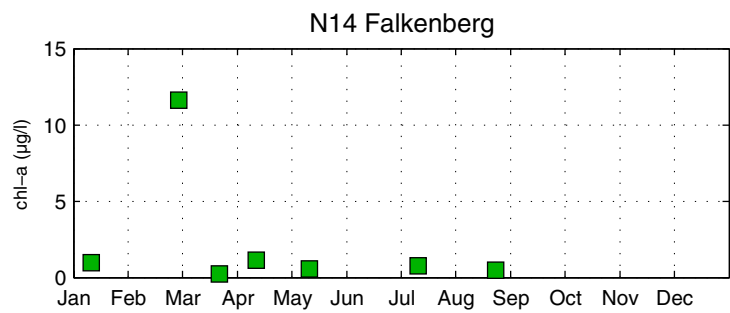
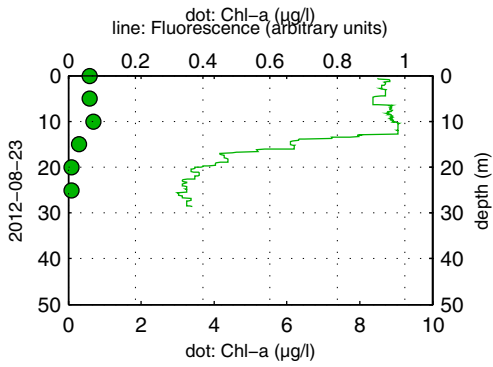
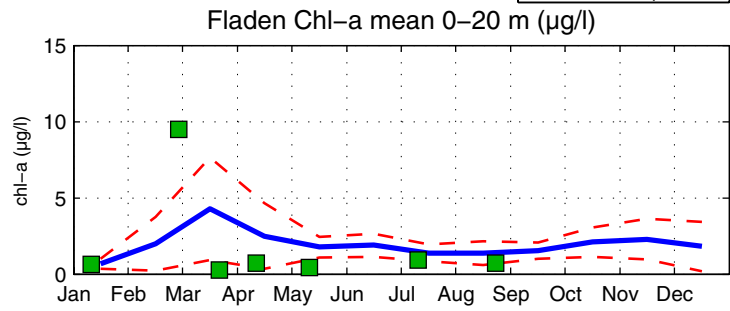
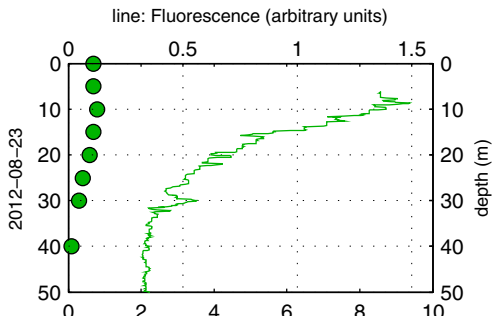
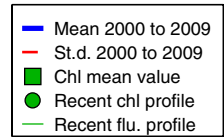
Selection of observed species	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	22/8	23/8	23/8	27/8
Hose 0-10 m	cells/l	cells/l	cells/l	cells/l
<i>Cylindrotheca closterium</i>			present	
<i>Nitzschia longissima</i>	present	present	present	present
<i>Thalassionema nitzschioides</i>			present	
<i>Dactyliosolen fragilissimus</i>	common	common	common	common
<i>Guinardia delicatula</i>		present	present	present
<i>Guinardia flaccida</i>		present		
<i>Leptocylindrus danicus</i>		present	present	present
<i>Proboscia alata</i>	present	common	common	common
<i>Rhizosolenia pungens</i>			present	
<i>Thalassiosira nordenskiöldii</i>			present	
<i>Cerataulina pelagica</i>	present	present	common	
<i>Chaetoceros</i> spp.			present	
<i>Chaetoceros affinis</i>				present
<i>Chaetoceros curvisetus</i>			present	
<i>Chaetoceros laciniosus</i>			present	
<i>Ceratium fusus</i>			present	
<i>Ceratium lineatum</i>	present			
<i>Ceratium macroceros</i>	present			
<i>Ceratium tripos</i>	present		present	
Dinophyceae	present		present	
<i>Dinophysis acuminata</i>		present	present	present
<i>Dinophysis acuta</i>	present			
Gymnodiniales	present	present	present	present
<i>Lingulodinium polyedrum</i>				present
Peridiniales		present		
<i>Prorocentrum micans</i>	present		present	present
<i>Prorocentrum minimum</i>			present	
<i>Diplopsalis</i> -complex				present
cf. <i>Azadinium spinosum</i>	present			
<i>Dolichospermum</i> sp.			present	
<i>Dinobryon</i> spp.			present	
Prymnesiales	common	very common	very common	very common
<i>Emiliana huxleyi</i>	very common	very common	very common	very common
<i>Pyramimonas</i> spp.	present			present
Cryptomonadales		present	present	
<i>Leucocryptos marina</i>	present		present	present
<i>Plagioselmis prolunga</i>	common	common	common	present
<i>Teleaulax</i> spp.	common			present
<i>Dictyocha speculum</i>			present	
Choanoflagellidea			present	
<i>Telonema subtile</i>		present	present	present
<i>Laboea strobila</i>			present	
<i>Mesodinium rubrum</i>	present			
Ciliophora	present	present		present

