SMHI
Oceanographic Unit
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AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

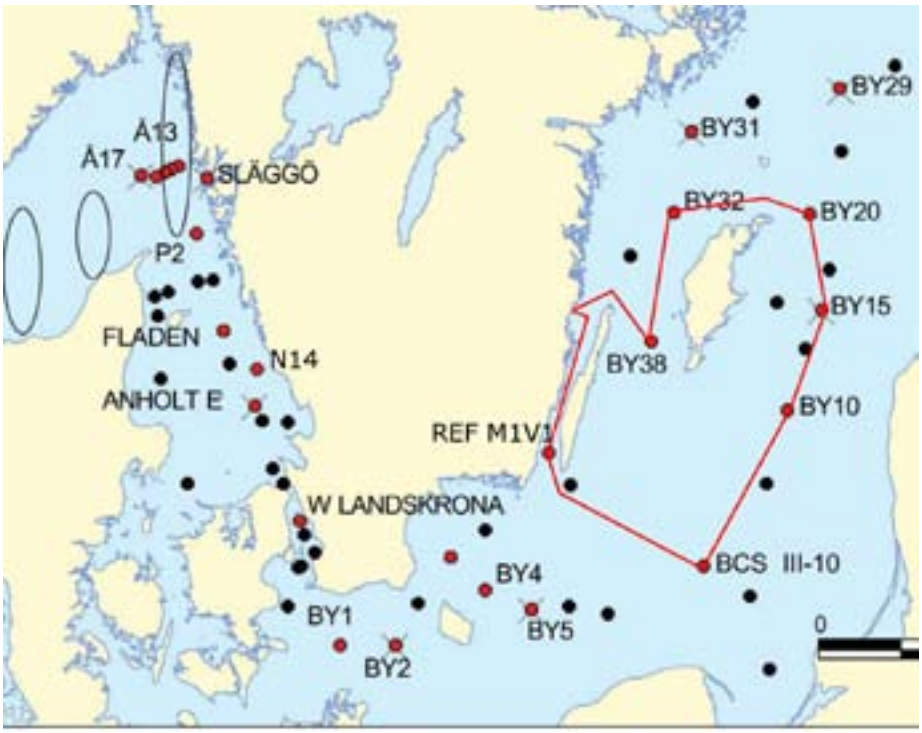
Sammanfattning

AlgAware nr 7 består av två delar på grund av att juliexpeditionen är uppdelad på två tillfällen. Denna rapport, del 1, presenterar växtplanktonanalyser från Östersjön. Del två av expeditionen startar 30 juli, och kommer att omfatta Västerhavet och södra Östersjön.

Växtplanktonanalyserna har genomförts ombord med fokus på cyanobakterier. Analyserna är inte så bra för andra plankton, men de som observerats rapporteras här.

Cyanobakterier både av typen *Aphanizomenon* sp. och den potentiellt skadliga *Nodularia spumigena**, fanns vid samtliga stationer. Cyanobakterieflingor var synliga i vattnet vid alla stationer förutom i Kalmar sund (Ref M1V1). Ytansamlingar observerades vid BY32 (nordväst om Gotland) och norr om BY38 (sydväst om Gotland).

För att se satellittolkningar av ytansamlingar av cyanobakterier: http://www.smhi.se/vadret/hav-och-kust/algsituationen-1.11383



The red line shows the cruise route.

Abstract

AlgAware number 7 is split in two parts because the July cruise is divided into two. This report, part 1, presents phytoplankton analysis from the Baltic Sea. The second cruise is planned to start 30th of July and will cover the Skagerrak, Kattegat and the southern Baltic.

Phytoplankton analysis have been made on board with main focus on cyanobacteria. The analysis is not so good for other plankton groups, but the organisms observed are reported here.

Cyanobacteria, both *Aphanizomenon* sp. and the potentially toxic *Nodularia spumigena**, were found at all stations during the cruise. Cyanobacteria flakes were visible at all stations except in the sound of Kalmar (Ref M1V1). Surface accumulations were observed at BY32 (northwest of Gotland) and north of BY38 (southwest of Gotland).

To follow the surface accumulations of cyanobacteria in the Baltic Sea by satellite interpretations: http://www.smhi.se/en/Weather/Sweden-weather/the-algae-situation-1.11631

