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Oskarshamn site investigation

Phytoplankton and zooplankton

Results from sampling in the Simpevarp area 2003–2004

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Keywords: Phytoplankton, Zooplankton, Biomass, Abundance, Species composition.

Abstract

This document reports the results gained by the study of phytoplankton and zooplankton within the investigation area of Oskarshamn. The purpose of this activity was to investigate and describe the composition of the plankton communities in the costal area and in the lakes within the investigation area.

Samples of phytoplankton and zooplankton were taken from three different localities in the sea and from one lake. Sampling was performed on twelve occasions between July 2003 and June 2004. All samples were stored. Analysis was later performed on the samples from three of these occasions, July 2003, December 2003 an April 2004. The analysis of the samples gave information on species composition, abundance and biomasses.

Generally the biomass of phytoplankton and zooplankton were higher in the summer samples from July than in the spring samples from April. The lowest biomass was generally found in the winter samples. Further more the biomass was considerable higher in the lake compared to the sea sites.

Normally there is a phytoplankton maximum of diatoms in spring samples. In April 2004 diatoms were dominating the phytoplankton community at three of the investigated sites. At one site the diatoms were not dominating though. Perhaps the maximum for diatoms came earlier or later there this year.

Several species of potentially toxic bluegreen algae (cyanophyceae) were found but in all case the biomass were comparatively low.

The zooplankton community structure measured as biomass was generally more complex in the samples from July. In the winter and spring samples the biomass was generally dominated by copepods.

Two nonconformities were detected. The first was that in the samples from PSM002064 Granholmsfjärden in July 2003 there was organic material, other than algae, present in such large amount that the analysis of phytoplankton became difficult. The biomass may have been underestimated because a smaller chamber had to be used which in fact was inadequate.

The second was that according to the activity plan, analyses of phyto- and zooplankton should be performed on samples from four occasions, July 2003, September 2003, December 2003 and spring 2004. The samples from September 2003 were, however, not analysed. Consequently analysis has been performed only on samples from three occasions.

Sammanfattning

Här rapporteras de resultat som samlats in i en studie av växt- och djurplankton som genomförts inom platsundersökningsområdet i Oskarshamn. Syftet med undersökningen var att undersöka och beskriva planktonsamhällenas sammansättning i kustområdet och i sjöarna inom undersökningsområdet.

Prover på växt- och djurplankton togs från tre olika platser i havet och från en sjö vid tolv tillfällen under perioden juli 2003 till juni 2004. Alla prover arkiverades. Analys genomfördes senare på prover från tre av provtillfällena, juli 2003, december 2003 och april 2004. Analyserna gav information om artsammansättning, individtäthet och biomassa.

Planktonbiomassan var generellt högre i sommarproverna från juli än i vårproverna från april. Lägst var biomassan i vinterproverna. Vidare var biomassan betydligt högre i sjön än vid de tre platserna i havet.

Normalt dominerar kiselalger växtplanktonsammansättningen på våren. I proverna från april 2004 var också kiselalger dominerande vid tre av lokalerna. En av lokalerna avvek dock. Möjligen kom kiselalgstoppen här tidigare eller senare detta år.

Flera arter av potentiellt giftiga blågrönalger påträffades. I samtliga fall var dock biomassan förhållandevis låg.

Zooplanktonsamhällets sammansättning mätt som biomassa var generellt mer komplext i proverna från juli. I proverna från vinter och vår dominerades dock biomassan av copepoder.

Två avvikelser förekom. Den första var att i proverna från PSM002064 Granholmsfjärden fanns en stor mängd organiska partiklar, förutom alger. Detta gjorde att analysen försvårades genom att en mindre räknekammare fick användas. Följden av detta var att biomassan kan ha underskattats i proverna.

Den andra avvikelsen var att endast prover från tre omgångar analyserades. Enligt aktivitetsplanen skulle prover från fyra omgångar analyseras, juli 2003, september 2003, december 2003 och ett prov från våren 2004. Proverna från september blev dock inte analyserade.

Contents

1 Introduction

This document reports the results gained by the study of phytoplankton and zooplankton in lakes and at the sea, which is one of the activities performed within the site investigation at Oskarshamn. The work was carried out in accordance with activity plan AP PS 400-03-039. In Table 1-1 controlling documents for performing this activity are listed. The activity plan is an SKB's internal controlling document.

Table 1-1. Controlling documents for the performance of the activity.

Activity plan	Number	Version
Undersökningar I Simpevarpsområdet. Provtagning och analys av plankton i sjöar och kustvatten	AP PS 400-03-039	1.0

The aim of the activity was to investigate the plankton composition in the aquatic ecosystems. These data will be a part of the data needed to describe the function of the ecosystems in the investigation area. The sampling was performed during 2003 and 2004 in one lake and at three sites in the costal area (Figure 1-1). All data generated was stored in the database SICADA.

Table 1-2. Data references.

Subactivity	Database	Identity number
Name	SICADA	Field note Simpevarp 170, Simpevarp 346
Name	GIS	
Plankton samples	SKB nr	9306

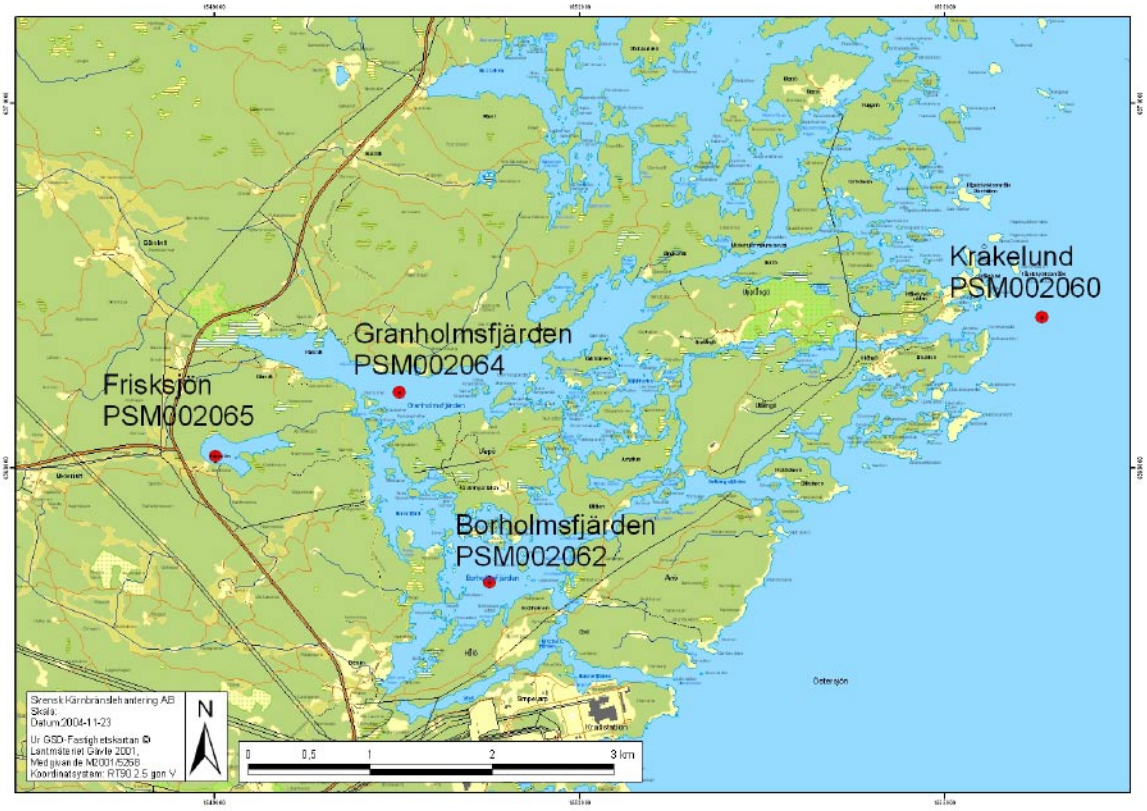

Figure 1-1. *Location of the investigated sites in the Simpevarp area.*

2 Objective and scope

The purpose of this activity was to investigate and describe the composition of the plankton communities in the costal area and in the lakes within the investigation area. Samples of phytoplankton and zooplankton were taken from three different localities in the sea and from one lake. The analysis of the samples gave information on species composition, abundance and biomasses.

3 Equipment

3.1 Description of equipment/interpretation tools

For sampling of phytoplankton a “Rambergrör” (a plastic tube of 2 m with a diameter of 3.5 cm) was used (Figure 3-1). For sampling of zooplankton a Limnos catcher (4.3 litre) was used (Figure 3-1). The zooplankton samples from each level were sieved through a plankton net with a mesh size of 64µm.

The analysis of phytoplankton was performed in sedimentation chambers of different volumes (5, 10 or 25 ml) at the laboratory of Medins Sjö- och Åbiologi AB using an inverted phase-contrast microscope (Leica DM IRB). The analysis of zooplankton was performed at the College of Borås using an inverted microscope (Leitz Diavert).

Figure 3-1. *The “Rambergrör” (left) was used to sample phytoplankton and the Limnos catcher (right) was used to sample zooplankton.*

4 Execution

4.1 General

Quantitative investigation of phyto- and zooplankton were performed in accordance with the activity plan (AP PS 400-03-039) at three sites in the coastal area and in one lake (Table 4-1). The methods used are principally based on BIN PR 066 for phytoplankton and BIN PR 016 for zooplankton. Some elucidations are noted below. Sampling was performed at eight occasions in 2003 and at four occasions in 2004 (Table 4-2). These occasions coincided with the surface water programme. The site co-ordinates are also the same as in the surface water programme. Analyses were performed on the samples from two occasions in 2003 and from one occasion 2004 (Table 4-2). The three occasions were chosen to have results from summer maximum, winter minimum and spring maximum for diatoms.

Sampling was performed with some method differences between the years. In 2003, at the two deepest sites in the coastal area, Kråkelund and Granholmsfjärden, samples from different depth zones were kept apart and handled as separate samples (Table 4-3). In 2004, the sampling methods were changed, and the samples at the two sites comprised the whole water column (Table 4-4).

Table 4-1. Sampled sites.

Idcode	Site	Type	Maximum depth
PSM002060	Kråkelund	Sea	30
PSM002062	Borholmsfjärden	Sea	3.3
PSM002064	Granholmsfjärden	Sea	17
PSM002065	Frisksjön	Lake	3

Table 4-2. Sampling occasions and analyses performed during 2003–2004.

Month	2004 Sampling week	Analysis week	2003 Sampling week	Analysis week
January	–	–	–	–
February	–	–	–	–
Mars	–	–	–	–
April	–	–	16 and 18	16
May	–	–	22	–
June	–	–	24	–
July	29	29	–	–
August	33	–	–	–
September	37	–	–	–
October	40 and 44	–	–	–
November	47 and 49	–	–	–
December	50	50	–	–

At the two shallow sites, Borholmsfjärden and Lake Frisksjön, five subsamples were taken, and mixed into one sample. This was done both years, and only when sampling phytoplankton (Table 4-3 and 4-4).

Table 4-3. Sampling in different depth zones 2003.

Site	Type	Depth zones (m) Phytopl.	Zoopl.	No of subsamples Phytopl.	Zoopl.
Kråkelund	Sea	0–10, 10–20, 20–28	0–10, 10–20, 20–29	1	1
Borholmsfjärden	Sea	0–2	0–3	5	1
Granholmsfjärden	Sea	0–10, 10–16	0–10, 10–17	1	1
Frisksjön	Lake	0–2	0–3	5	1

Table 4-4. Sampling in different depth zones 2004.

Site	Type	Depth zones (m) Phytopl.	Zoopl.	No of subsamples Phytopl.	Zoopl.
Kråkelund	Sea	0–28	0–29	1	1
Borholmsfjärden	Sea	0–2	0–3	5	1
Granholmsfjärden	Sea	0–16	0–17	1	1
Frisksjön	Lake	0–2	0–3	5	1

4.2 Execution of field work

For sampling of phytoplankton a “Rambergrör”, a plastic tube of 2 m with a diameter of 3.5 cm was used. In Lake Frisksjön, and at Borholmsfjärden, five sub samples were taken within a radius of 50 m. At the other two sites only one sample were taken from each 2 m level. Each sample taken with the “Rambergrör” was emptied in an empty plastic bucket. After stirring, a one litre sub sample was taken into another bucket, where finally the entire sample was gathered. After stirring a part of the sample was then poured into a 250 ml glass bottle. All samples were preserved with a solution of lugol.

For sampling of zooplankton a Limnos catcher was used. Water from the depth of each meter was sieved through plankton net with a mesh size of 64µm. When the water from the whole depth zone had been sieved, the bottom cup of the plankton net was emptied into a glass bottle. The sample was then preserved with solution of lugol.

All samples that were not analysed were later preserved for long time storage. The phytoplankton samples were preserved with 1 ml formalin/100 ml sample and the samples were stored in the cold-storage room at Äspö. The zooplankton samples were preserved in 95% ethanol and the samples are temporary stored at the College of Borås.

4.3 Data handling/post processing

The data obtained from the activity was reported digitally to SKB and stored in the database SICADA. These data will later be used for further interpretation and modelling.

4.3.1 Analysis of phytoplankton

The phytoplankton samples were analysed by Iréne Sunsberg at the accredited analysing laboratory Medins Sjö- och Åbiologi AB. The method used (Utermöhl-teqnique) for quantitative analysis of phytoplankton imply sedimentation of the organisms in settling chambers followed by analysis of the sample in an inverted phase-contrast microscope (Leica DM IRB) / Utermöhl, 1958/. Sedimentation chambers of different volumes were used (5, 10 or 25 ml) depending on the concentration of algae.

The enumeration and calculation of biovolume/biomass (wet weight) were made according to BIN PR 066 /SNV, 1986/. After sedimentation on the bottom of the chamber, the species, genera or groups were counted in different magnifications. The counting numbers were converted to numbers per volume of water. Calculation of the biomass volume involves calculation of specific volume of different species. The shapes and form of the counted phytoplankton species were adapted to the nearest approximate geometric figure. The necessary measurements were taken and the volume of each cell could be estimated. The biomass per unit of water could then be calculated. The assumption that the density of the organism equals that of water was used, so 1 mm^3/l = 1 mg/l.