Selection of observed species	BY2 Arkona	BY5 Bornholmsdj	BY 9	BY15 Gotlandsdj	BY38 Karlsödj	REF M1-V1
Red=potentially toxic species	23/8	24/8	25/8	25/8	26/8	26/8
Hose 0-10 m	Cells/l	Cells/l	Cells/l	Cells/l	Cells/l	Cells/l
Centrales		present	present		present	present
<i>Chaetoceros danicus</i>		present				
<i>Chaetoceros impressus</i>			present	present	common	present
<i>Coscinodiscus centralis</i>	present					present
<i>Cyclotella</i> spp.				present	present	
<i>Melosira moniliformis</i>			present			
Pennales		present	present			
<i>Amphidinium crassum</i>					present	
<i>Cladopyxis claytonii</i>		present				
<i>Cladopyxis setifera</i>	present					present
<i>Dinophysis acuta</i>	present					
<i>Dinophysis norvegica</i>					present	
<i>Dissodinium pseudolunula</i>	present					
Gymnodiniales	common	common		common	common	common
<i>Gyrodinium flagellare</i>	present					
<i>Gyrodinium spirale</i>						present
<i>Heterocapsa</i> spp.	common	common	common			
<i>Heterocapsa</i> cf. <i>minima</i>					present	
<i>Katodinium glaucum</i>	present	present		present	present	present
Peridinales	common			common		common
<i>Peridiniella danica</i>					present	
<i>Prorocentrum minimum</i>	present					
<i>Dolichospermum</i> sp.					present	present
<i>Aphanizomenon flos-aquae</i>		present		common	common	present
<i>Nodularia spumigena</i>				present	present	present
Cyanobacteria colony	present	present	present	present	present	
cf. <i>Cyanodictyon</i> spp.						common
<i>Snowella litoralis</i>				present		
<i>Woronichinia</i> spp.				present	present	present
Cryptomonadales	common	common	common	common	common	common
<i>Leucocryptos marina</i>				common		
<i>Teleaulax</i> spp.	common	common	common	common	common	common
<i>Pseudopedinella</i> spp.	common					
<i>Ebria tripartita</i>	present				present	present
<i>Eutreptiella</i> spp.		common	common	common		
<i>Eutreptiella gymnastica</i>					common	common
<i>Pterosperma</i> spp.		present	present	present	present	
<i>Pyramimonas</i> spp.	common	common	common	common	common	common
<i>Oocystis</i> cf. <i>pelagica</i>			common	present	present	present
<b>Prymnesiales</b>	<b>common</b>	<b>common</b>	<b>common</b>	<b>common</b>	<b>common</b>	<b>common</b>
<i>Telonema subtile</i>		present				
<i>Balanion</i> spp.	present	present				
Ciliophora	present	common	common	common	common	common
<i>Helicostomella subulata</i>	present	present			present	
<i>Mesodinium rubrum</i>	present	common	common	common		common
<i>Strobilidium</i> spp.	present					