More detailed information on species composition and abundance

The Baltic Sea

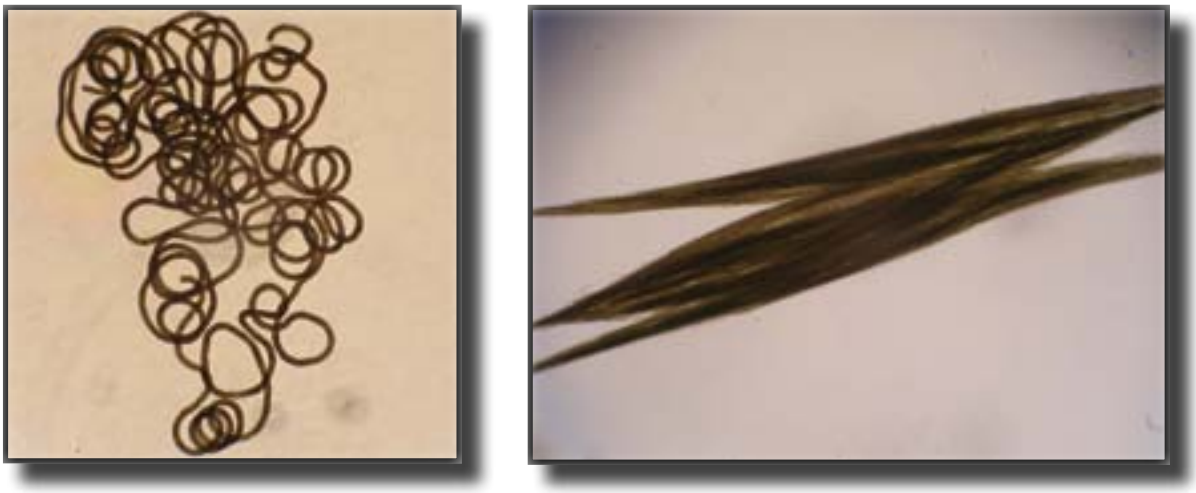
Short summary of the observed accumulations.
Cyanobacteria flakes were visible in the water at all of the visited stations except at Ref M1V1 in Kalmar Sound. Surface accumulations were observed the first time during the stop at BY32, southwest of Gotland. The first two days of the expedition were rather windy, but day three when BY32 was due, was warm and calm which made the conditions perfect for cyanobacteria accumulations. Heading south towards BY38, accumulations were scarce and at the station cyanobacteria flakes in the water were observed, but no surface accumulations. Microscope analysis showed that both *Nodularia spumigena** and *Aphanizomenon* sp. were abundant.

Results from the microscope analysis.
50 ml of water was filtered through 10 µm polycarbonate filters before being analysed using a light microscope. Potentially toxic species are marked with *. The observed species are listed on page 4.

Small species were not analysed on board. Results of chlorophyll *a*, which will be analysed at SMHI, will not be included in this report.

Ref M1V1 Kalmar Sound 2013-07-15
Aphanizomenon filaments (threads) were abundant and *Anabaena* was common. *Nodularia spumigena** was present in low amount. A few diatoms were observed although hard to see on the filters. The dinoflagellates *Dinophysis norvegica** and *D. acuminata** were present.

BCS III-10NE Southeast Baltic 2013-07-15
A lack of permit to conduct sampling in Polish waters caused sampling west of the original station. Cyanobacteria flakes were seen in the water. Analysis revealed the dominance of *Aphanizomenon* sp. but both *Anabaena* sp. and *Nodularia spumigena** were common. The chlorophyte *Planctonema lauterbornii* and the diatom *Chaetoceros impressus* were abundant.



The potentially toxic cyanobacterium *Nodularia spumigena* (left) and *Aphanizomenon* sp.

BY10 East of Gotland 2013-07-16
A surface sample was dominated by *Aphanizomenon* sp. *Nodularia spumigena** was common.

BY15 Eastern Gotland Basin 2013-07-16
Aggregations of *Aphanizomenon* sp. and *N. spumigena* filaments were abundant in the 0-10 m sample. In the surface sample however, the *N. spumigena** filaments had aggregated as well. Cyanobacteria flakes were seen in the water, but no surface accumulations yet at the time of the visit.

BY20 Fårö Deep 2013-07-16
Cyanobacteria flakes were abundant in the water, and the surface sample contained many aggregations of filaments. Equal amounts of *Aphanizomenon* sp. and *Nodularia spumigena** were found.

BY32 Western Gotland Basin 2013-07-17
Surface accumulations of cyanobacteria became visible and extended during the time spent on site. Two surface samples were analysed, the first one contained approximately the same amount of *Aphanizomenon* sp. and *Nodularia spumigena**, the second one, sampled one hour later, was dominated by *Nodularia spumigena**.

BY38 Norrköping Deep 2013-07-17
Cyanobacteria were visible as flakes in the water. More or less equal amounts of *Aphanizomenon* sp. and *Nodularia spumigena** were present. The dinoflagellate *Dinophysis norvegica** and the diatom *Chaetoceros impressus* were common.

The diatom *Chaetoceros impressus.*

Phytoplankton analysis and text by:
Ann-Turi Skjevik

Selection of observed species	Ref M1V1	BCS III-10	BY15	BY38
Red=potentially toxic species	15/7	15/7	16/7	17/7
Hose 0-10 m	cells/l	cells/l	cells/l	cells/l
Chaetoceros impressus	present	common	present	present
Chaetoceros throndsenii	present			
Melosira sp.	present			
Dinophysis acuminata	present		present	present
Dinophysis norvegica	present		present	present
Dinophysis rotundata				present
Prorocentrum minimum	present			
Planctonema lauterbornii		common	present	present
Ebria tripartita				present
pico cyanobacteria colonies	present	common	present	present
Anabaena sp.	common	present	present	common
Aphanizomenon sp.	very common	common	very common	very common
Nodularia spumigena	common	common	common	very common

Surface samples, bucket 0 m	The following filamentous cyanobacteria were observed:		
Station:	*Aphanizomenon* sp.	*Nodularia spumigena**	*Anabaena* spp.
BY10	dominating	common	present
BY15	very common	very common	present
BY20	very common	very common	present
BY32	very common	dominating	present
BY38	very common	very common	present

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).