For assessment of the size of the biomass the Swedish assessment criteria for lakes /Wiederholm, 1999/ was used for the result from Lake Frisksjön (PSM002065). There are no Swedish assessment criteria for phytoplankton biomass in samples from coast and sea. To compare and assess the results on biomass from the different stations in the costal area an assumption was made. According to /Widerholm, 1999/ the concentration of chlorophyll is assumed to be 0.5% of the phytoplankton volume. The classification of concentration of chlorophyll according to Swedish assessment criteria for costal waters /Johansson, 1999/ could then be used to asses the results. The classifications and deviations presented derive from a classification of eutrophication of the sea and lakes. Large deviations always represent a high concentration of chlorophyll and assumed corresponding degree of eutrophication.

In July and December 2003 samples were taken from three depths in PMS002060 Kråkelund and two depths in PMS002064 Granholmsfjärden. In April just one sample (from surface to bottom) was taken. To compare the results the biomasses from each depth were weighted to give the biomass of the whole column of water. The classification of the chlorophyll values was done from the results from the surface water only in July and December 2003. The results on chlorophyll from April 2004 had to be classified and assessed for the whole water column.

4.3.2 Analysis of zooplankton

The phytoplankton samples were analysed by Jan Erik Svensson at the College of Borås. Zooplankton were analysed and counted in a Leitz Diavert inverted microscope. Rotifers, tintinnid ciliates, copepod nauplii and sometimes also copepodites and macro-invertebrate larvae, were counted in subsamples (4–8% of the total sample), while the total sample were counted for all other zooplankton. Biomass of identified species, or higher taxa, where calculated after converting individual body sizes to dry weights by using size/weight regressions given in the literature /Botrell et al. 1976; Dumont et al. 1975; Durbin and Durbin, 1978; Hansen, 1992/. In order to do this a large number of specimens had to be measured for body length, or some other size parameter. In each sample up to 25 of the first encountered individuals of each species/taxa were measured. For calculation of rotifer biomass, which usually was very low, fixed individual biomasses were used, however.

Several keys were used for the species identification, e.g. /Enckell, 1980; Flössner, 2000; Kiefer and Fryer, 1978; Koste, 1978; Leider, 1996; Pontin, 1978/. Larvae of benthic macro-invertebrates, here mainly bivalves, gastropods and macro-crustaceans, were not determined to species, but they were usually classified according to larval types (trochophora, veliger et al).

4.4 Nonconformities

In the samples from PSM002064 Granholmsfjärden in July 2003 there was organic material, other than algae, present in such large amount that the analysis of phytoplankton became difficult. The biomass may have been underestimated because a smaller chamber had to be used which in fact was inadequate.

According to the activity plan, analyses of phyto- and zooplankton should be performed on samples from four occasions, July 2003, September 2003, December 2003 and spring 2004. The samples from September 2003 were, however, not analysed, because of misunderstandings between Medins and SKB. Consequently analysis has been performed only on samples from three occasions.

5 Results

5.1 Phytoplankton

5.1.1 PSM002060 Kråkelund

Dinophytes and cyanophytes dominated the biomass of the phytoplankton community in July 2003. In December 2003 dinophytes, cryptophytes and diatoms were dominant groups whereas diatoms were predominant in April 2004 (Figure 5-1). The most common genera were *Aphanizomenon, Anabena* and *Gymnodinium* in July, *Cryptomonas* in December and *Skeletonema* and *Chaetoceros* in April.

The highest algal biomass was recorded in July 2003 (0.4 mg/l). In December 2003 the biomass was 0.05 mg/l and in April 2004, 0.4 mg/l. The concentration of chlorophyll can be estimated from the values of biomass according to Johansson, S. (ed.) 1999. The concentration of chlorophyll in July and April are considered as low, whereas the value for December is very low (Table 5-1).

In July and December, phytoplankton was sampled from three different levels in Kråkelund (Figure 5-2). The biomass decreased with depth in July. However, at all depths the same groups were dominating in general, although the proportion of (for example) cyanophytes decreased with depth. The number of species also decreased with depth but the most common taxa were found at all levels. In December the biomass was very low and the species composition was similar at all levels. The estimated concentration of chlorophyll from the surface layer (0–10 m) in July is considered as high (Table 5-1).

Several species of bluegreen algae (cyanophyceae) were recorded in July. The most common species were *Anabena lemmermannii, Aphanizomenon cf klebahnii* and to some extent *Nodularia spumigena*. These species are all recorded as potentially toxic for the Baltic /Edler et al. 1995/. The biomass of bluegreens was however relative low.

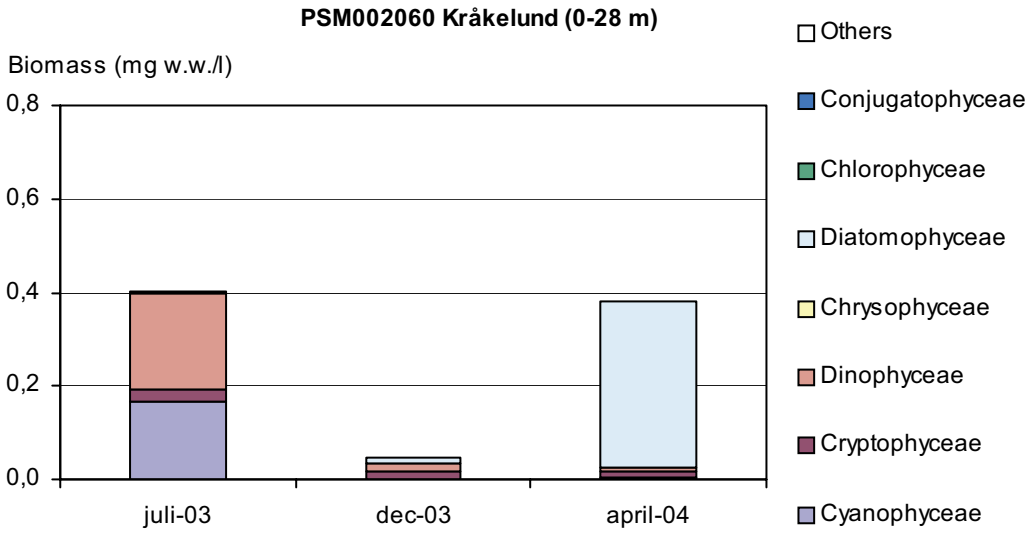

Figure 5-1. *Biomass of phytoplankton divided into different groups from station PSM002060 Kråkelund (0–28 m).*

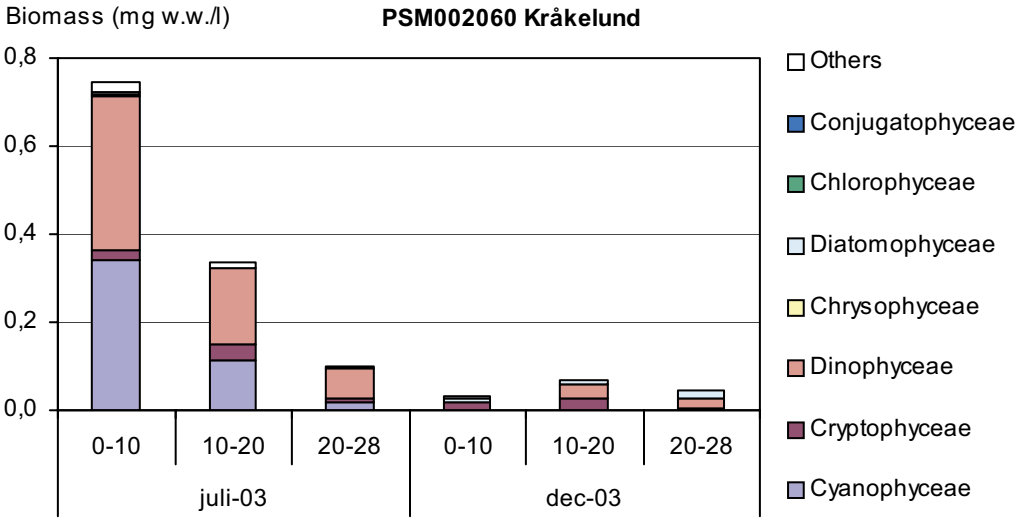

Figure 5-2. *Biomass of phytoplankton separated into different classes from station PSM002060 Kråkelund at different depths (0–10, 10–20 and 20–28 m).*

Table 5-1. Total biomass of phytoplankton in station PSM002060 Kråkelund and classification of calculated chlorophyll concentrations and classification of deviation from comparative value according to /Johansson, 1999/.

Station number	Station name	Date	Sampling depth (m)	Biomass (mg w.w./l)	Chlorophyll calculated (µg/l)	Classification	Deviation
PSM002060	Kråkelund	2003-07-16	0–10	0.75	3.7	High	Very large
PSM002060	Kråkelund	2003-07-16	10–20	0.34	–	–	–
PSM002060	Kråkelund	2003-07-16	20–28	0.10	–	–	–
PSM002060	Kråkelund	2003-12-09	0–10	0.03	0.2	Very low	No or insignificant
PSM002060	Kråkelund	2003-12-09	10–20	0.07	–	–	–
PSM002060	Kråkelund	2003-12-09	20–28	0.05	–	–	–
PSM002060	Kråkelund	2003-07-16	0–28	0.42	2.1	Low	Evident
PSM002060	Kråkelund	2003-12-09	0–28	0.05	0.2	Very low	No or insignificant
PSM002060	Kråkelund	2004-04-13	0–28	0.39	2.0	Low	Evident

5.1.2 PSM002062 Borholmsfjärden

Chryptophytes and diatoms dominated the biomass of the phytoplankton community in July and December 2003. In April 2004 there was no predominant group (Figure 5-3). *Diatoma tenuis* and *Cryptomonas spp*. were most common in July and December 2003. *Pseudopedinella elastica* together with other small monadoids were dominating in April 2004.

The highest algal biomass was recorded in July 2003 (1.2 mg w.w./l). In December 2003 the biomass was 0.4 mg w.w./l and in April 2004, 0.3 mg w.w./l. The estimated chlorophyll value in July is considered as very high, whereas the values for December and April are very low and low respectively (Table 5-2).

Several species of bluegreen algae (cyanophyceae) were recorded in July but in a very low biomass (<0.001 mg w.w./l). Three potentially toxic /Edler et al. 1995/ genera were found, *Woronichinia* and *Anabena* in July and *Limnothrix* in December.

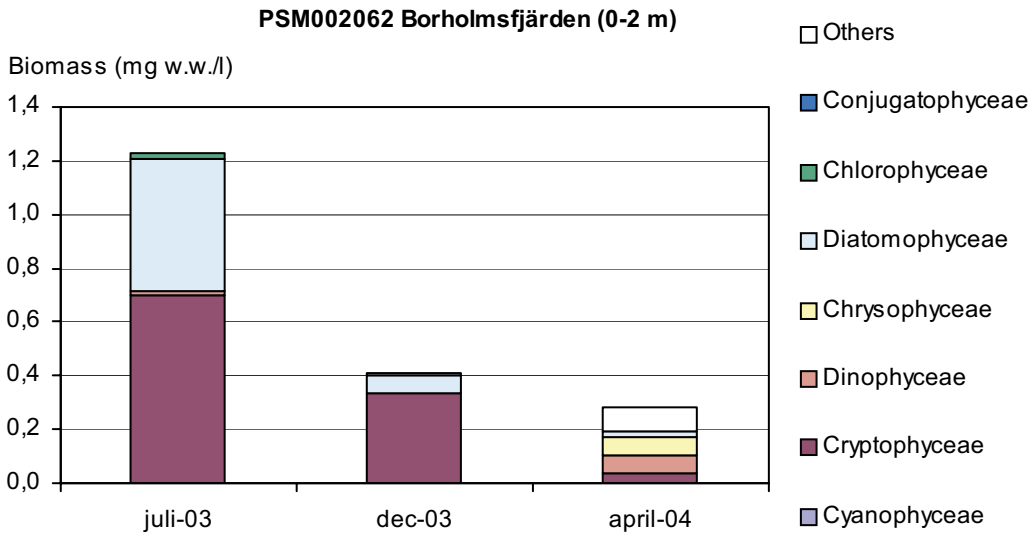

Figure 5-3. *Biomass of phytoplankton separated into different classes from station PSM002062 Borholmsfjärden (0–2 m).*

Table 5-2. Total biomass of phytoplankton in station PSM002062 Borholmsfjärden and classification of calculated chlorophyll concentrations and classification of deviation from comparative value according to /Johansson, 1999/

Station number	Station name	Date	Sampling depth (m)	Biomass (mg w.w./l)	Chlorophyll calculated (µg/l)	Classification	Deviation
PSM002062	Borholmsfjärden	2003-07-16	0–2	1.2	6.1	Very high	Evident
PSM002062	Borholmsfjärden	2003-12-10	0–2	0.4	2.1	Low	No or insignificant
PSM002062	Borholmsfjärden	2004-04-14	0–2	0.3	1.4	Very low	No or insignificant

5.1.3 PSM002064 Granholmsfjärden

Cryptophytes dominated the biomass of the phytoplankton community in July 2003 whereas dinophytes were dominant in December 2003. In April 2004 were diatoms the most dominant algae group (Figure 5-4). Different species of *Cryptomonas* were common in both July and December 2003. In December also species of dinophyceae were frequent. In April 2004 was however the genera *Chaetoceros* the most common taxa.

The highest algal biomass was recorded in April 2004 (0.9 mg w.w./l). In July 2003 the biomass was 0.1 mg w.w./l and in December 2003, 0.2 mg w.w./l. The concentration of chlorophyll can be estimated from the values of biomass according to /Johansson, 1999/. The chlorophyll value in April is considered as high, whereas the values for July and December are very low (Table 5-3).

