SMHI
Oceanographic Unit
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AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Abstract

AlgAware number 7 is split in two parts because the July cruise is divided into two. This report, part 2, presents phytoplankton analysis from the Skagerrak, the Kattegat and the south-western part of the Baltic Proper.

Phytoplankton analyses have partly been made on board, partly on land, at the SMHI laboratory.

No surface accumulations were observed during the cruise. At the Bornholm Basin, BY4 and BY5, and in the Hanö Bight, cyanobacteria flakes were seen in the water. Some filaments of the cyanobacteria Aphanizonemon flos-aquae were found at BY2, Bornholm basin, in the integrated samples (0-10m).

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

The Swedish West coast and the southern Baltic Sea

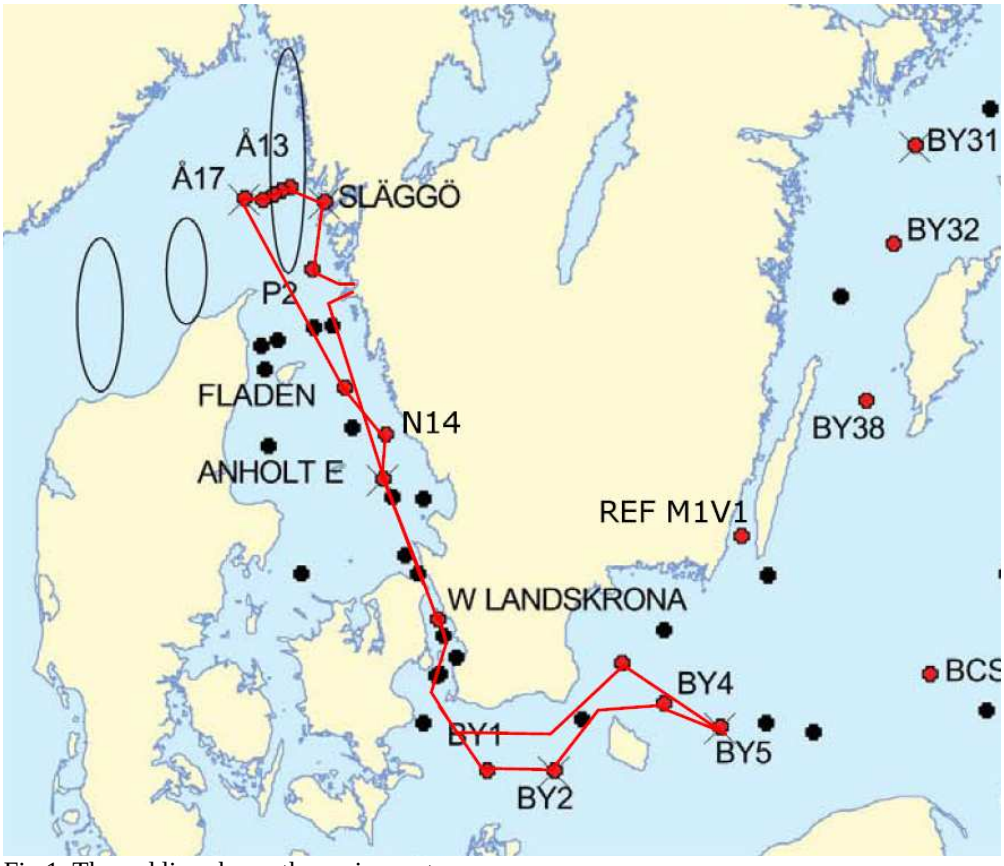


Fig 1. The red line shows the cruise route

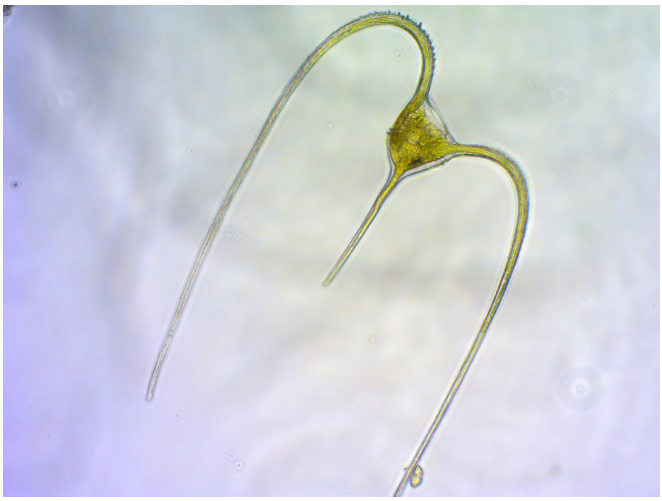
The Skagerrak

Short summary of fluorescence maxima in the Skagerrak
At station P2 (Skagerrak coast), a very diverse phytoplankton sample was found at 30 meters where the chlorophyll fluorescence peaked. The dinoflagellate genus *Ceratium* dominated, and numerous other species were present, diatoms, dinoflagellates and other classes too. The water was nutrient rich at 30 meters and almost depleted above this depth.