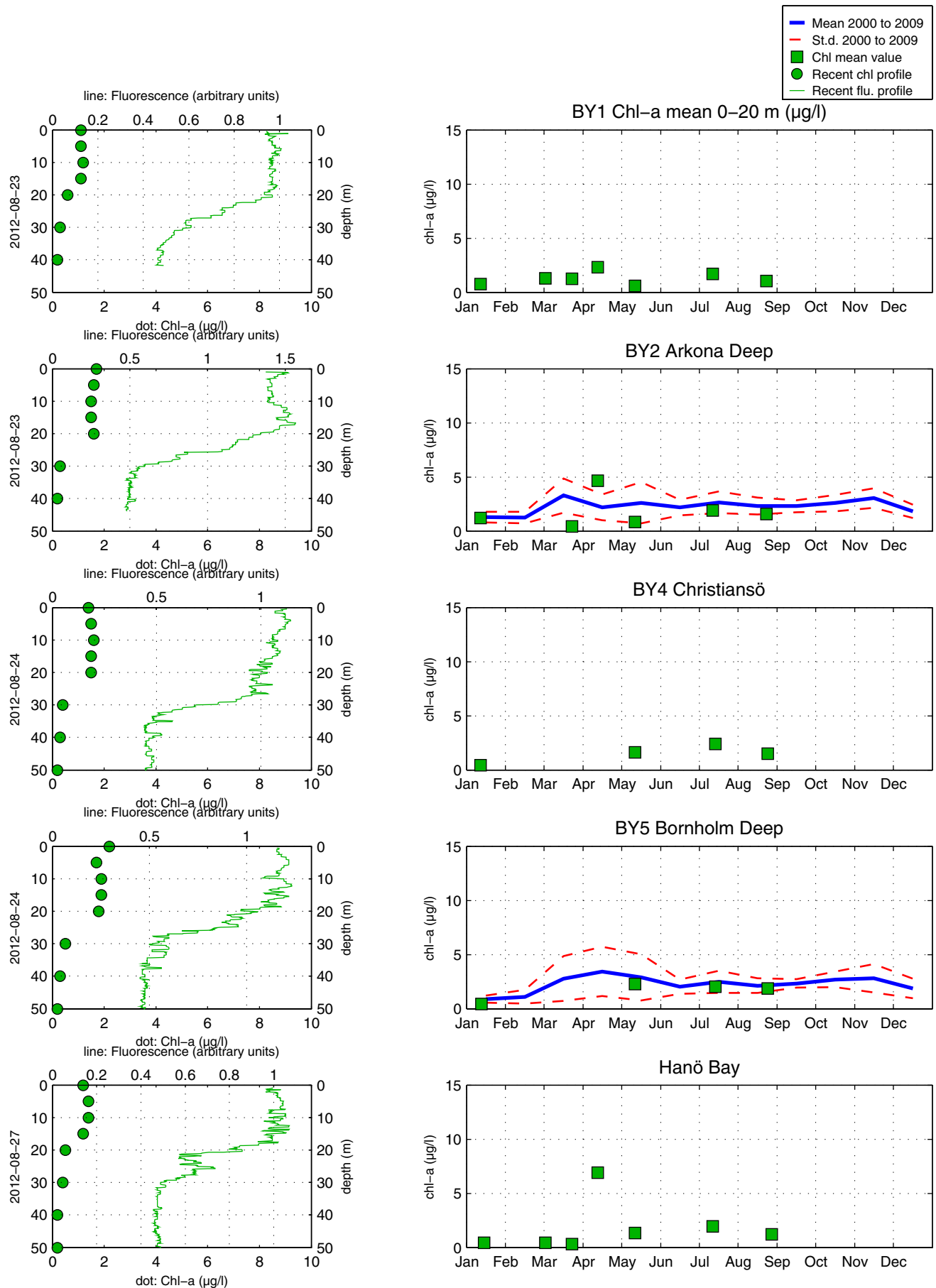
# The Skagerrak



# The Kattegat and the Sound

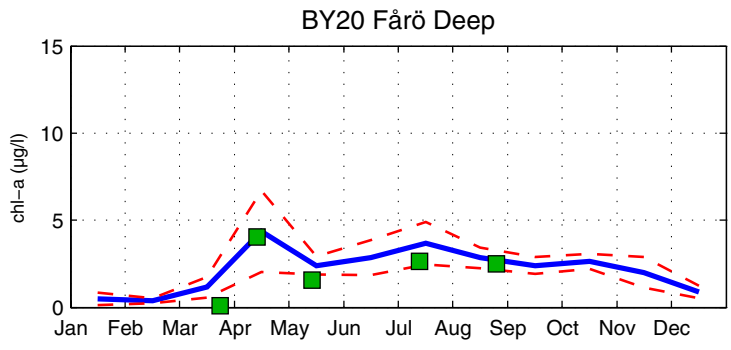
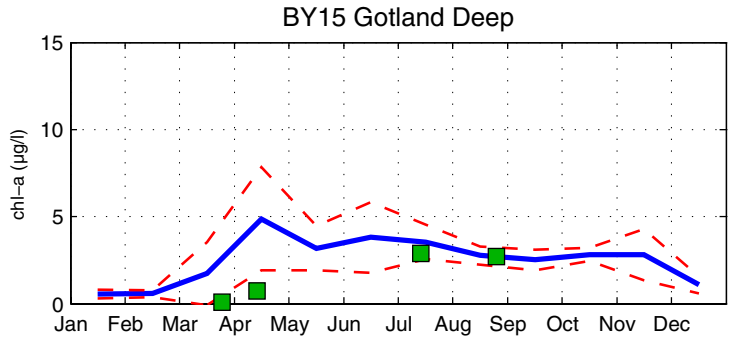