In July and December, phytoplankton was sampled from two different levels in Granholmsfjärden (Figure 5-5). The biomass decreased with depth in both July and December. In July Cryptophytes were dominating in the upper layer whereas also dinophytes were common in the bottom layer. In December the species composition was similar at the two depths. Note that the biomass was very low in July 2003 which differs from the other stations. The estimated chlorophyll value from the surface layer (0–10 m) is considered as very low (Table 5-3). The biomass could have been underestimated in July

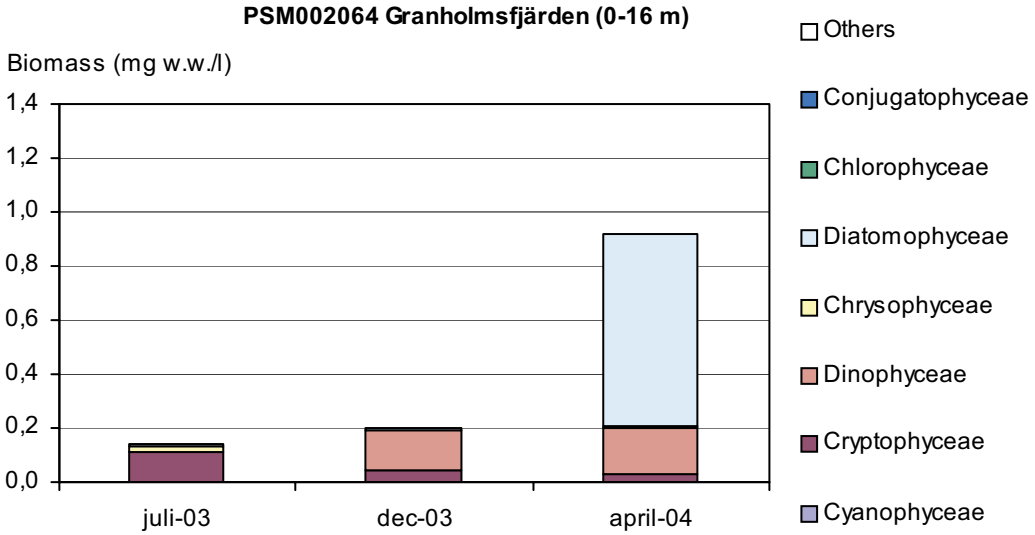

Figure 5-4. *Biomass of phytoplankton separated into different classes from station PSM002064 Granholmsfjärden (0–16 m).*

Table 5-3. Total biomass of phytoplankton in station PSM002064 Granholmsfjärden and classification of calculated chlorophyll concentrations and classification of deviation from comparative value according to /Johansson, 1999/

Station number	Station name	Date	Sampling depth (m)	Biomass (mg w.w./l)	Chlorophyll calculated (µg/l)	Classification	Deviation
PSM002064	Granholmsfjärden	2003-07-15	0–10	0.14	0.7	Very low	No or insignificant
PSM002064	Granholmsfjärden	2003-07-15	0–16	0.07	–	–	–
PSM002064	Granholmsfjärden	2003-12-09	0–10	0.27	1.4	Very low	No or insignificant
PSM002064	Granholmsfjärden	2003-12-09	0–16	0.10	–	–	–
PSM002064	Granholmsfjärden	2003-07-15	0–16	0.11	0.6	Very low	No or insignificant
PSM002064	Granholmsfjärden	2003-12-09	0–16	0.21	1.1	Very low	No or insignificant
PSM002064	Granholmsfjärden	2004-04-13	0–16	0.92	4.6	High	Small

due to the presence of material (other than algae), which complicated the analyses of the samples. The concentration of chlorophyll measured from water samples in the epilimnion in Granholmsfjärden in July confirms this supposition /Ericsson and Engdahl 2004/. The chlorophyll concentration from these measurements indicates a very high biomass of phytoplankton. However in the hypolimnion the value is low which correspond to the low transparency at this station.

Two potentially toxic /Edler et al. 1995/ genera of bluegreen algae were found in the investigation, *Woronichinia* and *Planktothrix*, but in a very low biomass.

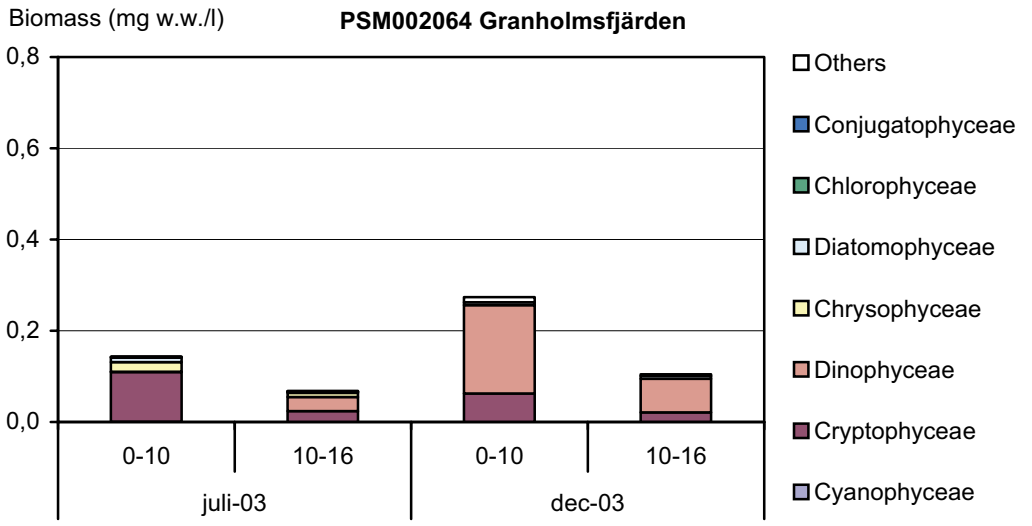

Figure 5-5. *Biomass of phytoplankton separated into different classes from station PSM002064 Granholmsfjärden at different depths (0–10 m, 10–16 m).*

5.1.4 PSM002065 Frisksjön

Dinophytes dominated the biomass of the phytoplankton community in July whereas diatoms dominated in December 2003 and in April 2004 (Figure 5-6). Perdinium willei was the dominating species in July. *Merismopedia warmingiana, Cryptomonas spp*., *Monoraphidium dybowskii* and *Trachelemonas sp*. were also common. In December 2003 the phytoplankton community had changed to be dominated by the diatom genera *Aulacoseira spp*. In April 2004 was *Aulacoseira spp* still the most common genera followed by species of *Cryptomonas*. Several species found in Frisksjön are typical for a humic lake.

The highest algal biomass was recorded in July 2003 (5.2 mg w.w./l). In December 2003 the biomass was 0.1 mg w.w./l and in April 2004, 0.4 mg w.w./l. The biomass value in July is considered as very high, whereas the values for December and April are very low according to /Wiederholm, 1999/ (Table 5-4).

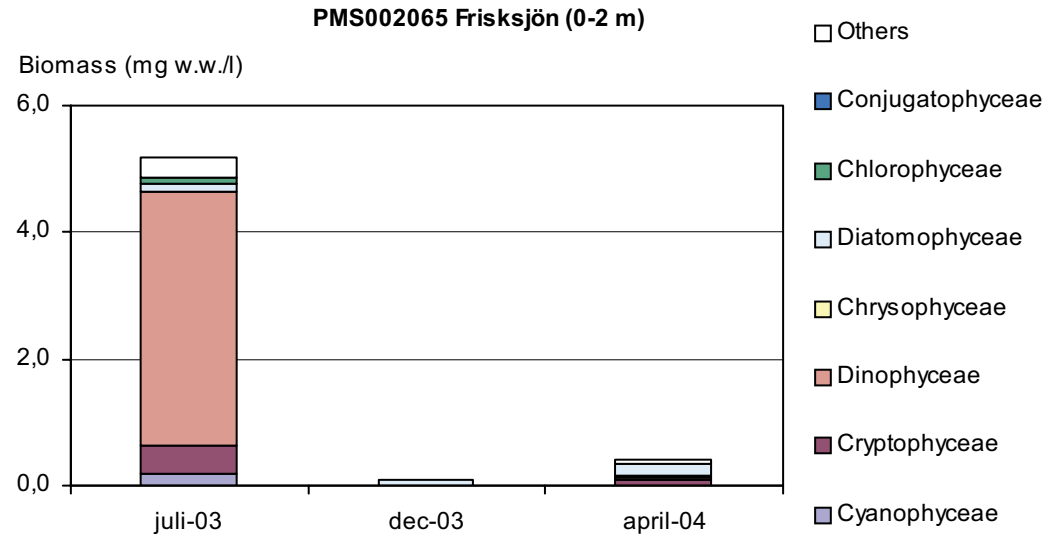

Figure 5-6. *Biomass of phytoplankton separated into different classes from station PSM002065 Frisksjön (0–2 m)*

Table 5-4. Classification of total biomass of phytoplankton in station PSM002065 Frisksjön and classification of deviation from comparative value according to /Widerholm, 1999/.

Station number	Station name	Date	Sampling depth (m)	Biomass (mg w.w./l)	Classifi-cation	Deviation
PMS002065	Frisksjön	2003-07-15	0–2	5.2	Very high	Very large
PMS002065	Frisksjön	2003-12-10	0–2	0.1	Very low	No or insignificant
PSM002065	Frisksjön	2004-04-14	0–2	0.4	Very low	No or insignificant

Several species of bluegreen algae (cyanophyceae) were recorded from the lake, although in very low biomasses. Only one species of cyanophytes, *Merismopedia warmingiana*, were frequent in July. However, the biomass value is considered as very low /Wiederholm, 1999/. The species is not documented as potentially toxic either /Edler et al. 1995/.

5.2 Zooplankton

5.2.1 PSM002060 Kråkelund

In general zooplankton biomass was very low at Kråkelund at all dates and at all depths and the species composition indicated more saline conditions than at the other stations. In July 2003 several groups made up the community (Figure 5-7). In relative terms cladocerans and copepods were most important but also rotifers, larvae of some benthic macro-invertebrates and tintinnid ciliates contributed to a total zooplankton biomass of 0.0190 mg d.w. l^{-1} (calculated mean for the whole water column). Important species during July were the cladoceran *Bosmina longispina* and juvenile copepods, especially *Acartia sp*. and *Eurytemora sp*.

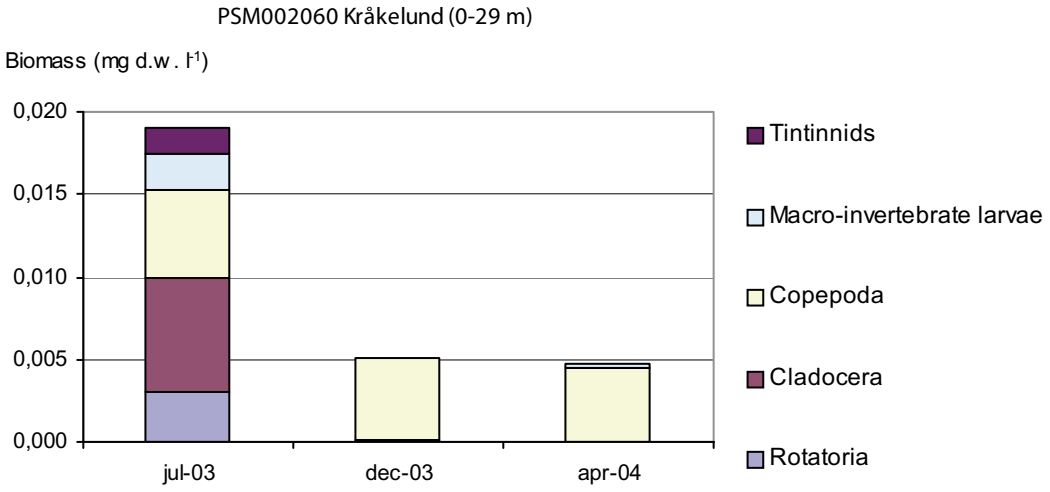

Figure 5-7. *Biomass of different zooplankton groups in the whole water column at PSM002060 Kråkelund (0–29 m). Values for July and December 2003 are calculated from the stratified data in Figure 5-9.*

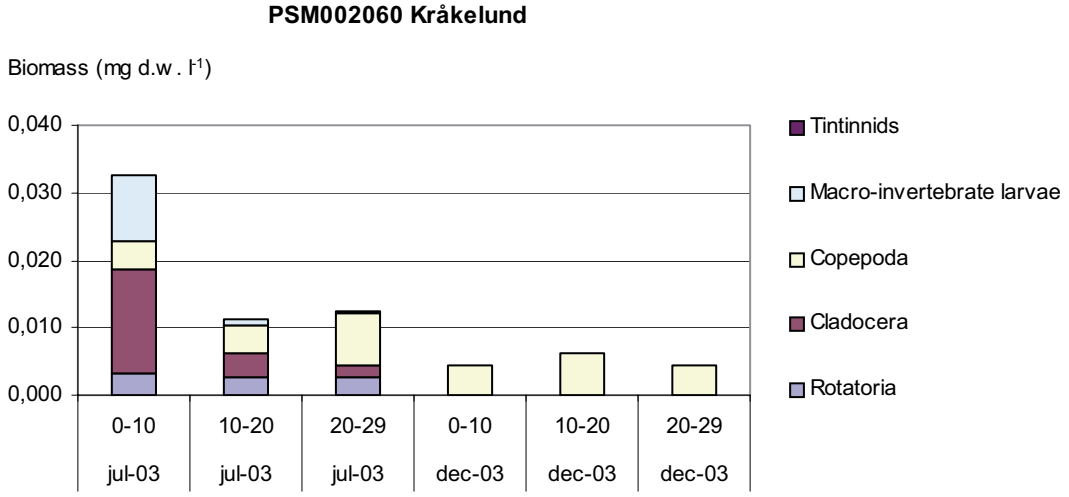

Figure 5-8. *Biomass of different zooplankton groups in different strata of the water column at PSM002060 Kråkelund in July and December 2003.*

In December 2003 (0.0051 mg d.w. l^{-1}) and April 2004 (0.0047 mg d.w. l^{-1}) zooplankton biomass was still lower than in July and dominated by copepods, especially adults and juveniles of *Acartia spp*. At all sampling dates the zooplankton biomass and density was lower, and usually much lower, at Kråkelund than at any of the other stations. Compared to the other sites the community composition resembled most that in Granholmsfjärden.

The stratified sampling showed that biomass was highest in the surface water (0–10 m) in July but evenly distributed with depth in December 2003 (Figure 5-8). Cladocerans, especially *Bosmina longispina*, were important in the surface water in July but also larvae of macro-invertebrates, especially molluscs, contributed. These larvae will settle and grow to adults in littoral and shallow areas. Thus, invertebrate larvae may contribute to an horizontal transport of materials and energy from the Kråkelund pelagial to benthic habitats.

5.2.2 PSM002062 Borholmsfjärden

In Borholmsfjärden the zooplankton community (total biomass was 0.074 mg d.w. l^{-1}) was dominated by rotifers in July 2003 (Figure 5-9). The most important species was *Keratella cochlearis*. In December 2003 (0.061 mg d.w. l^{-1}) calanoid copepods were most important (adults and juveniles of *Acartia* sp. and *Eurytemora* sp.) and in April 2004 (0.352 mg d.w. l^{-1}) large cyclopoid copepods, i.e. *Cyclops* sp. dominated strongly. Tintinnids and macro-invertebrate larvae were absent or very scarce at all sampling dates.