At the Skagerrak Å-section from Å13, closest to the coast to Å17, fluorescence peaks were present between 20 to 30 meters.

Å17 (open Skagerrak) 30th of July
The species diversity was quite high but total cell numbers low. Small flagellates of different sorts were most common. Cells belonging to prymnesiophyceae were dominating. The toxic dinoflagellate *Dinophysis norvegica* was also found in relatively high amounts.

Släggö (Skagerrak coast) 30th of July
The species diversity was quite low at this station. The cell abundance was moderate but mainly small cells were found in the sample. The coccolithophore *Emiliania huxleyi* was for example found in higher amounts.



The dinoflagellate *Ceratium macroceros* is a typical North Sea species. It was abundant in the fluorescence peak samples from the Skagerrak area.

The Kattegat

N14 Falkenberg 31st of July
The species diversity was moderate but total cell numbers low. Small flagellates were most common such as cells belonging to prymnesiophyceae. The coccolithophore *Emiliania huxleyi* was found in moderate amounts.

Anholt E 31st of July and Anholt E 2nd of july
The species diversity and total cell numbers were low on both occasions. Small cells dominated and cells belonging to prymnesiophyceae were most common on both occasions.

The Southern Baltic Sea

Short summary of surface samples in the south-western Baltic.
Cyanobacteria flakes were visible in the water at the Bornholm Basin, BY4 and BY5 and in the Hanö Bight. Microscope analysis revealed that the flakes were pale, pigment poor, aggregations of *Nodularia spumigena*, on which an ecosystem of diatoms, dinoflagellates and zooplankton were found. These aggregations are remnants from surface accumulations that have fallen apart and are beginning to sink to deeper depths.


Nodularia spumigena aggregation with diatoms and ciliates clinging on to it.

BY2 Arkona basin 1st of August
The species diversity was low. Mainly small flagellates were found in the sample. Different species belonging to the cryptomonadales dominated. Some filaments of the cyanobacteria *Aphanizomenon flos-aqua* was also present in the sample. Different ciliates were also found.

BY5 Bornholms deep 1st of August
The species diversity and total cellnumber were both low. Small cells mainly belonging to prymnesiales were found. Different ciliates were also found in relative hich cellnumbers.

Analyses, text and layout
Marie Johansen and Ann-Turi Skjevik

Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2013-07-30	2013-07-30	2013-07-31	2013-07-31	2013-08-02
Hose 0-10 m	cells/l	cells/l	cells/l	cells/l	cells/l
Cylindrotheca closterium					present
Dactyliosolen fragilissimus			present	present	present
Leptocylindrus danicus	present				
Proboscia alata				present	present
Alexandrium spp			present		
Ceratium furca	present				
Ceratium fusus	present				present
Ceratium longipes	present				
Ceratium macroceros	present				
Ceratium tripos	present		present	present	present
Dinophysis norvegica	present				
Dinophysis rotundata	present	present			
Gymnodiniales	present				
Gymnodinium	present		present	present	present
Heterocapsa spp		present	present	present	present
Katodinium glaucum	present	present			
Lingulodinium polyedrum			present		present
Peridiniales	present	present	present	present	present
Prorocentrum micans		present	present		present
Protoperidinium spp	present		present	present	present
Protoperidinium crassipes	present				
Protoperidinium divergens			present		
Protoperidinium steinii			present		
Scrippsiella CPX	present				
Dinobryon faculiferum				present	
Prymnesiales	common	common	common	common	common
Emiliania huxleyi		common	common		
Chlorodendrales		present			
Pyramimonas spp	present	common	present	present	
Cryptomonadales	present	present	present	present	
Leucocryptos marina	present	present			present
Plagioselmis prolonga		common	present	common	common
Teleaulax spp	present	present			present
Telonema subtile	present				
Helicostomella subulata			present		
Mesodinium rubrum		present			
Ciliophora spp	present		present	present	present

Selection of observed species	BY2	BY5
Red=potentially toxic species	2013-08-01	2013-08-01
Hose 0-10 m	cells/l	cells/l
Navicula spp		present
Mesodinium rubrum	present	
Cryptomonadales spp	present	present
Plagioselmis prolonga	common	present
Teleaulax spp	common	present
Pseudopedinella pyriforme	present	present
Ceratium tripos	present	
Gymnodinium spp		present
Peridiniales		present
Ebria tripartita	present	
Chaetoceros impressus	present	
Pyramimonas spp	common	present
Prymnesiales	present	common
Ciliophora	present	present
Aphanizomenon flos-aquae	present	

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.

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