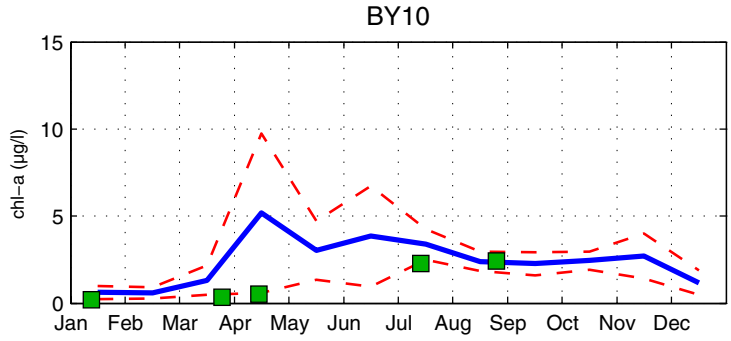
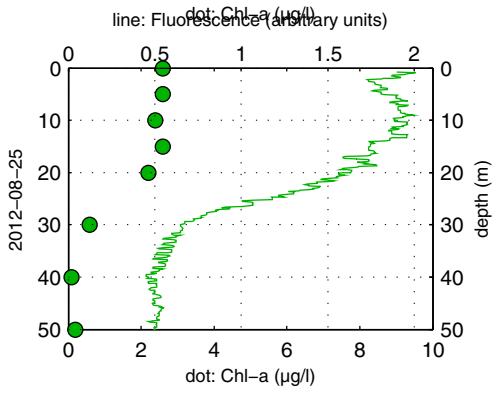
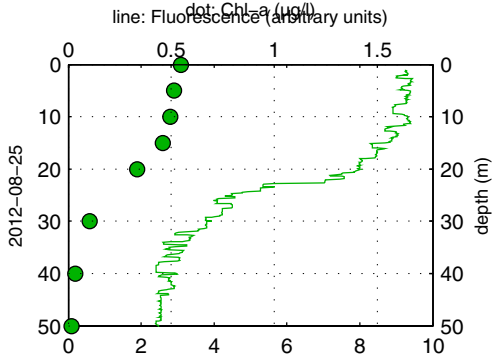
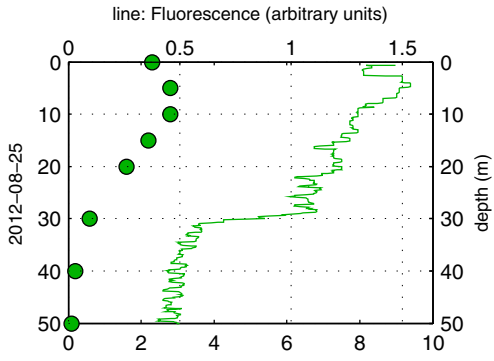