The zooplankton community at the Borholmsfjärden station showed an apparent seasonal change. This change may have consequences for the seasonal dynamics of material in the pelagial zone. The dominating rotifer, Ketarella cochlearis, is likely more efficient (per unit biomass) in recycling nutrients and other chemicals than the large-bodied and predatory copepodites and adults of Cyclops sp. The cyclopoid dominance in April 2004 may also have an effect on how material are translocated across ecosystem boundaries. By feeding and reproducing in the pelagial Cyclops sp. ties up material in copepod biomass but in some of the older instars they go to dormancy in the sediment. In this way material may be transported from the pelagial to the sediment, not only by sedimentation, but also by migrating zooplankton.

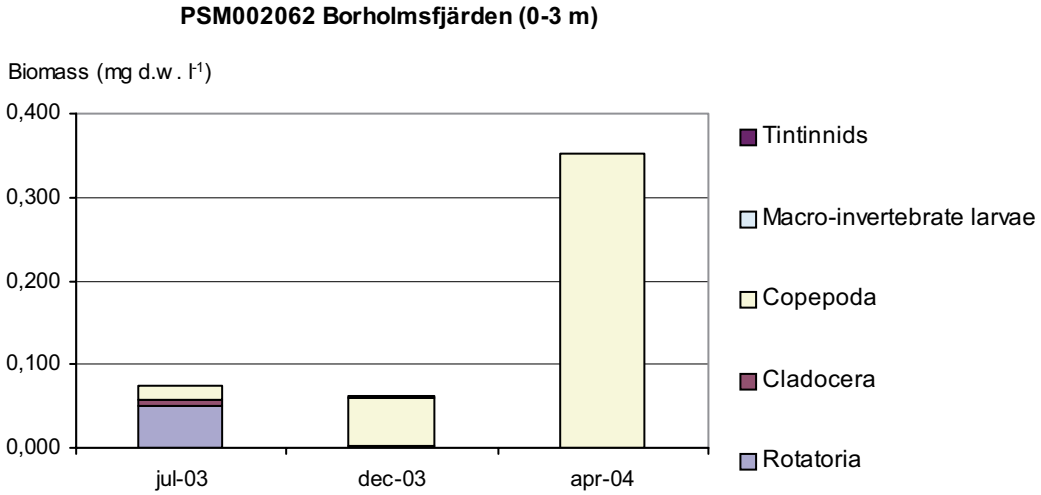

Figure 5-9. *Biomass of different zooplankton groups in the whole water column at PSM002062 Borholmsfjärden (0–3 m).*

5.2.3 PSM002064 Granholmsfjärden

In Granholmsfjärden zooplankton biomass was low at all times and depths (Figures 5-10 and 5-11). In July 2003 copepods and cladocerans made up most of the total biomass of 0.048 mg d.w. l^{-1} (calculated mean for the whole water column). *Bosmina longispina* was the most common cladoceran while *Eurytemora* spp contributed most to the copepod biomass. Copepods dominated in December 2003, when total zooplankton biomass was 0.045 mg d.w. l^{-1}, and in April 2004, when total biomass was 0.025 mg d.w. l^{-1}. Important groups were *Eurytemora* sp. and calanoid copepodites in December and calanoids together with cyclopoids in April.

Tintinnids were never common at the Granholmsfjärden station but macro-invertebrate larvae contributed somewhat to the biomass in the December samples.

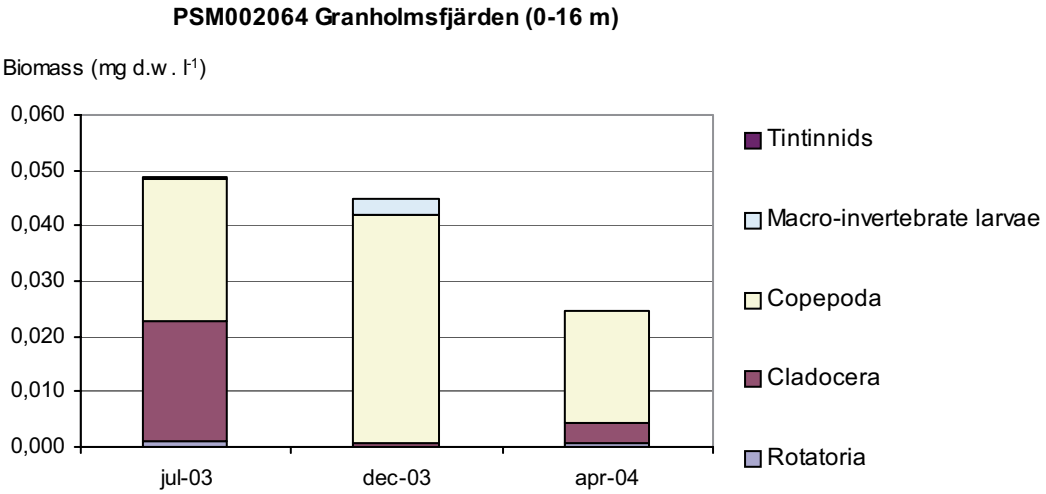

Figure 5-10. *Biomass of different zooplankton groups in the whole water column at PSM002064 Granholmsfjärden (0–16 m). Values for July and December 2003 are calculated from the stratified data in Figure 5-12.*

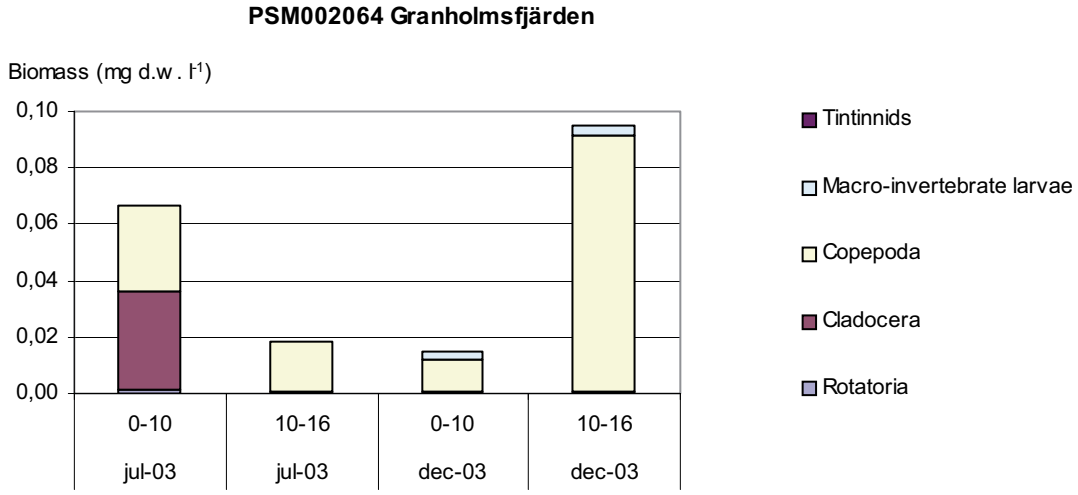

Figure 5-11. *Biomass of different zooplankton groups in different strata of the water column at PSM002064 Granholmsfjärden in July and December 2003.*

The stratified sampling showed differences in depth distribution between July and December 2003 (Figure 5-11). In July biomass was highest near the surface (0–10 m), due to high *Bosmina* densities, and in December it was highest in the deepest strata (10–16 m), due to high copepod densities.

5.2.4 PSM002065 Frisksjön

The zooplankton community in Frisksjön was typical for a small lake at the east coast of southern Sweden. Cladocerans dominated the summer sample, i.e. in July 2003 (Figure 5-12). At this time biomass was very high, 1.68 mg d.w. l^{-1} (note the scale difference as compared to the other zooplankton figures), mainly due to high densities of the filter-feeding *Daphnia cucullata* and the predatory *Leptodora kindti*. The small copepod *Thermocyclops* sp. was also common.

In December 2003 and April 2004 biomass was much lower than in July (0.158 and 0.138 mg d.w. l^{-1}, respectively), but high as compared to most of the samplings in the Baltic Sea. At both these dates the zooplankton communities were dominated by copepods, especially the large calanoid *Eudiaptomus* sp.

Zooplankton groups other than cladocerans and copepods where never important in Frisksjön. Several species of rotifers were identified but they did not contribute significantly to the community biomass.

The seasonal change in the community structure in Frisksjön indicates a rapid turnover in summer (July 2003) and a slower in winter (December 2003) and spring (April 2004). Cladocerans, as the efficiently filter-feeding *Daphnias*, are usually able to recycle nutrients and other chemical substances faster than slowly growing large copepods as *Eudiaptomus*.

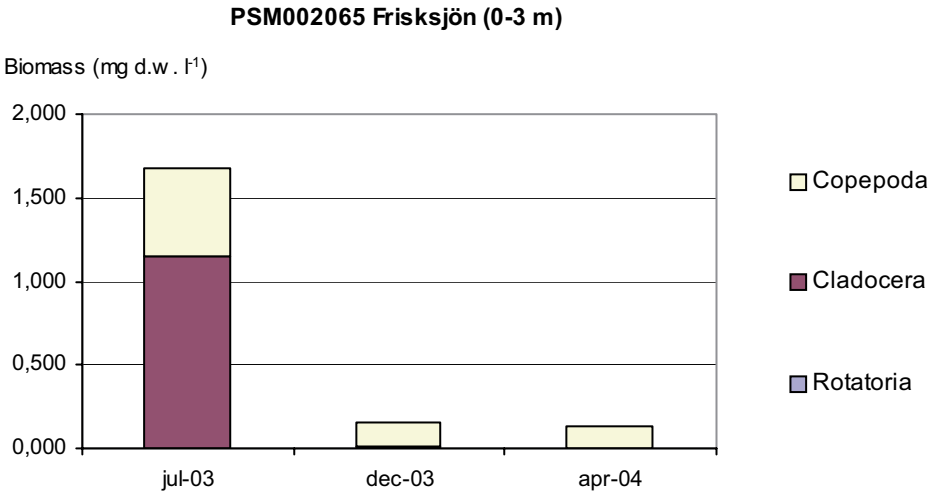

Figure 5-12. *Biomass of different zooplankton groups in the whole water column in the centre of Lake Frisksjön (0–3 m).*

6 Summary and discussions

Except for Granholmsfjärden the highest biomass of phytoplankton was recorded in July (Figure 6-1). The very low biomass in Granholmsfjärden in July is probably underestimated because of the presence of organic material in the samples, other than algae. This made the analysis more difficult. Normally there is a phytoplankton maximum of diatoms in spring samples. In April 2004 diatoms were dominating the phytoplankton community in Kråkelund, Granholmsfjärden and to some extent also in Frisksjön. In Borholmsfjärden the diatoms were not dominating though. Perhaps the maximum for diatoms came earlier or later this year. Several species of potentially toxic bluegreen algae (cyanophyceae) were found. However, at most sites and occasions the biomass of bluegreens was very low. In the summer samples from Kråkelund the bluegreens were a dominating group but the biomass were relatively low.

The zooplankton fauna differed between the sampled stations in several respects. Biomass per unit volume of water was usually highest in Frisksjön, followed by Borholmsfjärden, while the biomass was low or very low at the most saline stations, i.e. Kråkelund and Granholmsfjärden (Figure 6-2). The highest zooplankton biomass in the study was 1.68 mg d.w. l^{-1} measured in July 2003 in Frisksjön and the lowest was less than 0.005 mg d.w. l^{-1} in Kråkelund in April 2004. These large numerical differences indicate that the role of zooplankton as compartments and vectors for chemical elements, substances and energy, may differ significantly between the stations.

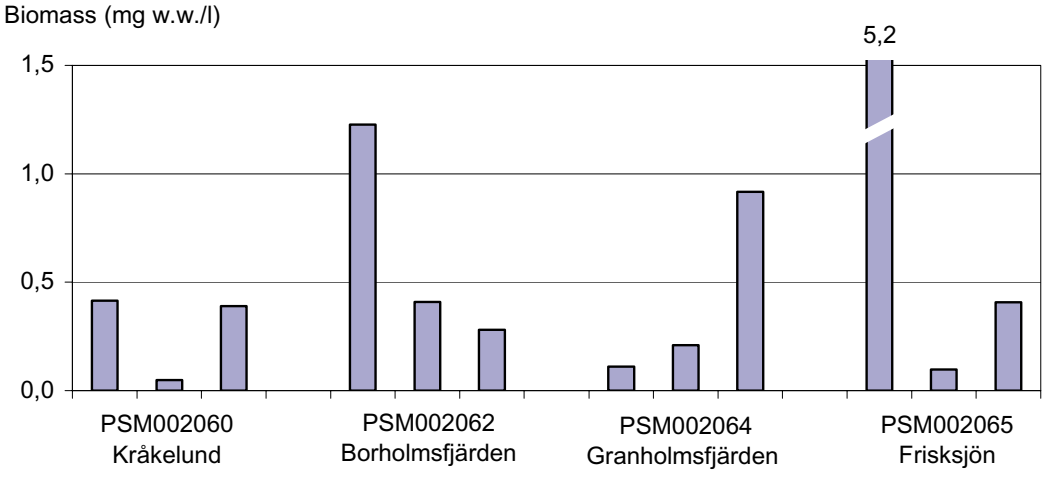

Figure 6-1. *Biomass of phytolankton in the whole water column in July 2003, December 2003 and April 2004. Data from the four investigated sites. Note that the value from July 2003 in Frisksjön was 5.2 mg w.w./l.*

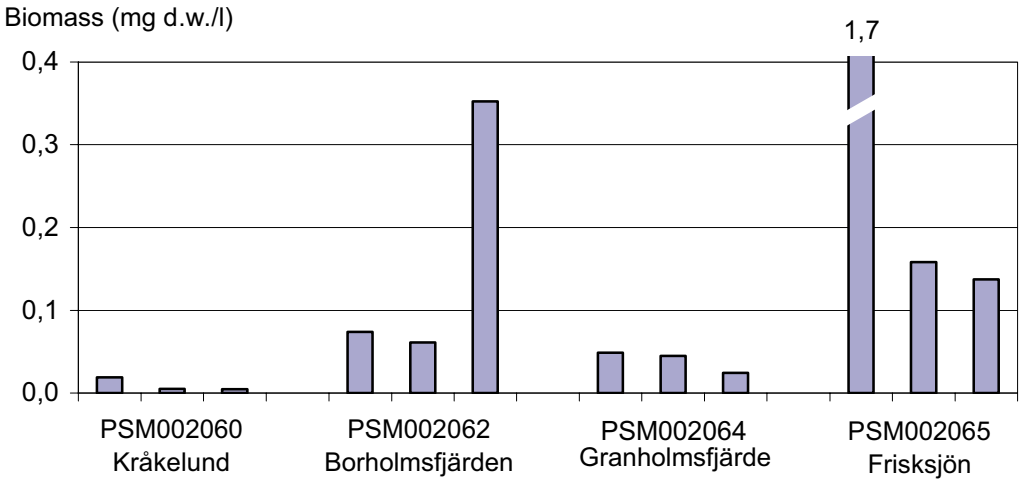

Figure 6-2. *Biomass of zooplankton in the whole water column in July 2003, December 2003 and April 2004. Data from the four investigated sites. Note that the value from July 2003 in Frisksjön was 1.7 mg w.w./l.*

Also differences in community structure indicate different roles of zooplankton. Depending on behaviour and biology of the actual species the effect on physio-chemical variables may differ. Thus copepods are considered to be oligotrophic agents that drain the pelagial from particles and dissolved substances. This is due to their biology, they ingest and assimilate phytoplankton and other particles but the defecated material is usually egested in pellets that sediment towards the bottom. Thus a high biomass of copepods, as e.g. in Borholmsfjärden in April 2004, may indicate a relatively efficient transport of nutrients and other substances to the sediments. Also macro-invertebrate larvae may serve as vectors that transport material from the pelagial to littoral areas. Small cladocerans on the other hand, in this study sometimes relatively common in surface waters at Kråkelund and Granholmsfjärden, and in Frisksjön, will usually recycle substances within the pelagial in a more efficient way. Also rotifers and ciliates will have this effect.

Zooplankton may be important as food for many species of fish and for different invertebrate predators. Thus, chemical elements, substances and energy may be transported from lower trophic levels via zooplankton, to fish. The zooplankton availability in shallow bays of the Baltic Sea may be crucial for the survival of fish fry and for adult fish that migrate to spawn there, as herring. In that way zooplanktivorous fish may translocate material from shallow bays, as those sampled in this study, to other areas of the Baltic Sea. In freshwaters, as Lake Frisksjön, planktivorous midge larvae, Chaoborus spp., may ingest zooplankton and transport material from the lake to terrestial areas after moulting as flying adults.

This study has focused on macro-zooplankton. The sampling method captured zooplankton larger than 64 microns while smaller species were not retained in the filter. Small zooplankton, e.g. many ciliates and protozoan, as well as small rotifers, may be very important for the recycling rate of substances. Thus, the microbial loop, where also bacteria and other picoplankton are important actors, may be at least as important as macro-zooplankton, e.g. in the dynamics of chemical elements and substances in the open water of lakes as well as the sea.

7 References

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Appendix 1

Information on sites and sampling

Idcode	Site	Type	Koordinates (x)	(y)	Maximum depth
PSM002060	Kråkelund	Sea	636924	155580	30
PSM002062	Borholmsfjärden	Sea	636706	155126	3.3
PSM002064	Granholmsfjärden	Sea	636862	155052	17
PSM002065	Frisksjön	Lake	636810	154901	3

Month	2003 Sampling week	Analysis week	2004 Sampling week	Analysis week
January	–	–	–	–
February	–	–	–	–
Mars	–	–	–	–
April	–	–	16 and 18	16
May	–	–	22	–
June	–	–	24	–
July	29	29	–	–
August	33	–	–	–
September	37	–	–	–
October	40 and 44	–	–	–
November	47 and 49	–	–	–
December	50	50	–	–

2003

Site	Type	Depth zones (m) Phytopl.	Zoopl.	No of subsamples Phytopl.	Zoopl.
Kråkelund	Sea	0–10, 10–20, 20–28	0–10, 10–20, 20–29	1	1
Borholmsfjärden	Sea	0–2	0–3	5	1
Granholmsfjärden	Sea	0–10, 10–16	0–10, 10–17	1	1
Frisksjön	Lake	0–2	0–3	5	1

2004

Site	Type	Depth zones (m) Phytopl.	Zoopl.	No of subsamples Phytopl.	Zoopl.
Kråkelund	Sea	0–28	0–29	1	1
Borholmsfjärden	Sea	0–2	0–3	5	1
Granholmsfjärden	Sea	0–16	0–17	1	1
Frisksjön	Lake	0–2	0–3	5	1

Volume of water sieved through plankton net when sampling zooplankton

2003

Site	Type	Dept level (m)	Number of catches	Volume sieved water (liters)
Kråkelund	Sea	0–10	10	43.0
Kråkelund	Sea	10–20	10	43.0
Kråkelund	Sea	20–29	9	38.7
Borholmsfjärden	Sea	0–3	3	12.9
Granholmsfjärden	Sea	0–10	10	43.0
Granholmsfjärden	Sea	10–17	7	30.1
Frisksjön	Lake	0–3	3	12.9

2004

Site	Type	Dept level (m)	Number of catches	Volume sieved water (liters)
Kråkelund	Sea	0–29	29	124.7
Borholmsfjärden	Sea	0–3	3	12.9
Granholmsfjärden	Sea	0–17	17	73.1
Frisksjön	Lake	0–3	3	12.9

Appendix 2

Species lists of phytoplankton

Det. = Person responsible for the identification.

EG = Ecological group

O – taxa typical for oligotrofic waters

E – taxa typical for eutrofic waters

I – taxa with broad ecological tolerance

TI = Trofiskt artindex.(troific species index) Some taxa are indicators of nutrient rich or nutrient poor environments. In this index the indicators are ranked from 11 till 100 /Hörnström, 1979/. 11 = very nutrient poor (ultraoligotrofic) environment, 100= very nutriemnt rich (eutrofic) environment. This is a index used for lakes.

Frekvens (frequency) = Estimated frequency of indicator species in a scale from 1 to 5, where 5 is the most common species.

Längd (length) = the length (μm/l) of the species. Useful for thread formed species like *Aulacoseira spp*.

Antal celler/l= number of cells per litre.

Biomassa (biomass) = biomass in wet weight of phytoplankton in mg/litre which is the same as the volume in mm^3/litre.

PSM002060. Kråkelund

2003-07-16
0-10 m
BIN PR066
Det. Iréne Sundberg

RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Ackreditated Laboratory

Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Cyanodictyon sp. PASCHER			1	
Lemmermanniella pallida (LEMMERMANN) GEITLER	E		2	
Nostocales				
Anabaena lemmermannii P. RICHTER	I	18	4	0,116
Anabaena sp. BORY, rak	I		1	
Aphanizomenon klebahnii (ELENK) PECH. & KALINA	E		4	0,197
Nodularia spumigena MERTENS			2	0,026
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1	
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		2	0,025
Katablepharis ovalis SKUJA	I		1	
DINOPHYCEAE (pansarflagellater)				
Dinophysis acuminata CLAPARÈDE & LACHMANN			2	0,067
Dinophysis norvegica CLAPARÈDE & LACHMANN			1	0,004
Dinophysis rotundata CLAPARÈDE & LACHMANN			2	0,053
Ebria tripartita (SCHUMANN) LEMMERMANN			2	0,013
Gymnodinium sp./Katodinium sp.	I		3	0,078
Heterocapsa triquetra (EHRENBERG)			2	0,001
Peridinium umbonatum STEIN			1	
Peridinium sp./Perdiniopsis sp.	I		1	
Pyrophacus horologicum STEIN			2	0,042
Obestämd			3	0,092
CHRYSOPHYCEAE (guldalger)				
Pedinella sp. WYSSOTZKI			1	
DIATOMOPHYCEAE (kiselalger)				
Chaetoceros sp.			1	
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		2	0,001
Nitzschia sp. HASSALL (closterium-typ)			2	0,004
Rhizosolenia longiseta ZACHARIAS	O	33	1	
Skeletonema sp. (GREVILLE)			1	
ÖVRIGA				
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	1	
Obestämda monader (inklusive Pyramomonas sp. + Chrysochromulina sp.)			3	0,026

PSM002060. Kråkelund

2003-07-16
10-20 m
BIN PR066
Det. Iréne Sundberg

RAPPORT
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REPORT issued by an Ackreditated Laboratory

Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Lemmermanniella pallida (LEMMERMANN) GEITLER	E		1	
Nostocales				
Anabaena lemmermannii P. RICHTER	I	18	2	0,023
Anabaena sp. BORY, rak	I		1	
Aphanizomenon cf. klebahnii (ELENK) PECH. & KALINA	E		4	0,064
Nodularia spumigena MERTENS			3	0,025
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1	
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3	0,039
Katablepharis ovalis SKUJA	I		1	
DINOPHYCEAE (pansarflagellater)				
Dinophysis acuminata CLAPARÈDE & LACHMANN			3	0,060
Dinophysis norvegica CLAPARÈDE & LACHMANN			2	0,011
Dinophysis rotundata CLAPARÈDE & LACHMANN			2	0,008
Gonyaulax sp./Protoperdinium sp.			1	
Gymnodinium sp. (liten) KOFOID & SWEZY	I		4	0,088
Obestämd (rund)			2	0,003
DIATOMOPHYCEAE (kiselalger)				
Chaetoceros sp.			1	
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1	
Nitzschia sp. HASSALL (closterium-typ)			2	0,0012
Skeletonema sp. (GREVILLE)			1	
ÖVRIGA				
Pyramimonas sp. SCHMARDA (Prasinophyceae)			1	
Obestämda monader (inkl. Pyramomonas sp.)			2	0,015

PSM002060. Kråkelund

2003-07-16
20-28 m
BIN PR066
Det. Iréne Sundberg

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REPORT issued by an Ackreditated Laboratory

Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Lemmermanniella pallida (LEMMERMANN) GEITLER	E		1	
Nostocales				
Anabaena sp. BORY rak	I		2	0,0005
Anabaena sp. BORY, böjd	I		2	0,004
Aphanizomenon cf. klebahnii (ELENK) PECH. & KALINA	E		3	0,011
Nodularia spumigena MERTENS			2	0,003
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		2	0,001
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		2	0,010
Katablepharis ovalis SKUJA	I		1	
DINOPHYCEAE (pansarflagellater)				
Dinophysis sp. EHRENBERG			2	0,033
Ebria tripartita (SCHUMANN) LEMMERMANN			2	0,013
Gonyaulax sp./Protoperdinium sp.			2	0,001
Gymnodinium sp. (liten) KOFOID & SWEZY	I		2	0,007
Peridinium sp. EHRENBERG	I		1	0,002
Obestämd			2	0,009
DIATOMOPHYCEAE (kiselalger)				
Chaetoceros sp.			1	
Pennales obestämda	I		2	0,002
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG), små	I		2	0,001
Nitzschia sp. HASSALL (closterium-typ)			2	0,0003
Skeletonema sp. (GREVILLE)			1	
ÖVRIGA				
Pyramimonas sp. SCHMARDA (Prasinophyceae)			2	0,001
Obestämda monader			2	0,003

PSM002062. Borholmsfjärden

2003-07-16
0-2 m
BIN PR066
Det. Iréne Sundberg

RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Ackreditated Laboratory

Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Aphanocapsa sp. NÄGELI			1	
Cyanodictyon sp. PASCHER			1	
Woronichinia sp.	E		1	
Nostocales				
Anabaena sp. BORY, böjd	I		1	
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1	
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		4	0,231
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		5	0,471
DINOPHYCEAE (pansarflagellater)				
Peridinium sp. /Peridiniopsis sp.			2	0,013
CHRYSOPHYCEAE (guldalger)				
Mallomonas akrokomos RUTTNER	I		1	
Mallomonas sp. (annan) PERTY	I		1	
DIATOMOPHYCEAE (kiselalger)				
Diatoma tenuis AGARDH	E		5	0,465
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		2	0,021
CHLOROPHYCEAE (grönalger)				
Chlorococcales				
Ankistrodesmus fusiformis CORDA	I	90	1	
Crucigenia quadrata-typ MORREN	I		1	
Dictyosphaerium sp. NÄGELI	I		1	
Micractinium pusillum FRESENIUS	E		1	
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		3	0,009
Monoraphidium sp./Koliella sp.			3	0,012
Nephroclamys subsolitaria (G. S. WEST) KORSHIKOV			1	
Oocystis sp. NÄGELI			1	
Scenedesmus spp. MEYEN	E		2	0,004
ÖVRIGA				
Obestämda monader			2	

PSM002064. Granholmsfjärden

2003-07-15
0-10 m
BIN PR066
Det. Iréne Sundberg

RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Ackreditated Laboratory

Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Woronichinia sp.	E		1	
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1	
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		4	0,084
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		3	0,025
DINOPHYCEAE (pansarflagellater)				
Dinophysis sp. EHRENBERG			1	
Ebria tripartita (SCHUMANN) LEMMERMANN			1	
Gymnodinium sp. (liten) KOFOID & SWEZY	I		1	
Peridinium sp. EHRENBERG	I		1	
CHRYSOPHYCEAE (guldalger)				
Pseudopedinella elastica SKUJA			3	0,021
DIATOMOPHYCEAE (kiselalger)				
Diatoma tenuis AGARDH	E		2	0,010
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1	
CHLOROPHYCEAE (grönalger)				
Chlorococcales				
Micractinium pusillum FRESENIUS	E		1	
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		1	
Monoraphidium sp./Koliella sp.			2	0,0002
Scenedesmus sp. MEYEN (med spröt)	E		1	
Scenedesmus sp. MEYEN (utan spröt)	E		1	
CONJUGATOPHYCEAE (konjugater)				
Closterium acutum var. variabile (LEMMERMANN) W. KRIEGER	I	50	1	
ÖVRIGA				
Obestämda monader			1	

PSM002064. Granholmsfjärden

2003-07-15
10-16 m
BIN PR066
Det. Iréne Sundberg

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Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1	
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3	0,022
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		2	0,002
DINOPHYCEAE (pansarflagellater)				
Ebria tripartita (SCHUMANN) LEMMERMANN			1	
Gymnodinium sp. (stor) KOFOID & SWEZY	I		1	
Obestämd, liten rund			2	0,002
Obestämd, stor rund			3	0,028
Obestämd, liten avlång			2	0,001
CHRYSOPHYCEAE (guldalger)				
Pseudopedinella elastica SKUJA			2	0,009
DIATOMOPHYCEAE (kiselalger)				
Chaetoceros sp.			1	
Diatoma tenuis AGARDH	E		2	0,001
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1	0,001
Nitzschia sp. HASSALL			1	
CHLOROPHYCEAE (grönalger)				
Chlorococcales				
Scenedesmus sp. MEYEN	E		1	
CONJUGATOPHYCEAE (konjugater)				
Closterium acutum var. variabile (LEMMERMANN) W. KRIEGER	I	50	1	
ÖVRIGA				
Obestämda monader			1	