# The Southern Baltic

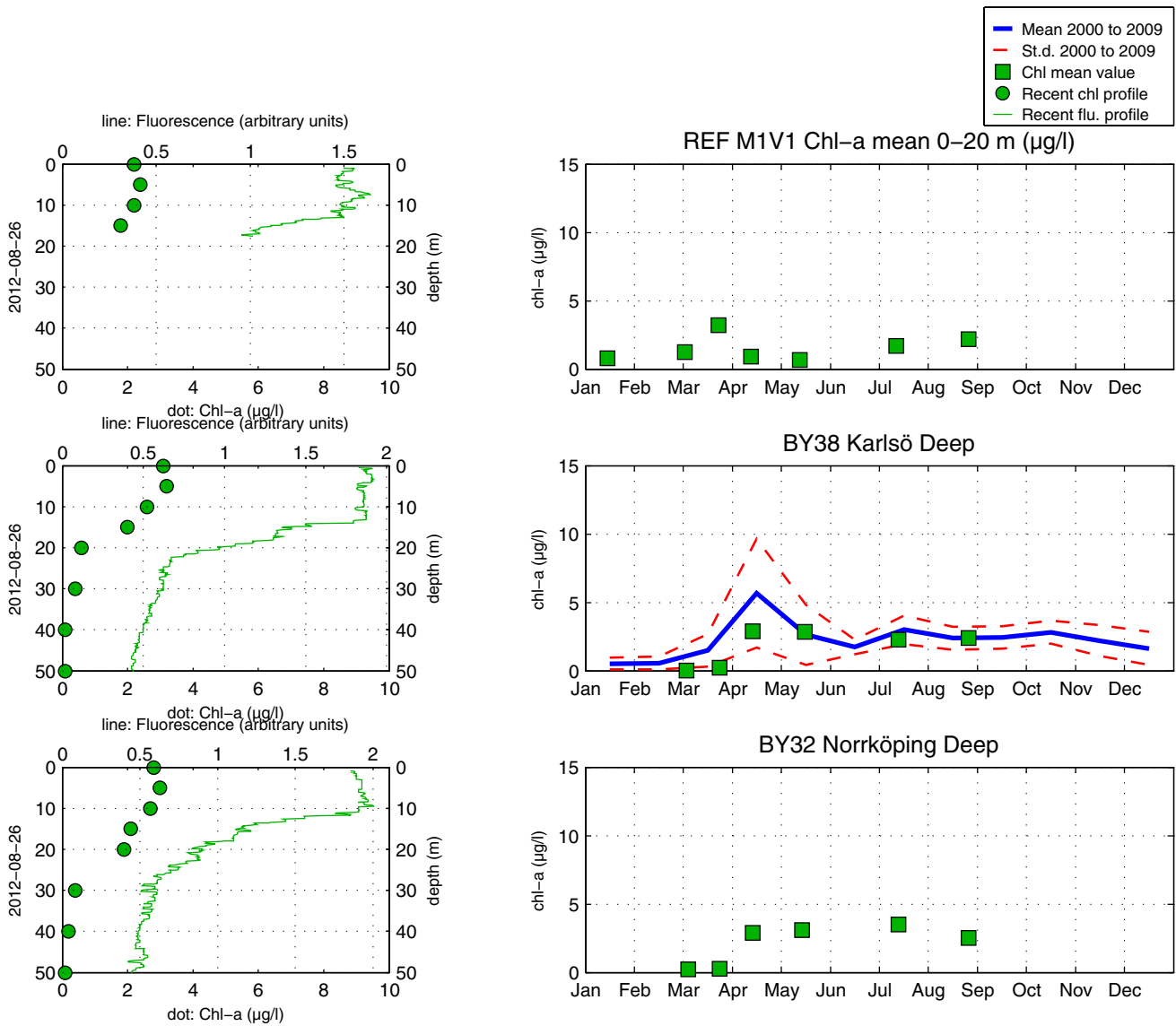




# The Eastern Baltic



# The Western Baltic



## Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup. 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 layers of phytoplankton occurring below the surface.

## Om AlgAware

SMHI genomför ca en gång per månad expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopisk analys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algbloomingar finns på [www.smhi.se](http://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](http://www.smhi.se).

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
<i>Alexandrium</i> spp.	Paralytic shellfish poisoning (PSP)	<b>Milda symptom:</b> 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 <b>Extrema symptom:</b> 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.	<b>Mild case:</b> Within 30 min: tingling sensation or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headache, dizziness, nausea, vomiting, diarrhoea. <b>Extreme case</b> Muscular paralysis; pronounced respiratory difficulty; choking sensation; death through respiratory paralysis may occur within 2-24 hours after ingestion.
<i>Dinophysis</i> spp.	Diarrhetic shellfish poisoning (DSP)	<b>Milda symptom:</b> Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont <b>Extrema symptom:</b> Upprepad exponering kan orsaka cancer	<b>Mild case:</b> Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. <b>Extreme case:</b> Repeated exposure may cause cancer.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	<b>Milda symptom:</b> Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramper <b>Extrema symptom:</b> Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper	<b>Mild case:</b> Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. <b>Extreme case:</b> dizziness, hallucinations, confusion, loss of memory, cramps.
<i>Chaetoceros concavicornis</i> / <i>C. convolutus</i>	Mechanical damage through hooks on setae	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> Fish death due to gill damage.
<i>Pseudochattonella</i> spp.	Fish toxin	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> 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.