PMS002065. Frisksjön

2003-07-15
0-2 m
BIN PR066
Det. Iréne Sundberg

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Arter	EG	TI	Frekvens (1 - 5)	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)				
Chroococcales				
Aphanothece sp.NÄGELI			2	
Merismopedia warmingiana LAGERHEIM	E		5	0,176
Nostocales				
Anabaena lemmermannii P. RICHTER	I	18	1	
CRYPTOPHYCEAE (rekylalger)				
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		3	0,064
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		4	0,134
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		4	0,271
DINOPHYCEAE (pansarflagellater)				
Ceratium hirundinella (O. F. MÜLLER) SCHRANK	I	34	3	0,154
Peridinium umbonatum STEIN			1	
Peridinium willei HUITFELD-KAAS	I	50	5	3,836
CHRYSOPHYCEAE (guldalger)				
Dinobryon bavaricum IMHOF	O	31	1	
Dinobryon crenulatum W: & G.S. WEST	O	13	1	
Dinobryon divergens IMHOF	I	39	1	
Mallomonas akrokomos RUTTNER	I		2	0,002
Mallomonas tonsurata PASCHER & RUTTNER	I		2	0,011
Mallomonas caudata IWANOFF	I		1	
Synura sp. EHRENBERG	I	50	2	
Uroglena sp. EHRENBERG	I		1	
DIATOMOPHYCEAE (kiselalger)				
Aulacoseira alpigena-typ (GUNOW) KRAMMER	O	23	2	0,012
Aulacoseira sp. THWAITES	I		1	
Centriska kiselalger KÜTZING) BRÉBISSON/EHRENBERG	I		1	
Rhizosolenia longiseta ZACHARIAS	O	33	3	0,114
CHLOROPHYCEAE (grönalger)				
Chlorococcales				
Botryococcus sp. KÜTZING	I		1	0,015
Crucigenia sp.	I		1	
Elakatothrix genevensis (REVERDIN) HINDÁK	I	17	1	
Monoraphidium dybowskii (WOLOSZY´NSKA) HINDÁK & KOMARKÓVA-LEGENEROVÁ	O	16	4	0,062
Oocystis sp. NÄGELI			1	
Pediastrum privum (PRINTZ) HEGEWALD	O		1	
Pediastrum tetras (EHRENBERG) RALFS	E	40	1	
Quadrigula sp. PRINTZ		21	1	
Scenedesmus sp. MEYEN (utan spröt)	E		1	
Tetraedron caudatum (CORDA) HANSGIRG	I	51	1	
CONJUGATOPHYCEAE (konjugater)				
Closterium acutum var. variabile (LEMMERMANN) W. KRIEGER	I	50	2	0,015
ÖVRIGA				
Trachelomonas sp. EHRENBERG (Euglenophyceae) (5-10µm)	E	55	1	
Trachelomonas sp. EHRENBERG (Euglenophyceae) (10-20µm)	E	55	4	0,300
Obestämda monader			1	

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REPORT issued by an Ackreditated Laboratory

PSM 002060. Kråkelund

2003-12-09
0-10 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal *10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Aphanizomenon sp. MORREN	I		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		2		44	0,004
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		26	0,013
DINOPHYCEAE (pansarflagellater)						
Heterocapsa triquetra (EHRENBERG)			2		2	0,001
Katodinium sp. FOTT			2		3	0,001
Obestämd (Gyrodinium sp.?)			1			
DIATOMOPHYCEAE (kiselalger)						
Centriska kiselalger (>40 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		2			0,002
Melosira sp. C. A. AGARDH			2			0,0080
ÖVRIGA						
Pyramimonas sp. SCHMARDA (Prasinophyceae)			2		11	0,002
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	1			

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PSM002060. Kråkelund

2003-12-09
10-20 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal *10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Aphanizomenon sp. MORREN	I		2	79500		0,001
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		2		54,2	0,005
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		35,1	0,019
DINOPHYCEAE (pansarflagellater)						
Dinophysis acuminata CLAPARÈDE & LACHMANN			2			0,022
Heterocapsa triquetra (EHRENBERG)			2		6,5	0,003
Katodinium sp. FOTT			1		0,0	
Obestämd (Gyrodinium sp.?)			2		0,1	0,009
DIATOMOPHYCEAE (kiselalger)						
Centriska kiselalger (20-25 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		2		0,6	0,002
Centriska kiselalger Actinocyclus-typ. (35-100 µm) EHRENBERG	I		2		0,2	0,008
Chaetoceros sp.			1			
Melosira sp. C. A. AGARDH			1			
Skeletonema sp. (GREVILLE)			1			
ÖVRIGA						
Pyramimonas sp. SCHMARDA (Prasinophyceae)			1			
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	1			
Obestämda monader (små)			1			

Laboratorium ackrediteras av Styrelsen för ackreditering och teknisk kontroll (SWEDAC) enligt svensk lag. Verksamheten vid de svenska ackrediterade laboratorierna uppfyller kraven i SS-EN 45001 (1989), SS-EN 45002 (1989) och ISO/IEC Guide 25 (1990:E). Denna rapport får endast återges i sin helhet, om inte SWEDAC och utfärdande laboratorium i förväg godkänt annat.

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PSM002060. Kråkelund

2003-12-09
20-28 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal ·10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Aphanizomenon sp. MORREN	I		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		3		23,0	0,002
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		9,6	0,004
DINOPHYCEAE (pansarflagellater)						
Dinophysis acuminata CLAPARÈDE & LACHMANN			1			0,004
Dinophysis rotundata CLAPARÈDE & LACHMANN			1			0,002
Heterocapsa triquetra (EHRENBERG)			2		2,0	0,001
Katodinium sp. FOTT			1			
Obestämd (Gyrodinium sp.?)			2		0,1	0,017
DIATOMOPHYCEAE (kiselalger)						
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		1			
Centriska kiselalger Actinocyclus-typ. (40-100 µm) EHRENBERG	I		2		0,2	0,018
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1			
ÖVRIGA						
Pyramimonas sp. SCHMARDA (Prasinophyceae)			1			
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	1			
Obestämda monader			1			

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SWEDAC ACKREDITERING 1646 EN 45 001
RAPPORT
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REPORT issued by an Ackreditated Laboratory

PSM002062. Borholmsfjärden

2003-12-10
0-2 m
BIN PR066
Det. Carin Nilsson

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal .10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Oscillatoriales						
Limnothrix sp.	E		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		3		438	0,049
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		2		427	0,286
DINOPHYCEAE (pansarflagellater)						
Katodinium sp. FOTT			2		4	0,002
DIATOMOPHYCEAE (kiselalger)						
Aulacoseira sp. (9 µm bred) THWAITES	I		1			
Cyclotella sp. KÜTZING	I		1			
Diatoma tenuis AGARDH	E		3		25	0,023
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		4		15	0,039
Nitzschia sp. (longissima-typ) (BRÉBISSON) RALFS			1			
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		1		3	0,0004
Scenedesmus sp. MEYEN	E		1			
ÖVRIGA						
Pyramimonas sp. SCHMARDA (Prasinophyceae)			3		71	0,011
Obestämda monader			2			

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PSM002064. Granholmsfjärden

2003-12-09
0-10 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal .10^3 celler/l	Biomassa mg/l
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		3		132	0,012
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		126	0,050
DINOPHYCEAE (pansarflagellater)						
Dinophysis acuminata CLAPARÈDE & LACHMANN			4		1	0,183
Heterocapsa triquetra (EHRENBERG)			2		4	0,003
Katodinium sp. FOTT			2		26	0,007
Peridinium sp. /Peridiniopsis sp.			1			
Protocentrum balticum-typ (LOHMAN)			1			
DIATOMOPHYCEAE (kiselalger)						
Chaetoceros sp.			1			
Diatoma tenuis AGARDH	E		2		2	0,003
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG), stavar långa	I		2		1	0,002
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG), stavar korta	I		2		2	0,002
CHLOROPHYCEAE (grönalger)						
Volvocales						
Chlamydomonas-typ EHRENBERG	I		1			
Chlorococcales						
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		1			
Scenedesmus sp. MEYEN	E		1			
ÖVRIGA						
Pyramimonas sp. SCHMARDA (Prasinophyceae)			3		84	0,011
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	1			
Obestämda monader			2			

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PSM002064. Granholmsfjärden

2003-12-09
10-16 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal .10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Oscillatoriales						
Planktothrix sp. ANAGNOSTIDIS & KOMÁREK			1			
Pseudoanabena limnetica (LEMMERMANN) KOMÁREK	E		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1			
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		48	0,021
DINOPHYCEAE (pansarflagellater)						
Dinophysis acuminata CLAPARÈDE & LACHMANN			3			0,043
Heterocapsa triquetra (EHRENBERG)			2		7	0,006
Katodinium sp. FOTT			2		7	0,002
Protocentrum balticum-typ (LOHMAN)			1			
Obestämd (liten)			2		24	0,017
Obestämd (mellan)			2		3	0,006
DIATOMOPHYCEAE (kiselalger)						
Aulacoseira sp. (7,5 µm bred) THWAITES	I		1			
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		1			
Chaetoceros sp.			1			
Diatoma tenuis AGARDH	E		2		7	0,006
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1			
Skeletonema sp. (GREVILLE)			1			
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Pediastrum boryanum (TURPIN) MENEGHINI	E	55	1			
ÖVRIGA						
Euglena sp. EHRENMBERG (Euglenophyceae)	E		1			
Pyramimonas sp. SCHMARDA (Prasinophyceae)			2		37	0,004
Obestämda monader			2			

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PMS002065. Frisksjön

2003-12-10
0-2 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd µm/l	Antal ·10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Oscillatoriales						
Pseudoanabena limnetica (LEMMERMANN) KOMÁREK	E		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		2		38	0,007
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		2		4	0,002
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		2		2	0,003
Katablepharis ovalis SKUJA	I		2		7	0,001
DINOPHYCEAE (pansarflagellater)						
Gymnodinium sp. (liten) KOFOID & SWEZY	I		1			
CHRYSOPHYCEAE (guldalger)						
Mallomonas akrokomos RUTTNER	I		1			
DIATOMOPHYCEAE (kiselalger)						
Aulacoseira sp. (10 µm bred) THWAITES	I		3	847166		0,070
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		1			
Fragilaria sp. LYNGBYE (inkl. Synedra EHRENBERG)	I		1			
Rhizosolenia longiseta ZACHARIAS	O	33	1			
Tabellaria flocculosa (ROTH) KÜTZING	I		1			
Tabellaria flocculosa var. asterionelloides (GRUNOW) KNUDSON	I	29	1			
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Elakatothrix sp. WILLE	I	17	1			
Pediastrum boryanum (TURPIN) MENEGHINI	E	55	1			
Scenedesmus sp. MEYEN	E		1			
CONJUGATOPHYCEAE (konjugater)						
Closterium acutum var. variabile (LEMMERMANN) W. KRIEGER	I	50	2		12	0,002
ÖVRIGA						
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	2		2	0,005
Obestämda monader			2		52	0,008

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PSM002060. Kråkelund

2004-04-13
0-28 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd.10^3 µm/l	Antal .10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Chroococcales						
Obestämd kolonibildande art			1			
Oscillatoriales						
Beggiatoa sp. TREVISAN			2	240		0,005
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp.-typ KARSTEN	I		2		76	0,005
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		2		22	0,006
DINOPHYCEAE (pansarflagellater)						
Dinophysis norvegica CLAPARÈDE & LACHMAN			1			
Gymnodinium sp. (liten) KOFOID & SWEZY	I		2		3	0,008
Gymnodinium sp. (stor) KOFOID & SWEZY	I		1			
Peridiniella catentata (LEVANDER) BALECH			1			
Protoperidinium bipes (PAULSEN) BALECH			2		0,8	0,002
Protoperidinium brevipes (PAULSEN) BALECH			1			
CHRYSOPHYCEAE (guldalger)						
Dinobryon faculiferum (WILLÉN) WILLÉN			1			
DIATOMOPHYCEAE (kiselalger)						
Achnantes taeniata GRUNOW			2	17		0,009
Chaetoceros holsaticus SCHÜTT			3		199	0,051
Chaetoceros wighamii BRIGHTWELL			2		70	0,026
Chaetoceros sp. (inkl. C: ceratosporus)			2		57	0,018
Coscinodiscus sp. EHRENBERG			2		0,1	0,008
Cyclotella sp. KÜTZING	I		1			
Melosira arctica (EHRENBERG) DICKIE			1			
Fragilaria sp. LYNGBYE	I		2		1,2	0,011
Pennales obestämda	I		1			
Rhoicospenia abbreviata (C. A. AGARDH) LANGE-BERTALOT			1			
Skeletonema sp. (GREVILLE)			5	10210		0,211
Thalassiosira baltica-typ (GRUNOW) OSTENFELD			2		0,8	0,022
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Scenedesmus acuminatus-typ (LAGERHEIM) CHODAT	E		1			
ÖVRIGA						
Euglenophyceae oidentifierad			2		4	0,003
Pyramimonas cf. virginica PENNIC (Prasinophyceae)			2		81	0,004

Medins
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435 33 Mölnlycke Org.nr. 556389-2545

SWEDAC ACKREDITERING 1646 EN 45 001
RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Ackreditated Laboratory

PSM002062. Borholmsfjärden

2004-04-14
0-2 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd·10^3 µm/l	Antal ·10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Chroococcales						
Woronichinia compacta-typ (LEMMERMANN) KOMÁREK & HINDÁK	E		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSG.G / Rhodomonas sp. KARSTEN (inkl. Hemiselmis sp.)	I		2		169	0,010
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		90	0,026
Katablepharis ovalis SKUJA	I		1			
DINOPHYCEAE (pansarflagellater)						
Ebria tripartita (SCHUMANN) LEMMERMANN			2		3	0,033
Gymnodinium sp./Katodinium sp. (avlång)	I		3		170	0,036
Gymnodinium sp. (annan) KOFOID & SWEZY	I		1			
Peridinium sp. EHRENBERG	I		1			
CHRYSOPHYCEAE (guldalger)						
Dinobryon facuiliferum (WILLÉN) WILLÉN			1			
Pseudopedinella elastica SKUJA			4		478	0,064
Oidentifierad			1			
DIATOMOPHYCEAE (kiselalger)						
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		1			
Chaetoceros sp.			1			
Diatoma tenuis AGARDH	E		2		45	0,027
Pennales obestämda	I		1			
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		2		24	0,001
ÖVRIGA						
Euglenophyceae (avlång)			2		8	0,004
Euglenophyceae (annan)			2		22	0,006
Pyramimonas sp. SCHMARDA (Prasinophyceae)			3		122	0,012
Obestämda monader			4		318	0,062

Medins
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435 33 Mölnlycke Org.nr. 556389-2545

RAPPORT
utfärdad av ackrediterat laboratorium
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PSM002064. Granholmsfjärden

2004-04-13
0-16 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd.10^3 µm/l	Antal .10^3 celler/l	Biomassa mg/l
CYANOPHYCEAE (blågrönalger)						
Nostocales						
Anabaena sp. BORY, böjd	I		1			
Aphanizomenon sp. MORREN	I		1			
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		1			
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		121	0,031
Hemiselmis sp.-typ			1			
DINOPHYCEAE (pansarflagellater)						
Dinophysis acuminata CLAPARÈDE et LACHMAN			2		0,8	0,022
Ebria tripartita (SCHUMANN) LEMMERMANN			1			
Gymnodinium sp. (stor) KOFOID & SWEZY	I		2		2,2	0,064
Gymnodinium sp. (avlång) KOFOID & SWEZY	I		2		3,0	0,019
Gymnodinium sp. (liten1) KOFOID & SWEZY	I		3		42	0,048
Gymnodinium sp. (liten2) KOFOID & SWEZY	I		2		26	0,008
Heterocapsa triquetra (EHRENBERG)			1			
Peridiniella catentata (LEVANDER) BALECH			2		0,8	0,006
Peridinium bipes STEIN	I	50	1			
CHRYSOPHYCEAE (guldalger)						
Dinobryon faculiferum (WILLÉN) WILLÉN			1			
Pseudopedinella elastica SKUJA			2		140	0,014
DIATOMOPHYCEAE (kiselalger)						
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		1			
Centriska kiselalger (>30 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		2		1,2	0,014
Chaetoceros wighamii BRIGHTWELL			4		1927	0,365
Chaetoceros sp.			4		1436	0,329
Coscinodiscus sp. EHRENBERG			1			
Diatoma tenuis AGARDH	E		1			
Melosira sp.			1			
Fragilaria sp. LYNGBYE	I		1			
Pennales obestämda	I		1			
Skeletonema sp. (GREVILLE)			1			
Surirella sp. TURPIN			1			
CHLOROPHYCEAE (grönalger)						
Chlorococcales						
Monoraphidium contortum. (THURET) KOMARKÓVA-LEGENEROVÁ	I		1			
Scenedesmus acuminatus-typ (LAGERHEIM) CHODAT	E		1			
Scenedesmus sp. MEYEN (annan)	E		1			
ÖVRIGA						
Chrysochromulina sp.			1			
Pyramimonas sp. SCHMARDA (Prasinophyceae)			1			
Obestämda monader			1			

Medins
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RAPPORT
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REPORT issued by an Ackreditated Laboratory

PSM002065. Frisksjön

2004-04-14
0-2 m
BIN PR066
Det. Iréne Sundberg

Arter	EG	TI	Frekv. (1 - 5)	Längd.10^3 µm/l	Antal .10^3 celler/l	Biomassa mg/l
CRYPTOPHYCEAE (rekylalger)						
Chroomonas sp. HANSGIRG / Rhodomonas sp. KARSTEN	I		3		195	0,021
Cryptomonas spp. (10 - 20 µm) EHRENBERG	I		3		40	0,024
Cryptomonas spp. (20 - 30 µm) EHRENBERG	I		2		8	0,049
Katablepharis ovalis SKUJA	I		2		85	0,007
DINOPHYCEAE (pansarflagellater)						
Gymnodinium sp. KOFOID & SWEZY	I		2		59	0,025
CHRYSOPHYCEAE (guldalger)						
Mallomonas akrokomos RUTTNER	I		2		23	0,002
Mallomonas caudata IWANOFF	I		2		0,9	0,003
Mallomonas sp. (annan) PERTY	I		2		23	0,014
Chrysophyceae oidentifierade			3		70	0,013
DIATOMOPHYCEAE (kiselalger)						
Aulacoseira sp. (5-10 µm bred) THWAITES	I		4	3751		0,185
Centriska kiselalger (10-20 µm) (KÜTZING) BRÉBISSON/EHRENBERG	I		2		13	0,007
Pennales obestämda	I		1			
Rhizosolenia longiseta ZACHARIAS	O	33	1			
Surirella sp. TURPIN			1			
Tabellaria flocculosa (ROTH) KÜTZING	I		1			
Tabellaria flocculosa var. asterionelloides (GRUNOW) KNUDSON	I	29	1			
CHLOROPHYCEAE (grönalger)						
Volvocales						
Chlamydomonas-typ EHRENBERG	I		3		104	0,012
Chlorococcales						
Golenkinia radiata CHODAT	E		1			
Pediastrum boryanum (TURPIN) MENEGHINI	E	55	1			
Scenedesmus spp. MEYEN	E		1			
CONJUGATOPHYCEAE (konjugater)						
Closterium acutum var. variabile (LEMMERMANN) W. KRIEGER	I	50	2		5	0,001
ÖVRIGA						
Euglena sp. EHRENMBERG (Euglenophyceae)	E		1			
Trachelomonas sp. EHRENBERG (Euglenophyceae)	E	55	2		4	0,005
Obestämda monader			3		161	0,040

Appendix 3

Species lists of zooplankton

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HÖGSKOLAN I BORÅS
Institutionen Ingenjörshögskolan

KRÅKELUND **Kvantitativ zooplanktonanalys**
16 juli 2003
PSM002060
636924, 155580
Djup: 0-10 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 22 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	4,51	0,00018
Keratella c. recurvispina	4,02	0,00020
Keratella quadrata	8,54	0,00043
Notholca sp (utan caudal spina)	0,51	0,00003
Synchaeta sp (monopus-typ)	21,61	0,00108
Synchaeta sp (liten)	0,51	0,00003
Synchaeta sp (stor)	6,54	0,00131
Trichocerca sp (stor)	0,51	0,00001
CLADOCERA		
Bosmina longispina	11,16	0,01280
Evadne sp	0,84	0,00071
Podon sp	1,23	0,00197
COPEPODA		
Eurytemora spp	0,33	0,00138
Calanoida, copepoditer	1,49	0,00186
Cyclopoida, copepoditer	0,09	0,00023
Copepoda, nauplier	2,51	0,00071
LARVER AV MAKRO-EVERTEBRATER		
Decapodlarver	0,02	0,00000
Veligerlarver	6,54	0,00596
Bivalvia, larver	8,05	0,00360
ROTATORIA, totalt	46,75	0,00325
CLADOCERA, totalt	13,23	0,01548
COPEPODA, totalt	4,42	0,00418
LARVER AV MAKRO-EVERTEBRATER, totalt	14,61	0,00956
ZOOPLANKTON, totalt	**79,00**	**0,03247**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
16 juli 2003
PSM002060
636924, 155580
Djup: 10-20 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 23 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Synchaeta sp (monopus-typ)	11,56	0,00058
Synchaeta sp (stor)	10,56	0,00211
Obestämd (Collotheca-typ)	1,00	0,00010
CLADOCERA		
Bosmina longispina	0,74	0,00078
Evadne sp	0,61	0,00054
Podon sp	0,98	0,00203
COPEPODA		
Acartia sp	0,12	0,00034
Eurytemora sp	0,05	0,00023
Temora longicornis	0,02	0,00009
Calanoida, copepoditer	2,12	0,00291
Cyclopoida, copepoditer	0,02	0,00002
Copepoda, nauplier	2,14	0,00057
LARVER AV MAKRO-EVERTEBRATER		
Bivalivia, larver	1,35	0,00083
Veligerlarver	0,12	0,00007
ROTATORIA, totalt	23,12	0,00279
CLADOCERA, totalt	2,33	0,00335
COPEPODA, totalt	4,47	0,00417
LARVER AV MAKRO-EVERTEBRATER, totalt	1,47	0,00090
ZOOPLANKTON, totalt	**31,37**	**0,01121**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
16 juli 2003
PSM002060
636924, 155580
Djup: 20-29 m
Provtagen volym: 38,7 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 25 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella quadrata	1,00	0,00005
Synchaeta sp (monopus-typ)	4,02	0,00020
Synchaeta sp (stor)	10,56	0,00211
Obestämd (Collotheca-typ)	4,51	0,00045
CLADOCERA		
Bosmina longispina	0,54	0,00082
Evadne sp	0,12	0,00012
Podon sp	0,21	0,00055
COPEPODA		
Acartia sp	0,28	0,00077
Eurytemora sp	0,16	0,00078
Temora longicornis	0,12	0,00027
Calanoida, copepoditer	5,72	0,00526
Harpactocoida	0,02	0,00000
Copepoda, nauplier	3,61	0,00085
LARVER AV MAKRO-EVERTEBRATER		
Bivalvia, larver	0,26	0,00014
Veligerlarver	0,12	0,00013
ÖVRIGT		
Tintinnider	2,00	0,00003
ROTATORIA, totalt	20,09	0,00281
CLADOCERA, totalt	0,86	0,00149
COPEPODA, totalt	9,91	0,00793
LARVER AV MAKRO-EVERTEBRATER, totalt	0,37	0,00027
ÖVRIGT, totalt	2,00	0,00003
ZOOPLANKTON, totalt	**33,23**	**0,01254**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
9 december 2003
PSM002060
636924, 155580
Djup: 0-10 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 5 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Obestämd (Collotheca-typ)	0,93	0,00009
COPEPODA		
Acartia longiremis, hanar	0,16	0,00059
Acartia longiremis, honor	0,02	0,00009
Temora longicornis	0,05	0,00017
Calanoida, copepoditer	2,93	0,00199
Copepoda, nauplier	5,51	0,00158
ROTATORIA, totalt	0,93	0,00009
COPEPODA, totalt	8,68	0,00442
ZOOPLANKTON, totalt	**9,61**	**0,00452**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
9 december 2003
PSM002060
636924, 155580
Djup: 10-20 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 5 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Obestämd (Collotheca-typ)	1,16	0,00012
COPEPODA		
Acartia longiremis, hanar	0,09	0,00032
Acartia longiremis, honor	0,19	0,00080
Temora longicornis	0,02	0,00013
Calanoida, copepoditer	3,42	0,00403
Harpacticoida	0,02	0,00000
Copepoda, nauplier	3,84	0,00089
LARVER AV MAKRO-EVERTEBRATER		
Polychaeta	0,02	0,00001
ROTATORIA, totalt	1,16	0,00012
COPEPODA, totalt	7,58	0,00616
LARVER AV MAKRO-EVERTEBRATER, totalt	0,02	0,00001
ZOOPLANKTON, totalt	**8,77**	**0,00629**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
9 december 2003
PSM002060
636924, 155580
Djup: 20-29 m
Provtagen volym: 38,7 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 7 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Obestämd (Collotheca-typ)	0,33	0,00003
COPEPODA		
Acartia longiremis, hanar	0,14	0,00053
Acartia longiremis, honor	0,14	0,00059
Calanoida, copepoditer	2,07	0,00266
Harpacticoida	0,02	0,00000
Copepoda, nauplier	2,70	0,00058
ROTATORIA, totalt	0,33	0,00003
COPEPODA, totalt	5,07	0,00436
ZOOPLANKTON, totalt	**5,40**	**0,00440**

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KRÅKELUND **Kvantitativ zooplanktonanalys**
13 april 2004
PSM002060
636924, 155580
Djup: 0-28 m
Provtagen volym: 120,4 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 5 september 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	0,06	0,00000
Keratella quadrata	0,02	0,00000
Synchaeta sp (liten)	0,68	0,00003
Obestämd (Collotheca-typ)	0,08	0,00001
Obestämd (Keratella-typ)	0,03	0,00000
COPEPODA		
Acartia longiremis	0,05	0,00023
Acartia sp.	0,09	0,00058
Acartia sp., copepoditer	1,69	0,00281
Temora sp. copepoditer	0,11	0,00064
Harpacticoida	0,01	0,00000
Copepoda, nauplier	1,32	0,00025
LARVER AV MAKRO-EVERTEBRATER		
Trochophoralarver	0,09	0,00010
Polychaeta	0,17	0,00004
Oklassificerad	0,02	0,00000
ROTATORIA, totalt	0,86	0,00005
COPEPODA, totalt	3,27	0,00449
LARVER AV MAKRO-EVERTEBRATER, totalt	0,27	0,00014
ZOOPLANKTON, totalt	**4,41**	**0,00468**

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BORHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
16 juli 2003
PSM002062
636706, 155126
Djup: 0-3 m
Provtagen volym: 12,9 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 11 september 2003

	Täthet (ind./liter)	**Biomassa** mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	843,88	0,04373
Keratella quadrata	6,51	0,00033
Synchaeta sp (liten)	140,62	0,00703
CLADOCERA		
Bosmina longispina	0,31	0,00063
Ceriodaphnia sp	2,40	0,00246
Sida cristallina	0,08	0,00270
COPEPODA		
Eurytemora sp, adulter	1,16	0,00554
Calanoida, copepoditer	1,79	0,00276
Cyclopoida, copepoditer	4,34	0,00504
Harpacticoida	0,16	0,00006
Copepoda, nauplier	13,57	0,00363
ROTATORIA, totalt	991,01	0,05109
CLADOCERA, totalt	2,79	0,00579
COPEPODA, totalt	21,02	0,01703
ZOOPLANKTON, totalt	**1014,82**	**0,07391**

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BORHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
10 december 2003
PSM002062
636706, 155126
Djup: 0-3 m
Provtagen volym: 12,9 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 3 januari 2004

	Täthet (ind./liter)	**Biomassa** mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	0,31	0,00002
Keratella quadrata	9,30	0,00047
Synchaeta sp (liten)	0,31	0,00002
Obestämd (Collotheca-typ)	3,18	0,00032
CLADOCERA		
Bosmina longispina	0,08	0,00035
Chydorus sp	0,78	0,00086
COPEPODA		
Acartia sp, hanar	0,08	0,00039
Acartia sp, honor	0,23	0,00118
Eurytemora sp, hanar	0,39	0,00484
Eurytemora sp, honor	0,54	0,00790
Calanoida, copepoditer	16,90	0,03617
Cyclopoida, copepoditer	0,39	0,00151
Copepoda, nauplier	28,91	0,00681
LARVER AV MAKRO-EVERTEBRATER		
Polychaeta	1,01	0,00048
Bivalvia, larver	0,08	0,00004
ROTATORIA, totalt	13,10	0,00081
CLADOCERA, totalt	0,86	0,00122
COPEPODA, totalt	47,44	0,05879
LARVER AV MAKRO-EVERTEBRATER, totalt	1,09	0,00052
ZOOPLANKTON, totalt	**62,49**	**0,06134**

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BORHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
14 april 2004
PSM002062
636706, 155126
Djup: 0-3 m
Provtagen volym: 12,9 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 9 september 2004

	Täthet (ind./liter)	**Biomassa** mg torrvikt/liter)
ROTATORIA		
Keratella quadrata	1,71	0,0001
CLADOCERA		
Bosmina longispina	0,23	0,0004
Chydorus sp	0,16	0,0001
COPEPODA		
Eurytemora sp, hanar	0,08	0,0008
Eurytemora sp, honor	0,08	0,0012
Calanoida, copepoditer	0,39	0,0011
Cyclops sp, hanar	8,45	0,0706
Cyclops sp, honor	13,80	0,2081
Mesocyclops sp, hanar	2,09	0,0073
Mesocyclops sp, honor	2,17	0,0148
Cyclopoida, obestämd, hanar	0,62	0,0038
Cyclopoida, obestämd, honor	0,39	0,0032
Cyclopoida, copepoditer	3,49	0,0129
Copepoda, nauplier	160,78	0,0280
ROTATORIA, totalt	1,71	0,0001
CLADOCERA, totalt	0,39	0,0006
COPEPODA, totalt	192,34	0,3516
ZOOPLANKTON, totalt	**194,44**	**0,3522**

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GRANHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
15 juli 2003
PSM002064
636862, 155052
Djup: 0-10 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 12 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	4,51	0,00018
Keratella c. recurvispina	0,51	0,00003
Keratella quadrata	1,00	0,00005
Synchaeta sp (liten)	26,12	0,00131
Synchaeta sp (stor)	0,51	0,00010
CLADOCERA		
Bosmina longispina	18,63	0,03433
Ceriodaphnia sp	0,05	0,00005
Chydorus sp	0,02	0,00001
Podon sp	0,02	0,00005
COPEPODA		
Acartia sp	1,02	0,00393
Eurytemora spp	1,56	0,01197
Calanoida, obestämd	0,19	0,00156
Calanoida, copepoditer	4,77	0,00544
Cyclopoida, obestämd	0,05	0,00017
Cyclopoida, copepoditer	3,81	0,00490
Copepoda, nauplier	11,56	0,00238
ÖVRIGA		
Tintinnider	33,65	0,00044
ROTATORIA, totalt	32,65	0,00166
CLADOCERA, totalt	18,72	0,03443
COPEPODA, totalt	22,95	0,03035
ÖVRIGA, totalt	33,65	0,00044
ZOOPLANKTON, totalt	**107,98**	**0,06689**

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GRANHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
15 juli 2003
PSM002064
636862, 155052
Djup: 10-16 m
Provtagen volym: 25,8 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 15 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Synchaeta sp (liten)	6,71	0,00034
CLADOCERA		
Bosmina longispina	0,23	0,00044
Chydorus sphaericus	0,04	0,00017
COPEPODA		
Acartia sp	0,97	0,00352
Eurytemora sp	0,16	0,00123
Calanoida, obestämd	0,19	0,00147
Calanoida, copepoditer	6,94	0,00867
Cyclopoida, obestämd	0,16	0,00050
Cyclopoida, copepoditer	0,66	0,00110
Copepoda, nauplier	3,84	0,00083
ÖVRIGA		
Tintinnider	15,89	0,00021
ROTATORIA, totalt	6,71	0,00034
CLADOCERA, totalt	0,27	0,00060
COPEPODA, totalt	12,91	0,01732
ÖVRIGA, totalt	15,89	0,00021
ZOOPLANKTON, totalt	**35,78**	**0,01847**

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GRANHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
9 december 2003
PSM002064
636862, 155052
Djup: 0-10 m
Provtagen volym: 43 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 4 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella cochlearis	0,09	0,00000
Keratella quadrata	1,47	0,00007
Synchaeta sp (stor)	0,12	0,00002
Obestämd (Collotheca-typ)	1,00	0,00010
CLADOCERA		
Bosmina longispina	0,09	0,00005
Chydorus sp	0,30	0,00045
Evadne sp	0,05	0,00007
COPEPODA		
Acartia sp, hanar	0,02	0,00011
Acartia sp, honor	0,05	0,00030
Eurytemora sp	0,14	0,00135
Calanoida, copepoditer	4,00	0,00800
Cyclopoida, copepoditer	0,12	0,00004
Harpacticoida	0,02	0,00001
Copepoda, nauplier	5,26	0,00161
LARVER AV MAKRO-EVERTEBRATER		
Polychaeta	1,47	0,00256
Bivalvia, larver	0,40	0,00019
ROTATORIA, totalt	2,67	0,00020
CLADOCERA, totalt	0,44	0,00056
COPEPODA, totalt	9,61	0,01141
LARVER AV MAKRO-EVERTEBRATER, totalt	1,86	0,00275
ZOOPLANKTON, totalt	14,58	0,01492

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GRANHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
9 december 2003
PSM002064
636862, 155052
Djup: 10-16 m
Provtagen volym: 25,8 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 5 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella quadrata	0,27	0,00001
Synchaeta sp (stor)	0,19	0,00004
Obestämd (Collotheca-typ)	0,97	0,00010
CLADOCERA		
Bosmina longispina	0,04	0,00014
Chydorus sp	0,58	0,00072
COPEPODA		
Acartia sp (1), hanar	0,16	0,00076
Acartia sp (1), honor	0,50	0,00293
Acartia sp (2), honor	0,12	0,00086
Eurytemora sp	3,68	0,04228
Calanoida, copepoditer	11,59	0,04039
Cyclopoida, copepoditer	0,47	0,00187
Copepoda, nauplier	5,62	0,00153
LARVER AV MAKRO-EVERTEBRATER		
Polychaeta	2,83	0,00299
Trochophoralarver	0,35	0,00015
ROTATORIA, totalt	1,43	0,00015
CLADOCERA, totalt	0,62	0,00086
COPEPODA, totalt	22,13	0,09061
LARVER AV MAKRO-EVERTEBRATER, totalt	3,18	0,00314
ZOOPLANKTON, totalt	27,36	0,09476

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GRANHOLMSFJÄRDEN **Kvantitativ zooplanktonanalys**
13 april 2004
PSM002064
636862, 155052
Djup: 0-16 m
Provtagen volym: 68,8 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 8 september 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Keratella quadrata	0,32	0,00002
Synchaeta sp (liten)	3,77	0,00019
Synchaeta sp (stor)	1,89	0,00038
Obestämd (Collotheca-typ)	1,25	0,00013
CLADOCERA		
Bosmina longispina	2,14	0,00366
COPEPODA		
Acartia sp. (1)	0,49	0,00216
Acartia sp. (2)	0,03	0,00023
Eurytemora sp	0,09	0,00090
Calanoida, copepoditer	2,20	0,00426
Mesocyclops sp.	0,17	0,00035
Cyclopoida, obestämd, adulter	0,63	0,00756
Cyclopoida, copepoditer	0,49	0,00134
Harpacticoida	0,42	0,00015
Copepoda, nauplier	10,04	0,00312
LARVER AV MAKRO-EVERTEBRATER		
Polychaeta	0,35	0,00015
ROTATORIA, totalt	7,23	0,00071
CLADOCERA, totalt	2,14	0,00366
COPEPODA, totalt	14,56	0,02006
LARVER AV MAKRO-EVERTEBRATER, totalt	0,35	0,00015
ZOOPLANKTON, totalt	**24,28**	**0,02457**

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FRISKSJÖN **Kvantitativ zooplanktonanalys**
15 juli 2003
PSM002065
636810, 154901
Djup: 0-2 m
Provtagen volym: 8,6 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 11 september 2003

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Asplanchna sp	2,56	0,00146
Conochilus sp	2,56	0,00003
Keratella cochlearis	2,56	0,00010
Pompholyx sp	5,00	0,00006
Trichocerca sp	17,56	0,00018
CLADOCERA		
Bosmina longispina	13,61	0,03060
Ceriodaphnia sp	14,19	0,03177
Daphnia cucullata	155,70	0,85673
Diaphanosoma brachyurum	6,98	0,02551
Leptodora kindti	1,28	0,20136
Obestämd chydorid	0,35	0,00065
COPEPODA		
Eudiaptomus spp	3,14	0,06048
Calanoida, copepoditer	6,98	0,04516
Mesocyclops sp	0,23	0,00146
Thermocyclops sp	37,67	0,24352
Cyclopoida, copepoditer	47,67	0,15875
Copepoda, nauplier	118,02	0,01835
ROTATORIA, totalt	30,23	0,00183
CLADOCERA, totalt	192,09	1,14661
COPEPODA, totalt	213,72	0,52773
ZOOPLANKTON, totalt	**436,05**	**1,67617**

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FRISKSJÖN **Kvantitativ zooplanktonanalys**
10 december 2003
PSM002065
636810, 154901
Djup: 0-3 m
Provtagen volym: 12,9 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 2 januari 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Asplanchna sp	6,20	0,00354
Kellicottia longispina	0,39	0,00002
Keratella cochlearis	24,81	0,00099
Keratella quadrata	0,47	0,00003
Synchaeta sp (stor)	3,33	0,00067
CLADOCERA		
Alonella nana	0,08	0,00006
Bosmina longirostris	0,08	0,00012
Ceriodaphnia sp	0,16	0,00023
Daphnia cucullata	0,47	0,00367
COPEPODA		
Eudiaptomus sp, hanar	7,67	0,05227
Eudiaptomus sp, honor	7,60	0,06818
Calanoida, copepoditer	7,05	0,02683
Cyclopoida, copepoditer	0,78	0,00142
Copepoda, nauplier	0,70	0,00043
ROTATORIA, totalt	35,19	0,00524
CLADOCERA, totalt	0,78	0,00408
COPEPODA, totalt	23,80	0,14912
ZOOPLANKTON, totalt	**59,77**	**0,15845**

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FRISKSJÖN **Kvantitativ zooplanktonanalys**
14 april 2004
PSM002065
636810, 154901
Djup: 0-3 m
Provtagen volym: 12,9 liter
Limnoshämtare, filtrering genom 64 µm Analyserat 10 september 2004

	Täthet (ind./liter)	**Biomassa** (mg torrvikt/liter)
ROTATORIA		
Kellicottia longispina	1,71	0,00007
Keratella cochlearis	3,33	0,00013
Keratella quadrata	6,67	0,00047
Synchaeta spp (stor)	1,71	0,00034
CLADOCERA		
Alonella nana	0,08	0,00001
Ceriodaphnia sp	0,08	0,00003
Daphnia cucullata	0,23	0,00084
COPEPODA		
Eudiaptomus sp., hanar	3,95	0,02883
Eudiaptomus sp., honor	5,12	0,04442
Calanoida, copepoditer	1,86	0,00822
Mesocyclops sp	0,47	0,00134
Thermocyclops sp	30,00	0,03852
Cyclopoida, copepoditer	0,93	0,00193
Copepoda, nauplier	30,16	0,01244
ROTATORIA, totalt	13,41	0,00101
CLADOCERA, totalt	0,39	0,00088
COPEPODA, totalt	72,48	0,13571
ZOOPLANKTON, totalt	**86,28**	**0,13760**

Jan-Erik Svensson

Appendix 4

Primary resluts for phytoplankton

Phytoplankton

General results

Station number	Station name	Date	Sampling depth (m)	Biomass total (mg/l)	Biomass bluegreen algae (mg/l)	Potentially toxic blue-green algae (number of taxa)	Number of species/ taxa total	Biomass Diatomo-phyceae in april (mg/l)
PSM002060	Kråkelund	2003-07-16	0–10	0.75	0.34	3	27	
PSM002060	Kråkelund	2003-07-16	10–20	0.34	0.11	3	20	
PSM002060	Kråkelund	2003-07-16	20–28	0.10	0.02	3	21	
PSM002062	Borholmsfjärden	2003-07-16	0–2	1.23	0.00	2	22	
PSM002064	Granholmsfjärden	2003-07-15	0–10	0.14	0.00	1	18	
PSM002064	Granholmsfjärden	2003-07-15	10–16	0.07	0.00	0	16	
PMS002065	Frisksjön	2003-07-15	0–2	5.17	0.18	1	35	
PSM002060	Kråkelund	2003-07-16	0–28	1.18	0.47	3	30	
PSM002064	Granholmsfjärden	2003-07-15	0–16	0.20	0.00	1	22	
PSM 002060	Kråkelund	2003-12-09	0–10	0.03	<0.01	1	10	
PSM002060	Kråkelund	2003-12-09	10–20	0.07	<0.01	1	15	
PSM002060	Kråkelund	2003-12-09	20–28	0.05	<0.01	1	14	
PSM002062	Borholmsfjärden	2003-12-10	0–2	0.41	0.00	0	13	
PSM002064	Granholmsfjärden	2003-12-09	0–10	0.27	0.00	0	17	
PSM002064	Granholmsfjärden	2003-12-09	10–16	0.10	<0.01	1	20	
PMS002065	Frisksjön	2003-12-10	0–2	0.10	0.00	0	19	
PSM002060	Kråkelund	2003-12-09	0–28	0.15	<0.01	1	16	
PSM002064	Granholmsfjärden	2003-12-09	0–16	0.38	0.00	1	26	
PSM002060	Kråkelund	2004-04-13	0–28	0.39	0.005	0	26	0.36
PSM002062	Borholmsfjärden	2004-04-14	0–2	0.28	<0.001	1	20	0.03
PSM002064	Granholmsfjärden	2004-04-13	0–16	0.92	0.00	0	33	0.71
PSM002065	Frisksjön	2004-04-14	0–2	0.41	0.00	0	24	0.19